

# Aquatic Resources Report for Dry Creek Parkway Trails, Phase II

Sacramento County, CA

July 2021 Revised July 2022

#### Prepared for:

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#### **ACRONYMS AND ABBREVIATIONS**

AMSL above mean sea level

County Sacramento County Office of Planning and Environmental Review

FAC Facultative plant species

FACU Facultative upland plant species
FACW Facultative wetland plant species

GPS Global Positioning System

ID Identification

IRD intermittent riverine drainages

mph miles per hour

NL Not Listed

NRCS Natural Resources Conservation Service's

NWI National Wetlands Inventory

OBL Obligate wetland plant species

PFOA palustrine, forested, temporarily flooded
PFOC palustrine, forested, seasonally flooded

PR Perennial Riverine

PSSC palustrine, scrub-shrub, seasonally flooded

R4SBC riverine, intermittent, streambed, seasonally flooded

R5UBF riverine, unknown perennial, unconsolidated bottom, semi permanently flooded

TNW traditional navigable waterway

U.S. United States

UPL Obligate upland plant species
USFWS U.S. Fish and Wildlife Service

USGS U.S. Geological Survey

WGS 84 World Geodetic System datum
WRCC Western Regional Climate Center

### Introduction

On behalf of Sacramento County Planning and Environmental Review (County), AECOM has prepared this aquatic resources report documenting potential wetlands and waters of the United States (U.S.) for the Dry Creek Parkway Trails Phase II Project, located in northern Sacramento County, California (Exhibit 1). The purpose of this report is to describe potential wetlands and other waters of the U.S. and State that were identified in the study area during biological surveys. This report also includes a map depicting the locations of aquatic resources present in the study area.

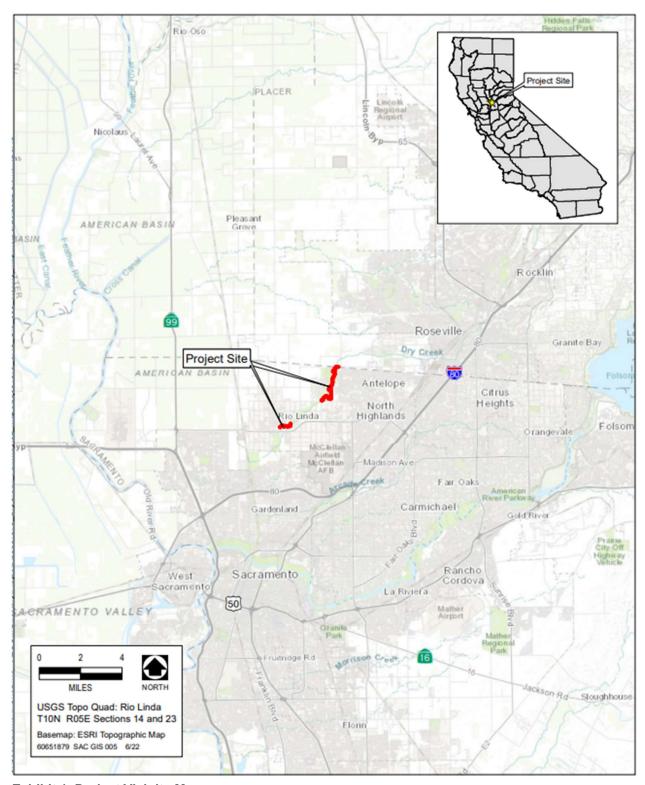
#### **Project Description and Background**

In August 2011, Sacramento County Regional Parks completed Phase I of the Dry Creek Parkway Trail project, which constructed three miles of bicycle, pedestrian, and equestrian trails within the Dry Creek Parkway in northern Sacramento County. Phase II is the next extension of this 10-mile master-planned regional trail system. Phase II is divided into two sections, the northern alignment and the southern alignment. The northern alignment of this next extension will link the Cherry Island Soccer Complex with Gibson Ranch Park, each of which has thousands of visitors annually. It is also the next link in connecting the Sacramento County trail system with the adjacent Placer County trail system. Phase II of the Dry Creek Parkway Trail will include the construction of 2.6 miles of paved Class I shared-use bicycle/pedestrian trails and 0.6 mile of equestrian trails from the Cherry Island Soccer Complex at 28th and U Streets to the Placer County line in Gibson Ranch Park (Exhibit 2 and Exhibit 3). The proposed southern alignment will include construction of 0.6 miles of paved Class I shared-use bicycle/pedestrian trails from the junction of Dry Creek Road and Curved Bridge Road to the Sacramento Northern Bike Trail. The project also involves improving bicycle lanes, signage, and striping along Curved Bridge Road and Cherry Lane, and providing interpretive signs along the trails.

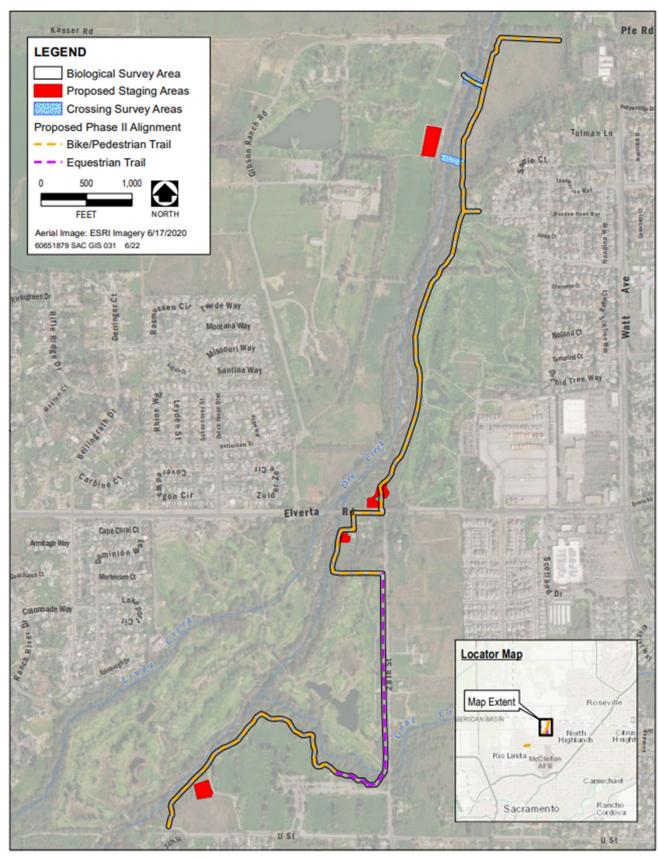
The bicycle lane improvements will link the Sacramento Northern Trail with the Dry Creek Parkway Trail. The trails will be constructed along the north edge of the Cherry Island Soccer Complex, parallel to 28th Street, and on the east side of Dry Creek adjacent to the Antelope Greens Golf Course and on County-owned parkland. A connection to Northbrook Park on the east side of Dry Creek is planned for this phase. A small section of new equestrian trail will be constructed along 28th Street. The existing band of riparian vegetation surrounding Dry Creek will be preserved to the greatest practical extent. The multi-use trail will consist of a 12-foot wide surface paved with asphalt concrete for bicyclists and skaters, and a three-foot wide decomposed granite shoulder on each side for pedestrians.

The multi-use trail base will consist of new aggregate and/or recycled asphalt concrete and Portland cement concrete. The parallel equestrian trail will consist of a six-foot wide dirt path. Four bridges are proposed as part of the project: two in the northern alignment, and two in the southern alignment. Two prefabricated bridges are proposed within the northern alignment (Exhibit 2 and Exhibit 3). A relatively short bridge will span Goat/Sierra Creek at the east side of the Soccer Complex near 28th Street, and a longer bridge will be placed across Dry Creek in one of two potential locations, both of which are near the northern end of Gibson Ranch Park. These placements are separated by about 900 feet. The land cover and aquatic features within both of these potential bridge locations are evaluated in this report. The bridges will be anchored to steel-reinforced concrete abutments resting on steel-reinforced concrete cast-in-place piers. Interpretive signs, containing environmental and cultural information, will be placed at several points along the trails. Two new bridge crossings are proposed within the southern alignment. One will be an approximately 150-foot bridge crossing over a perennial stream (an unnamed tributary to Dry Creek), and the other will be an approximately 60-foot bridge crossing over a ditch (Ditch 3; see Exhibit 3). The larger bridge in this southern alignment will be located approximately 180 feet east of the Sacramento Northern Bike Trail.

