gallaway
ENTERPRISES

DRAFT DELINEATION OF JURISDICTIONAL WATERS OF THE UNITED STATES

Bruce Road Widening Project

Chico, Butte County, California

July 2020

Prepared for:
City of Chico Public Works Department
Attn: Tracy Bettencourt
411 Main Street, 2nd Floor
P.O. Box 3420
Chico, CA 95927

Prepared by:
Gallaway Enterprises
117 Meyers Street, Suite 120
Chico CA 95928
(530) 332-9909
www.gallawayenterprises.com

Contents

List of Tables and Figures

List of Appendices and Exhibits

DRAFT DELINEATION OF JURISDICTIONAL WATERS OF THE UNITED STATES,

Bruce Road Widening Project, Chico, California

Introduction and Project Location

Gallaway Enterprises conducted a delineation of waters of the United States (WOTUS) and aquatic resources for the Bruce Road Widening Project (Project) consisting of an approximately 2-mile segment of Bruce Road from Highway 32 to Skyway Road, within the City of Chico, Butte County, CA (**Figure 1 and 2**). The Project site is located within the US Geological Survey (USGS) Chico Quadrangle, Sections 29 and 3, Township 22N, Range 2E. The project currently proposed on the site is a road widening project to increase the road to two lanes in both directions.

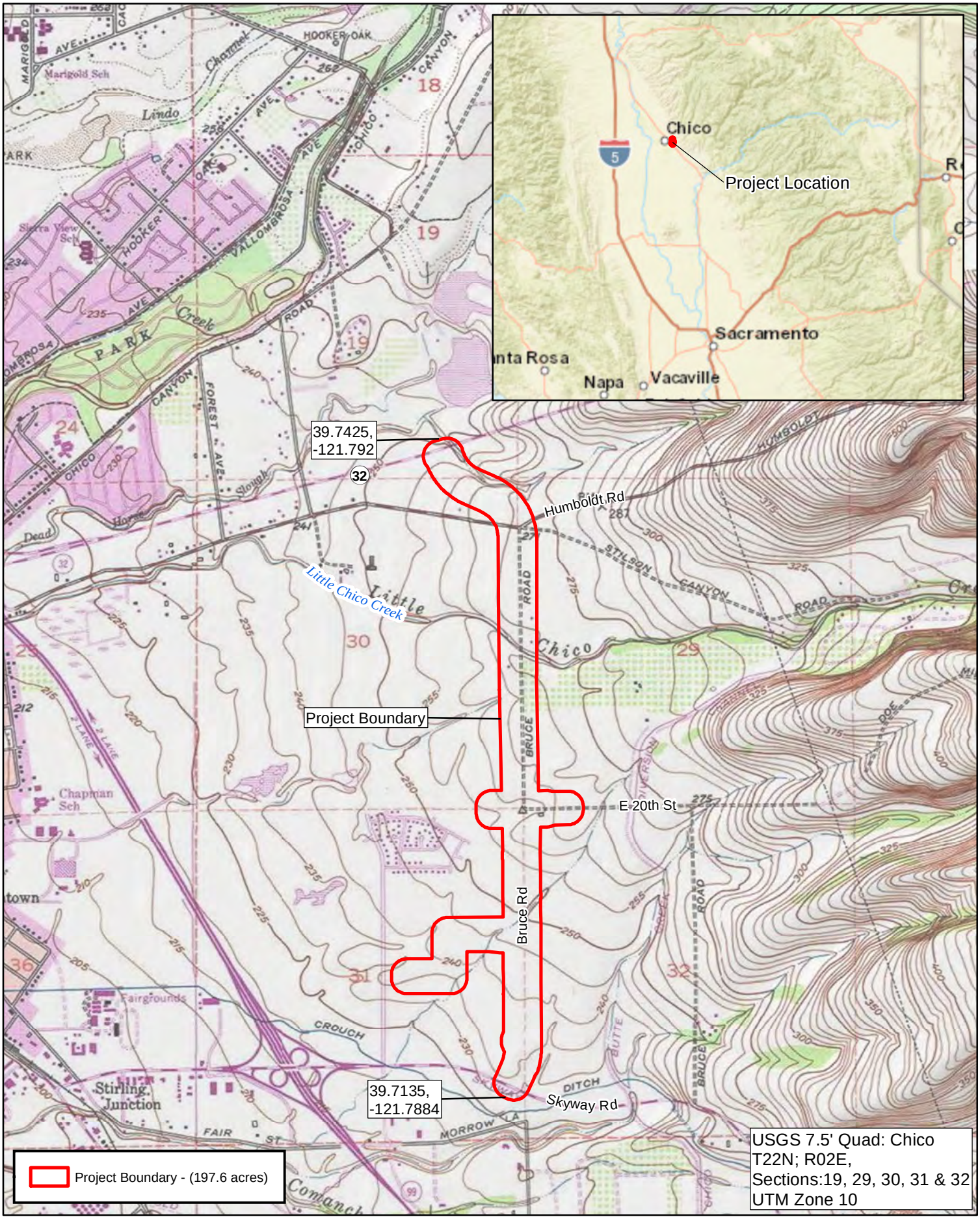
The Project site is accessible via Highway 99 by taking exit 383 for Skyway Road, turning east onto Skyway Road and then turning left onto Bruce Road. The Project site occurs on both sides of Bruce Road beginning at the Skyway Road intersection and ending at the Highway 32 intersection.

A survey of WOTUS was conducted on April 7 and 20, 2016 by Senior Botanist Elena Gregg and soil scientist/GIS analyst Sam Rossi and on June 18, 2019 by Ms. Gregg. Conditions within the Project site have not changed since the 2016 or 2019 site visits. Data regarding the location and extent of wetlands and other waters of the United States were collected using a Trimble Geo Explorer 6000 Series GPS Receiver. 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) (1987 Delineation Manual); the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (2008) (Arid West Manual); the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (2008); the *State of California 2016 Wetland Plant List* and *2019 National Wetland Plant List updated information*; and the *Clean Water Act Final Rule, Federal Register Volume 85, No-77* (Final Rule), April 21, 2020. Gallaway Enterprises have prepared this report in compliance with the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (January 2016).

Environmental Setting and Site Conditions

The Project's survey area included the City of Chico's (City) Right-of-Way (ROW) as well as a buffer of 250-feet, where access was granted, within the adjacent privately owned land. Land that was already developed, planned for immediate future development, or are part of a Corps permitted project were not surveyed (**Exhibit A**). The Project is positioned within the northeastern Central Valley. Within the Project, the land in the ROW includes the asphalt paved roadway, the gravel shoulder, and the small strip of disturbed land adjacent to the road shoulder that is regularly managed for vegetation. The land outside the ROW consists of annual grassland with vernal pool complexes or urban land. A few creeks flow through the Project site, including Little Chico Creek and unnamed tributaries of Dead Horse Slough. A number of wetlands are also present within the Project's survey area.

The average annual precipitation is25.66 inches and the average annual temperature is 61.0° F (WRCC 2020) in the region where the Project is located. The Project ranges in elevation from 233 to 274 feet above sea level and is sloped between 0-8 percent. Soils within the site are loams or clay loams with a restrictive layer ranging from 10 to more than 80 inches deep.



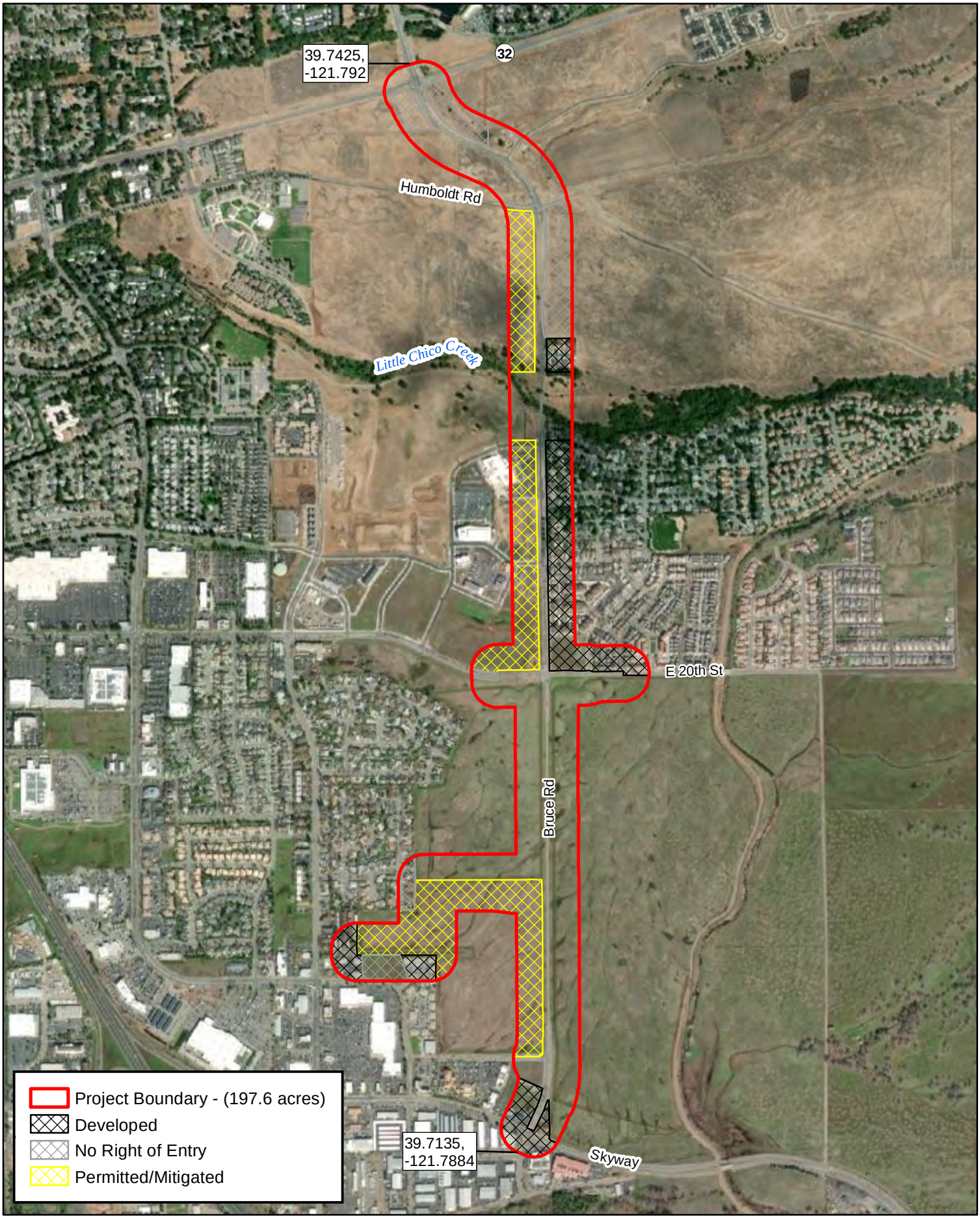
1:24,000
0 500 1,000 Feet
Data Sources: ESRI, USGS, City of Chico

NORTH

Bruce Road Road Widening Project
Regional Location
Figure 1

gallaway ENTERPRISES

GE: #17-014b Map Date: 07/20/20



NORTH

1:14,500
0 500 1,000 Feet

Data Sources: ESRI, USGS, City of Chico, Maxar 02/11/19 & 08/06/19

Bruce Road Road Widening Project
Project Location
Figure 2

gallaway ENTERPRISES

GE: #17-014b Map Date: 07/20/20

Survey Methodology

The entire Project was traversed on foot by Gallaway Enterprises staff on April 7 and 20, 2016 and June 18, 2019 to identify any potentially jurisdictional features. The survey, mapping efforts, and report production were performed according to the valid legal definitions of WOTUS in effect in 2019 and updated to the current valid legal definitions of WOTUS that became effective as of June 22, 2020. The boundaries of non-tidal, non-wetland waters, when present, were delineated at the ordinary high water mark (OHWM) as defined in 33 Code of Federal Regulations (CFR) 328.3. The OHWM represents the limit of United States Army Corps of Engineers (Corps) jurisdiction over non-tidal waters (e.g., streams and ponds) in the absence of adjacent wetlands (33 CFR 328.04) (Curtis, et. al. 2011). Historic aerial photographs available on Google Earth were analyzed prior to conducting the field visit. Areas identified as having potential wetland or unusual signatures on historical aerial photos were assessed in the field to determine the current conditions.

Field data were entered onto data sheets using the most current format (**Appendix A**). Wetland perimeters based on the 1987 Delineation Manual and the Arid West Manual were recorded and defined according to their topographic and hydrologic orientation. Sample points were established for each wetland and the corresponding upland zone. No data or sample points were taken within the wetlands previously verified by the Corps (SPK2006-00794, SPK2005-01036, SPK2006-00865, and SPK2005-00063). Test pit sampling was performed in areas displaying historic wetland signatures on past aerial photographs and problem areas. Test pit sampling points involved physical sampling of soils and vegetation, and investigation regarding hydrological connectivity. Only areas exhibiting the necessary wetland parameters according to the 1987 Delineation Manual and Arid West Manual on the date surveyed were mapped as wetlands. Photographs were taken to show WOTUS, test pit areas, and/or areas identified as having unusual aerial signatures. The locations of the photo points are depicted in **Figure 3** and the associated photographs are provided at the end of the report.

Many of the terms used throughout this report have specific meanings relating to the federal wetland delineation process. Term definitions are based on the Corps 1987 Delineation Manual; the Arid West Manual; *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008) and the Final Rule. The terms defined below have specific meaning relating to the delineation of WOTUS as prescribed by §404 of the Clean Water Act (CWA) and described in 33 CFR Part 328 and 40 CFR Parts 110, 112, and 116, and 122.

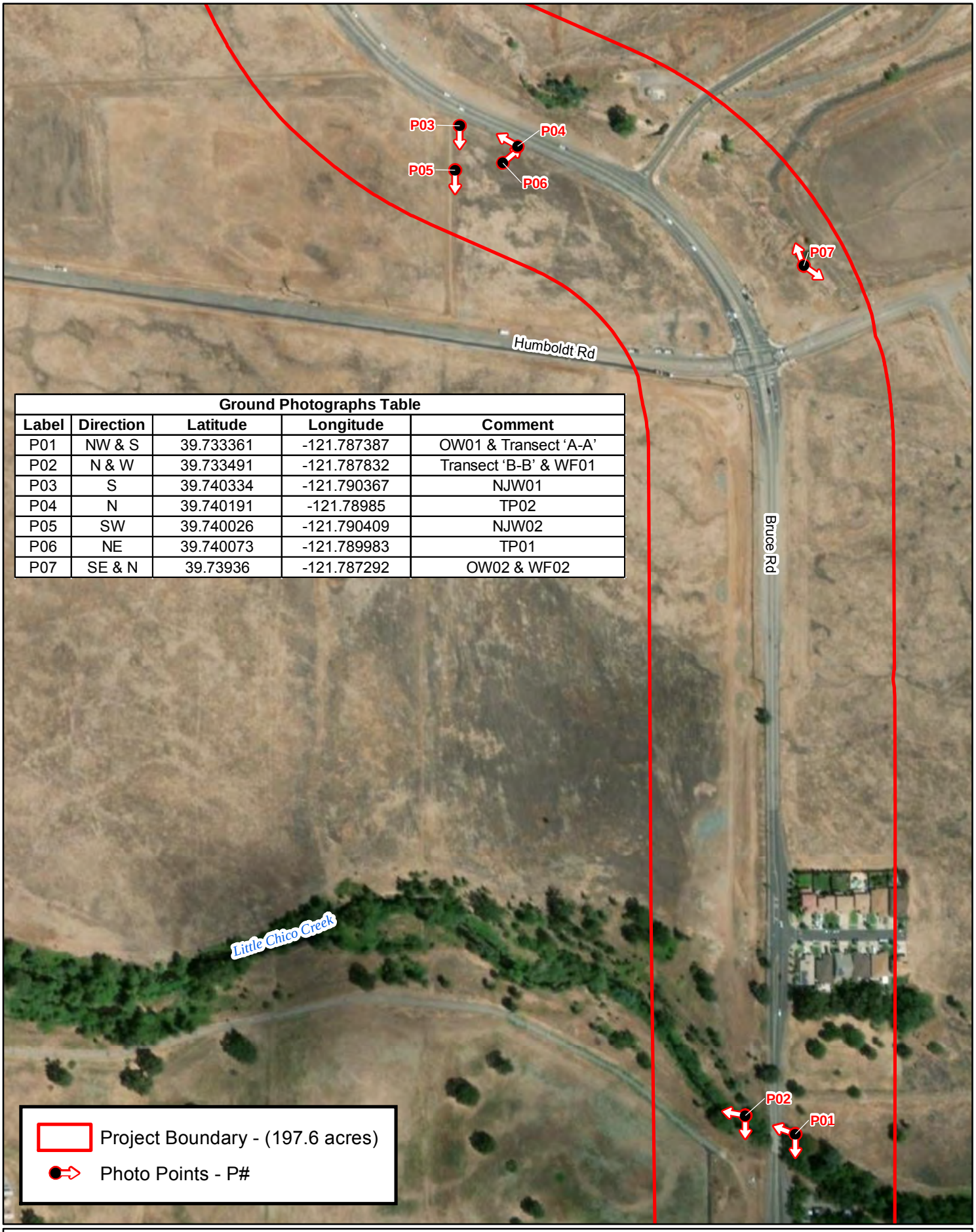
Determination of Hydrophytic Vegetation

The presence of hydrophytic vegetation was determined using the methods outlined in the 1987 Delineation Manual and the Arid West Manual. Areas were considered to have positive indicators of hydrophytic vegetation if they pass the dominance test, meaning more than 50 percent of the dominant species are obligate wetland, facultative wetland and facultative plants. Plant species were identified to the lowest taxonomy possible. Plant indicator status was determined by reviewing the State of California 2016 Wetland Plant List for the Arid West Region and the National Wetland Plant List 2019 updated information. In situations where dominance can be misleading due to seasonality, the prevalence index will be used to determine hydrophytic status of the community surrounding sample sites.

