Aquatic Resources Evaluation Report

Sacramento County Bradshaw Road/ Jackson Road Intersection Project

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TABLE OF CONTENTS

Tables

Appendices

ACRONYMS AND ABBREVIATIONS

CalTrans	California Department of Transportation
CFR	Code of Federal Regulation
County	Sacramento County
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
FAC	Facultative
FACU	Facultative upland
FACW	Facultative wetland
GPS	Global Positioning System
NL	Not listed
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWPR	Navigable Waters Protection Rule
OBL	Obligate
OHWM	Ordinary high water mark
OWUS	Other Waters of the United States
PEM1A	palustrine, emergent, persistent, temporarily flooded
PEM1Ax	palustrine, emergent, persistent, temporarily flooded, excavated
PEM1C	palustrine, emergent, persistent, seasonally flooded
PFOC	palustrine, forested, seasonally flooded
PUSCx	palustrine, unconsolidated shore, seasonally flooded, excavated
R2UBH	riverine, lower perennial, unconsolidated bottom, permanently flooded
TNWs	Traditional navigable waters
U.S.	United States
UPL	Obligate upland
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WGS 84	World Geodetic System datum

INTRODUCTION

On behalf of Sacramento County Office of Planning and Environmental Review (County), AECOM has prepared this aquatic resources delineation report documenting potential wetlands and waters of the United States (U.S.) for the Bradshaw Road/Jackson Road Intersection Project (the project), in eastern Sacramento County, California. The project comprises approximately 8.51 acres of Sacramento County and California Department of Transportation [CalTrans] right-of-way facilities (i.e., roadways, sidewalks, fence lines and adjacent vegetation) that form the intersection of Bradshaw Road and Jackson Highway (the project area). The purpose of this report is to provide an accurate quantification and delineation of potentially jurisdictional waters of the U.S., including wetlands, in accordance with 33 Code of Federal Regulations (CFR) §328 of the Clean Water Act (CWA) for the proposed project.

DELINEATION METHODS

To evaluate all areas of possible aquatic resources, including potentially jurisdictional wetlands and waters of the U.S., within the project area prior to the field delineation, an AECOM wetland ecologist used Google Earth to review aerial imagery at various times of the year from 1993 to 2018 (Google Earth 2020), the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Wetlands Mapper to review areas and types of wetlands (USFWS 2021), the U.S. Geological Survey (USGS) National Map (USGS 2020) to assess waterways, and the Natural Resources Conservation Service's (NRCS) Online Soil Survey (NRCS 2021a) to check for the presence of hydric soils. Two AECOM wetland ecologists, William Splittstoesser and Jasmine Wurlitzer, conducted a field survey on May 25, 2021.

The delineation of the project area was based on information and guidance in the *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Field Manual* (Lichvar and McColley 2008) and the U.S. Army Corps of Engineers (USACE) Regulatory Guidance Letter No. 05-05, which provides further guidance on OHWM identification (USACE 2005). The USACE Regulatory Guidance Letter No. 05-05 provides technical guidelines and methods for identifying waters that may be subject to USACE jurisdiction under Section 404 of the CWA.

Potentially jurisdictional areas (other waters) and the OHWM were identified and recorded digitally in the field using a Global Positioning System (GPS) data receiver (Trimble R1®) connected to an Apple® iPhone 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. No wetland determination data forms were completed because no wetlands are present. The potential aquatic resources in the project area are ten (10) roadside culvert ditches. A drainage feature's OHWM is typically defined by characteristics such as shelving, scour lines, and other natural linear features that define the bed-and-bank portion of the channel that floods under normal conditions (USACE 2005).

Eleven (11) OHWM worksheets were completed in the field by walking the ditches in and adjacent to the project area The OHWM of these features was identified primarily by a break in slope and changes in the amount of vegetation cover. Soil was assessed at strategic points at and adjacent to each ditch and indicated varying levels of inundation within the channels. The OHWM was recorded by walking along the slope break and shift in herbaceous cover, digitally recording lines. Of the eleven ditches mapped, ten (10) were determined to be within

the boundaries of the projectarea and one (Ditch #5) was determined to be outside the project area. Therefore, Ditch 5 is omitted from this analysis and the features subject to this evaluation report include Ditches 1–4, and 6–11.