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**Exhibit 1. Project Vicinity Map** 



**Exhibit 2. Project Area Map (Northern Alignment)** 



**Exhibit 3. Project Area Map (Southern Alignment)** 

#### **Methods**

To evaluate all areas of possible aquatic resources within the project area prior to the site reconnaissance survey, an AECOM wetland ecologist used Google Earth to review aerial imagery at various times of the year from 1985 to 2020 (Google Earth 2020). Other desktop resources consulted before the field survey included the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Wetlands Mapper to review areas and types of aquatic features (USFWS 2020), the U.S. Geological Survey (USGS) National Map (USGS 2021) to assess waterways, and the Natural Resources Conservation Service's (NRCS) Online Soil Survey (NRCS 2022a) to check for the presence of hydric soils. Two sets of field surveys were conducted: one in March of 2021 and the other in April of 2022. In March of 2021, two AECOM wetland ecologists, William Splittstoesser and Jasmine Wurlitzer, conducted field surveys from March 1st through March 5th. In April of 2022, two AECOM wetland ecologists, Charles Battaglia and David Greenspan, conducted field surveys on March 30th and April 1st. For both the 2021 and 2022 surveys the survey area included the proposed project alignment plus a 50-foot swath measured 25-feet from each side of the centerline of the proposed trail (i.e., the study area).

Aquatic features were identified and recorded digitally in the field using a Global Positioning System (GPS) data receiver (Trimble R1®) connected to an Apple® iPhone or Apple® iPad and imported onto an electronic version of an aerial photograph. GPS data were recorded using the World Geodetic System datum (WGS 84), which was established by the U.S. National Geospatial-Intelligence Agency in 1984 and last revised in 2004

Botanical nomenclature in this report follows *The Jepson Manual: Vascular Plants of California*, *Second Edition* (Baldwin et al. 2012). Plant community names follow *A Manual of California Vegetation: Second Edition* (CNPS 2021), where applicable. Plants observed in the project area during the field survey were identified to the species level whenever possible, and their wetland indicator status was determined using the National Wetland Plant List (USACE 2018). Hydrophytic species are those listed as obligate (OBL), facultative wetland (FACW), or facultative (FAC). A species' wetland indicator status designation corresponds to the probability that the species will occur in a wetland habitat. Observed plants are referenced in the text below along with their wetland indicator status (USACE 2018), which are defined using the following terms:

- Obligate wetland plant species (OBL) Plants that almost always occur in wetlands under natural conditions (estimated probability >99 percent), but which rarely occur in non-wetlands.
- Facultative wetland plant species (FACW) Plants that occur usually (estimated probability >67
  percent to 99 percent) in wetlands, but also occur in non-wetlands.
- Facultative plant species (FAC) Plants with a similar likelihood (estimated probability 33 percent to 67 percent) of occurring in both wetlands and non-wetlands.
- Facultative upland plant species (FACU) Plants that occur sometimes (estimated probability 1
  percent to <33 percent) in wetlands but occur more often in non-wetlands.</li>
- Obligate upland plant species (UPL) Plants that occur rarely (estimated probability <1 percent) in wetlands but occur almost always in non-wetlands.
- Not Listed (NL) Plant species for which insufficient information was available to determine an
  indicator status and are treated as upland species because they do not on occur on the wetland
  plant list. Plants not listed on the 2018 National Wetland Plant List are listed on Table A-1 as NL and
  assumed to be UPL consistent with standard protocol.

# **Project Area Setting**

The project is divided into two sections: the northern alignment and the southern alignment. The entirety of the project area is in the Rio Linda community of northern Sacramento County, California (Exhibit 1). The southernmost portion of the northern alignment begins east of the Cherry Island Soccer complex and is bounded by Dry Creek to the west and U Street to the south. The alignment continues northeast before dipping south along Goat/Sierra Creek before continuing north between 28th Street and the Cherry Island Golf Course. The alignment then cuts west with Cherry Island Golf Course to the south and residential areas to the north before continuing north across Elverta Road. The alignment then follows the east bank of Dry Creek and is bounded by Antelope Greens Golf Course to the west to the approximate Placer County line. Most of the surrounding area is developed for residential and recreational use. The northernmost point of the southern alignment begins at the intersection of Curved Bridge Road and Dry Creek Road and runs south along the eastern side of Dry Creek Road until just before it reaches Dry Creek. At that point, the alignment cuts east, crossing county-owned parcels until it reaches and crosses a perennial stream (an unnamed tributary to Dry Creek) on the westernmost side of the alignment.

#### Climate and Topography

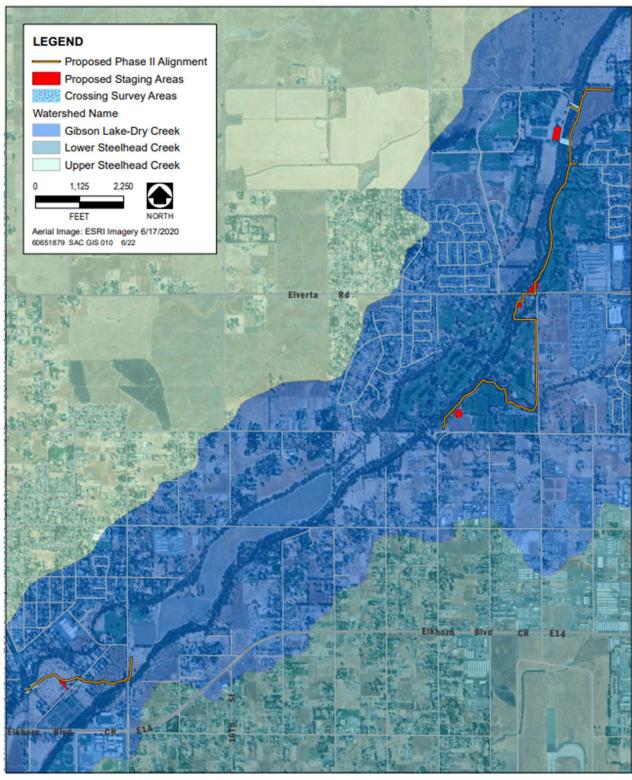
The project area is located within the Mediterranean California sub-region of the Arid West Region, which is characterized by relatively warm, wet winters and dry summers, with most of the precipitation falling between November and April (USACE 2008). During the 2021 reconnaissance survey, weather conditions were sunny with high temperatures between 65° and 70° Fahrenheit, and winds ranging from 0 to14 miles per hour (mph). During the 2022 reconnaissance survey, weather conditions were sunny with high temperatures between 70° and 75°, and winds ranging from 0 to 20 mph.

The nearest National Weather Service station to the project area with a complete climate summary, as reported by the Western Regional Climate Center (WRCC), is in Sacramento California (WRCC 2021). Based on records from the Sacramento Station, the project area receives an average of 18.15 inches of rainfall each year, with most rainfall occurring from December to March (WRCC 2021).

Topography in the project area is generally flat (0–2%). The elevation within the northern alignment varies between approximately 60 feet above mean sea level (AMSL) and 90 feet AMSL, generally increasing from south to north along the 2.6-mile project alignment. The elevation within the southern alignment varies between approximately 40 feet AMSL and 90 feet AMSL, generally increasing from west to east along the 0.6-mile project alignment.