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.



Ground Photographs Table				
Label	**Direction**	**Latitude**	**Longitude**	**Comment**
P01	NW & S	39.733361	-121.787387	OW01 & Transect 'A-A'
P02	N & W	39.733491	-121.787832	Transect 'B-B' & WF01
P03	S	39.740334	-121.790367	NJW01
P04	N	39.740191	-121.78985	TP02
P05	SW	39.740026	-121.790409	NJW02
P06	NE	39.740073	-121.789983	TP01
P07	SE & N	39.73936	-121.787292	OW02 & WF02

NORTH

1:3,800

0 200 400 Feet

Data Sources: ESRI, City of Chico, Maxar 02/11/19 & 08/06/19

Bruce Road Widening Project
Ground Photographs Map
Figure 3

gallaway ENTERPRISES

GE# 17-14b Map Date: 07/22/20

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%) 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.

Determination of Hydric Soils

Soil survey information was reviewed for the current site condition. Field samples were evaluated by using the Munsell soil color chart (2009 Edition), hand texturing, and assessing soil features (e.g. oxidized root channels, evidence of hardpan, Mn and Fe concretions). Information regarding local soil and series descriptions is provided in **Appendix B.** A number of test pits (**Appendix A**) were dug within portions of the site that demonstrated wetland signatures in historic aerial photographs but did not meet the wetland test parameters upon investigation in the field. The current Natural Resources Conservation Service (NRCS) *Field Indicators of Hydric Soils in the United States, Version 8.2* (NRCS 2018) was used in conjunction with the Arid West Manual to determine the presence of hydric soil indicators.

Determination of Wetland Hydrology

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

- 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, surface soil cracks and drift lines.

The presence of water or saturated soil for approximately 12% or 14 consecutive days during 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 (Wetland Training Institute 1995).

Historic aerial photographs were analyzed to look for primary and secondary wetland hydrology indicators of inundation or saturation. The historic aerial imagery reviewed was the public, readily available imagery provided on Google Earth (1998-2018). If aerial signatures demonstrated the presence of surface water on 5 or more of the historic aerial photographs viewed, inundation and a primary indicator of wetland hydrology was determined to be present. Saturation, a secondary indicator of wetland hydrology, was determined to be present if saturation, "darker patches within the field," were observed on 5 or more of the 9 historic aerial photographs viewed.

Determination of Ordinary High Water Mark

Gallaway utilized methods consistent with the Arid West Manual and *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, (*Lichvar and McColley 2008*)* to determine the OHWM. The lateral extents of non-tidal water bodies (e.g. intermittent and ephemeral streams) were based on the OHWM, which is "the line on the shore established by the fluctuations of water" (Corps 2005). The OHWM was determined based on multiple observed physical characteristics of the area, which can include scour, multiple observed flow events

(from current and historical aerial photos), shelving, and changes in the character of soil, presence of mature vegetation, deposition, and topography. Due to the wide extent of some floodplains, adjacent riparian scrub areas characterized by hydric soils, hydrophytic vegetation, and hydrology may be included within the OHWM of a non-tidal water body (Curtis, et. al. 2011). Inclusion of minor special aquatic areas is an acceptable practice as outlined in the Arid West Manual.

OHWM Transects:

Representative OHWM widths measured in the field are shown as transect lines and measured in feet as required by the Corps *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program (2016)* and presented as an average for the entire drainage. These transect measurements are used to ensure that the other waters of the United States identified within the area surveyed are mapped and calculated at the appropriate average width for each channel segment based on the Corps definition of OHWM as defined in the Arid West OHWM Field Guide and the Ordinary High Water Mark Identification RGL 05-05 (2005) (RGL 05-05). At the transect line Gallaway used multiple observed physical indicators in determining the OHWM. The lateral extents of the transect lines identify the location of the OHWM where benches, drift, exposed root hairs, changes in substrate/particle size, and, if appropriate, changes in vegetation were observed. An Arid West OHWM Datasheet (Curtis and Lichvar 2010) was filled out for the stretch of Little Chico Creek present in the Project and one of the segments of the unnamed tributary of Dead Horse Slough present within the Project (**Appendix C**).

Jurisdictional Boundary Determination and Acreage Calculation

For the unverified wetland-upland boundary, the boundary was determined based on the presence or inference of positive indicators of all mandatory criteria. Soil samples were taken within wetland and upland areas. The site was traversed on foot to identify wetland features and boundaries. The spatial data obtained during the preparation of this wetland delineation was collected using a Trimble Geo Explorer 6000 Series GPS Receiver. No readings were taken with fewer than 5 satellites. Point data locations were recorded for at least 25 seconds at a rate of 1 position per second. Area and line data were recorded at a rate of 1 position per second while walking at a slow pace. All GPS data were differentially corrected for maximum accuracy. In some cases, when visual errors and degrees of precision are identified due to environmental factors negatively influencing the precision of the GPS instrument (i.e. dense tree cover, steep topography, and other factors affecting satellite connection) mapping procedures utilized available topographic and aerial imagery datasets in order to improve accuracy in feature alignment and location.

For the verified wetland-upland boundary, the boundary was obtained as shapefiles and overlaid onto the map, as was the case for wetland features verified under SPK2005-01036, SPK2005-00063 and SPK2006-00794, or the boundary was estimated and digitized based on the original delineation map, as was the case for the wetland features verified under SPK2006-00865.

Non-Jurisdictional Boundary Determination and Acreage Calculation

Areas were determined to be non-wetlands if they did not meet the necessary wetland test parameters (hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4) and were determined to be potentially non-jurisdictional if they were consistent with the description of non-jurisdictional features as presented in the *Corps Jurisdictional Determination Form Instructional Guidebook* (2007) and Final Rule. The vast majority of the WOTUS present within the Project boundary have been previously verified by the Corps.

Of the features that have not been verified by the Corps, there are two wetlands that are isolated (NJW01 and NJW02). These two isolated wetlands lack any direct surface hydrologic connection to

jurisdictional features. A total of 0.051 acre of unverified isolated wetlands occur within the Project and are depicted in **Exhibit A**. Due to the isolated nature of these wetlands, they meet the definition of a non-jurisdictional water per Section 328.3(b)(1) of the Final Rule.

Results

Table 1 Summarizes the area calculations for the pre-jurisdictional features within the Project. A complete Draft Delineation of WOTUS map, utilizing a 1" to 200' scale, is included as **Exhibit A**.

Table 1. Draft Delineation of Waters of the United States Acreage Table for the Bruce Road Widening Project.

Draft Delineation of Waters of the U.S.						
Other Waters/Tributaries						
Label	**Cowardin**	**Description**	**Width (ft)**	**Length (ft)**	**Area (sq ft)**	**Acres**
OW01	R4	Intermittent	34.2	807.7	27658.0	0.635
OW02	R4	Intermittent	17.3	161.5	2789.4	0.064
OW03	PRB	Pond	NA	NA	858.4	0.020
OW04	PRB	Pond	NA	NA	1877.1	0.043
OW05	PRB	Pond	NA	NA	2730.1	0.063
OW06	R4	Intermittent	20.2	104.8	2115.0	0.049
OW07	R4	Intermittent	13.2	171.6	2265.1	0.052
OW08	R4	Intermittent	16.4	405.2	6640.6	0.152
OW09	R4	Intermittent	27.5	166.5	4582.6	0.105
OW10	R4	Intermittent	6.0	82.6	495.7	0.011
OW11	R4	Intermittent	4.0	72.7	290.9	0.007
			Pond Feature Totals =	**NA**	**5465.6**	**0.125**
			Intermittent Totals =	**1972.7**	**46860.8**	**1.076**
			Other Waters Totals =	**1972.7**	**52326.4**	**1.201**
Wetland Features						
Label	**Cowardin**	**Description**	**Width (ft)**	**Length (ft)**	**Area (sq ft)**	**Acres**
WF01	RP1EM	Riparian Wetland	NA	NA	4576.5	0.105
WF02	PUB	Seasonal Wetland	NA	NA	745.2	0.017
WF03	PUB	Seasonal Wetland	NA	NA	2866.5	0.066
			Riparian Wetland Totals =	**NA**	**4576.5**	**0.105**
			Seasonal Wetland Totals =	**NA**	**3611.8**	**0.083**
			Wetland Feature Totals =	**NA**	**8188.1**	**0.188**
			Total Waters of the U.S. =	**NA**	**60514.6**	**1.389**

Waters of the United States: Tributaries

There a total of 11 features identified as a Tributary (Tributary) to a TNW per the Final Rule within the Project. Tributaries are intermittent or perennial water bodies in a typical year, including lakes, stream channels, and other similar 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). The boundaries of all Tributaries identified within the Project were delineated based on the observed OHWM, including physical characteristics such as natural lines impressed on the bank, shelving, changes in the character of the soil, the destruction of terrestrial vegetation, debris lines and other appropriate indicators.

One of the Tributaries (OW01) identified within the Project is Little Chico Creek. The other Tributaries (OW02-OW11) are segments of unnamed tributaries of Dead Horse Slough. Some of the sections of the unnamed tributary of Dead horse Slough are man-made impoundments (OW03, OW04 and OW05) and function more as ponds than drainages. All of these Tributaries are intermittent drainage features that typically flow for more than 3 months of the year and have a documented hydrologic connection to a TNW. Water was observed flowing within Little Chico Creek during the June field visit due to the late rains that occurred in the spring of 2019. The Tributaries identified within the Project were observed to contain appropriate morphology of bed, bank and scour.

Waters of the United States: Adjacent Wetlands

A total of three unverified jurisdictional adjacent wetlands occur within the Project, which have been characterized as a riparian wetland and seasonal wetlands (**Figure 4**). Riparian wetlands are associated with the active flood plain of drainages but are located outside of the OHWM. Seasonal wetlands are depressional features that typically stay inundated into the late spring to early summer months and are dominated by generalist wetland plant species. The wetlands identified within the Project exhibited all necessary wetland parameters (**Appendix A**).

During the aerial photography review of the Project conducted prior to the field visit, a few areas were identified that exhibited dark or riparian signatures. Where aerial photographs identified these unusual signatures, but were found to lack wetland parameters when ground-truthed, representative test pits and/or photographs were taken (**Appendix A**, **Figure 4**). Photo points were taken at test pits, wetlands and other locations throughout the Project to depict the current site conditions (**Figure 3**).

Soils

Gallaway collected soil data at various locations throughout the Project. Field observations of soil characteristics included soil color, texture, structure, and the visual assessment of soil features (e.g. the presence, or absence of redoximorphic features and the depth of restrictive layers such as hardpans). Field observations of soil characteristics at the pit sites are included in the data sheet forms presented in **Appendix A**. Gallaway's soil texture evaluations within depression-like areas rendered relatively dark soil colors with loamy soil textures. Loams and clay loams, often with gravel or cobble present, were observed in locations throughout the Project site. Iron concentrations and depletions were found along root channels, pore spaces, and as soft masses in the soil matrix at varying depths within the surface horizons. The depth of the hand dug soil pits were dug deep enough to determine or rule out the presence/absence of hydric soil indicators.

The geographic region in which the Project is found is often characterized as having a naturally occurring restrictive duripan layer composed of cemented cobbly or gravelly material or lithic bedrock. Hardpans restrict root growth, limit water infiltration, and cause perching of the water table in certain locations. Within the Project area, the restrictive layer ranged from 2 to more than 80 inches deep. Also, very cobbly soil profiles were often observed at 1-13 inches in depth, which restricted the ability to hand-dig soil pits.

Gallaway queried the National Cooperative Soil Survey database to further evaluate the current soil conditions. A copy of the soil survey map and a description of mapped soil units for the Project are

included as **Appendix B**. A total of six soil map units occur within the Project. The map units are listed below in **Table 2**. Based on Gallaway's review, of the six soil map units identified within the Project, five contain only minor amounts of hydric components (1-18%). The hydric components are typically found on fan terraces, stream terraces and ridges. A copy of the soil survey map and a description of mapped soil units for the Project are included as **Appendix B**.

Table 2. Soil Map Units, NRCS hydric soil designation, and approximate totals for the Bruce Road Widening Project.

Map Unit Symbol	Map Unit Name	% Hydric Component in Map Unit	Landform of Hydric Component	% Map Unit in Project
300	Redsluff gravelly loam, 0 to 2 percent slopes	3	Fan terraces	21.3%
301	Wafap-Hamslough complex, 0 to 2 percent slopes	18	Stream terraces	20.5%
302	Redtough-Redswale complex, 0-2 percent slopes	8	Fan terraces	40.6%
447	Charger fine sandy loam, 0 to 1 percent slopes	N/A	N/A	4.1%
614	Doemill-Jokerst complex, 0 to 3 percent slopes	2	Ridges	7.4%
615	Doemill-Jokerst complex, 3 to 8 percent slopes	1	Ridges	6.1%

Vegetation

During the site visits, identifiable vegetation within the wetlands present included perennial rye-grass (*Festuca perennis*) (FAC), Fremont's goldfields (*Lasthenia fremontii*) (OBL), white pincushion (*Navarretia leucocephala*) (OBL), great valley eryngo (*Eryngium castrense*) (OBL), stalked popcorn-flower (*Plagiobothrys stipitatus*) (FACW), and Mediterranean barley (*Hordeum marinum ssp. gussoneanum*) (FAC). Vegetation within the upland portions of the Project site was mainly composed of medusahead (*Elymus caput-medusae*) (UPL), wild oats (*Avena barbata*) (UPL), long-beaked stork's-bill (*Erodium botrys*) (FACU), soft chess (*Bromus hordeaceous*) (FACU), and perennial rye-grass. The dominant species present in the valley foothill riparian habitat along the banks of Little Chico Creek included a tree canopy of valley oak (*Quercus lobata*) (FACU) and Oregon ash (*Fraxinus latifolia*) (FACW) and a few California sycamores (*Platanus racemosa)* (FAC), a sparse shrub canopy of willows (*Salix* sp.) and an understory of Himalayan blackberry (*Rubus armeniacus*) (FAC), smartweed (*Persicaria hydropiperoides*) (OBL) and mugwort (*Artemisia douglasiana*) (FAC). The riverine habitat within the intermittent creek beds in the Project site was void of vegetation.

Hydrology

Precipitation and surface runoff from adjacent land function as the main hydrological inputs for the WOTUS located within the Project site. Ten intermittent drainages occur within the Project including Little Chico Creek (OW01) and multiple unnamed direct tributaries of Dead Horse Slough (OW02-OW11). There are multiple segments of the unnamed tributary of Dead Horse Slough present within the Project

due to the presence of man-made impoundments (OW03, OW04 and OW05) (**Exhibit A**). Dead Horse Slough is a tributary of Little Chico Creek and Little Chico Creek is a tributary of Angel's Slough, which is a tributary of Butte Creek, which in turn is a tributary of the Sacramento River, a TNW.

There are three unverified wetlands present within the Project site (WF01-WF03). All of these wetlands are abutting wetlands that have a direct surface connection to a jurisdictional drainage.

Several test pit data points were collected in features that exhibited a possible wetland signature when analyzing the aerial photos. Based on test pit data collected at these locations (**Appendix A**), the areas lacked the necessary wetland parameters and were not mapped as features.

There are also a couple of non-jurisdictional waters present within the Project as defined in Section 328.3(b) of the Final Rule. These non-jurisdictional waters include two isolated wetlands (NJW01 and NJW02).

Site Photos Taken on June 18, 2019

P01 – Transect ‘A-A’ looking south

P02 – Transect ‘B-B’ looking south

P01 – Little Chico Creek and bridge looking west

P02 – WF 01 looking west

Site Photographs – Taken April 7, 2016

P03 – NJW 01 looking southeast

P04 – Test Pit 02 looking northwest

P 05 – NJW 02 looking south

P06 – Test Pit 01 looking northeast

P07 – Drainage OW02 looking southeast

P07 – WF 02 looking north

Glossary

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 wetlands are defined in Corps and EPA regulations as wetlands that abut, or touch at least at one point or side, a tributary or other jurisdictional feature. Wetlands separated from other waters of the U.S. by man-made/artificial dikes or barriers, natural river berms, beach dunes and the like are 'adjacent wetlands' so long as the artificial structure allows for a direct hydrologic surface connection. The entirety of wetlands are considered adjacent if the wetland has a road or similar artificial structure dividing it as long as the road/structure allows for a direct hydrologic surface connection through or over that structure in a typical year.