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.
- 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 the data forms as NL and assumed to be UPL consistent with standard protocol.

Ditch hydrology was assessed by recording observations of drainage patterns, watermarks, flooded or saturated soil conditions, change in soil texture, and other indicators. In addition, potentially jurisdictional areas were evaluated in terms of their status as navigable waterways or their adjacency or hydrologic connections to navigable waterways.

REGULATORY SETTING

The regulatory setting is framed by current enabling legislation and case law. Under Section 404 of the CWA, the USACE regulates the discharge of dredged and fill materials into "waters of the U.S." Section 401 of the CWA (33 U.S.C. 1341) gives states and authorized tribes the authority to grant, deny, or waive certification of proposed federal licenses or permits that may discharge into waters of the United States. In California, the State Water Resources Control Board (SWRCB) and the nine (9) Regional Water Quality Control Boards (RWQCB) regulate California's water resources, and the approprite RWQCB requires any applicant of a federal license or permit conducting any activity that may result in a discharge of a pollutant into waters of the U.S. to obtain certification. Section 401 certification is required prior to issuance of a Section 404 permit.

JURISDICTIONAL WATERS OF THE U.S.

Jurisdictional waters of the U.S. include "territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide; tributaries; lakes and ponds, and impoundments of jurisdictional waters; and adjacent wetlands" (33 CFR § 328.3). Certain waters of the U.S. are considered "special aquatic sites" because they are generally recognized as having particular ecological value; such sites include sanctuaries and refuges, wetlands, mudflats, vegetated shallows, and riffle and pool complexes (40 CFR § 230). Special aquatic sites are defined by the U.S. Environmental Protection Agency (EPA) and may be afforded additional consideration in a project's permit process. The USACE also regulates navigable waters under Section 10 of the Rivers and Harbors Act of 1899. Navigable waters are defined as "… those waters of the U.S. that… are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce" (33 CFR § 322.2).

Projects that place fill in jurisdictional wetlands and non-wetland waters of the U.S. require a permit from the USACE under Section 404 of the CWA. Nationwide permits are issued by the USACE for specific types of activities that have minimal individual or cumulative adverse environmental impacts. Individual permits are required for large and/or complex projects or projects that exceed the impact threshold for nationwide permits.

Recent federal rule making has modified how the USACE defines certain waters of the U.S. The most pertinent rules are summarized in the final rule published by the EPA and the USACE defining the scope of waters federally regulated under the CWA. The Navigable Waters Protection Rule (NWPR) (USACE 2020) was published in the Federal Register on April 21, 2020 to finalize a revised definition of "waters of the United States," as regulated under Section 404 of the CWA. The rule aims to streamline the definition so that it includes simple categories of jurisdictional waters, provides clear exclusions for water features that traditionally have not been regulated, and defines terms in the regulatory text that were previously undefined in statute. The 2012 NWPR regulates the nation's navigable waters and the core tributary systems that provide perennial or intermittent flow into them. The new definition eliminated the application of a significant nexus test and relies more explicitly on surface water connectivity to determine jurisdiction.

The 2020 NWPR recognizes four categories of waters that are considered jurisdictional waters of the U.S. including 1) ***Territorial Seas and Traditional Navigable Waters***; 2) ***Tributaries***; 3) ***Lake and Ponds, and Impoundments of Jurisdictional Waters***; and 4) ***Adjacent Wetlands***; all defined as follows (USACE 2020):

1) ***Territorial Seas and Traditional Navigable Waters (TNWs)*** are defined as territorial seas and waters that are currently used, were used in the past, or may be susceptible to use for interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide.
2) ***Tributary*** is defined as a river, stream, or similar naturally occurring surface water channel that contributes surface water flow to a territorial sea or TNW in a typical year either directly or indirectly through other tributaries, jurisdictional lakes, ponds, or impoundments, or adjacent wetlands. A tributary must be perennial or intermittent in a typical year. The alteration or relocation of a tributary does not modify its jurisdictional status, provided it continues to be perennial or intermittent and contributes surface water flow to a TNW or territorial sea in a typical year. A tributary does not lose its jurisdictional status if it contributes surface water flow to a downstream jurisdictional water in a typical year through a channelized non-jurisdictional surface water feature, through a subterranean river, through a culvert, dam, tunnel, or other similar artificial feature, or through a debris pile, boulder field, or similar natural feature.