#### Hydrology

The study area is within the boundary of the Gibson Lake-Dry Creek Watershed and the Lower Steelhead Creek Watershed (Exhibit 4). Hydrology in the project area is a combination of natural direct seasonal precipitation and intermittent urban runoff from adjacent areas which contribute to the following aquatic resource types found onsite: Perennial Riverine, Intermittent Riverine, and ditches. Drainage gradients across the site flow generally from northeast to southwest. There are two blue-line waterways that occur within and immediately adjacent to the study area, Dry Creek and Sierra/Goat Creek (USGS 2021). Both blue-line waterways are Palustrine systems and seasonally flooded water regimes, meaning they are nontidal wetlands dominated by trees and shrubs with surface water present for extended periods, but generally absent by the end of the growing season (USGS 2021). The Sierra/Goat Creek channel runs generally in a westerly and southerly direction into Dry Creek. Dry Creek flows southwest along to Steelhead Creek (a.k.a. the Natomas East Main Drainage Canal), which drains south and west to the American River, a traditional navigable waterway (TNW).



Source: NRCS 2020

**Exhibit 4. Watershed Map** 

The nearest weather station is a rain accumulation sensor at the Rio Linda Station near the intersection of Chesney Way and Q Street in Rio Linda (#47321), approximately 2.45 miles southwest of the northern alignment and 0.75 miles north of the southern alignment (Sacramento County 2021). At the time of the 2021 field investigation, 5.32 inches of precipitation (below average) had been recorded for the 2021 water year, which began on October 1, 2020. The last precipitation recorded in 2021 prior to the field survey was 0.08 inches on February 19<sup>th</sup> (Sacramento County 2021). In the 13 days following the survey date, 1.22 inches of rainfall was recorded between March 6<sup>th</sup> and March 18<sup>th</sup>, accumulating 6.54 inches of rainfall for the current rain year (Sacramento County 2021). At the time of the 2022 field investigation, 15.52 inches of precipitation (below average) had been recorded for the 2022 water year, which began on October 1, 2021. The last precipitation recorded in 2022 prior to the field survey was 0.82 inches on March 28<sup>th</sup> (Sacramento County 2022). In the 16 days following the survey date, 0.75 inches of rainfall was recorded between April 1<sup>st</sup> and April 16<sup>th</sup>, accumulating 16.27 inches of rainfall for the current rain year.

#### Soils

According to NRCS Soil Survey of Sacramento County, California (NRCS 2022a), the soils within the study area belong to five soil series: Liveoak sandy clay loam, 0–2 % slopes, occasionally flooded, Fiddyment fine sandy loam, 1–8% slopes, Reiff fine sandy loam, 0–2 % slopes, occasionally flooded, Xerofluvents, 0–2 % slopes, flooded, and Xerarents-San Joaquin complex, 0–1% slopes (NRCS 2022a) which are described below and presented in Exhibit 5 and Exhibit 6. The specific soil map unit occurring within the project area and its hydric status, according to the National Hydric Soils List, (NRCS 2022b) are presented below in Table 1, and the location of each soil unit within the project area, as mapped by NRCS, is depicted on the soils map in Exhibit 5 and Exhibit 6.

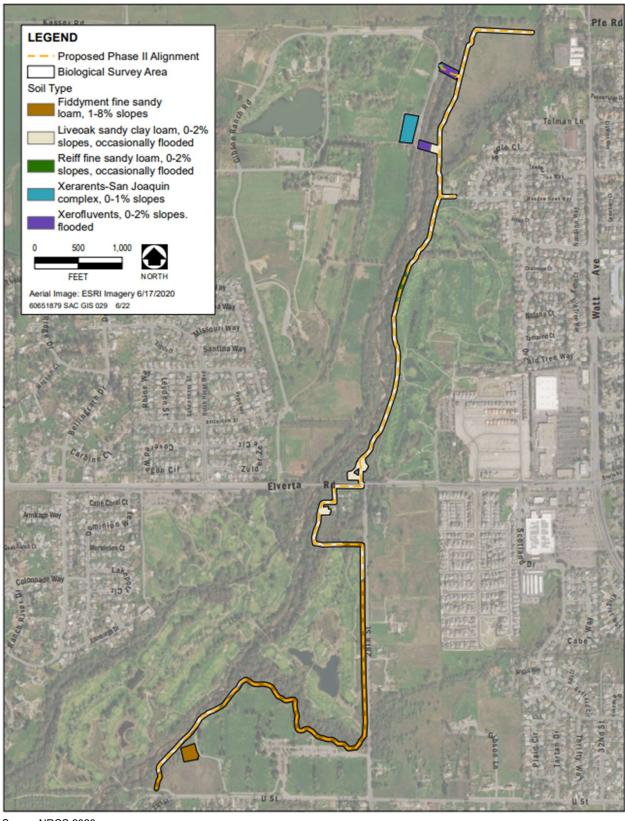
**Table 1. Soil Units Present Within Project Area** 

Soil Unit	Hydric Soil
Liveoak sandy clay loam, 0–2 % slopes, occasionally flooded	No
Fiddyment fine sandy loam, 1–8% slopes	No
Reiff fine sandy loam, 0–2 % slopes, occasionally flooded	No
Xerofluvents, 0–2 % slopes, flooded	Yes
Xerarents-San Joaquin complex, 0-1% slopes	No

Source: NRCS 2022a, NRCS 2022b. Data Compiled by AECOM in 2021

#### Liveoak Sandy Clay Loam, 0-2 % Slopes, Occasionally Flooded

The Liveoak sandy clay loam, 0–2 % slopes, occasionally flooded map unit is composed of Liveoak (85 percent) major soil type and Columbia (5 percent), Sailboat (4 percent), Unnamed A (4 percent), and Unnamed B (2 percent) inclusions or minor components. Two inclusions, Columbia and Sailboat, are listed as hydric (NRCS 2022b). The parent material of the major soil component is alluvium derived from granite. Liveoak soils are well to moderately well drained and have negligible to low runoff and moderate permeability. Liveoak soils are on low alluvial terraces and distributary channels and are occasionally susceptible to flooding. Slopes are 0 to 2 percent. Elevation ranges from 15 to 110 feet. The climate where this soil is found is sub-humid with hot dry summers and cool moist winters. Soils are used for cropland and grazing. Main crops include fruits, nuts, small grains, and irrigated orchards and row crops. The taxonomic classification of Liveoak soils is Fine-loamy, mixed, superactive, thermic Typic Haploxerolls (NRCS 2022b).



Source NRCS 2020

**Exhibit 5. Soils Map (Northern Alignment)** 



Source NRCS 2020

**Exhibit 6. Soils Map (Southern Alignment)** 

#### Fiddyment Fine Sandy Loam, 1-8% Slopes

The Fiddyment fine sandy loam, 1–8% slopes map unit is composed of Fiddyment (85 percent) major soil type and Andregg (3 percent), Redding (3 percent), Orangevale (3 percent), Xerarents (2 percent), Unnamed A (2 percent) and Unnamed B (2 percent) inclusions or minor components. No components are listed as hydric (NRCS 2022b). The parent material of the major soil component is residuum derived by sedimentary rock. Fiddyment soils are well drained and have slow to medium runoff and very slow permeability. Fiddyment soils are on low terraces and hills. Slopes are 0 to 15 percent. Elevation ranges from 50 to 350 feet. The climate where this soil is found is sub-humid with hot dry summers and cool moist winters. These soils are used for rangeland, non-irrigated crops, and urban development. The taxonomic classification of Fiddyment soils is Fine-loamy, mixed, superactive, thermic Typic Durixeralfs (NRCS 2022b).