The regulations define "adjacent wetlands" as wetlands that meet at least one of following criteria:

(1) There is an unbroken surface hydrologic connection between the wetland and jurisdictional waters;
(2) The wetland is inundated by flooding from a jurisdictional sea, tributary or lake/pond;
(3) The wetlands are physically separated from jurisdictional sea, tributary or lake/pond only by a natural berm, bank, dune, or similar natural feature; or
(4) The wetlands are physically separated from jurisdictional sea, tributary or lake/pond only by an artificial dike, barrier or similar artificial structure and the artificial structure allows for a direct connection between the wetland and jurisdictional water in a typical year.

The agencies will also continue to assert jurisdiction over wetlands "adjacent" to traditional navigable waters as defined in the agencies' regulations. The Rapanos decision does not affect the scope of jurisdiction over wetlands that are adjacent to traditional navigable waters. The agencies will assert jurisdiction over those adjacent wetlands that have a continuous surface connection with a relatively permanent, non-navigable tributary, without the legal obligation to make a significant nexus finding.

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.

Channel. "An open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water" (Langbein and Iseri 1960:5).

Channel bank. The sloping land bordering a channel. The bank has steeper slope than the bottom of the channel and is usually steeper than the land surrounding the channel.

Cobbles. Rock fragments 7.6 cm (3 inches) to 25 .4 cm (10 inches) in diameter.

Debris flow. A moving mass of rock fragments, soil, and mud where more than 50% of the particles are larger than sand-sized.

Ditch. A constructed or excavated channel used to convey water.

Drift. Organic debris oriented to flow direction(s) (larger than small twigs).

Ephemeral stream. An ephemeral stream has flowing water only in direct response to 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.

Facultative wetland (FACW). Wetland indicator category; species usually occurs in wetlands (estimated probability 67–99%) but occasionally found in non-wetlands.

Flat. A level landform composed of unconsolidated sediments usually mud or sand. Flats may be irregularly shaped or elongate and continuous with the shore, whereas bars are generally elongate, parallel to the shore, and separated from the shore by water.

Gravel. A mixture composed primarily of rock fragments 2mm (0 .08 inch) to 7.6 cm (3 inches) in diameter. Usually contains much sand.

Growing season The frost-free period of the year (see U.S. Department of Interior, National Atlas 1970:110-111 for generalized regional delineation).

Herbaceous. With the characteristics of an herb; a plant with no persistent woody stem above ground.

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).

Hydrophyte, **hydrophytic.** Any plant growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

Intermittent stream. An intermittent stream has flowing water during certain times of the year and more than in direct response from precipitation, when elevated groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water.

Jurisdictional Waters. Features that meet the definition of waters of the Unites States provided below and that fall under Corps regulations pursuant to Section 404 of the CWA are considered jurisdictional features. These include territorial seas; tributaries; lakes and ponds and impoundments of jurisdictional waters; and adjacent wetlands.

Litter. Organic debris oriented to flow direction(s) (small twigs and leaves).

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.

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

Obligate hydrophytes. Species that are found only in wetlands e.g., cattail (*Typha latifolia*) as opposed to ubiquitous species that grow either in wetland or on upland-e .g., red maple (*Acer rubrum*).

Obligate wetland (OBL). Wetland indicator category; species occurs almost always (estimated probability 99%) under natural conditions in wetlands.

Palustrine the Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 parts per thousand. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m (6.6 feet) at low water; and (4) salinity due to ocean-derived salts is less than 0.5 parts per thousand.

Perennial stream. A perennial stream has flowing water year-round during atypical 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.

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**.**

Scour. Soil and debris movement.

Sheetflow. Overland flow occurring in a continuous sheet; a relatively high-frequency, low-magnitude event.

Shrub. A woody plant which at maturity is usually less than 6 m(20 feet) tall and generally exhibits several erect, spreading, or prostrate stems and has a bushy appearance ; e.g., speckled alder (*Alnus rugosa*) or buttonbush (*Cephalanthus occidentalis*).

Succession. Changes in the composition or structure of an ecological community.

Traditional Navigable Waters (TNWs)."[a]ll waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide." These waters are referred to in this guidance as traditional navigable waters. The traditional navigable waters include all of the "navigable waters of the United States," as defined in 33 C.F.R. Part 329 and by numerous decisions of the federal courts, plus all other waters that are navigable-in-fact (for example, the Great Salt Lake, UT, and Lake Minnetonka, MN). Thus, the traditional navigable waters include, but are not limited to, the "navigable waters of the United States" within the meaning of Section 10 of the Rivers and Harbors Act of 1899 (also known as "Section 10 waters").

Tree. A woody plant which at maturity is usually 6 m (20 feet) or more in height and generally has a single trunk, unbranched for 1 m or more above the ground, and a more or less definite crown; e.g., red maple (*Acer rubrum*), northern white cedar (*Thuja occidentalis*).

Tributary. Tributaries are defined by regulation as a "river, stream or similar naturally occurring surface water channel that contributes surface water flow to a [jurisdictional water] in a typical year either directly or through one or more [jurisdictional water]. A tributary must be perennial or intermittent in a typical year." Tributaries include natural perennial or intermittent drainages that have been realigned or relocated.

Typical Year. Defined by the EPA and Corps as meaning when precipitation and other climactic variables are within the normal periodic range for the geographic area based on a rolling thirty-year period.

Water table. The upper surface of a zone of saturation. No water table exists where that surface is formed by an impermeable body.

Waters of the United States (WOTUS). This is the encompassing term for areas under federal jurisdiction pursuant to Section 404 of the CWA. Waters of the United States are divided into "adjacent wetlands" and "tributaries".

Watershed (drainage basin). An area of land that drains to a single outlet and is separated from other watersheds by a divide.

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 potential federal jurisdiction, a wetland must support positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology.

Woody plant. A seed plant (gymnosperm or angiosperm) that develops persistent, hard, fibrous tissues, basically xylem; e.g., trees and shrubs.

Xeric. Relating or adapted to an extremely dry habitat

References

Cheatham, N.H., and J.R. Haller. 1975. An annotated list of California habitat types. Univ. of California Natural Land and Water Reserve System, unpubl. manuscript.

Cowardin, Lewis M., Virginia Carter, Francis C. Golet and Edward T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington D.C.

Curtis, Katherine E., Robert W. Lichvar. 2010. Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. ERDC/CRREL TN-10-1. U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH

Curtis, Katherine E., Robert W. Lichvar, Lindsey E. Dixon. 2011. Ordinary High Flows and the Stage-Discharge Relationship in the Arid West Region (Technical Report). U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH

Environmental Laboratory 1987. U.S. Army Corps of Engineers wetlands delineation manual. (Technical Report Y-87-1). U.S. Army Waterways Experiment Station. Vicksburg, MS.

Environmental Protection Agency and Department of Defense. 2020. Federal Register, Vol. 85, No. 77, The Navigable Waters Protection Rule: Definition of "Waters of the United States"; Final Rule. April 21, 2020. 22250- 22342. Washington, DC.

Lichvar, R.W., and J.S. Wakeley, ed. 2004. Review of Ordinary High Water Mark indicators for delineating arid streams in the southwestern United States. ERDC/CRREL TR-04-1. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. (http://www.crrel.usace.army.mil/techpub/CRREL _Reports/reports/TR04-21.pdf).

Lichvar, R.W., D. Finnegan, M. Ericsson, and W. Ochs. 2006. Distribution of Ordinary High Water Mark (OHWM) indicators and their reliability in identifying the limits of "Waters of the United States" in arid southwestern channels. ERDC/CRREL TR-06-5. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. (http://www.crrel.usace.army.mil/techpub/CRREL_Reports/ reports/TR06-5.pdf).

Lichvar, R.W. and S.M. McColley. 2008. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Western Region of the Western United States. ERDC/CRREL TR-08-12. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. State of California 2016 Wetland Plant List: The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. U.S. Army Corps of Engineers. ISSN 2153 733X.

Mayer, K.E. and W.F. Laudenslayer. 1988. A Guide to Wildlife Habitats of California. California Department of Forestry and Fire Protection. Sacramento, CA.

National Oceanic and Atmospheric Administration (NOAA). 2019. National Integrated Drought Information System. U.S. Drought Monitor. Accessed online through the U.S. Drought Portal (www.drought.gov).

Natural Resources Conservation Service (NRCS). 2019. Custom Soil Resource Report for Butte County Area, California. Accessed through the NRCS Web Soil Survey website (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm).

Soil Survey Staff. 2010. Keys to Soil Taxonomy, 11th ed. USDA-Natural Resources Conservation Service, Washington, DC.

U.S. Army Corps of Engineers (Corps). 2008. Regional supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. J.S. Wakeley, R.W. Lichvar, and C.V. Noble, ed. ERDC/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center, Environmental Laboratory.

U.S. Army Corps of Engineers, South Pacific Division. 2001. Final summary report: Guidelines for jurisdictional determinations for water of the United States in the arid Southwest. San Francisco, CA: U.S. Army Corps of Engineers, South Pacific Division. (http://www.spl.usace.army.mil/regulatory/lad.htm).

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://soils.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. 2018. Field Indicators of Hydric Soils in the United States, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

Western Regional Climate Center, Desert Research Institute. 2020. http://www.wrcc.dri.edu. Local Climate Summary for the Chico Univ Farm, California (041715) NOAA Cooperative Station.

Wetland Training Institute. 1995. Field guide for wetland delineation: 1987 Corps of Engineers manual. (WTI 95-3). Poolsville, MD.

Appendix A: Wetland Delineation Data Sheets

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project | City/County: Chico, Butte County | Sampling Date: 4/7/16

Applicant/Owner: City of Chico | State: CA | Sampling Point: TP 01

Investigator(s): E. Gregg, S. Rossi | Section, Township, Range: Sec 30, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): none | Slope (%): 0.3

Subregion (LRR): C - Mediterranean California | Lat: 39.739906 | Long: -121.789886 | Datum: WGS 84

Soil Map Unit Name: Redtough-Redswale, 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 ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Triphysaria eriantha*	50	Yes	Not Listed
2. *Festuca perennis*	20	Yes	FAC
3. *Erodium botrys*	10	No	FACU
4. *Crassula tillaea*	5	No	FACU
5. *Leontodon saxatilis*	5	No	FACU
6.			
7.			
8.			
Total Cover:	90 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	20	x 3 =	60
FACU species	20	x 4 =	80
UPL species	50	x 5 =	250
Column Totals:	90 (A)		390 (B)

Prevalence Index = B/A = 4.33

Hydrophytic Vegetation Indicators:

- [●] Dominance Test is >50%
- [●] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: TP 01

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10 YR 4/4	99	2.5 YR 4/6	1	C	PL	sandy loam	cobble & Mn stains present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: clay pan

Depth (inches): 5

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project City/County: Chico, Butte County Sampling Date: 4/7/16

Applicant/Owner: City of Chico State: CA Sampling Point: TP 02

Investigator(s): E. Gregg, S. Rossi Section, Township, Range: Sec 30, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): slightly concave Slope (%): 0.3

Subregion (LRR): C - Mediterranean California Lat: 39.740196 Long: -121.789915 Datum: WGS 84

Soil Map Unit Name: Redtough-Redswale, 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 (•)	No ( )	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Area located in a graded roadside

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Festuca perennis*	20	Yes	FAC
2. *Deschampsia danthonioides*	5	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	25 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 75 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (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		x 1 =	0
FACW species	5	x 2 =	10
FAC species	20	x 3 =	60
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	25 (A)		70 (B)

Prevalence Index = B/A = 2.80

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks:

SOIL

Sampling Point: TP 02

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1	7.5YR 3/3	100					sandy clay loam	gravel present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: clay pan

Depth (inches): 1

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project City/County: Chico, Butte County Sampling Date: 4/7/16

Applicant/Owner: City of Chico State: CA Sampling Point: TP 03

Investigator(s): E. Gregg, S. Rossi Section, Township, Range: Sec 30, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): slightly concave Slope (%): 0.3

Subregion (LRR): C - Mediterranean California Lat: 39.739039 Long: -121.788409 Datum: WGS 84

Soil Map Unit Name: Redtough-Redswale, 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 (•)	No ( )	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Festuca perennis*	20	Yes	FAC
2. *Deschampsia danthonioides*	5	Yes	FACW
3. *Leontodon saxatilis*	5	Yes	FACU
4.			
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 70 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	5	x 2 =	10
FAC species	20	x 3 =	60
FACU species	5	x 4 =	20
UPL species		x 5 =	0
Column Totals:	30 (A)		90 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks:

SOIL

Sampling Point: TP 03

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1	7.5YR 3/3	100					sandy clay loam	gravel present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: clay pan

Depth (inches): 1

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Bridge over Little Chico Creek City/County: Chico, Butte County Sampling Date: 6-18-19

Applicant/Owner: City of Chico State: CA Sampling Point: TP04

Investigator(s): E. Gregg Section, Township, Range: Section 29, Township 22N. Range 2E

Landform (hillslope, terrace, etc.): alluvial fan terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 39.733197 Long: -121.787432 Datum: NAD 83

Soil Map Unit Name: Charger fine sandy loam, 0 to 1 percent 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 ○	No ◉	
Hydric Soil Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Wetland Hydrology Present?	Yes ○	No ◉	

Remarks: Above average rainfall during winter/spring resulting in a longer duration of water present in creek. Area was on a high terrace. The banks of the creek were highly cut and this terrace was disconnected from the creek/floodplain and outside of the OHWM. The low-flow channel was approximately 8 feet below this terrace.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	80	Yes	FACW
2.			
3.			
4.			
Total Cover:	80 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Toxicodendrom diversilobum*	30	Yes	UPL
2. *Aristolochia californica*	20	Yes	Not Listed
3. *Elymus glaucus*	15	No	FACU
4. *Xanthium strumarium*	5	No	FAC
5. *Galium aparine*	3	No	FACU
6. *Bromus diandrus*	2	No	UPL
7.			
8.			
Total Cover:	75 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 25 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	80	x 2 =	160
FAC species	5	x 3 =	15
FACU species	18	x 4 =	72
UPL species	52	x 5 =	260
Column Totals:	155 (A)		507 (B)

Prevalence Index = B/A = 3.27

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: leaf debris present in bare ground stratum.

SOIL

Sampling Point: TP04

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/2	57	7.5YR 4/6	3	C	PL	silty loam	
	10YR 2/2	40						
1-6	10YR 3/2	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: --

Depth (inches): --

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil pit dug deep enough to determine the presence/absence of hydric soil indicators. No hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No wetland hydrology indicators observed.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Bridge over Little Chico Creek City/County: Chico, Butte County Sampling Date: 6-18-19

Applicant/Owner: City of Chico State: CA Sampling Point: W01

Investigator(s): E. Gregg Section, Township, Range: Section 30, Township 22N. Range 2E

Landform (hillslope, terrace, etc.): alluvial fan terrace Local relief (concave, convex, none): slight bench Slope (%): 0.5

Subregion (LRR): C - Mediterranean California Lat: 39.733521 Long: -121.787857 Datum: NAD 83

Soil Map Unit Name: Charger fine sandy loam, 0 to 1 percent 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 ◉	No ○	
Hydric Soil Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks: Above average rainfall during winter/spring resulting in a longer duration of water present in creek. Area was a riparian wetland adjacent to Little Chico Creek outside of the OHWM.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus lobata*	10	No	FACU
2.			
3.			
4.			
Total Cover:	10 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Persicaria hydropiperoides*	35	Yes	OBL
2. *Xanthium strumarium*	35	Yes	FAC
3. *Festuca perennis*	10	No	FAC
4. *Artemisia douglasiana*	10	No	FAC
5. *Rubus armeniacus*	5	No	FAC
6. *Chenopodium album*	5	No	FACU
7.			
8.			
Total Cover:	100 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (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	35	x 1 =	35
FACW species		x 2 =	0
FAC species	60	x 3 =	180
FACU species	15	x 4 =	60
UPL species		x 5 =	0
Column Totals:	110 (A)		275 (B)

Prevalence Index = B/A = 2.50

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:

SOIL

Sampling Point: W01

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	94	7.5YR 4/6	6	C	PL	sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: --

Depth (inches): --

Hydric Soil Present? Yes ◉ No ○

Remarks: Soil pit dug deep enough to determine the presence/absence of hydric soil indicators. Area was not a closed depression, therefore, indicator F8 was not met.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Bridge over Little Chico Creek City/County: Chico, Butte County Sampling Date: 6-18-19

Applicant/Owner: City of Chico State: CA Sampling Point: U01

Investigator(s): E. Gregg Section, Township, Range: Section 30, Township 22N. Range 2E

Landform (hillslope, terrace, etc.): alluvial fan terrace Local relief (concave, convex, none): none Slope (%): 0.5

Subregion (LRR): C - Mediterranean California Lat: 39.733541 Long: -121.787853 Datum: NAD 83

Soil Map Unit Name: Charger fine sandy loam, 0 to 1 percent 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 ○	No ◉	
Hydric Soil Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Wetland Hydrology Present?	Yes ○	No ◉	

Remarks: Above average rainfall during winter/spring resulting in a longer duration of water present in creek. Area was flat to almost convex.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus lobata*	5	No	FACU
2.			
3.			
4.			
Total Cover:	5 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Avena barbata*	30	Yes	UPL
2. *Epilobium brachycarpum*	30	Yes	Not Listed
3. *Festuca perennis*	15	No	FAC
4. *Festuca myuros*	10	No	FACU
5. *Galium parisiense*	10	No	UPL
6. *Bromus hordeaceus*	5	No	FACU
7.			
8.			
Total Cover:	100 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	15	x 3 =	45
FACU species	20	x 4 =	80
UPL species	70	x 5 =	350
Column Totals:	105 (A)		475 (B)

Prevalence Index = B/A = 4.52

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:

SOIL

Sampling Point: U01

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: --

Depth (inches): --

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil pit dug deep enough to determine the presence/absence of hydric soil indicators. No hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No wetland hydrology indicators observed.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project City/County: Chico, Butte County Sampling Date: 4/7/16

Applicant/Owner: City of Chico State: CA Sampling Point: W 02

Investigator(s): E. Gregg, S. Rossi Section, Township, Range: Sec 29, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C - Mediterranean California Lat: 39.739414 Long: -121.787402 Datum: WGS 84

Soil Map Unit Name: Doemill-Jokerst, 3-8% 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 (•)	No ( )	
Hydric Soil Present?	Yes (•)	No ( )	**Is the Sampled Area within a Wetland?** Yes (•) No ( )
Wetland Hydrology Present?	Yes (•)	No ( )	

Remarks: Area historically disturbed. Feature has formed due to the adjacent man-made impoundment present within the drainage.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Navarretia leucocephala*	35	Yes	OBL
2. *Plagiobothrys stipitatus*	20	Yes	FACW
3. *Lasthenia fremontii*	5	No	OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	60 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 40 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (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	40	x 1 =	40
FACW species	20	x 2 =	40
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	60 (A)		80 (B)

Prevalence Index = B/A = 1.33

Hydrophytic Vegetation Indicators:

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks:

SOIL

Sampling Point: W 02

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5 YR 3/3	75	10 YR 4/8	25	C	M	cobbly loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: hardpan

Depth (inches): 4

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☒ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches): 0-3
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project City/County: Chico, Butte County Sampling Date: 4/7/16

Applicant/Owner: City of Chico State: CA Sampling Point: U 02

Investigator(s): E. Gregg, S. Rossi Section, Township, Range: Sec 29, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 5

Subregion (LRR): C - Mediterranean California Lat: 39.739414 Long: -121.787402 Datum: WGS 84

Soil Map Unit Name: Doemill-Jokerst, 3-8% 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 ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Area was historically disturbed due to the historic landfill located to the east.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 100 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- (•) Dominance Test is >50%
- (•) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks: Exposed bedrock in herb stratum.