The term "tributary" includes a ditch that either relocates a tributary, is constructed in a tributary, or is constructed in an adjacent wetland, provided the ditch is perennial or intermittent and contributes surface water flow to a TNW or territorial sea in a typical year.

The U.S. Army Corps of Engineers (USACE) defines intermittent streams as having "flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow," (USACE 2012). Ephemeral streams, in contrast, have "flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream," and "[r]unoff from rainfall is the primary source of water for stream flow," (USACE 2012). In contrast to both intermittent and ephemeral streams, perennial streams have "flowing water year-round during a typical year. The water table is located above the stream bed for most of the year," and "[g]roundwater is the primary source of water for stream flow," (USACE 2012).

3) ***Lakes and Ponds, and Impoundments of Jurisdictional Waters*** is defined as standing bodies of open water that contribute surface water flow in a typical year to territorial seas or TNW either directly or through a tributary, another jurisdictional lake, pond, or impoundment, or an adjacent wetland. The agencies note that a lake, pond, or impoundment of a jurisdictional water does not lose its jurisdictional status if it contributes surface water flow to a downstream jurisdictional water in a typical year through a channelized non-jurisdictional surface water feature; through a culvert, dike, spillway, or similar artificial feature; or through a debris pile, boulder field, or similar natural feature. A lake, pond, or impoundment of a jurisdictional water also is jurisdictional if, in a typical year, it is inundated by flooding from a territorial sea or TNW, a tributary, or another jurisdictional lake, pond, or impoundment.

4) ***Adjacent Wetlands*** are defined as wetlands that "abut" a territorial sea or TNW, a tributary, or a lake, pond, or impoundment of a jurisdictional water; are inundated by flooding from a territorial sea or TNW, a tributary, or a lake, pond, or impoundment of a jurisdictional water in a typical year; are physically separated from a territorial sea or TNW, a tributary, or a lake, pond, or impoundment of a jurisdictional water only by a natural berm, bank, dune, or similar natural feature; or are physically separated from a territorial sea or TNW, a tributary, or a lake, pond, or impoundment of a jurisdictional water only by an artificial dike, barrier, road or similar artificial structure, so long as that structure allows for a direct hydrological surface connection trough a culvert, flood or tide gate, pump, or similar artificial feature or over the structure in a typical year.

NON-JURISDICTIONAL WATERS OF THE U.S.

The NWPR also outlines non-jurisdictional "waters of the United States" that are not included in the four categories of "waters of the United States" listed above. This distinction provides clarity that the following waters or features, which are not identified as jurisdictional in the NWPR, are not a jurisdictional under the CWA:

- Ephemeral features, including ephemeral streams, swales, gullies, rills, and pools.
- Groundwater, including groundwater drained through subsurface drainage systems, such as drains in agricultural lands.
- Diffuse stormwater run-off and directional sheet flow over upland.
- Many farm and roadside ditches.

- Prior converted cropland.
- Artificially irrigated areas, including fields flooded for agricultural production, that would revert to upland should application of irrigation water to that area cease.
- Artificial lakes and ponds, including water storage reservoirs and farm, irrigation, stock watering, and log cleaning ponds, constructed or excavated in upland or in non-jurisdictional waters.
- Water-filled depressions constructed or excavated in upland or in non-jurisdictional waters incidental to mining or construction activity, and pits excavated in upland or in non-jurisdictional waters for the purpose of obtaining fill, sand, or gravel.
- Stormwater control features excavated or constructed in upland or in non-jurisdictional waters to convey, treat, infiltrate, or store stormwater run-off.
- Groundwater recharge, water reuse, and wastewater recycling structures, including detention, retention and infiltration basins and ponds, that are constructed in upland or in non-jurisdictional waters.
- Waste treatment systems including all lagoons and treatment ponds (such as settling or cooling ponds), designed to convey or retain, concentrate, settle, reduce, or remove pollutants, either actively or passively, from wastewater or stormwater prior to discharge (or eliminating any such discharge).