#### Reiff Fine Sandy Loam, 0–2% Slopes, Occasionally Flooded

The Reiff fine sandy loam, 0–2 % slopes, occasionally flooded map unit is composed of Reiff (85 percent) major soil type and Coyotecreek (3 percent), San Joaquin (3 percent), Sailboat (3 percent), Hicksville (3 percent), Vina (2 percent) and Unnamed (1 percent) inclusions or minor components. One inclusion, Sailboat, is listed as hydric (NRCS 2022b). The parent material of the major soil component is alluvium. Reiff soils are well drained and have very slow to slow runoff and moderately rapid permeability. Reiff soils are on floodplains and alluvial fans. Slopes are 0 to 2 percent. Elevation ranges from 30 to 500 feet. The climate where this soil is found is sub-humid with hot dry summers and cool moist winters. These soils are used for row, field, and orchard crops. The taxonomic classification of Coarse-loamy, mixed, superactive, nonacid, thermic Mollic Xerofluvents (NRCS 2022b).

#### Xerofluvents, 0-2 % Slopes, Flooded

The Xerofluvents, 0–2 % slopes, flooded map unit is composed of Xerofluvents (90 percent) major soil type and Riverwash (4 percent), Rossmoor (3 percent), and Xerorthents (3 percent) inclusions or minor components. Both the major component and major inclusion, Riverwash, are listed as hydric (NRCS 2022b). The parent material of the major soil component is alluvium. Xerofluvents soils are somewhat excessively well drained and have very slow to slow runoff and moderately rapid permeability. Xerofluvents soils are on nearly level to channeled floodplains and recent alluvial fans. Slopes are 0 to 1 percent. Elevation ranges from 150 to 300 feet. The climate where this soil is found is semi arid with hot dry summers and cool moist winters. The taxonomic classification of Coarse-silty, mixed, superactive, calcareous, thermic Typic Xerofluvents (NRCS 2022b).

#### Xerarents-San Joaquin Complex, 0-1% Slopes

The Xerarents-San Joaquin complex, 0–1% slopes map unit is composed of Xerarents (65 percent) and San Joaquin (20 percent) major soil types and Columbia (3 percent), Clear Lake (3 percent), Sailboat (2 percent), Red Bluff (2 percent), Redding (2 percent), Durixeralfs (2 percent), and Unnamed (1 percent) inclusions or minor components. Three inclusions- Columbia, Clear Lake, and Sailboat- are listed as hydric (NRCS 2022b). The parent material of the major soil component is alluvium derived from granite. Xerarents soils are well drained and have very slow to slow runoff and moderately rapid permeability. Xeraarents soils are on nearly level to channeled floodplains and recent alluvial fans. Slopes are 0 to 1 percent. Elevation ranges from 0 to 100 feet. The climate where this soil is found is semi-arid with hot dry summers and cool moist winters. (NRCS 2022b).

#### **Land Cover Types**

The land cover types and associated vegetation communities present within the 24.12 acre study area are documented during the field survey and described below (Exhibit 7 through Exhibit 11). Vegetation communities are assemblages of plant species defined by the composition and relative abundance of one or more dominant and associate plant species that occur together in the same area. All plant species observed during the field survey along with their wetland indicator status are listed in Appendix A, and representative photographs are provided in Appendix B.



Exhibit 7. Vegetation Communities and Land Cover Types (Map 1 of 5)

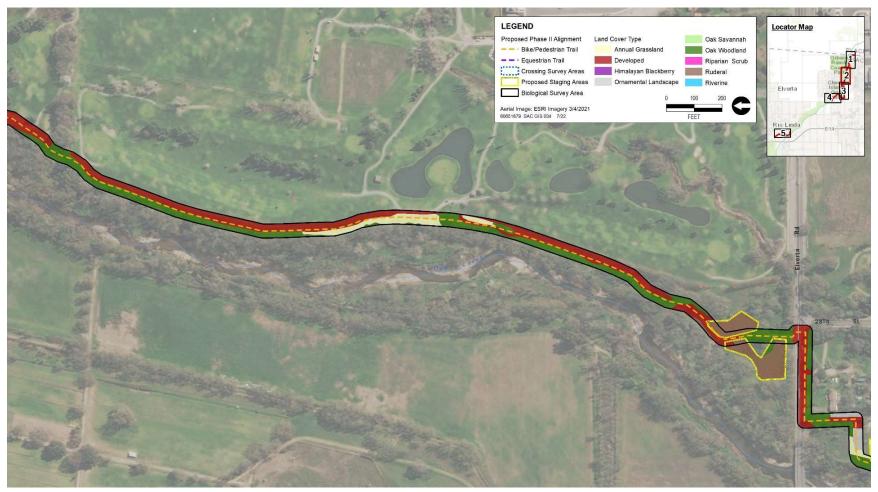


Exhibit 8. Vegetation Communities and Land Cover Types (Map 2 of 5)



Exhibit 9. Vegetation Communities and Land Cover Types (Map 3 of 5)



Exhibit 10. Vegetation Communities and Land Cover Types (Map 4 of 5)

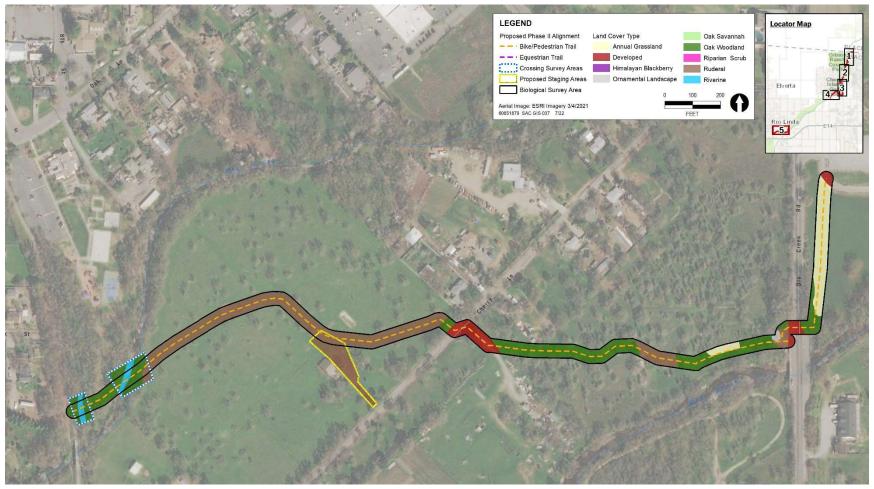


Exhibit 11. Vegetation Communities and Land Cover Types (Map 5 of 5)

#### **Annual Grassland**

Annual grasslands and pastures account for approximately 3.19 acres within the study area. The annual grassland community can be best described as an *Avena* (*barbata*, *fatua*) Herbaceous Semi-Natural Alliance, according to the Manual of California Vegetation (CNPS 2021). This vegetation alliance typically is dominated by wild oats (*Avena barbata* and/or *Avena fatua*). The annual grassland vegetation in the study area is composed primarily of nonnative annual grasses, including wild oats (*Avena* spp.) (NL), foxtail barley (*Hordeum murinum*) (FACU), ripgut brome (*Bromus diandrus*) (NL), red brome (*Bromus madritensis* ssp. *rubens*) (UPL), and rattail six weeks fescue (*Festuca myuros*) (NL). Forbs scattered throughout the grassland include wild radish (*Raphanus* spp.) (NL), winter vetch (*Vicia villosa* ssp. *varia*) (NL), milk thistle (*Silybium marianum*) (NL), yellow star thistle (*Centuarea solstitialis*) (NL), common fiddleneck (*Amsinckia intermedia*) (NL), and prickly lettuce (*Lactuca serriola*) (FACU).