SOIL

Sampling Point: U 02

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0	N/A						bedrock	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: bedrock

Depth (inches): 0

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project City/County: Chico, Butte County Sampling Date: 4/7/16

Applicant/Owner: City of Chico State: CA Sampling Point: W 03

Investigator(s): E. Gregg, S. Rossi Section, Township, Range: Sec 30, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): slightly concave Slope (%): 3

Subregion (LRR): C - Mediterranean California Lat: 39.739856 Long: -121.787687 Datum: WGS 84

Soil Map Unit Name: Doemill-Jokerst, 3-8% 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 (•)	No ( )	
Hydric Soil Present?	Yes (•)	No ( )	**Is the Sampled Area within a Wetland?** Yes (•) No ( )
Wetland Hydrology Present?	Yes (•)	No ( )	

Remarks: Area historically disturbed.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Eleocharis macrostachya*	10	Yes	OBL
2. *Navarretia leucocephala*	10	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	20 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 80 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (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	20	x 1 =	20
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	20 (A)		20 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks:

SOIL

Sampling Point: W 03

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5 YR 3/2	93	2.5 YR 4/6	7	C	PL	cobbly clay	Mn stains

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: hardpan

Depth (inches): 8

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☒ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project City/County: Chico, Butte County Sampling Date: 4/7/16

Applicant/Owner: City of Chico State: CA Sampling Point: U 03

Investigator(s): E. Gregg, S. Rossi Section, Township, Range: Sec 30, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): sloped Slope (%): 3

Subregion (LRR): C - Mediterranean California Lat: 39.739856 Long: -121.787687 Datum: WGS 84

Soil Map Unit Name: Doemill-Jokerst, 3-8% 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 ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Area was historically disturbed from the construction/use of the historic landfill to the southeast.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus hordeaceous*	45	Yes	FACU
2. *Vicia villosa*	25	Yes	Not Listed
3. *Leontodon saxatilis*	15	No	FACU
4. *Festuca perennis*	15	No	FAC
5.			
6.			
7.			
8.			
Total Cover:	100 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	15	x 3 =	45
FACU species	60	x 4 =	240
UPL species	25	x 5 =	125
Column Totals:	100 (A)		410 (B)

Prevalence Index = B/A = 4.10

Hydrophytic Vegetation Indicators:

- [•] Dominance Test is >50%
- [•] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks:

SOIL

Sampling Point: U 03

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 3/3	100					sandy clay loam	gravel/cobble present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: clay pan

Depth (inches): 8

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil pit dug deep enough to determine the presence/absence of hydric soil indicators. No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project City/County: Chico, Butte County Sampling Date: 4/7/16

Applicant/Owner: City of Chico State: CA Sampling Point: W 04

Investigator(s): E. Gregg, S. Rossi Section, Township, Range: Sec 30, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0.4

Subregion (LRR): C - Mediterranean California Lat: 39.739964 Long: -121.790389 Datum: WGS 84

Soil Map Unit Name: Redtough-Redswale, 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 (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Area historically graded and this feature was likely created to help drain the graded lot during rain events.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Deschampsia danthonioides*	25	Yes	FACW
2. *Hordeum marinum gussoneanum*	25	Yes	FAC
3. *Juncus xiphioides*	20	Yes	OBL
4. *Leontodon saxatilis*	10	No	FACU
5. *Trifolium dubium*	10	No	UPL
6. *Festuca perennis*	5	No	FAC
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (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	20	x 1 =	20
FACW species	25	x 2 =	50
FAC species	30	x 3 =	90
FACU species	10	x 4 =	40
UPL species	10	x 5 =	50
Column Totals:	95 (A)		250 (B)

Prevalence Index = B/A = 2.63

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks:

SOIL

Sampling Point: W 04

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10 YR 4/4	90	5 YR 5/8	10	C	PL	sandy loam	gravel present, Mn stains
10-13	7.5 YR 4/2	100					sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: hardpan

Depth (inches): 13

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project City/County: Chico, Butte County Sampling Date: 4/7/16

Applicant/Owner: City of Chico State: CA Sampling Point: U 04

Investigator(s): E. Gregg, S. Rossi Section, Township, Range: Sec 30, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0.3

Subregion (LRR): C - Mediterranean California Lat: 39.739964 Long: -121.790389 Datum: WGS 84

Soil Map Unit Name: Redtough-Redswale, 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 ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Area was historically graded.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Erodium botrys*	40	Yes	FACU
2. *Triphysaria eriantha*	20	Yes	FACU
3. *Festuca bromoides*	15	No	FACU
4. *Crassula tillaea*	10	No	FACU
5. *Juncus bufonius*	10	No	FACW
6. *Deschampsia danthonioides*	5	No	FACW
7.			
8.			
Total Cover:	100 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	15	x 2 =	30
FAC species		x 3 =	0
FACU species	85	x 4 =	340
UPL species		x 5 =	0
Column Totals:	100 (A)		370 (B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:

- [•] Dominance Test is >50%
- [•] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks:

SOIL

Sampling Point: U 04

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/4	96	5YR 5/8	4	C	PL	sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: clay pan

Depth (inches): 4

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil pit dug deep enough to determine the presence/absence of hydric soil indicators. No hydric soil indicators present - area not a closed depression.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project | City/County: Chico, Butte County | Sampling Date: 4/7/16

Applicant/Owner: City of Chico | State: CA | Sampling Point: W 05

Investigator(s): E. Gregg, S. Rossi | Section, Township, Range: Sec 30, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): slightly concave | Slope (%): 0.3

Subregion (LRR): C - Mediterranean California | Lat: 39.740228 | Long: -121.790359 | Datum: WGS 84

Soil Map Unit Name: Redtough-Redswale, 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 (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Area historically graded.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hordeum marinum gussoneanum*	40	Yes	FAC
2. *Festuca perennis*	30	Yes	FAC
3. *Leontodon saxatilis*	15	No	FACU
4. *Erodium botrys*	10	No	FACU
5. *Medicago polymorpha*	5	No	FACU
6.			
7.			
8.			
Total Cover:	100 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (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		x 1 =	0
FACW species		x 2 =	0
FAC species	70	x 3 =	210
FACU species	30	x 4 =	120
UPL species		x 5 =	0
Column Totals:	100 (A)		330 (B)

Prevalence Index = B/A = 3.30

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks:

SOIL

Sampling Point: W 05

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 4/4	90	5 YR 5/8	10	C	PL	sandy loam	cobble present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: hardpan

Depth (inches): 6

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bruce Road Widening Project City/County: Chico, Butte County Sampling Date: 4/7/16

Applicant/Owner: City of Chico State: CA Sampling Point: U 05

Investigator(s): E. Gregg, S. Rossi Section, Township, Range: Sec 30, T 22N, R 2E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0.3

Subregion (LRR): C - Mediterranean California Lat: 39.740228 Long: -121.790359 Datum: WGS 84

Soil Map Unit Name: Redtough-Redswale, 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 ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Area was historically graded.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Erodium botrys*	40	Yes	FACU
2. *Triphysaria eriantha*	30	Yes	FACU
3. *Festuca bromoides*	15	No	FACU
4. *Bromus hordeaceous*	10	No	FACU
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	95	x 4 =	380
UPL species		x 5 =	0
Column Totals:	95 (A)		380 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- [•] Dominance Test is >50%
- [•] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks:

SOIL

Sampling Point: U 05

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/4	99	5YR 5/8	1	C	PL	sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. CS=Covered or Coated Sand Grains

[2] Location: PL=Pore Lining, M=Matrix.

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present. unless distributed or problematic

Restrictive Layer (if present):

Type: clay pan

Depth (inches): 4

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil pit dug deep enough to determine the presence/absence of hydric soil indicators. No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No primary wetland hydrology indicators observed.

Appendix B: NRCS Soils Map and Soil Series Description

United States Department of Agriculture

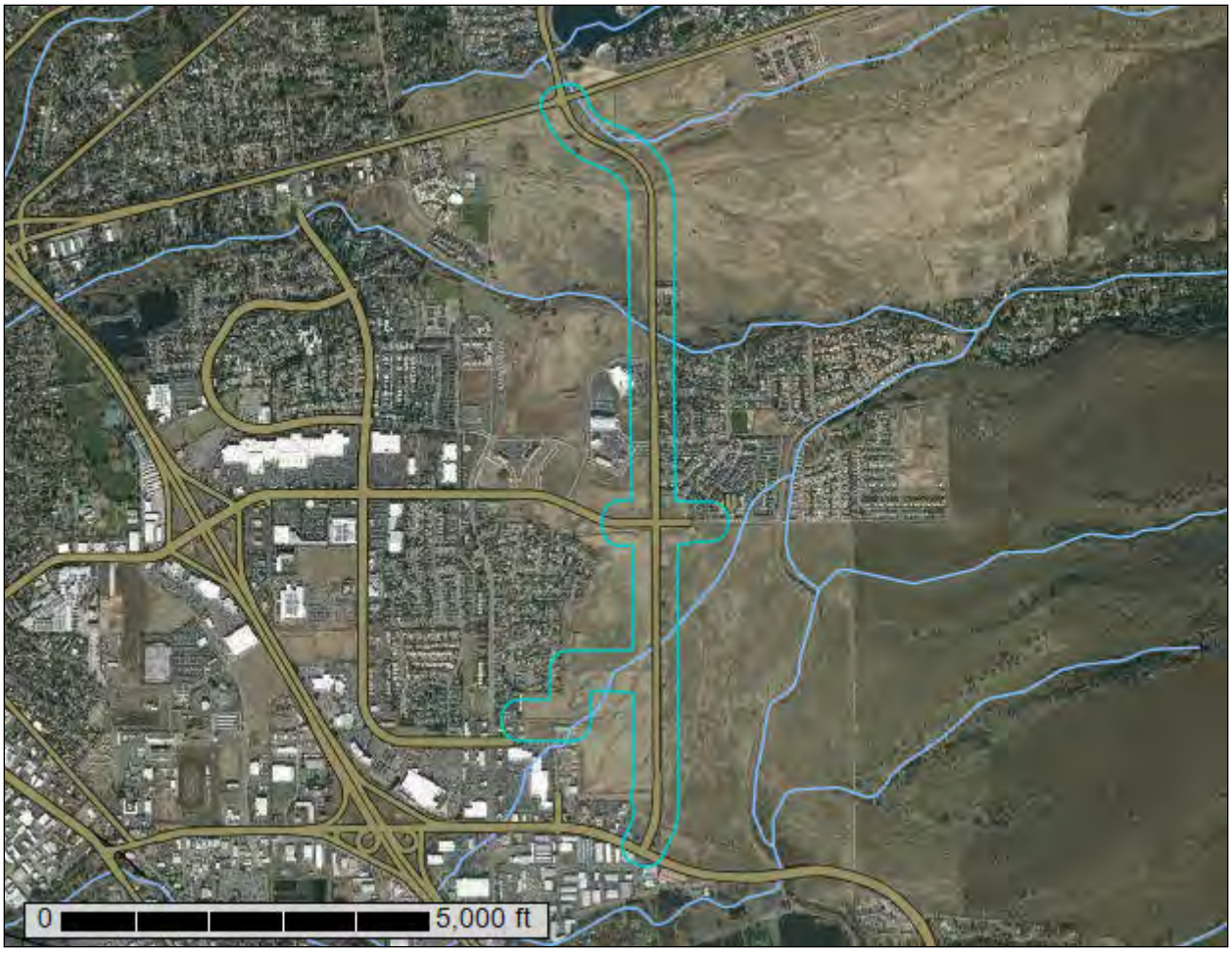
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Butte Area, California, Parts of Butte and Plumas Counties

Bruce Road Widening Project



July 21, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

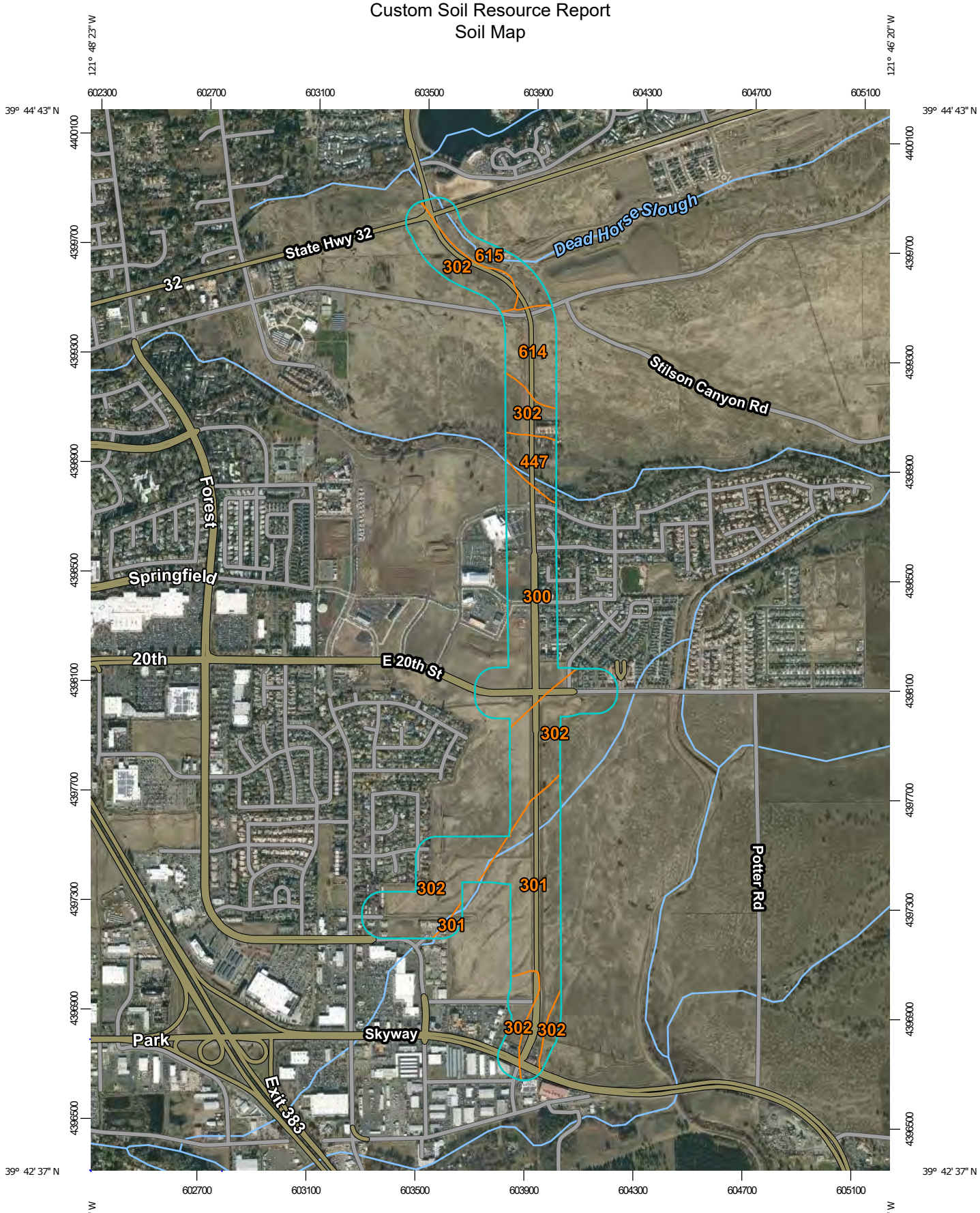
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:18,900 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 250 500 1000 1500