WATERS OF THE STATE

The Porter-Cologne Water Quality Control Act, which states that "waters of the State" fall under the jurisdiction of the appropriate RWQCB. The RWQCB must prepare and periodically update water quality control plans (basin plans). Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Projects that discharge waste to wetlands or waters of the State must meet waste discharge requirements of the RWQCB, which may be issued in addition to a water quality certification or waiver under Section 401 of the CWA.

New California regulations protecting wetlands and state waters were approved by the State Water Resources Control Board and took effect on May 28, 2020 (SWRCB 2020, SWRCB 2021). The new rule provides a new definition of wetlands, and it also requires a new type of permit for discharges considered a dredge or fill into a Waters of the State. Under the new rule, wetlands are defined to include all Waters of the U.S. wetlands and it also includes all-natural wetlands, regardless of their proximity to other waters as well as wetlands lacking vegetation, such as salt flats and desert playas. An artificially created wetland that is less than an acre or an artificially created wetland that was constructed and is maintained primarily for wastewater, stormwater, water recycling, or groundwater recharge is generally not considered a Water of the State.

For Waters of the State, the new rule requires a new permit in addition to 401 certification from the RWQCB that applies to any discharge of dredge or fill to Waters of the State with some exceptions. Exclusions include agricultural activities such as rice fields and stockponds, as well as for routine and emergency operations and maintenance activities by public agencies, water utilities, or special districts that result in discharges to artificial Waters of the State if they are primarily for sediment settling, stormwater, surface water treatment, recycled water, or groundwater recharge, or if they are preserving the capacity and the line of grade in the footprint of an existing flood control or stormwater conveyance facility. Other exemptions for operation and maintenance activities are for those activtiies that would impact an artificial Water of the State that's neither a federal water of the US nor specified in a water quality control plan that was a modified Water of the State, or if it is not something that was identified as compensatory mitigation, if the activity is primarily for wastewater treatment or

disposal, sediment settling, stormwater, fire suppression, industrial process and cooling, recycled water, or groundwater recharge.

PROJECT AREA SETTING

The project area is located within the Carmichael USGS 7.5-minute quadrangle and within Township 08N, Range 06E, Sections 20 and 21, and consists of Sacramento County and CalTrans rights-of-way at the intersection of Jackson Road and Bradshaw Road in Sacramento, CA in Sacramento County (Exhibit 1, Appendix A). The project area extends approximately 0.2 mile in each cardinal direction following Bradshaw Road north/south and Jackson Road east/west. Surrounding land uses include urban development, hay fields, and surface mining facilities. The majority of the region is privately owned and developed for industrial, residential, transportation, and agricultural uses. The project area is situated in an urban development and is part of a highly disturbed and managed landscape with little to no remaining natural vegetation. The size of the project area, which includes the proposed intersection, is approximately 8.51 acres.

CLIMATE AND TOPOGRAPHY

The project area is located within the Mediterranean California (LRR-C) 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 (Environmental Laboratory 2010). During the field delineation, weather conditions were sunny and warm with temperatures ranging from 64° to 80° Fahrenheit and winds ranging from 5 to 10 miles per hour.

The nearest National Weather Service station to the project area with a complete climate summary, as reported by the Western Regional Climate Center, is located 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 at the project area is approximately 65 feet above mean sea level with little variation.

HYDROLOGY

The study area is within the boundary of the Upper Morrison Creek watershed (Exhibit 2, Appendix A). Hydrology in the project area is a combination of natural direct seasonal precipitation and occasional urban runoff (e.g., excess landscape irrigation water) from adjacent areas. Rainfall is the primary source of hydrology inputs into drainages in the project area. Groundwater is not a source of water in the project area. Drainage gradients across the site flow generally from northeast to southwest. The nearest blue-line waterway is Morrison Creek, approximately 0.25 mile to the south and east (USGS 2020). The nearest weather station is a rain accumulation sensor at Mather Airport about 750 feet east of the intersection of Kiefer Boulevard and Happy Lane (#47354), approximately 1.5 miles northeast of the study area (Sacramento County 2021). At the time of the field investigation, 7.8 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 0.04 inches on March 19th (Sacramento County 2021). No rainfall was recorded in the 10 days following the site investigation (Sacramento County 2021).