#### Developed

Developed areas within the study area account for approximately 8.45 acres. These areas are characterized by human development which result in frequent and severe disturbance including mowing, weed-eating, herbicide application, and other human activities. Developed areas within the study area include mowed turf fields of the Cherry Island Soccer Complex, Northbrook Park, and the Antelope Greens Golf Course, as well as other horticultural landscape areas, walkways and other pathways, roads, road shoulders, parking areas, and transient campsites. Vegetation associated with developed areas in the study area consists of dandelion (*Taraxacum officinale*) (FACU), scarlet pimpernel (*Lysimachia arvensis*) (FAC), dove's-foot geranium (*Geranium mole*) (NL), white clover (*Trifolium repens*) (FACU), annual bluegrass (*Poa annua*) (FAC), willowherb (*Epilobium brachycarpum*) (FAC), fillaree (*Erodium* spp.) (FACU), bull thistle (*Cirsium vulgare*) (FACU), shepard's purse (*Capsella bursa-pastoris*) (FACU), common mouse ear chickweed (*Cerastium fontanum*) (FACU), and sweetgum (*Liquidambar styraciflua*) (FAC).

#### **Valley Oak Woodland**

Valley oak woodland accounts for approximately 7.26 acres within the study area. The valley oak woodland community can be best described as a *Quercus* Forest Alliance with intermittent to continuous canopy, according to the Manual of California Vegetation (CNPS 2021). This vegetation alliance typically is dominated by valley oak (*Quercus lobata*) and interior live oak (*Quercus wislizeni*). In the project area, dominant species are valley oak (FACU), interior live oak (NL), and with some Oregon ash (*Fraxinus latifolia*) in the southern alignment. There is an open to continuous shrub layer of Himalayan blackberry (*Rubus armeniacus*) (FAC), Callery pear (*Pyrus calleryana*) (NL), almond (*Prunus dulcis*) (NL), black locust (*Robinia pseudoacacia*) (FACU), privet (*Ligustrum* spp.) (FACU or UPL), and some elderberry (*Sambucus nigra*) (FACU) and coffeeberry (*Frangula californica*) (FACU) shrubs. Herbaceous vegetation includes miner's lettuce (*Claytonia perfoliata*) (FAC), fennel (*Foeniculum vulgare*) (NL), mugwort (*Artemesia douglasiana*) (FAC), and white horehound (*Marrubium vulgare*) (FACU).

#### Valley Oak Savannah

Valley oak savannah accounts for approximately 1.35 acres within the study area. The valley oak savannah community can be best described as an *Avena* (*barbata, fatua*) Herbaceous Semi-Natural Alliance, according to the Manual of California Vegetation (CNPS 2021). In the study area, dominant species are wild oats, foxtail barley, and ripgut brome intermixed with yellow star thistle and scattered small-to-medium sized valley oak and interior live oak.

#### Riparian Scrub

Riparian scrub accounts for approximately 0.13 acre within the study area. In the study area, dominant species are naturalized nonnative tree species such as privet, almond, and Callery pear intermixed with Oregon ash (*Fraxinus latifolia*) (FACW), with an herbaceous understory vegetation community of valley sedge (*Carex barbarae*) (FAC), English plantain (*Plantago lanceolate*) (FAC), miniature lupine (*Lupinus bicolor*) (NL), scarlet pimpernel (*Lysimachia arvensis*) (FAC), miner's lettuce (*Claytonia perfoliate*) (FAC), and California wild rose (*Rosa californica*) (FAC).

#### Ruderal

Ruderal areas within the study area account for approximately 3.32 acres. Ruderal areas within the study area include an area that had previously been occupied by an English walnut orchard, and is now being grazed by cattle, and other areas that have been disturbed and overgrown by non-native invasive plants.

These areas are dominated by non-native grasses, milk thistle (*Silybum marianum*) (NL), wild radish (*Raphanus raphanistrum*) (NL), foxtail (*Alopecurus* spp.) (FAC, FACW, or OBL), wild fennel (*Nigella arvensis*) (NL), wild oats (*Avena sativa*) (UPL), and ripgut brome (*Bromus diandrus*) (NL).

#### **Ornamental Landscape**

Ornamental landscape areas within the study area account for approximately 0.12 acres. These areas are dominated by almond trees (*Prunis dulcis*) (NL) and black locust (*Robinia pseudoacacia*) (FACU).

#### **Aquatic Features**

Aquatic features mapped within the study area and associated vegetation communities documented during the field survey are described below and shown on Exhibit 12 through Exhibit 16. All plant species observed during the field survey along with their wetland indicator status are listed in Appendix A, and representative photographs are provided in Appendix B.

#### Ditch

Several manmade drainages (ditches) border roadways and other developed areas and are subject to many types of disturbance including roadway runoff, traffic, irrigation runoff, and stormwater structures. Three of these features cross the study area and together make up approximately 0.06 acre of the study area. One ditch crosses where the proposed alignment parallels the eastern (Ditch1); the second crosses the study area along the western boundary of the Antelope Greens Golf Course (Ditch 2). Heavy disturbance has rendered much of this ditch barren. Where vegetation is present it is primarily dominated by non-native species such as annual bluegrass. Other less dominant common species include dove's foot geranium, scarlet pimpernel, and bull thistle. The third ditch (Ditch 3) crosses the study area on the westernmost portion of the southern alignment, under the smaller proposed crossing. The vegetation within this feature is dominated by plants in the buttercup (*Ranunculus*) genus.

#### **Perennial Riverine**

Perennial riverine features within the study area include the Sierra /Goat Creek (Feature Identification [ID] PR2) and Dry Creek (Feature ID PR1 and PR3) channels which parallel and briefly cross the project alignment and constitute approximately 0.15 acre of the study area (Exhibit 12 through Exhibit 16). Feature ID PR3 can be best described as an offshoot of Dry Creek, that diverges from Dry Creek near Elverta Road in the north and drains back into Dry Creek near Rio Linda Boulevard in the south. Both are freshwater streams that, based on a review of aerial imagery of photos taken between 1985 and 2020 (Google Earth 2020), are characterized by nearly year-round hydrology.

The Sierra/Goat Creek channel bottom and banks consist of unconsolidated fines. The area surveyed was approximately 8 feet wide and 2 to 3 feet deep. Channel banks are steep, incised, and generally densely vegetated by grasses and forbs including common bog rush, valley sedge, and miner's lettuce. The tops of banks are heavily vegetated with valley oak trees and Himalayan blackberry in the valley oak woodland vegetation community (CNPS 2021). Dead fish, downed branches, and trash were abundant in the portion surveyed during the 2021 and 2022 surveys.

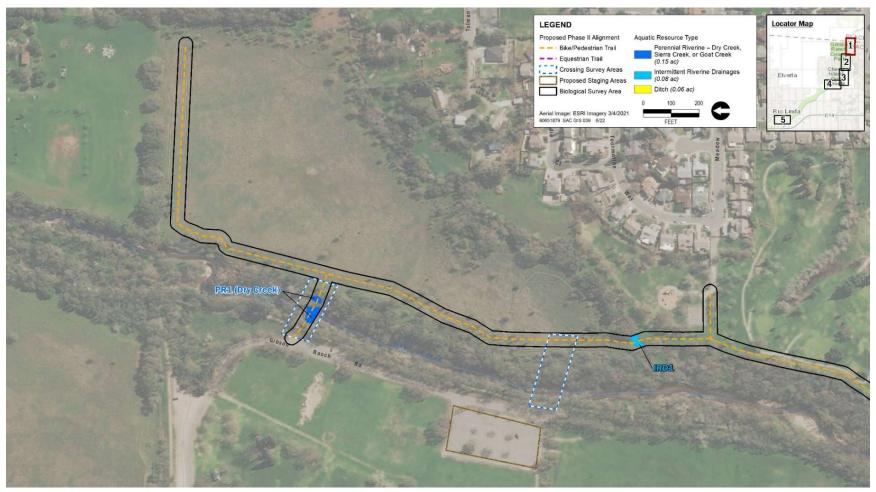


Exhibit 12. Aquatic Resources Map (Map 1 of 5)