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butte Area, California, Parts of Butte and Plumas Counties
Survey Area Data: Version 17, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 6, 2018—Dec 12, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
300	Redsluff gravelly loam, 0 to 2 percent slopes	42.2	21.3%
301	Wafap-Hamslough , 0 to 2 percent slopes	40.5	20.5%
302	Redtough-Redswale , 0 to 2 percent slopes	80.3	40.7%
447	Charger fine sandy loam, 0 to 1 percent slopes	8.1	4.1%
614	Doemill-Jokerst , 0 to 3 percent slopes	14.5	7.4%
615	Doemill-Jokerst , 3 to 8 percent slopes	12.0	6.1%
Totals for Area of Interest		**197.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Butte Area, California, Parts of Butte and Plumas Counties

300—Redsluff gravelly loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hh0t
Elevation: 180 to 400 feet
Mean annual precipitation: 24 to 29 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 255 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Redsluff, gravelly loam, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Redsluff, Gravelly 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: Fine-loamy alluvium derived from igneous, metamorphic and sedimentary rock over gravelly alluvium derived from volcanic rock

Typical profile

Ap - 0 to 2 inches: gravelly loam
Bt1 - 2 to 5 inches: gravelly loam
Bt2 - 5 to 12 inches: gravelly clay loam
Bt3 - 12 to 21 inches: gravelly loam
Bt4 - 21 to 29 inches: gravelly loam
Bt5 - 29 to 37 inches: gravelly loam
Bt6 - 37 to 42 inches: extremely gravelly sandy loam
Cq - 42 to 80 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.28 to 0.99 in/hr)
Depth to water table: About 35 to 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 0.5 mmhos/cm)
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Unnamed, weak cementation below 40 inches
Percent of map unit: 4 percent
Landform: Fan terraces
Hydric soil rating: No

Fernandez, sandy loam
Percent of map unit: 4 percent
Landform: Fan terraces
Hydric soil rating: No

Typic haploxeralfs, very deep
Percent of map unit: 3 percent
Landform: Fan terraces
Hydric soil rating: No

Anita, gravelly duripan
Percent of map unit: 3 percent
Landform: Fan terraces
Hydric soil rating: Yes

Munjar
Percent of map unit: 2 percent
Landform: Fan terraces
Hydric soil rating: No

Redtough
Percent of map unit: 2 percent
Landform: Fan terraces
Hydric soil rating: No

Pachic argixerolls
Percent of map unit: 2 percent
Landform: Fan terraces
Hydric soil rating: No

301—Wafap-Hamslough , 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hgxp
Elevation: 150 to 440 feet
Mean annual precipitation: 25 to 28 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 255 days
Farmland classification: Not prime farmland

Map Unit Composition
Wafap, gravelly loam, and similar soils: 70 percent
Hamslough, clay, and similar soils: 15 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wafap, Gravelly Loam

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly and clayey alluvium over cobbly channel alluvium over cemented cobbly and gravelly alluvium derived from volcanic rock

Typical profile

A - 0 to 1 inches: gravelly loam
Bt1 - 1 to 5 inches: cobbly clay loam
Bt2 - 5 to 13 inches: very cobbly clay loam
Bt3 - 13 to 32 inches: extremely cobbly clay loam
Bt4 - 32 to 39 inches: extremely cobbly clay loam
Btq - 39 to 46 inches: extremely gravelly sandy clay loam
2Bqm - 46 to 56 inches: cemented cobbly gravelly material

Properties and qualities

Slope: 0 to 2 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: 40 to 60 inches to duripan
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 13 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 0.5 mmhos/cm)
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Description of Hamslough, Clay

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey alluvium over clayey and gravelly alluvium over cemented cobbly and gravelly alluvium derived from volcanic rock

Typical profile

A1 - 0 to 3 inches: clay
A2 - 3 to 14 inches: cobbly clay

Bw - 14 to 19 inches: extremely gravelly clay
Bg - 19 to 27 inches: extremely gravelly sandy clay
2Bqm - 27 to 36 inches: cemented cobbly gravelly material

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 80 inches
Frequency of flooding: Occasional
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline (0.0 to 0.5 mmhos/cm)
Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Unnamed, loamy-skeletal, duripan 40 to 60 inches

Percent of map unit: 3 percent
Landform: Stream terraces
Hydric soil rating: No

Unnamed, fine, duripan 40 to 60 inches

Percent of map unit: 3 percent
Landform: Stream terraces
Hydric soil rating: No

Anita, gravelly duripan

Percent of map unit: 2 percent
Landform: Stream terraces
Hydric soil rating: Yes

Unnamed, fine-loamy, duripan 40 to 60 inches

Percent of map unit: 2 percent
Landform: Stream terraces
Hydric soil rating: No

Tuscan taxadjunct

Percent of map unit: 2 percent
Landform: Stream terraces
Hydric soil rating: No

Unnamed, frequently flooded

Percent of map unit: 1 percent
Landform: Flood plains
Hydric soil rating: No

Unnamed, frequent long ponding

Percent of map unit: 1 percent
Landform: Stream terraces

Microfeatures of landform position: Vernal pools
Hydric soil rating: Yes

Oxyaquic argixerolls, very stony
Percent of map unit: 1 percent
Landform: Stream terraces
Hydric soil rating: No

302—Redtough-Redswale , 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hh0v
Elevation: 200 to 400 feet
Mean annual precipitation: 23 to 28 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 255 days
Farmland classification: Not prime farmland

Map Unit Composition
Redtough, loam, and similar soils: 50 percent
Redswale, cobbly loam, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Redtough, Loam

Setting
Landform: Fan terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Mounds
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy alluvium over cemented cobbly and gravelly alluvium derived from volcanic rock

Typical profile
A - 0 to 1 inches: loam
Bt1 - 1 to 7 inches: gravelly loam
Bt2 - 7 to 13 inches: very cobbly loam
Bqm - 13 to 23 inches: cemented very gravelly material

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: 10 to 20 inches to duripan
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 2 to 20 inches

Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.6 inches)

Interpretive groups

Land capability classification (irrigated): 7s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Redswale, Cobbly Loam

Setting

Landform: Fan terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Swales
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Cobbly and loamy alluvium over cemented cobbly and gravelly alluvium derived from volcanic rock

Typical profile

A - 0 to 1 inches: cobbly loam
Bt - 1 to 7 inches: very cobbly loam
Bqm - 7 to 17 inches: cemented very gravelly material

Properties and qualities

Slope: 0 to 3 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: 4 to 10 inches to duripan
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Very low (about 0.7 inches)

Interpretive groups

Land capability classification (irrigated): 8
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Unnamed, frequent long ponding

Percent of map unit: 3 percent
Landform: Fan terraces
Microfeatures of landform position: Vernal pools
Hydric soil rating: Yes

Redswale, frequent long flooding

Percent of map unit: 3 percent
Landform: Fan terraces
Microfeatures of landform position: Swales

Hydric soil rating: Yes

Anita, gravelly duripan
Percent of map unit: 2 percent
Landform: Fan terraces
Microfeatures of landform position: Swales
Hydric soil rating: Yes

Tuscan
Percent of map unit: 2 percent
Landform: Fan terraces
Microfeatures of landform position: Mounds
Hydric soil rating: No

Munjar
Percent of map unit: 2 percent
Landform: Fan terraces
Microfeatures of landform position: Mounds
Hydric soil rating: No

Abruptic durixeralfs
Percent of map unit: 2 percent
Landform: Fan terraces
Microfeatures of landform position: Mounds
Hydric soil rating: No

Unnamed, riser slopes
Percent of map unit: 1 percent
Landform: Fan terraces
Hydric soil rating: No

447—Charger fine sandy loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hgzf
Elevation: 180 to 600 feet
Mean annual precipitation: 24 to 28 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 255 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Charger, fine sandy loam, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charger, Fine Sandy Loam

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy alluvium derived from igneous, metamorphic and sedimentary rock over gravelly alluvium derived from volcanic and metamorphic rock

Typical profile

Ap - 0 to 3 inches: fine sandy loam
A1 - 3 to 7 inches: fine sandy loam
A2 - 7 to 15 inches: fine sandy loam
Bw1 - 15 to 32 inches: sandy loam
Bw2 - 32 to 42 inches: sandy loam
Bw3 - 42 to 53 inches: sandy loam
Bw4 - 53 to 63 inches: sandy loam
C - 63 to 80 inches: extremely gravelly loamy coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.27 to 4.25 in/hr)
Depth to water table: About 40 to 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 0.5 mmhos/cm)
Available water storage in profile: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Vina, fine sandy loam

Percent of map unit: 8 percent
Landform: Alluvial fans
Hydric soil rating: No

Redsluff

Percent of map unit: 5 percent
Landform: Fan terraces
Hydric soil rating: No

Unnamed, loamy-skeletal

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Almendra

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Unnamed, sandy-skeletal

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Wafap

Percent of map unit: 1 percent
Landform: Stream terraces
Hydric soil rating: No

614—Doemill-Jokerst , 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hgzk
Elevation: 160 to 520 feet
Mean annual precipitation: 25 to 29 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 255 days
Farmland classification: Not prime farmland

Map Unit Composition

Doemill, gravelly loam, and similar soils: 50 percent
Jokerst, very cobbly loam, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Doemill, Gravelly Loam

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Microfeatures of landform position: Mounds
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy residuum weathered from volcanic breccia

Typical profile

A - 0 to 1 inches: gravelly loam
Bt1 - 1 to 5 inches: gravelly loam
Bt2 - 5 to 9 inches: gravelly loam
Bt3 - 9 to 14 inches: gravelly loam
R - 14 to 24 inches: bedrock

Properties and qualities

Slope: 0 to 3 percent
Percent of area covered with surface fragments: 5.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat poorly drained
Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.43 to 1.28 in/hr)
Depth to water table: About 2 to 20 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Jokerst, Very Cobbly Loam

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Microfeatures of landform position: Swales
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy residuum weathered from volcanic breccia

Typical profile

A - 0 to 1 inches: very cobbly loam
Bt - 1 to 4 inches: gravelly loam
R - 4 to 14 inches: bedrock

Properties and qualities

Slope: 0 to 3 percent
Percent of area covered with surface fragments: 17.0 percent
Depth to restrictive feature: 2 to 10 inches to lithic bedrock
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.71 to 1.13 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: Very low (about 0.4 inches)

Interpretive groups

Land capability classification (irrigated): 8
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Rock outcrop, mudflow breccia

Percent of map unit: 5 percent
Landform: Ridges
Hydric soil rating: No

Lithic xerorthents

Percent of map unit: 3 percent
Landform: Ridges

Hydric soil rating: No

Unnamed, frequent long ponding

Percent of map unit: 2 percent
Landform: Ridges
Microfeatures of landform position: Vernal pools
Hydric soil rating: Yes

615—Doemill-Jokerst , 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hgzm
Elevation: 160 to 1,000 feet
Mean annual precipitation: 25 to 29 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 255 days
Farmland classification: Not prime farmland

Map Unit Composition

Doemill, gravelly loam, and similar soils: 50 percent
Jokerst, very cobbly loam, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Doemill, Gravelly Loam

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Microfeatures of landform position: Mounds
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy residuum weathered from volcanic breccia

Typical profile

A - 0 to 1 inches: gravelly loam
Bt1 - 1 to 5 inches: gravelly loam
Bt2 - 5 to 9 inches: gravelly loam
Bt3 - 9 to 14 inches: gravelly loam
R - 14 to 24 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 5.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.43 to 1.28 in/hr)

Depth to water table: About 2 to 20 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Jokerst, Very Cobbly Loam

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Microfeatures of landform position: Swales
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy residuum weathered from volcanic breccia

Typical profile

A - 0 to 1 inches: very cobbly loam
Bt - 1 to 4 inches: gravelly loam
R - 4 to 14 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 17.0 percent
Depth to restrictive feature: 2 to 10 inches to lithic bedrock
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.71 to 1.13 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: Very low (about 0.4 inches)

Interpretive groups

Land capability classification (irrigated): 8
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Rock outcrop, mudflow breccia

Percent of map unit: 6 percent
Landform: Ridges
Hydric soil rating: No

Lithic xerorthents

Percent of map unit: 3 percent
Landform: Ridges
Hydric soil rating: No

Unnamed, frequent long ponding

Percent of map unit: 1 percent
Landform: Ridges
Microfeatures of landform position: Vernal pools
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix C: Arid West Ordinary High Water Mark Data Sheet

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Bruce Road Bridge Replacement
Project Number: 17-014
Stream: Little Chico Creek (Transect #2)
Investigator(s): E. Gregg
Date: 6-18-19 **Time:** 12:20
Town: Chico **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Little Chico Creek @ the Bruce Road bridge (East side of bridge)

Projection: Google Earth **Datum:** WGS 84
Coordinates: 39.733224°, -121.787374°

Potential anthropogenic influences on the channel system:
Adjacent residential developments, roadway runoff

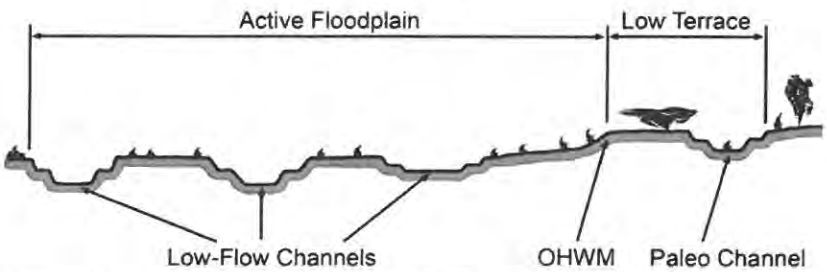
Brief site description: Dense tree canopy with little to no shrub understory. The creek is highly channelized on this side of the bridge.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates:
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☒ Stream gage data (CDWR WDL station)
  Gage number: A04910
  Period of record: continuous
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

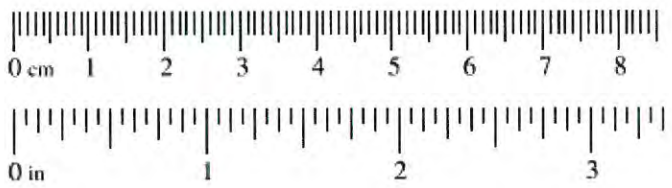


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☒ Digitized on computer
   - ☒ GPS
   - ☐ Other:

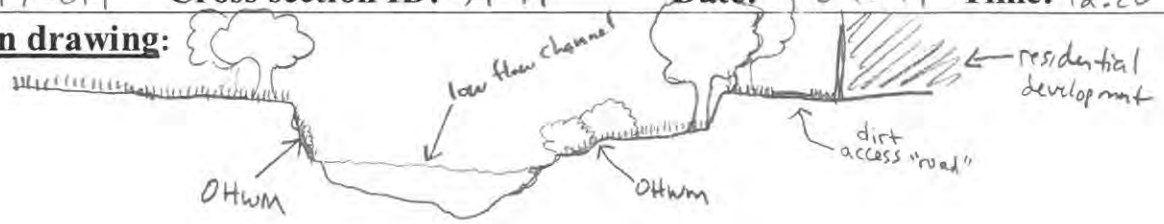
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64		
0.157	4	Pebble	
		Granule	
0.079	2.00		
0.039	1.00	Very coarse sand	
		Coarse sand	
0.020	0.50		
1/2 0.0098	0.25	Medium sand	Sand
		Fine sand	
1/4 0.005	0.125		
		Very fine sand	
1/8 0.0025	0.0625		
		Coarse silt	
1/16 0.0012	0.031		
		Medium silt	Silt
1/32 0.00061	0.0156		
		Fine silt	
1/64 0.00031	0.0078		
		Very fine silt	
1/128 0.00015	0.0039		
		Clay	Mud



Project ID: 17-014 **Cross section ID:** A'-A' **Date:** 6-18-19 **Time:** 12:20

Cross section drawing:



looking upstream

OHWM

GPS point: Transect A'-A' (see delineation map)

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [x] Other: exposed roots
- [x] Other: drift

Comments:

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: —

Characteristics of the floodplain unit:

Average sediment texture: cobble + fine sand

Total veg cover: 95 % Tree: 90 % Shrub: 0 % Herb: 5 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

all canopy cover—no tree trunks present

Indicators:

- [ ] Mudcracks
- [x] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [x] Benches
- [ ] Soil development
- [ ] Surface relief
- [x] Other: sediment deposits
- [ ] Other:
- [ ] Other:

Comments:

water was present & flowing during survey

Project ID: 17-014 **Cross section ID:** A'-A' **Date:** 6-18-19 **Time:** 12:20

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: —

Characteristics of the floodplain unit:

Average sediment texture: fine sand

Total veg cover: 220 % Tree: 100 % Shrub: 40 % Herb: 80 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

all canopy cover - no tree trunks present.