SOILS

According to NRCS Soil Survey of Sacramento County, California (NRCS 2021a), the soils within the project area belong to two soil series: San Joaquin silt loam, leveled, 0 to 1 percent slopes, and San Joaquin silt loam, 0 to 3 percent slopes; both soil series are described below. The specific soil map unit occurring within the project area and its hydric status, according to the National Hydric Soils List, (NRCS 2021b) 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 3 in Appendix A.

Table 1. Soil Units Present Within Project Area

Soil Unit	Hydric Soil
San Joaquin silt loam, leveled, 0 to 1 percent slopes	No
San Joaquin silt loam, 0 to 3 percent slopes	No

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

SAN JOAQUIN SILT LOAM, LEVELED, 0–1 PERCENT SLOPES

The San Joaquin silt loam, leveled, 0 to 1 percent slopes map unit is composed of San Joaquin (85 percent) major soil type and Bruella (3 percent), Durixeralfs (3 percent), Xerarents (2 percent), Galt (2 percent), Hedge (2 percent), Kimball (2 percent), and unnamed (1 percent) inclusions or minor components. One inclusion, Galt, is listed as hydric (2021b). The parent material of the major soil component is alluvium derived from granite. San Joaquin soils are well to moderately well drained and have medium to high runoff and very slow permeability. San Joaquin soils are on low terraces and valleys and are occasionally susceptible to flooding. Slopes are 0 to 9 percent. Elevation ranges from 20 to 500 feet. The climate where this soil is found is dry with hot dry summers and cool moist and foggy winters. These soils are used for cropland and grazing. Main crops include fruits, nuts, small grains, and irrigated pasture crops such as rice. The taxonomic classification of San Joaquin soils is fine, mixed, active, thermic Abruptic Durixeralfs.

SAN JOAQUIN SILT LOAM, 0–3 PERCENT SLOPES

The San Joaquin silt loam, 0 to 3 percent slopes map unit is composed of San Joaquin (85 percent) major soil type and Galt (4 percent), Bruella (4 percent), Hedge (3 percent), Kimball (3 percent), and unnamed (1 percent) inclusions or minor components. One inclusion, Galt, is listed as hydric (2021b). The parent material of the major soil component is alluvium derived from granite. San Joaquin soils are well to moderately well drained and have medium to high runoff and very slow permeability. San Joaquin soils are on low terraces and valleys and are occasionally susceptible to flooding. Slopes are 0 to 9 percent. Elevation ranges from 20 to 500 feet. The climate where this soil is found is dry with hot dry summers and cool moist and foggy winters. These soils are used for cropland and grazing. Main crops include fruits, nuts, small grains, and irrigated pasture crops such as rice. The taxonomic classification of San Joaquin soils is fine, mixed, active, thermic Abruptic Durixeralfs.

VEGETATION COMMUNITIES AND LAND COVER TYPES

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. The vegetation

communities and associated land cover types documented during the field survey are described below and shown in Table 2 and on Exhibit 4 in Appendix A. All plant species observed during the field survey along with their wetland indicator status are listed in Appendix B, and representative photographs are provided in Appendix C.

Table 2. Vegetation Communities and Land Cover Types Present Within Project Area

Vegetation Community/Land Cover Type	Acres
Ruderal/Annual Grassland	1.85
Urban/Developed	6.27
Horticultural Landscape	0.39

Source: data compiled by AECOM in 2021

RUDERAL/ANNUAL GRASSLAND

Ruderal and annual grassland vegetation are present in areas that have been previously filled and graded and are frequently disturbed by vehicle use. The ruderal/annual grassland community can be best desribed 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*). In the project area, ruderal and grassland vegetation cover is dominated largely by wild oats (*Avena* sp.), ripgut brome (*Bromus diandrus*) (NL), (*Erodium botrys*) (NL), and hairy winter vetch (*Vicia villosa* ssp. *villosa*) (NL). Other common species that were less dominant included hawkbit (*Leontodon saxatilis*) (NL), willowherb (*Epilobium brachycarpum*) (FAC), and yellow star thistle (*Centaurea solstitialis*) (NL).