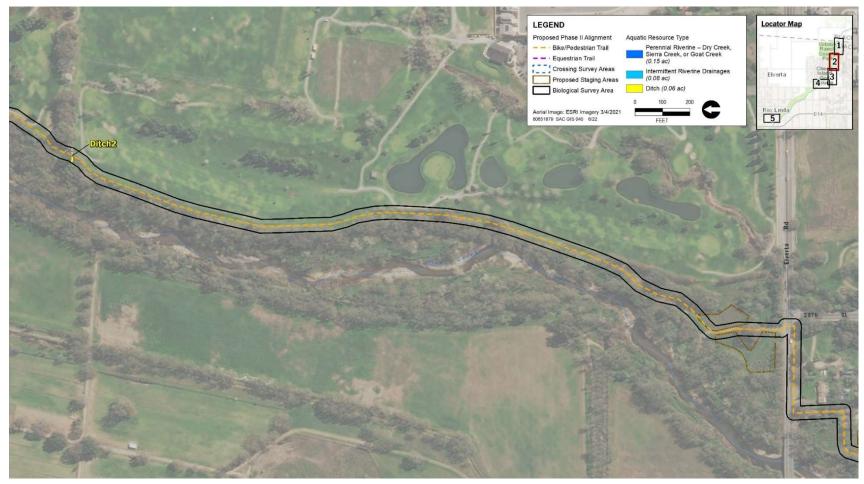


Exhibit 13. Aquatic Resources Map (Map 2 of 5)

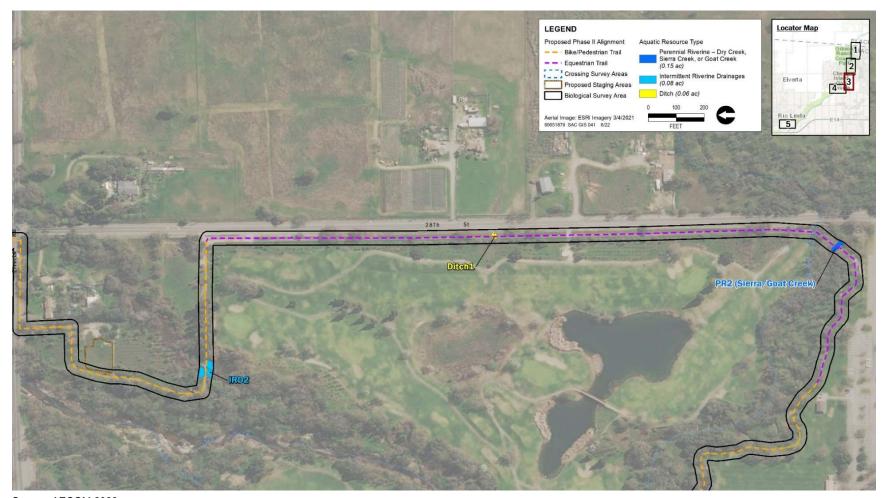


Exhibit 14. Aquatic Resources Map (Map 3 of 5)



Exhibit 15. Aquatic Resources Map (Map 4 of 5)

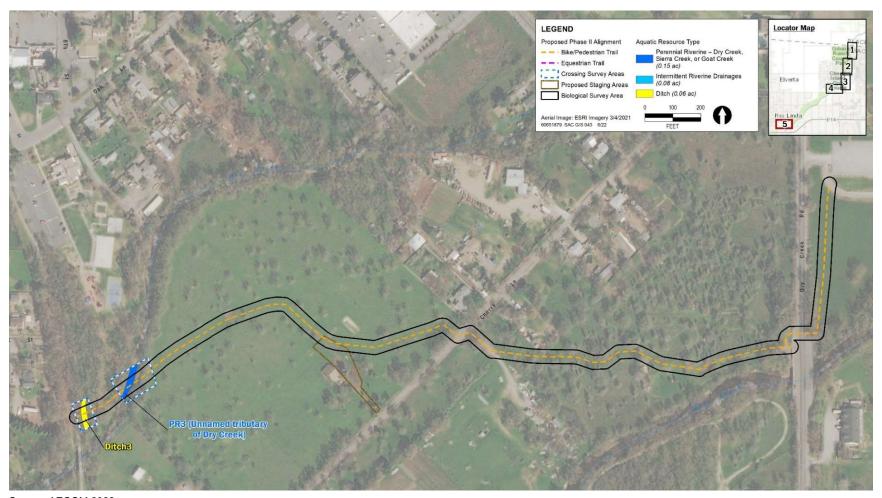


Exhibit 16. Aquatic Resources Map (Map 5 of 5)

The Dry Creek channel parallels a greater extent of the study area and conditions are more variable than on Sierra/Goat Creek. The channel bottom and bank of Dry Creek consist of unconsolidated fines, and its banks are generally less steep compared to Sierra/Goat Creek. Dry Creek is occasionally open and sandy at the bottom of banks forming beaches. Channel dimensions vary along the project alignment but are approximately 20 feet wide and 6 to 8 feet deep on average. The vegetation community along the base of Dry Creek's creek banks can best be described as *Carex barbarae* Herbaceous alliance, according to the Manual of California Vegetation (CNPS 2021). Dominant species include valley sedge and fringed willowherb (*Epilobium ciliatum*) (FAC). In the study area dominant bank vegetation included horsetail, valley sedge, and fringed willowherb. The upper banks are characterized by a Valley Oak Woodland Forest Alliance with intermittent to continuous canopy (CNPS 2021).

The southern portion of the project alignment traverses Park Rio Linda and runs perpendicular to two offshoots of Dry Creek that splits at Elverta Road in the north and reconnects near Rio Linda Boulevard in the south. The vegetation community along the upper banks can be best described as *Quercus* Forest Alliance, with an understory consisting of mowed ruderal grassland.

#### **Intermittent Riverine Drainages**

Two intermittent drainages occur within the study area perpendicular to the project alignment, one immediately north of Northbrook Park (Feature ID IRD1) and perpendicular to Dry Creek, and one along the portion of the project alignment that parallels the northern boundaries of the Cherry Island Golf Course. These features account for approximately 0.08 acre of the study area.

The area surrounding Feature IRD1 is developed for recreational use and thus experiences frequent human disturbance including mowing, sporting events, and horseback riding. Water in the channels is likely only present immediately following rainfall events resulting from high-water levels in Dry Creek. The feature class's vegetation community can be best described as a *Brassica nigra – Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance with open to continuous canopy, according to the Manual of California Vegetation (CNPS 2021). This vegetation alliance typically is dominated by field mustard (*Brassica rapa*) and yellow star thistle. In the study area, the intermittent drainages are dominated by cut leaf geranium (*Geranium dissectum*) (NL), field mustard (*Brassica rapa*) (FACU), fringed willowherb, sour grass (*Oxalis stricta*) (FACU), rough cocklebur (*Xanthium strumarium*) (FAC), and yellow star thistle.

The area surrounding Feature IRD2 consists primarily of Oak Woodland (dominated by live oak), Himalayan blackberry thicket, and ruderal vegetation. This intermittent riverine drainage is adjacent to the Cherry Island Gold Course, and thus this area likely experiences anthropogenic disturbances. Water in the channels is likely present during the wet season, and absent during the dry summer months. The feature class's vegetation community can be best described as a Rubus armeniacus, Sesbania punicea, Ficus carica Shrubland Semi-Natural Alliance with intermittent to continuous canopy, according to the Manual of California Vegetation (CNPS 2021). This vegetation alliance typically is dominated by Himalayan blackberry and common fig (Ficus carica). Within the portion of the project area that this aquatic feature occupies, the dominant vegetation is a dense shrub layer of Himalayan blackberry (FAC) with interior live oak canopy cover.

# **Survey Results**

This section presents the results of the 2021 and 2022 aquatic resources survey. All aquatic features are depicted on the aquatic resources map provided as Exhibit 12 through Exhibit 16.