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☐ Surface relief
- ☒ Other: exposed roots
- ☒ Other: change in vegetation composition
- ☐ Other: change in % vegetation cover

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: —

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 200 % Tree: 100 % Shrub: 10 % Herb: 90 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☒ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☒ Benches
- ☒ Soil development
- ☒ Surface relief
- ☒ Other: change in vegetation composition
- ☐ Other:
- ☐ Other:

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Bruce Road Bridge Replacement
Project Number: 17-014
Stream: Little Chico Creek (Transect # 1)
Investigator(s): E. Gregg

Date: 6-18-19 **Time:** 11:40am
Town: Chico **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Little Chico Creek @ the Bruce Road bridge (west side of bridge)

Projection: Google Earth **Datum:** WGS 84
Coordinates: 39.733436°, -121.787859°

Potential anthropogenic influences on the channel system:
Adjacent residential developments, roadway runoff

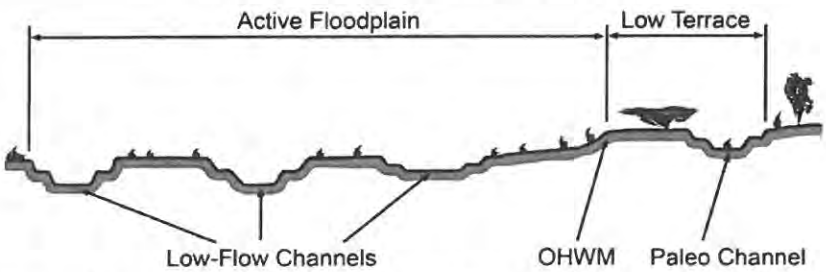
Brief site description: Patches of willows and trees line the banks with rest of banks composed of annual grassland

Checklist of resources (if available):

- ☒ Aerial photography
  Dates:
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☒ Stream gage data (CDWR WDL Station)
  Gage number: A04910
  Period of record: Continuous
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

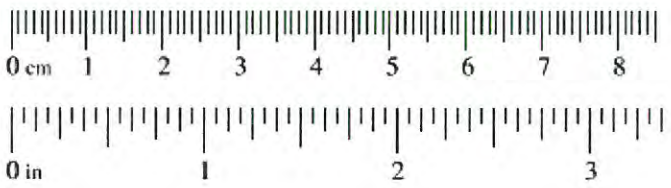


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☒ Digitized on computer
   - ☒ GPS
   - ☐ Other:

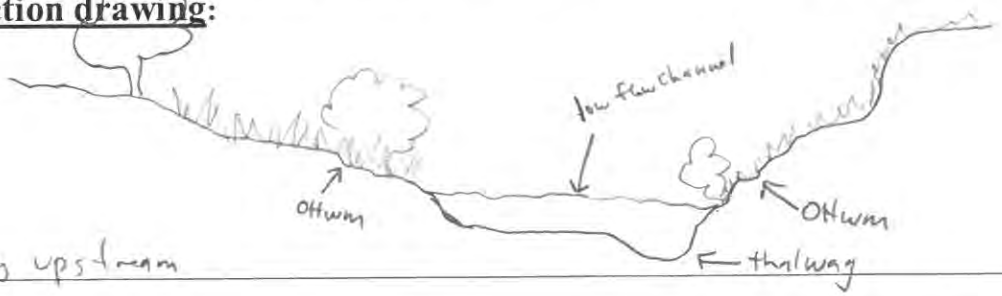
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
2.56	64	Cobble	Gravel
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



Project ID: 17-014 **Cross section ID:** B'-B' **Date:** 6-18-19 **Time:** 11:40

Cross section drawing:



OHWM

GPS point: Transect B'-B'

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [x] Other: Sediment deposits
- [ ] Other: _____

Comments:

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [x] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: fine sand

Total veg cover: 100 % Tree: 10 % Shrub: ____ % Herb: 90 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [x] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [ ] Presence of bed and bank
- [x] Benches
- [ ] Soil development
- [x] Surface relief
- [x] Other: change in vegetation composition
- [ ] Other: _____
- [ ] Other: _____

Comments:

Project ID: 17-014 **Cross section ID:** B'-B' **Date:** 6-18-19 **Time:** 11:40

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: ~

Characteristics of the floodplain unit:

Average sediment texture: fine sand

Total veg cover: 100 % Tree: ____ % Shrub: 30 % Herb: 70 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☐ Surface relief
- ☒ Other: change in sed. texture
- ☒ Other: change in vegetation species
- ☒ Other: change in vegetative percent

Comments:

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: ~

Characteristics of the floodplain unit:

Average sediment texture: cobble + fine sand/coarse silt

Total veg cover: 10 % Tree: — % Shrub: — % Herb: 10 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☒ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☐ Surface relief
- ☒ Other: exposed root hairs
- ☒ Other: change in % vegetation
- ☐ Other: ____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Bruce Road Widening Project
Project Number: 17-014
Stream: Unnamed Tributary of Dead Horse Slough
Investigator(s): E. Gregg

Date: 6-18-19 **Time:** 11 am
Town: Chico **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: East of Bruce Road, north of Humboldt Road.

Projection: Google Earth **Datum:** WGS 84
Coordinates: 39.739873°, -121.788931°

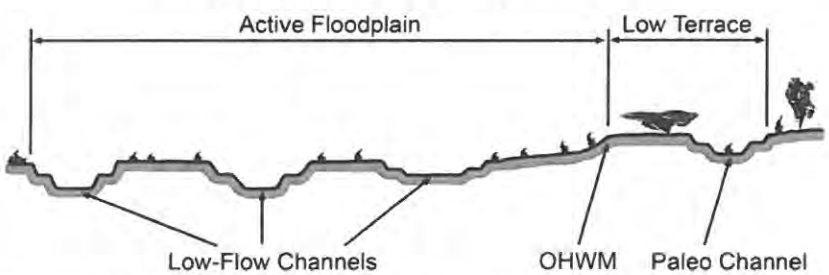
Potential anthropogenic influences on the channel system:
Stream has been significantly man-altered in the past and unnatural impoundment have been installed along this stretch of creek. Significant urban runoff influences present.

Brief site description: Stream is historically man altered. Little tree or shrub canopy present with the stream bed composed of exposed bedrock.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 1998-2019
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

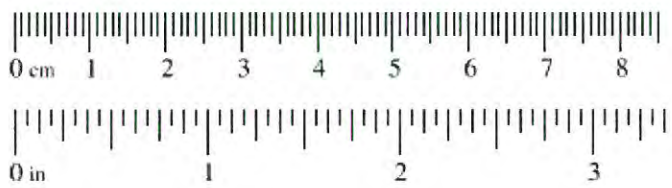


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☒ Digitized on computer
   - ☒ GPS
   - ☐ Other:

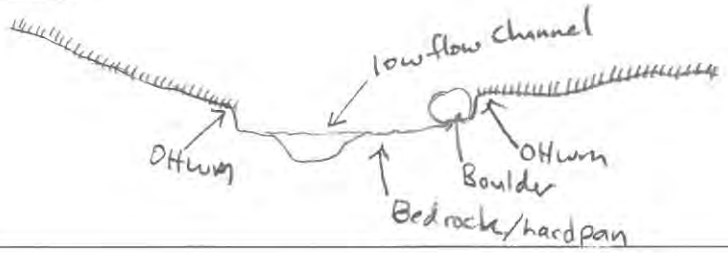
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
2.56	64	Cobble	Gravel
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



Project ID: 17-014 **Cross section ID:** 'C-C' **Date:** 6-18-19 **Time:** 11 am

Cross section drawing:



OHWM

GPS point: See Transect 'C-C' on Delineation Map (panel 1)

Indicators:

- ☒ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☒ Other: exposed roots
- ☐ Other: _____

Comments:

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: —

Characteristics of the floodplain unit:

Average sediment texture: N/A – cemented hardpan

Total veg cover: 0 % Tree: — % Shrub: — % Herb: — %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☒ Other: sediment deposits
- ☐ Other: _____
- ☐ Other: _____

Comments:

Project ID: 17-014 **Cross section ID:** C-C' **Date:** 6-18-19 **Time:** 11am

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: —

Characteristics of the floodplain unit:

Average sediment texture: N/A - cemented bedrock

Total veg cover: 5 % Tree: — % Shrub: — % Herb: 5 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☐ Surface relief
- ☒ Other: exposed roots
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: —

Characteristics of the floodplain unit:

Average sediment texture: gravelly silt

Total veg cover: 100 % Tree: — % Shrub: — % Herb: 100 % → upland grasses

Community successional stage:

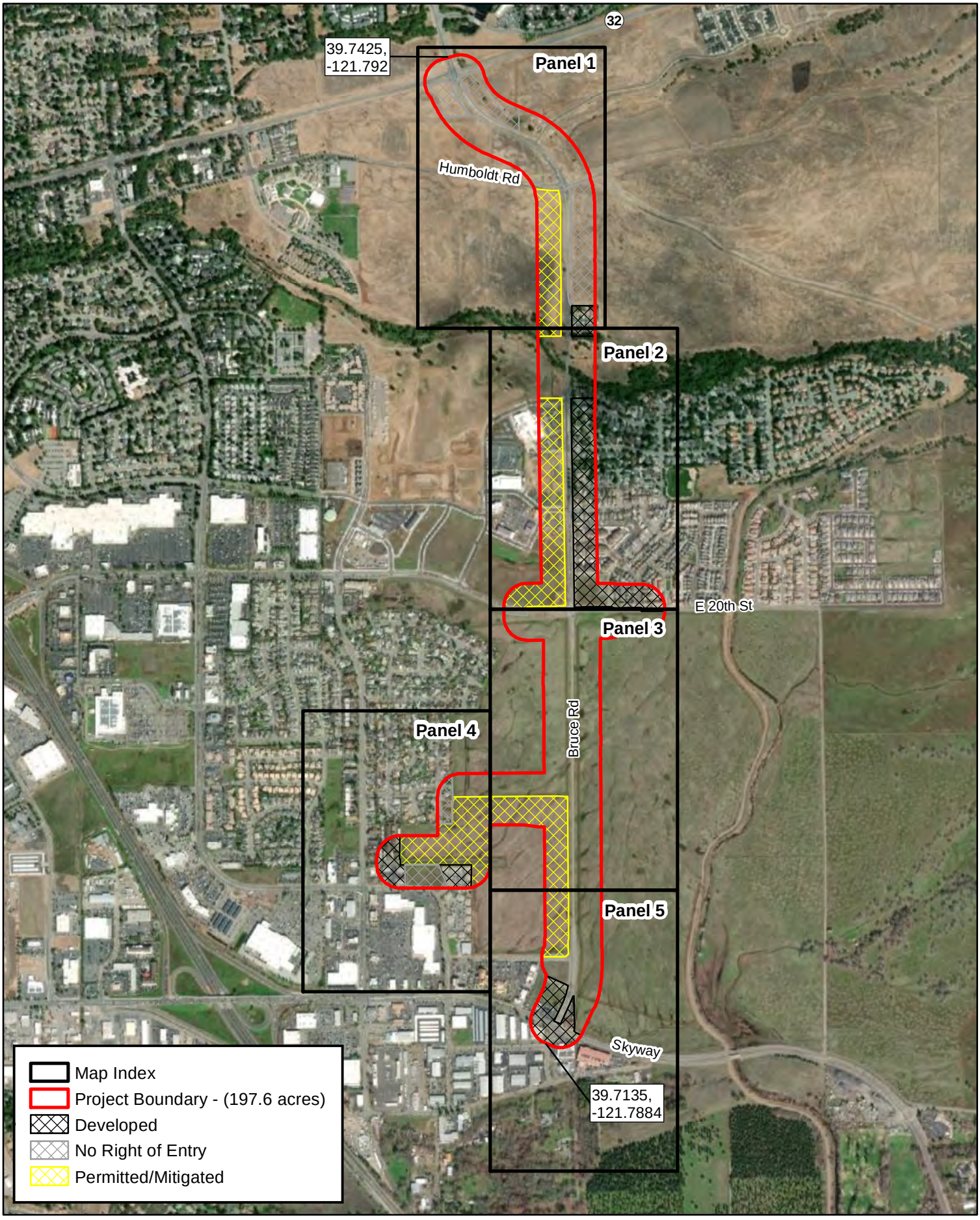
- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☒ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☒ Benches
- ☒ Soil development
- ☒ Surface relief
- ☒ Other: change in veg. cover
- ☒ Other: change in veg. composition
- ☐ Other: _____

Comments:

Exhibit A: Draft Delineation of Waters of the United States Map



NORTH

1:16,000
0 500 1,000 Feet

Data Sources: ESRI, USGS,
City of Chico, Maxar 02/11/19 & 08/06/19

Bruce Road Road Widening Project
Draft Delineation of Waters of the U.S. Map Index
Exhibit A

gallaway ENTERPRISES

GE: #17-014b Map Date: 07/21/20

39.7425,
-121.792

2017 Gallaway Enterprises
SPK-2005-00063

2006 Gallaway Consulting
SPK-2005-01036

1998 Foothill Associates
SPK-2006-00865

2006 Gallaway Consulting
SPK-2005-01036

32

Native Oak Dr

Bruce Rd

Humboldt Rd

16 Feet

20 Feet

OW09
WF67
DW157
DW002
DW001
DW003
DW028
DW004
W05
U05
NJW01
P03
TP02
P04
U04
P05
TP01
P06
W04
NJW02
TP03
OW08
OW11
'D-D'
OW06
OW04
WF03
OW07
'C-C'
U03
W03
OW03
OW10
OW05
WF02
W02
U02
P07
OW02
WF014
WF015
WF017
WF018
WF020
WF019
WF021
WF026
WF129
WF027
WF025
WF029
WF032

The features represented on this graphic are considered preliminary until written verification by the USACE. All features identified as Non-Jurisdictional by Rule may still fall under State jurisdiction per section 401 of the CWA.

Coordinate System: NAD 1983 California State Plane II (Feet)
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD 88

Made in accordance with the Updated Map & Drawing Standards for the South Pacific Division Regulatory Program

- Project Boundary - (197.6 acres)
- Map Index
- Developed
- No Right of Entry
- Permitted/Mitigated
- 5 ft contours
- OHWM Transect - 'X-X'
- Culvert
- Flow Direction
- Photo Points* - P#

Data Points

- Upland - U#
- Wetland - W#
- Test Pit - TP#

Other Waters - OW# - (1.201 acres)

- Intermittent - (0.018 acres)
- Intermittent - (1.058 acres)
- Pond - (0.125 acres)

Wetland Features - WF# - (0.188 acres)

- Seasonal Wetland - (0.083 acres)
- Riparian Wetland - (0.105 acres)

Non-Jurisdictional by Rule - NJW# - (0.051 acres)

- Vernal Swale - (0.029 acres)
- Seasonal Swale - (0.022 acres)

Previously Verified Features - (3.390 acres)

- Wetland Features - SPK-2005-01036 - (0.488 acres)
- Wetland Features - SPK-2005-00063 - (0.008 acres)
- Wetland Features - SPK-2006-00865 - (0.149 acres)
- Wetland Features - SPK-2006-00794 - (2.745 acres)

***See Figure 3, Ground Photographs Map, for additional information on Photo Points.**

NORTH

1:2,400 1 inch = 200 feet
0 100 200 Feet

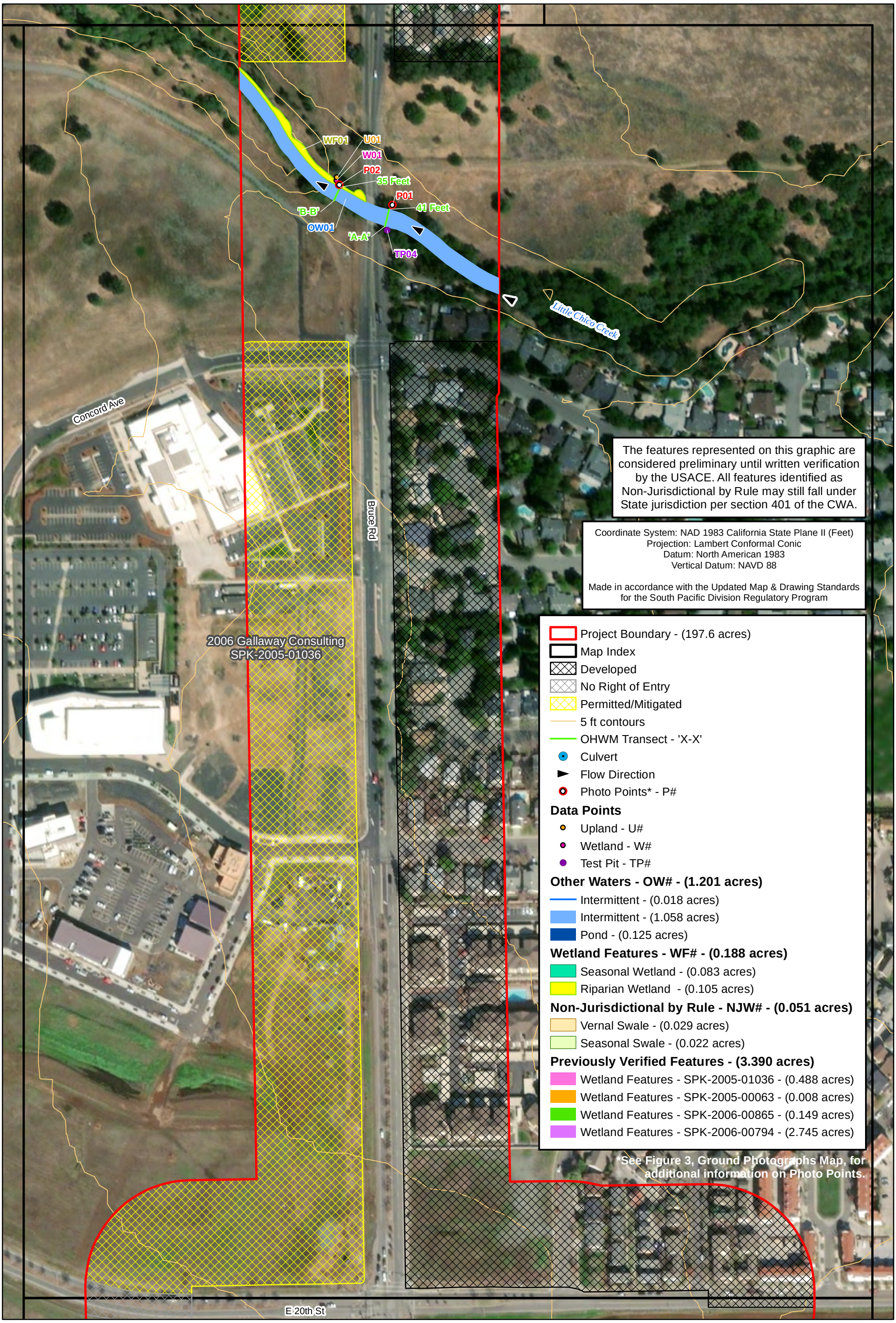
Data Sources: ESRI, USGS, City of Chico, Maxar 02/11/2019 & 08/06/2019