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. Vegetation in ditches is dominated by non-native ruderal species such as Bermuda grass (*Cynodon dactylon*) (FACU) and Italian ryegrass (*Festuca perennis*) (NL). Other less dominant common species include wild radish (*Raphanus raphanistrum*) (NL), dove-weed (*Croton setiger*) (NL), prostrate knotweed (*Polygonum aviculare* ssp. *depressum*) (FAC), and black mustard (*Brassica nigra*) (NL). There are also a few valley oak trees (*Quercus lobata*) (FACU) rooted along the top of ditch banks in the eastern portion of the project area, but they are small, limited in number, and widely scattered and, thus, do not form a riparian habitat vegetation layer.

URBAN/DEVELOPED

Urban areas within the project area include paved portions of Jackson Road, Bradshaw Road, and their intersection. Developed land cover consists of commercial structures, outbuildings, parking areas, driveways, and roads. These developed areas are mostly devoid of vegetation and bordered by ruderal vegetation.

HORTICULTURAL LANDSCAPE

Horticultural landcapes within the project area include ornamental trees and shrubs abutting the intersection as well as a maintained grassy median on Bradshaw Road.

DELINEATION RESULTS

This section presents the results of the delineation of waters of the U.S., as defined by the USACE and pursuant to Section 404 of the CWA, for the project area. All aquatic features delineated are depicted on the wetland delineation map provided as Exhibit 5 in Appendix A and are at a scale of 1 inch = 250 feet.

NATIONAL WETLANDS INVENTORY

There are no wetlands or other aquatic features mapped in the NWI for the project area extent (Exhibit 2, Appendix A). The NWI identifies 8 distinct features within 0.75 mile of the project area representing four classification types (freshwater pond, freshwater emergent wetland, freshwater forested/shrub wetland, and riverine) (USFWS 2021). There are two freshwater ponds east of the project area. Both of these features are classified as PUSCx (palustrine, unconsolidated shore, seasonally flooded, excavated), meaning that they are nontidal human-excavated features. Based on review of aerial imagery, the nearest of these features experiences seasonal flooding on an intermittent but regular basis while the second no longer exists and has been filled in. There are four freshwater emergent features to the south and southeast of the project area. Two of these features are classified as PEM1A (palustrine, emergent, persistent, temporary flooded) meaning that they non-tidal features dominated by persistent emergent vegetation. Based on review of aerial imagery, neither feature appears to exist. The third freshwater emergent feature is classified as PEM1C (palustrine, emergent, persistent, seasonally flooded) meaning that it is a non-tidal feature dominated by persistent emergent vegetation which experiences extended periods of flooding. Based on review of aerial imagery, this feature appears to be a section of Morrison Creek.

The final freshwater emergent feature is classified as PEM1Ax (palustrine, emergent, persistent, temporary flooded, excavated) meaning that it is a non-tidal human excavated feature dominated by persistent emergent vegetation. This feature appears to flow southeast out of Morrison Creek. Review of aerial imagery showed brief periods of discontinuous saturation along the feature.

There is one freshwater forested/shrub wetland feature classified as PFOC (palustrine, forested, seasonally flooded). This feature resides to the southeast of the project area and connects a freshwater emergent feature to Morrison Creek. Review of aerial imagery indicates that this feature is a section of Morrison Creek. There is one final riverine feature named Morrison Creek and classified as R2UBH (riverine, lower perennial, unconsolidated bottom, permanently flooded) meaning that it is a low gradient non-tidal feature with year round surface water.

POTENTIALLY JURISDICTIONAL FEATURES

There are no potentially jurisidictional waters of the U.S. in the project area.

POTENTIALLY NON-JURISDICTIONAL FEATURES (OWUS AND UPLAND FEATURES)

A total of 0.20-acre account for ten (10) potentially non-jurisdictional aquatic features in the project area, and they are designated as Ditch 1, Ditch 2, Ditch 3, Ditch 4, Ditch 6, Ditch 7, Ditch 8, Ditch 9, Ditch 10, and Ditch 11. Each of the features have a clear OHWM. A total of 8.41 acres of upland features make up the remainder of the

project area. Approximate acreages of each feature, including non-jurisdictional uplands, are summarized below in Table 3 and Table 4.