#### **National Wetlands Inventory**

There are six wetlands or other aquatic features mapped in the NWI for the project area extent (Exhibit 17 and Exhibit 18) representing two classification types (freshwater forested/shrub wetland and riverine). In the northern alignment, the NWI identifies twenty-seven distinct, unnamed features within one mile of the project area four classification types (freshwater emergent wetland, freshwater forested/shrub wetland, freshwater pond, and riverine) (USFWS 2020). The NWI maps Dry Creek and Sierra/Goat Creek as freshwater forested/shrub wetland. Within the southern alignment, the NWI identifies fifteen unnamed features within one mile of the project area, having four classification types (freshwater emergent wetland, freshwater forested/shrub wetland, freshwater pond, and riverine) (USFWS 2020).

North of Elverta Road, Dry Creek is classified as PFOA (palustrine, forested, temporarily flooded), meaning that it is a nontidal wetland dominated by woody vegetation greater than 6 meters in height. Based on observations made in the field and review of historical aerial imagery (Google Earth 2020), Dry Creek appears to be characterized by surface water for most of the year although it may dry up toward the end of the growing season. The feature runs largely parallel to the project alignment, southwest to Steelhead Creek (a.k.a. the Natomas East Main Drainage Canal), which drains south and west to the American River, a TNW.

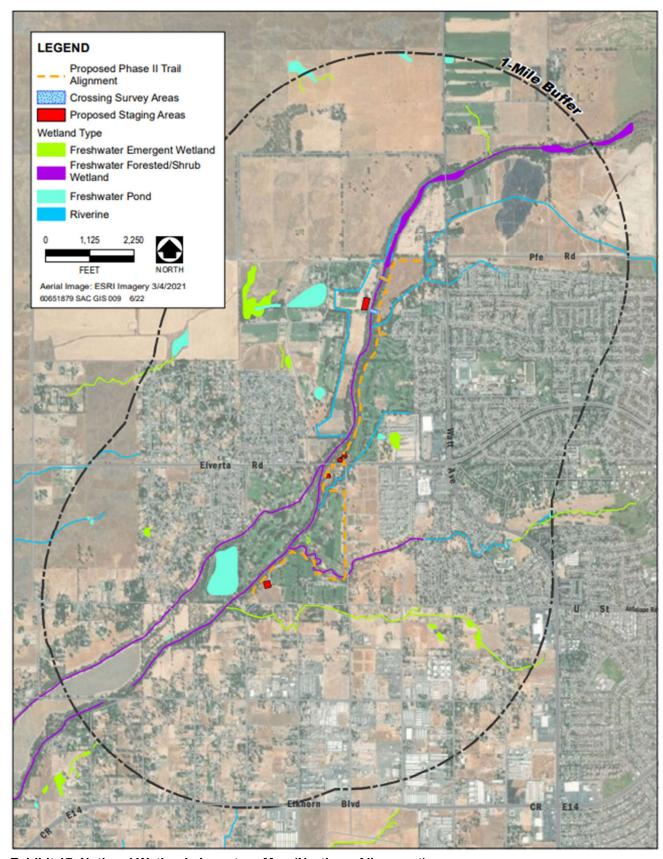
South of Elverta Road, Dry Creek branches into two streams, reconnecting approximately 4 miles downstream, just south of Rio Linda Boulevard. This offshoot of Dry Creek is classified as PFOC (palustrine, forested, seasonally flooded), meaning that it is a nontidal wetland dominated by woody vegetation greater than 6 meters in height. Based on observations made in the field and review of historical aerial imagery (Google Earth 2020), Dry Creek appears to be characterized by surface water for most of the year although it may dry up toward the end of the growing season. The feature runs largely parallel to the project alignment, southwest to Steelhead Creek (a.k.a. the Natomas East Main Drainage Canal), which drains south and west to the American River, a TNW.

Sierra/Goat Creek is classified as PSSC (palustrine, scrub-shrub, seasonally flooded), meaning that it is a nontidal wetland dominated by woody vegetation less than 6 meters in height. Based on observations made in the field and review of historical aerial imagery (Google Earth 2020), Sierra/Goat Creek appears to be characterized by surface water for most of the year although it may dry up toward the end of the growing season. The Sierra Creek channel runs generally in a westerly and southerly direction along the study area into Dry Creek and is likely recharged via irrigation and precipitation runoff.

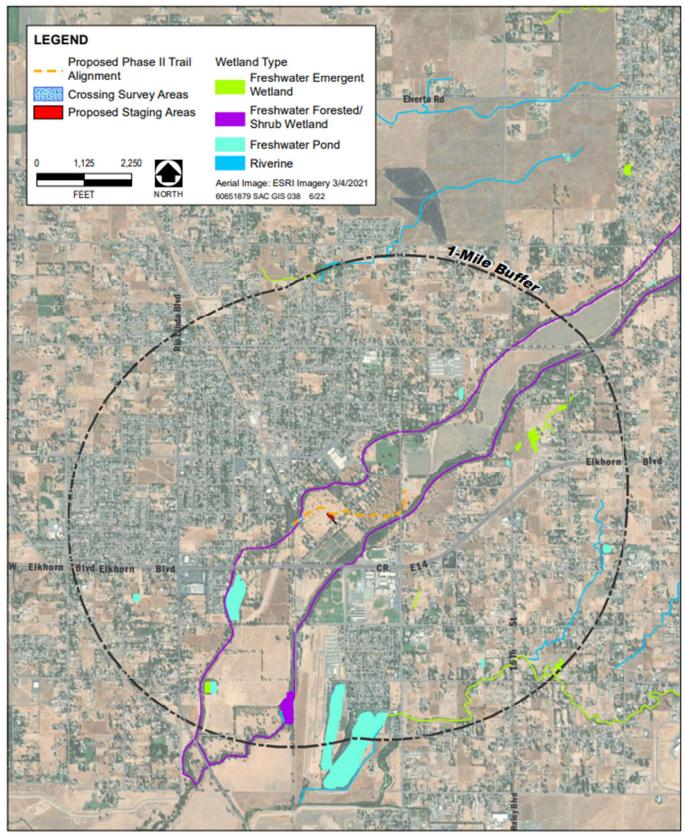
The other three features are unnamed riverine features mapped by the NWI as tributaries to Dry Creek.

The first, located at the far northern end of the study area near the Placer County line, is categorized as R5UBF (riverine, unknown perennial, unconsolidated bottom, semi permanently flooded), meaning that is wetland contained within a channel of unknown distinction with at least 25% cover being smaller than stones and regular presence of surface water. Based on field observations and review of historical aerial imagery (Google Earth 2020), this feature appears to be synonymous with Dry Creek.

The second, located just north of Northbrook Park, is classified as R4SBC (riverine, intermittent, streambed, seasonally flooded), meaning that it is wetland contained within a channel that contains flowing water for only part of the year, often in the growing season. This feature appears to drain westerly into Dry Creek and was mapped as an intermittent riverine drainage during the site visit. No water was observed in the channel during the 2021 nor 2022 surveys. Historical aerial imagery (Google Earth 2020) did not depict any prolonged periods where flowing water occurred in the channel.



**Exhibit 17. National Wetlands Inventory Map (Northern Alignment)** 



**Exhibit 18. National Wetlands Inventory Map (Southern Alignment)** 

The third, south of Elverta Road just West of Cherry Island golf-course, is classified as R4SBC (riverine, intermittent, streambed, seasonally flooded), meaning that it is wetland contained within a channel that contains flowing water for only part of the year, often in the growing season. This feature as mapped up to Dry Creek, however during the 2021 and 2022 field efforts this feature appeared to be interrupted by unofficial roads and walkways likely utilized by nearby residents and/or neighboring encampments. The feature was mapped as a ditch. The only hydrology observed in the feature was approximately 2 to 3 inches of standing water. Historical aerial imagery review was not helpful in determining historic presence of surface water due to dense tree canopy in the project area.