Bruce Road Widening Project
Draft Delineation of Waters of the U.S. (Panel 1)
Exhibit A

Delineation by: E. Gregg
Map by: B. Reaves

gallaway ENTERPRISES

GE: #17-014b Map Date: 07/22/20



NORTH

1:2,400 1 inch = 200 feet
0 100 200 Feet

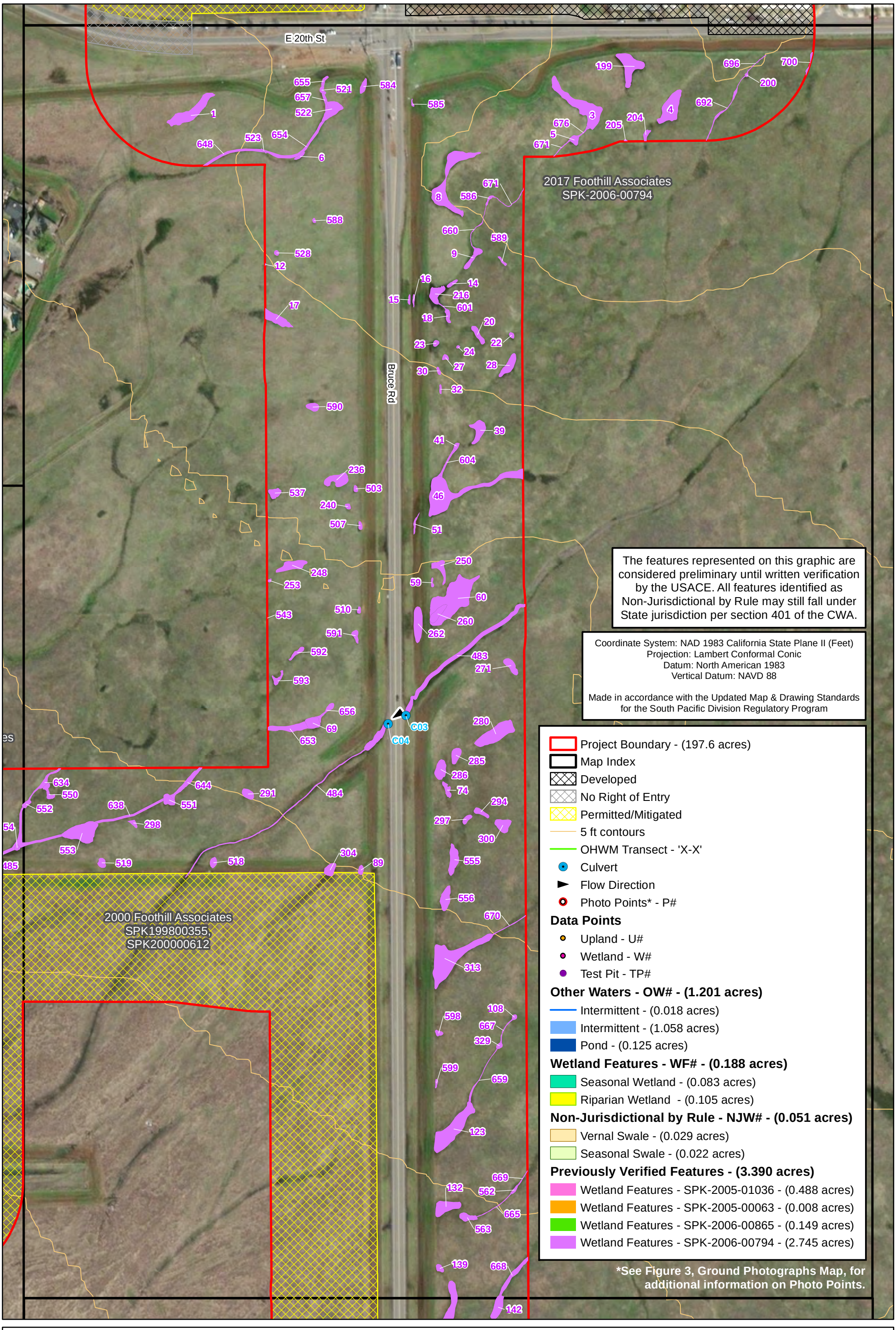
Data Sources: ESRI, USGS, City of Chico, Maxar 02/11/2019 & 08/06/2019

Bruce Road Widening Project
Draft Delineation of Waters of the U.S. (Panel 2)
Exhibit A

Delineation by: E. Gregg
Map by: B. Reaves

gallaway ENTERPRISES

GE: #17-014b Map Date: 07/22/20



The features represented on this graphic are considered preliminary until written verification by the USACE. All features identified as Non-Jurisdictional by Rule may still fall under State jurisdiction per section 401 of the CWA.

Coordinate System: NAD 1983 California State Plane II (Feet)
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD 88

Made in accordance with the Updated Map & Drawing Standards for the South Pacific Division Regulatory Program

- Project Boundary - (197.6 acres)
- Map Index
- Developed
- No Right of Entry
- Permitted/Mitigated
- 5 ft contours
- OHWM Transect - 'X-X'
- Culvert
- Flow Direction
- Photo Points* - P#

Data Points

- Upland - U#
- Wetland - W#
- Test Pit - TP#

Other Waters - OW# - (1.201 acres)

- Intermittent - (0.018 acres)
- Intermittent - (1.058 acres)
- Pond - (0.125 acres)

Wetland Features - WF# - (0.188 acres)

- Seasonal Wetland - (0.083 acres)
- Riparian Wetland - (0.105 acres)

Non-Jurisdictional by Rule - NJW# - (0.051 acres)

- Vernal Swale - (0.029 acres)
- Seasonal Swale - (0.022 acres)

Previously Verified Features - (3.390 acres)

- Wetland Features - SPK-2005-01036 - (0.488 acres)
- Wetland Features - SPK-2005-00063 - (0.008 acres)
- Wetland Features - SPK-2006-00865 - (0.149 acres)
- Wetland Features - SPK-2006-00794 - (2.745 acres)

*See Figure 3, Ground Photographs Map, for additional information on Photo Points.

NORTH

1:2,400 1 inch = 200 feet
0 100 200 Feet

Data Sources: ESRI, USGS, City of Chico, Maxar 02/11/2019 & 08/06/2019

Bruce Road Widening Project
Draft Delineation of Waters of the U.S. (Panel 3)
Exhibit A

Delineation by: E. Gregg
Map by: B. Reaves

gallaway ENTERPRISES

GE: #17-014b Map Date: 07/22/20

New Dawn Cir

Notre Dame Blvd

Webster Dr

Forest Ave

2017 Foothill Associates
SPK-2006-00794

515
289
76
722
554
517
608
87
607
305
485

2000 Foothill Associates
SPK199800355,
SPK200000612

The features represented on this graphic are considered preliminary until written verification by the USACE. All features identified as Non-Jurisdictional by Rule may still fall under State jurisdiction per section 401 of the CWA.

Coordinate System: NAD 1983 California State Plane II (Feet)
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD 88

Made in accordance with the Updated Map & Drawing Standards for the South Pacific Division Regulatory Program

- Project Boundary - (197.6 acres)
- Map Index
- Developed
- No Right of Entry
- Permitted/Mitigated
- 5 ft contours
- OHWM Transect - 'X-X'
- Culvert
- Flow Direction
- Photo Points* - P#

Data Points

- Upland - U#
- Wetland - W#
- Test Pit - TP#

Other Waters - OW# - (1.201 acres)

- Intermittent - (0.018 acres)
- Intermittent - (1.058 acres)
- Pond - (0.125 acres)

Wetland Features - WF# - (0.188 acres)

- Seasonal Wetland - (0.083 acres)
- Riparian Wetland - (0.105 acres)

Non-Jurisdictional by Rule - NJW# - (0.051 acres)

- Vernal Swale - (0.029 acres)
- Seasonal Swale - (0.022 acres)

Previously Verified Features - (3.390 acres)

- Wetland Features - SPK-2005-01036 - (0.488 acres)
- Wetland Features - SPK-2005-00063 - (0.008 acres)
- Wetland Features - SPK-2006-00865 - (0.149 acres)
- Wetland Features - SPK-2006-00794 - (2.745 acres)

*See Figure 3, Ground Photographs Map, for additional information on Photo Points.

NORTH

1:2,400 1 inch = 200 feet
0 100 200 Feet

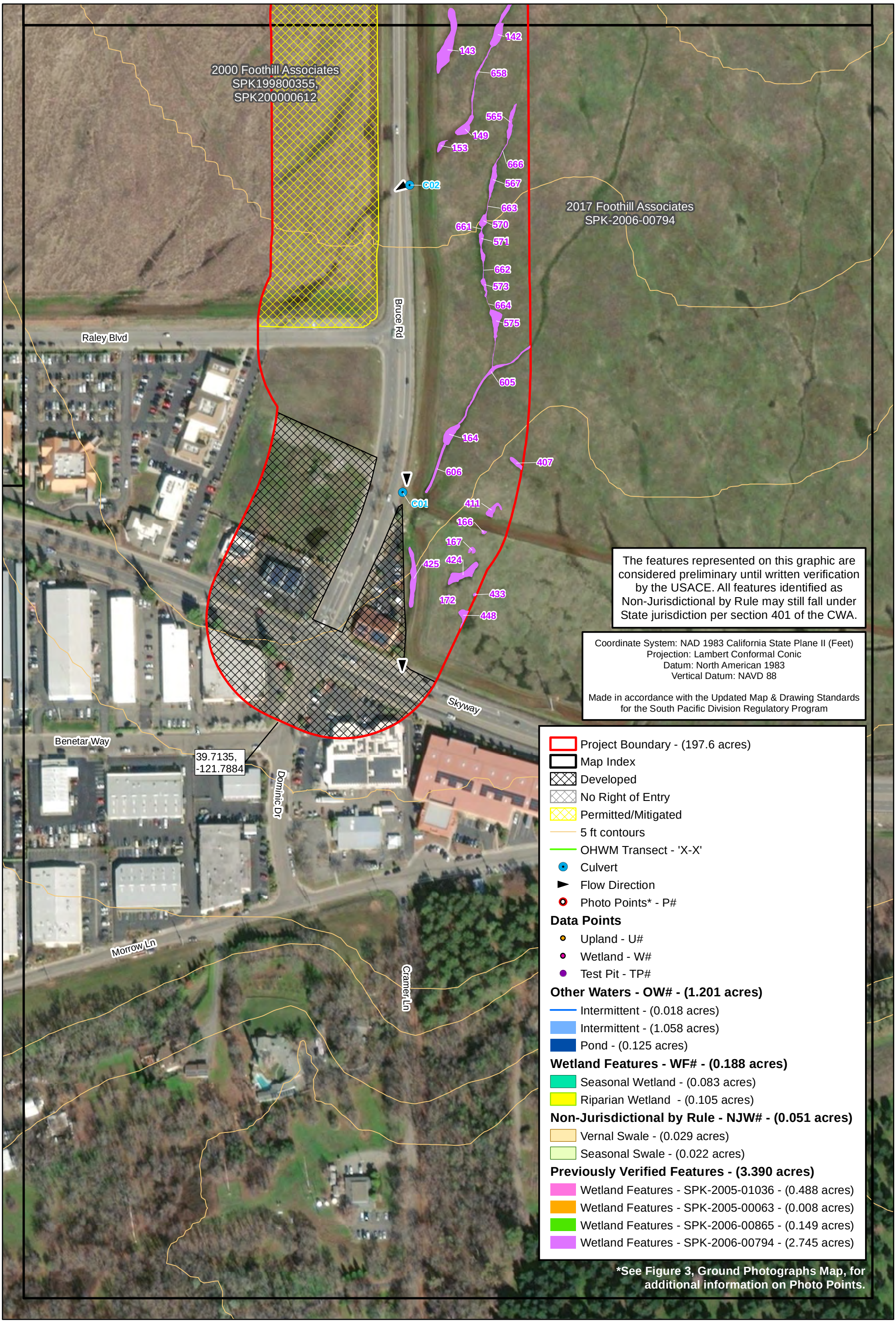
Data Sources: ESRI, USGS, City of Chico, Maxar 02/11/2019 & 08/06/2019

Bruce Road Widening Project
Draft Delineation of Waters of the U.S. (Panel 4)
Exhibit A

Delineation by: E. Gregg
Map by: B. Reaves

gallaway ENTERPRISES

GE: #17-014b Map Date: 07/22/20



NORTH

1:2,400 1 inch = 200 feet

0 100 200 Feet

Data Sources: ESRI, USGS, City of Chico, Maxar 02/11/2019 & 08/06/2019

Bruce Road Widening Project
Draft Delineation of Waters of the U.S. (Panel 5)
Exhibit A

Delineation by: E. Gregg
Map by: B. Reaves

gallaway ENTERPRISES

GE: #17-014b Map Date: 07/22/20

Draft Delineation of Waters of the U.S.

Other Waters

Label	Cowardin	Description	Location (Lat/Long)		Width* (ft)	Length (ft)	Area (sq ft)	Acres
OW01	R4	Intermittent	39.733336	-121.787013	34.2	807.7	27658.0	0.635
OW02	R4	Intermittent	39.739219	-121.787616	17.3	161.5	2789.4	0.064
OW03	PRB	Pond	39.739728	-121.78803	NA	NA	858.4	0.020
OW04	PRB	Pond	39.740133	-121.787276	NA	NA	1877.1	0.043
OW05	PRB	Pond	39.739471	-121.787731	NA	NA	2730.1	0.063
OW06	R4	Intermittent	39.740132	-121.787921	20.2	104.8	2115.0	0.049
OW07	R4	Intermittent	39.739949	-121.788632	13.3	171.6	2288.6	0.053
OW08	R4	Intermittent	39.74034	-121.791613	16.4	405.2	6640.6	0.152
OW09	R4	Intermittent	39.742378	-121.787447	27.5	166.5	4582.6	0.105
OW10	R4	Intermittent	39.739641	-121.787447	6.0	82.6	495.7	0.011
OW11	R4	Intermittent	39.740259	-121.787859	4.0	72.7	290.9	0.007
					Pond Feature Totals =	**NA**	**5465.6**	**0.125**
					Intermittent Totals =	**1972.7**	**46860.8**	**1.076**
					Other Waters Totals =	**1972.7**	**52326.4**	**1.201**

*Widths are represented as averages

Wetland Features

Label	Cowardin	Description	Location (Lat/Long)		Width (ft)	Length (ft)	Area (sq ft)	Acres
WF01	RP1EM	Riparian Wetland	39.73348	-121.787804	NA	NA	4576.5	0.105
WF02	PUB	Seasonal Wetland	39.73942	-121.787376	NA	NA	745.2	0.017
WF03	PUB	Seasonal Wetland	39.739999	-121.787643	NA	NA	2866.5	0.066
					Riparian Wetland Totals =	**NA**	**4576.5**	**0.105**
					Seasonal Wetland Totals =	**NA**	**3611.6**	**0.083**
					Wetland Feature Totals =	**NA**	**8188.1**	**0.188**
					Total Waters of the U.S. =	**NA**	**60514.6**	**1.389**

Non-Jurisdictional by Rule

Label	Cowardin	Description	Location (Lat/Long)		Width (ft)	Length (ft)	Area (sq ft)	Acres
NJW01	PUB	Vernal Swale	39.74026	-121.790307	NA	NA	1263.2	0.029
NJW02	PUB	Seasonal Swale	39.739891	-121.790407	NA	NA	961.3	0.022
					Non-Jurisdictional by Rule Totals =	**NA**	**2224.5**	**0.051**