Table 3. Potentially Non-Jurisdictional Aquatic Features; Other Waters of the US

Non-Jurisdictional Waters of the US	Acres
Ditch 1	0.01
Ditch 2	0.01
Ditch 3	0.02
Ditch 4	0.01
Ditch 6	0.04
Ditch 7	0.01
Ditch 8	0.05
Ditch 9	0.01
Ditch 10	0.01
Ditch 11	0.03
Total Non-jurisdictional Aquatic Features	**0.20**

Source: Data compiled by AECOM in 2021

Table 4. Non-Jurisdictional Upland Features

Upland Habitat Types	Acres
Ruderal/Annual Grassland	1.75
Urban/Developed	6.27
Horticultural Landscape	0.39
Non-Jurisdictional Upland Features	**8.41**

Source: Data compiled by AECOM 2021

All potentially non-jurisdictional features mapped in the project area are significantly impaired and not functioning under normal circumstances. Major disturbances from adjacent development include roadway runoff, traffic, irrigation runoff, and stormwater structures. Considerable accumulation of anthropogenic litter is present across all features.

Ditches 1 and 2 are roadside ditches running north to south along the west portion of Bradshaw Road. A 12-inch corrugated metal culvert conveys runoff from residential grasslands east of Bradshaw Road into Ditch 2. Flow continues north via an additional 12-inch corrugated metal culvert which conveys runoff into Ditch 1 beneath a residential driveway by way of a third, 12-inch corrugated metal culvert. Ditch 1 is approximately 2 feet wide and 218.75 feet long. It has a vaguely defined bed/bank, and is largely void of vegetation. Mud cracks, debris, and a clear vegetation break characterize the channel bed. Ditch 2 is approximately 2.5 feet wide and 194.07 feet long. It posesses steep, densely vegetated banks and a nearly bare channel which is characterized by mudcracks, debris,

and sparse vegetation. Dominant bank vegetation along both Ditches 1 and 2 includes wild oat, hawkbit, ripgut brome, and stinkwort, and willowherb accounts for approximately 2% herbaceous cover in the channel. No hydrology was observed in either feature at the time of the survey. Both 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.

Ditch 3 is a roadside ditch running north to south along the west portion of Bradshaw Road and then turns to the west at the intersection of Bradshaw Road with Jackson Road, briefly following Jackson Road to the west where it drains into a grated storm-drain immediately north of Jackson Road. A 12-inch corrugated metal culvert crosses under Bradshaw Road from the east and conveys additional runoff into Ditch 3, where it flows south and then west draining into the aforementioned storm-drain. Ditch 3 is approxmiately 2.5 feet wide and 281.01 feet long. It posesses steep, vegetated banks and a well-defined bare channel which is characterized by a clear vegetation break, mudcracks, and debris. Dominant bank vegetation includes wild oat and ripgut brome. No hydrology was observed at the time of the survey, but review of historic aerial imagery indicates that this feature experiences seasonal ponding and ephemeral flow during and briefly after storm events. The stormwater drain is labeled "flows to creek," presumably Morrison Creek. The following definitions of non-jurisdicitonal features, provided in the NWPR, support designation of Ditch 3 as a non-jurisdictional feature:

- Groundwater, including groundwater drained through subsurface drainage systems, such as drains in agricultural lands.
- Stormwater control features excavated or constructed in upland or in non-jurisdictional waters to convey, treat, infiltrate, or store stormwater run-off.

Ditch 4 is a roadside ditch running east to west parallel to the north side of Jackson Road. It is approximately 5 feet wide and 70.79 feet in length. This feature posesses a 12-inch corrugated metal culvert encased in concrete which conveys runoff east to west. This feature is characterized by a vague bed/bank featuring a wide and shallow channel. Banks are densely vegetated and dominated by wild oat, wild radish, and softchess brome. The channel exhibits herbaceous cover of approximately 15% with Italian ryegrass increasing down the banks and into the channel. No hydrology was observed during the site visit. Review of historical aerial imagery indicates this feature experiences seasonal ponding following storm events. This feature appears generally isolated and is not connected to tributaries, TNW's, or other jurisdictional waters.