#### **Aquatic Resources Features**

Eight aquatic features in the project area account for a total of 0.30-acres within the 24.12-acre study area (Exhibit 12 through Exhibit 16). Approximate acreages of each feature are summarized in Table 2.

**Table 2. Aquatic Features** 

Aquatic Feature Type		Acres
Perennial Riverine		
PR1 (Dry Creek)		0.07
PR2 (Sierra/Goat Creek)		0.02
PR3 (Unnamed tributary of Dry Creek)		0.06
	Total	0.15
Intermittent Riverine Drainages		
IRD1		0.03
IRD2		0.05
	Total	0.08
Ditches		
Ditch1		0.01
Ditch2		0.01
Ditch3		0.05
	Total	0.07
Total Aquatic Features		0.30

Source: Data compiled by AECOM in 2021 and 2022

Perennial riverine (PR) features in the study area include Goat/Sierra Creek (PR1) and Dry Creek (PR2). Both creeks were inundated at the time of the survey. Goat/Sierra Creek connects to Dry Creek in the southern portion of the northern alignment area, immediately north of the Cherry Island Soccer Complex. Dry Creek overlaps with the study area in the northernmost reach of the proposed alignment in two main locations: one where a bridge is proposed to be placed across Dry Creek near the northern end of Gibson Ranch Park; and the other where a portion of the eastern bank of Dry Creek cuts into the survey area north of the proposed bridge. Dry Creek also overlaps with the study area at the westernmost point of the southern alignment, immediately west of Park Rio Linda. Based on field observations and the review of aerial imagery over time, Dry Creek is connected to the Natomas East Main Drainage Canal which is tributary to the American River, a TNW.

There are two intermittent riverine drainages (IRD) in the study area in the northern portion of the study area; one that slopes from east to west near Northbrook Park (IRD1) and one that slopes northeast to southwest just north of the Cherry Island Golf Course (IRD2). There was water present in these drainages at the time of the 2021 and 2022 surveys. Based on field observations and the review of aerial imagery over time, these drainages appear to only support intermittent flow during the wet season and they are connected to Dry Creek, which is connected to the Natomas East Main Drainage Canal, a tributary to the American River.

There are three ditches in the study area (Ditch1, Ditch 2, and Ditch 3). Ditch1 and Ditch 2 appear to convey ephemeral/seasonal runoff as well as landscape irrigation runoff from adjacent properties. Based on field observations and the review of aerial imagery over time, the ditches appear to only support ephemeral flow during and briefly after storm events and are generally isolated and not connected to

tributaries, TNW's, or other jurisdictional waters. However, the ditch mapped in the northern portion of the study area, along the edge of the Antelope Greens Golf Course, may connect to Dry Creek, which is connected to the Natomas East Main Drainage Canal, a tributary to the American River. Ditch 3 is a roadside ditch that parallels the Sacramento Northern Bike Trail on the east side. This ditch likely serves to support ephemeral flow during and briefly after storm events. Ditch 3 may connect to Dry Creek, which is connected to the Natomas East Main Drainage Canal, a tributary to the American River. A bridge is proposed for construction across this ephemeral drainage.

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WRCC. See Western Regional Climate Center.

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# **Appendix A | Plant Species Observed**

Table A-1. Plant Species Observed in Study Area

Scientific Name	Common Name	Indicator Status <sup>1</sup>
Acer negundo	box elder	FACW
Amsinckia intermedia	common fiddleneck	NL
Aristolochia californica	California pipe vine	NL
Artemisia douglasiana	mugwort	FAC
A <i>vena</i> sp.	wild oats	-
Brassica rapa	field mustard	FACU
Bromus madritensis ssp. rubens	red brome	UPL
Bromus diandrus	ripgut brome	NL
Capsella bursa-pastoris	shepard's purse	FACU
Carex barbarae	valley sedge	FAC
Centaurea solstitialis	yellow star thistle	NL
Cerastium fontanum	common chickweed	FACU
Cirsium vulgare	bull thistle	FACU
Claytonia perfoliata	miner's lettuce	FAC
Conium maculatum	poison hemlock	FACW
Cyperus eragrostis	tall cyperus	FACW
Epilobium ciliatum	fringed willowherb	FACW
Epilobium brachycarpum	willowherb	FAC
Equisetum hyemale	horsetail	FACW
Erodium sp.	filaree	- -
Festuca myuros	rattail six weeks fescue	NL
Foeniculum vulgare	fennel	NL
Frangula californica	coffee berry	NL
Fraxinus latifolia	Oregon ash	FACW
Geranium dissectum	cut-leaf geranium	NL
Geranium molle	dove's foot geranium	NL
Holocarpha virgata	pitgland tarweed	NL
Hordeum murinum	foxtail barley	FACU
Juncus effusus	common bog rush	FACW
Lactuca serriola	prickly lettuce	FACU
Ligustrum sp.	privet	-
Liquidambar styraciflua	sweetgum	FAC
Lupinus bicolor	miniature lupine	NL
Lysimachia arvensis	scarlet pimpernel	FAC
Marah fabacea	California man-root	NL NL
Marrubium vulgare	white horehound	FACU
Oxalis stricta	sour grass	FACU
Plantago lanceolata	English plantain	FAC
Poa annua	annual bluegrass	FAC
Prunus dulcis	almond	NL NL
Pyrus calleryana	Callery pear	NL
Quercus lobata	valley oak	FACU
Quercus wislizeni	interior live oak	NL
Raphanus sp.	wild radish	-
Robinia pseudoacacia	black locust	- FACU
Rosa californica	California wild rose	FAC
Rubus armeniacus	Himalayan blackberry	FAC
Rumex sp.	dock	i AO
Rumex sp. Sambucus nigra ssp. caerulea	elderberrry	- FACU
Sambucus nigra ssp. caerulea Silybum marianum	milk thistle	NL
Sirybum mananum Taraxacum officinale	dandelion	FACU
raraxacum οπιсιπαιε Torilis arvensis		NL
	field hedge parsley	NL FACU
Toxicodendron diversilobum	poison oak	
Trifolium repens	white clover	FACU
Verbena litoralis	shore vervain	NL NI
<i>Vicia villosa</i> ssp. <i>varia</i>	winter vetch	NL

<sup>&</sup>lt;sup>1</sup> OBL=Obligate, FACW=Facultative Wetland, FAC = Facultative, FACU = Facultative Upland; UPL = Upland, NL= Not Listed Source: Compiled by AECOM in 2021; Baldwin et. al. 2012; USACE 2018

# Appendix B | Representative Photographs



Photo 1. Aquatic Feature PR1 – Sierra/Goat Creek, existing bridge crossing.



Photo 2. Aquatic Feature Ditch 1 – an existing pathway crosses through this ditch, which is adjacent to the western boundary of Cherry Island Golf Course.



Photo 3. Aquatic Feature IRD1 – steep drainage north of Northbrook Park. View is of location where parkway is proposed to cross through or across this drainage.



Photo 4. Aquatic Feature IRD1 – steep drainage north of Northbrook Park. View is of location where parkway is proposed to cross through or across this drainage.



Photo 5. Aquatic Feature PR2 (Dry Creek) – view is of location of the proposed bridge crossing to Gibson Ranch Park as taken from eastern bank.



Photo 6. Aquatic Feature PR2 (Dry Creek) – view is of location of the proposed bridge crossing to Gibson Ranch Park as taken from western bank.



Photo 7. Aquatic Feature Ditch 2 – small ditch with culvert that conveys runoff from Antelope Greens Golf Course to the west.



Photo 8. Segment of Dry Creek (PR2). This is the first of two potential locations for the proposed Dry Creek crossing. Photo taken on the east bank, looking north.



Photo 9. Segment of Dry Creek (PR2). This is the second of the two potential locations for the proposed Dry Creek crossing, approximately 900 feet south of the first tentative placement (see photo 9). Photo taken on the east bank looking west.



Photo 10. Representative photograph of the public lands/old walnut orchard that the southern alignment traverses.