Verified Delineation SPK-2005-01036

Wetland Features

Label	Description	Location (Lat/Long)		Width (ft)	Length (ft)	Area (sq ft)	Acres
DW001	Vernal Pool/Swale	39.740611	-121.791617	NA	NA	5624.8	0.129
DW002	Vernal Pool/Swale	39.740678	-121.792113	NA	NA	239.4	0.005
DW003	Vernal Pool/Swale	39.740353	-121.791419	NA	NA	2300.2	0.053
DW004	Vernal Pool/Swale	39.740085	-121.791231	NA	NA	11914.1	0.274
DW028	Vernal Pool/Swale	39.740381	-121.791204	NA	NA	251.2	0.006
DW157	Vernal Pool/Swale	39.740725	-121.791738	NA	NA	923.0	0.021
				Verified Delineation SPK-2005-01036 Totals =	**NA**	**21252.7**	**0.488**

Verified Delineation SPK-2005-00063							
Wetland Features							
Label	**Description**	**Location (Lat/Long)**		**Width (ft)**	**Length (ft)**	**Area (sq ft)**	**Acres**
WF67	Seasonal Wetland	39.742173	-121.792326	NA	NA	338.6	0.008
Verified Delineation SPK-2005-01036 Totals =					**NA**	**338.6**	**0.008**

Verified Delineation SPK-2006-00865							
*Wetland Features							
Label	**Description**	**Location (Lat/Long)**		**Width (ft)**	**Length (ft)**	**Area (sq ft)**	**Acres**
WF014	Vernal Pool	39.738344	-121.787224	NA	NA	291.3	0.007
WF015	Vernal Pool	39.738259	-121.787013	NA	NA	92.3	0.002
WF017	Vernal Pool	39.737577	-121.786784	NA	NA	117.4	0.003
WF018	Vernal Pool	39.737276	-121.787123	NA	NA	1144.8	0.026
WF019	Vernal Pool	39.736937	-121.786886	NA	NA	253.0	0.006
WF020	Vernal Pool	39.736855	-121.787142	NA	NA	661.2	0.015
WF021	Vernal Pool	39.736664	-121.787165	NA	NA	265.6	0.006
WF025	Vernal Swale	39.736041	-121.786899	NA	NA	158.9	0.004
WF026	Vernal Swale	39.736031	-121.787394	NA	NA	1768.3	0.041
WF027	Vernal Swale	39.736097	-121.786638	NA	NA	62.6	0.001
WF029	Vernal Swale	39.735467	-121.787417	NA	NA	1000.4	0.023
WF032	Vernal Swale	39.735217	-121.786826	NA	NA	412.7	0.009
WF129	Vernal Swale	39.736134	-121.786524	NA	NA	252.6	0.006
Verified Delineation SPK-2006-00865 Totals =					**NA**	**6481.2**	**0.149**
*Acreage estimated from previously verified delineation map							

Verified Delineation SPK-2006-00794							
Wetland Features							
Label	**Description**	**Location (Lat/Long)**		**Width (ft)**	**Length (ft)**	**Area (sq ft)**	**Acres**
1	Depressional Seasonal Wetland	39.725733	-121.789101	NA	NA	2675.5	0.061
3	Depressional Seasonal Wetland	39.725767	-121.785837	NA	NA	3772.3	0.087
4	Depressional Seasonal Wetland	39.725751	-121.78508	NA	NA	2451.8	0.056
5	Depressional Seasonal Wetland	39.725544	-121.785887	NA	NA	355.1	0.008
6	Depressional Seasonal Wetland	39.725446	-121.788187	NA	NA	196.5	0.005
8	Depressional Seasonal Wetland	39.725282	-121.78693	NA	NA	4008.3	0.092
9	Depressional Seasonal Wetland	39.724785	-121.786738	NA	NA	676.6	0.016
12	Depressional Seasonal Wetland	39.724737	-121.788488	NA	NA	12.0	0.000
14	Depressional Seasonal Wetland	39.724618	-121.786914	NA	NA	222.6	0.005
15	Depressional Seasonal Wetland	39.724513	-121.787274	NA	NA	122.1	0.003
16	Depressional Seasonal Wetland	39.72451	-121.787237	NA	NA	130.7	0.003
17	Depressional Seasonal Wetland	39.724411	-121.788461	NA	NA	1241.9	0.029
18	Depressional Seasonal Wetland	39.724408	-121.78695	NA	NA	303.6	0.007
20	Depressional Seasonal Wetland	39.724287	-121.786699	NA	NA	559.6	0.013
22	Depressional Seasonal Wetland	39.724282	-121.786417	NA	NA	138.3	0.003
23	Depressional Seasonal Wetland	39.724232	-121.787051	NA	NA	173.8	0.004
24	Depressional Seasonal Wetland	39.724207	-121.786866	NA	NA	55.5	0.001
27	Depressional Seasonal Wetland	39.72414	-121.786972	NA	NA	167.5	0.004
28	Depressional Seasonal Wetland	39.724086	-121.786441	NA	NA	978.4	0.022
30	Depressional Seasonal Wetland	39.724052	-121.787029	NA	NA	130.9	0.003
32	Depressional Seasonal Wetland	39.723935	-121.787014	NA	NA	109.5	0.003
39	Vernal Pool	39.723668	-121.786698	NA	NA	1154.7	0.027
41	Vernal Pool	39.723567	-121.786881	NA	NA	153.9	0.004
46	Depressional Seasonal Wetland	39.7233	-121.78667	NA	NA	5907.0	0.136
51	Depressional Seasonal Wetland	39.723063	-121.787228	NA	NA	203.8	0.005
59	Depressional Seasonal Wetland	39.722682	-121.787087	NA	NA	117.6	0.003
60	Depressional Seasonal Wetland	39.722579	-121.786913	NA	NA	6097.7	0.140
69	Depressional Seasonal Wetland	39.721778	-121.78809	NA	NA	771.8	0.018
74	Depressional Seasonal Wetland	39.721344	-121.786967	NA	NA	430.4	0.010
76	Depressional Seasonal Wetland	39.721216	-121.791348	NA	NA	1998.9	0.046
87	Depressional Seasonal Wetland	39.720959	-121.791481	NA	NA	29.1	0.001
89	Depressional Seasonal Wetland	39.720824	-121.787691	NA	NA	244.5	0.006
108	Depressional Seasonal Wetland	39.71987	-121.786408	NA	NA	128.3	0.003
123	Depressional Seasonal Wetland	39.719147	-121.786926	NA	NA	3919.2	0.090
132	Depressional Seasonal Wetland	39.718642	-121.786984	NA	NA	1437.3	0.033
139	Depressional Seasonal Wetland	39.718247	-121.787037	NA	NA	272.3	0.006
142	Depressional Seasonal Wetland	39.717994	-121.786554	NA	NA	1060.9	0.024
143	Depressional Seasonal Wetland	39.717942	-121.786971	NA	NA	3068.8	0.070
149	Depressional Seasonal Wetland	39.717394	-121.786826	NA	NA	899.7	0.021
153	Depressional Seasonal Wetland	39.717276	-121.787027	NA	NA	302.0	0.007
164	Depressional Seasonal Wetland	39.715409	-121.786955	NA	NA	989.9	0.023
166	Depressional Seasonal Wetland	39.714774	-121.786677	NA	NA	95.3	0.002
167	Depressional Seasonal Wetland	39.714657	-121.786775	NA	NA	201.3	0.005
172	Depressional Seasonal Wetland	39.714343	-121.786974	NA	NA	183.5	0.004
199	Vernal Pool	39.726019	-121.785423	NA	NA	2322.0	0.053
200	Vernal Pool	39.725963	-121.784443	NA	NA	60.1	0.001

204	Vernal Pool	39.72556	-121.785286	NA	NA	275.3	0.006
205	Vernal Pool	39.725512	-121.785446	NA	NA	32.1	0.001
216	Vernal Pool	39.72455	-121.787049	NA	NA	947.7	0.022
236	Vernal Pool	39.723348	-121.787882	NA	NA	1284.5	0.029
240	Vernal Pool	39.723177	-121.787791	NA	NA	143.6	0.003
248	Vernal Pool	39.722795	-121.78826	NA	NA	1206.9	0.028
250	Vernal Pool	39.722773	-121.78702	NA	NA	810.0	0.019
253	Vernal Pool	39.7227	-121.788448	NA	NA	56.0	0.001
260	Vernal Pool	39.722481	-121.787044	NA	NA	758.7	0.017
262	Vernal Pool	39.722417	-121.787208	NA	NA	1486.9	0.034
271	Vernal Pool	39.722143	-121.786428	NA	NA	708.9	0.016
280	Vernal Pool	39.721704	-121.786557	NA	NA	2822.1	0.065
285	Vernal Pool	39.721566	-121.786893	NA	NA	667.7	0.015
286	Vernal Pool	39.721472	-121.78702	NA	NA	994.0	0.023
289	Vernal Pool	39.721312	-121.79145	NA	NA	925.9	0.021
291	Vernal Pool	39.721319	-121.788635	NA	NA	541.0	0.012
294	Vernal Pool	39.721195	-121.786684	NA	NA	414.9	0.010
297	Vernal Pool	39.721152	-121.786802	NA	NA	294.5	0.007
298	Vernal Pool	39.72113	-121.789594	NA	NA	216.8	0.005
300	Vernal Pool	39.721113	-121.786499	NA	NA	926.7	0.021
304	Vernal Pool	39.720828	-121.787948	NA	NA	627.3	0.014
305	Vernal Pool	39.720807	-121.791526	NA	NA	30.3	0.001
313	Vernal Pool	39.720251	-121.786933	NA	NA	5272.6	0.121
329	Vernal Pool	39.719685	-121.786533	NA	NA	169.4	0.004
407	Vernal Pool	39.715153	-121.786293	NA	NA	358.2	0.008
411	Vernal Pool	39.714917	-121.786599	NA	NA	550.7	0.013
424	Vernal Pool	39.714504	-121.786852	NA	NA	1393.4	0.032
425	Vernal Pool	39.714476	-121.787274	NA	NA	1612.9	0.037
433	Vernal Pool	39.714371	-121.786753	NA	NA	51.5	0.001
448	Vernal Pool	39.714204	-121.786809	NA	NA	447.4	0.010
483	Riverine Seasonal Wetland	39.722569	-121.786293	NA	NA	3906.8	0.090
484	Riverine Seasonal Wetland	39.721391	-121.788061	NA	NA	2711.0	0.062
485	Riverine Seasonal Wetland	39.720943	-121.790686	NA	NA	3267.7	0.075
503	Excavated Pit	39.723291	-121.787727	NA	NA	139.5	0.003
507	Excavated Pit	39.723052	-121.787689	NA	NA	157.0	0.004
510	Excavated Pit	39.722506	-121.787701	NA	NA	126.5	0.003
515	Excavated Pit	39.721518	-121.790707	NA	NA	25.7	0.001
517	Excavated Pit	39.721018	-121.790708	NA	NA	143.2	0.003
518	Excavated Pit	39.720876	-121.788926	NA	NA	331.7	0.008
519	Excavated Pit	39.720874	-121.789861	NA	NA	360.5	0.008
521	Depressional Seasonal Wetland	39.72587	-121.787997	NA	NA	174.6	0.004
522	Depressional Seasonal Wetland	39.725743	-121.787917	NA	NA	1238.4	0.028
523	Depressional Seasonal Wetland	39.725479	-121.788491	NA	NA	57.8	0.001
528	Depressional Seasonal Wetland	39.724819	-121.788385	NA	NA	124.2	0.003
537	Depressional Seasonal Wetland	39.723265	-121.788405	NA	NA	550.1	0.013
543	Depressional Seasonal Wetland	39.722463	-121.788501	NA	NA	1.3	0.000
550	Depressional Seasonal Wetland	39.721335	-121.790305	NA	NA	447.0	0.010

551	Depressional Seasonal Wetland	39.72128	-121.7893	NA	NA	569.1	0.013
552	Depressional Seasonal Wetland	39.721256	-121.790491	NA	NA	236.0	0.005
553	Depressional Seasonal Wetland	39.721073	-121.790025	NA	NA	2766.7	0.064
554	Depressional Seasonal Wetland	39.720973	-121.790569	NA	NA	132.0	0.003
555	Depressional Seasonal Wetland	39.720891	-121.786916	NA	NA	1198.6	0.028
556	Depressional Seasonal Wetland	39.720639	-121.786982	NA	NA	1036.4	0.024
562	Depressional Seasonal Wetland	39.718754	-121.78641	NA	NA	160.8	0.004
563	Depressional Seasonal Wetland	39.718577	-121.786805	NA	NA	586.0	0.013
565	Depressional Seasonal Wetland	39.717425	-121.786441	NA	NA	744.9	0.017
567	Depressional Seasonal Wetland	39.717054	-121.786593	NA	NA	792.6	0.018
570	Depressional Seasonal Wetland	39.716789	-121.786674	NA	NA	391.0	0.009
571	Depressional Seasonal Wetland	39.716622	-121.786687	NA	NA	531.1	0.012
573	Depressional Seasonal Wetland	39.716367	-121.786666	NA	NA	319.9	0.007
575	Depressional Seasonal Wetland	39.716141	-121.786573	NA	NA	1035.1	0.024
584	Vernal Pool	39.725895	-121.787654	NA	NA	373.6	0.009
585	Vernal Pool	39.725784	-121.787244	NA	NA	75.3	0.002
586	Vernal Pool	39.725161	-121.786601	NA	NA	168.3	0.004
588	Vernal Pool	39.725027	-121.78807	NA	NA	76.0	0.002
589	Vernal Pool	39.724762	-121.786493	NA	NA	154.9	0.004
590	Vernal Pool	39.723822	-121.788084	NA	NA	476.7	0.011
591	Vernal Pool	39.722341	-121.78773	NA	NA	331.3	0.008
592	Vernal Pool	39.722231	-121.788221	NA	NA	364.2	0.008
593	Vernal Pool	39.722065	-121.788383	NA	NA	363.2	0.008
598	Vernal Pool	39.719768	-121.787041	NA	NA	200.2	0.005
599	Vernal Pool	39.719444	-121.787063	NA	NA	108.2	0.002
601	Riverine Seasonal Wetland	39.724471	-121.786996	NA	NA	60.4	0.001
604	Riverine Seasonal Wetland	39.72346	-121.786961	NA	NA	408.2	0.009
605	Riverine Seasonal Wetland	39.716285	-121.786196	NA	NA	1378.7	0.032
606	Riverine Seasonal Wetland	39.715185	-121.787074	NA	NA	739.8	0.017
607	Depressional Seasonal Wetland	39.720949	-121.790959	NA	NA	194.2	0.004
608	Depressional Seasonal Wetland	39.720964	-121.790872	NA	NA	63.5	0.001
634	Riverine Seasonal Wetland	39.721482	-121.790247	NA	NA	637.2	0.015
638	Riverine Seasonal Wetland	39.721194	-121.789619	NA	NA	1012.7	0.023
644	Riverine Seasonal Wetland	39.721417	-121.789121	NA	NA	945.5	0.022
648	Riverine Seasonal Wetland	39.7254	-121.788978	NA	NA	904.9	0.021
653	Riverine Seasonal Wetland	39.721747	-121.788296	NA	NA	1263.4	0.029
654	Riverine Seasonal Wetland	39.725507	-121.788207	NA	NA	1147.4	0.026
655	Riverine Seasonal Wetland	39.72593	-121.787982	NA	NA	211.0	0.005
656	Riverine Seasonal Wetland	39.721853	-121.787977	NA	NA	447.2	0.010
657	Riverine Seasonal Wetland	39.725796	-121.787974	NA	NA	248.1	0.006
658	Riverine Seasonal Wetland	39.717709	-121.786714	NA	NA	624.3	0.014
659	Riverine Seasonal Wetland	39.719462	-121.786709	NA	NA	394.1	0.009
660	Riverine Seasonal Wetland	39.724969	-121.786705	NA	NA	229.3	0.005
661	Riverine Seasonal Wetland	39.716734	-121.786688	NA	NA	57.6	0.001
662	Riverine Seasonal Wetland	39.71647	-121.786675	NA	NA	74.1	0.002
663	Riverine Seasonal Wetland	39.716884	-121.786637	NA	NA	63.0	0.001
664	Riverine Seasonal Wetland	39.716254	-121.786634	NA	NA	31.6	0.001
665	Riverine Seasonal Wetland	39.718645	-121.786575	NA	NA	221.7	0.005
666	Riverine Seasonal Wetland	39.717239	-121.786512	NA	NA	140.2	0.003
667	Riverine Seasonal Wetland	39.719785	-121.786489	NA	NA	162.9	0.004

668	Riverine Seasonal Wetland	39.718316	-121.786306	NA	NA	979.1	0.022
669	Riverine Seasonal Wetland	39.718869	-121.786304	NA	NA	86.3	0.002
670	Riverine Seasonal Wetland	39.720598	-121.786252	NA	NA	216.1	0.005
671	Riverine Seasonal Wetland	39.725319	-121.786221	NA	NA	307.8	0.007
676	Riverine Seasonal Wetland	39.725597	-121.785812	NA	NA	156.9	0.004
692	Riverine Seasonal Wetland	39.725727	-121.784643	NA	NA	572.6	0.013
696	Riverine Seasonal Wetland	39.726035	-121.784367	NA	NA	113.7	0.003
700	Riverine Seasonal Wetland	39.725565	-121.78397	NA	NA	165.0	0.004
722	Ditch/Canal	39.721921	-121.791474	NA	255.5	1788.5	0.041
Verified Delineation SPK-2006-00794 Totals =					**255.5**	**119562.2**	**2.745**