Ditch 6 is a roadside ditch running north to south parallel to the west side of Bradshaw Road. The average width of this feature is approximately 3 feet with a length of 401.96 feet. A 12-inch corrugated metal culvert conveys road runoff from north to south into Ditch 6. A second 12-inch corrugated metal culvert conveys additional runoff from west to east into Ditch 6. The feature posesses densely vegetated banks and a clearly defined barren channel bed characterized by mudcracks and debris. Feature banks are dominated by willowherb, Italian ryegrass, wild oat, Italian thistle, and Russian thistle. No hydrology was observed during the site visit, and based on field observations and review of aerial imagery over time, Ditch 6 appears to only support ephemeral flow during and briefly after storm events and is generally isolated and not connected to tributaries, TNW's, or other jurisdictional waters.

Ditch 7 is a roadside ditch which flows from north to south parallel to the east side of northbound Bradshaw Road and is 0.01 acre (104.81 lineal feet, and 6-inches wide) in size. This feature is connected to Morrison Creek approximately 0.25 mile south of the project site. Morrison Creek is a tributary of the Sacramento River, a TNW.

Morrison Creek flows southwest from the project area and combines with the Sacramento River just north of Stone Lakes National Wildlife Refuge, approximately 15 miles southwest of the project site. No hydrology was observed in Ditch 7 at the time of the site visit. Like all the roadside ditches mapped in the project area, Ditch 7 exhbits ephemeral hydrology with flowing water present only during, and for a short duration after, precipitation events in a typical year, with runoff from rainfall acting as the primary source of water. The following definitions of non-jurisdicitonal features, provided in the NWPR, support designation of Ditch 7 as a non-jurisdictional feature:

- Ephemeral features, including ephemeral streams, swales, gullies, rills, and pools.
- Many farm and roadside ditches.
- Stormwater control features excavated or constructed in upland or in non-jurisdictional waters to convey, treat, infiltrate, or store stormwater run-off.

Ditch 8 is a roadside ditch running east to west parallel to the south side of Jackson Road. It is approximately 3 feet wide and runs 695.49 feet in length. An 18-inch corrugated metal culvert conveys runoff under Jackson Road from north to south into Ditch 8. A second 18-inch concrete culvert on the west end of the feature flows east to west underneath a nearby a gas station. This culvert is filled with trash and debris and does not appear to have conveyed flow for an extended period of time. Feature banks are gently sloped and dominated by ruderal vegetation including wild oat, softchess brome, field mustard, and ripgut brome, with a few small, scattered valley oaks also present along the top of the south bank. The center of the channel is covered in dense, dead thatch along with curly dock and Bermuda grass. No hydrology was observed during the site visit. Based on field observations and the review of aerial imagery over time, Ditch 8 appears to only support ephemeral flow during and briefly after storm events and is generally isolated and not connected to tributaries, TNW's, or other jurisdictional waters.

Ditches 9, 10, and 11 run east to west parallel to the north side of Jackson Road and are connected by a series of small culverts. A 24-inch corrugated metal culvert flows westbound into Ditch 10 and a 6-inch box culvert flows westbound into Ditch 11. Two 36-inch concrete v-shaped culverts convey flows out of Ditch 9, westbound and soutbound, respectively, into facilities under the roadways. Banks are gently sloped and densely vegetated by Italian ryegrass with some narrow-leaf milkweed, wild radish, and field mustard. Channels posess herbaceous cover of 10-20% which includes Italian ryegrass as well as some toad rush and spike rush.

The average width and approximate length of these features are as follows: Ditch 9 averages 3.5 feet wide and its length is approximately 62.19 feet; Ditch 10 averages 1.5 feet wide and its approximate length is 109.43 feet; and Ditch 11 averages 6 inches wide and its length is approximately 210.49 feet. No hydrology was observed in any of these three ditches and all three appear to only support ephemeral flow during and briefly following storm events. All three ditches are generally isolated and not connected to tributaries, TNW's, or other jurisdictional waters.

JURISDICTIONAL DETERMINATION

The approximately 8.51-acre project area contains approximately 0.20 acre of potentially non-jurisdictional waters of the U.S. The remainder of the project area is made up of highly disturbed upland features.

Artificially created wetlands, such as the ten roadside ditches mapped in the project area, constructed and maintained primarily for wastewater, stormwater, water recycling, or groundwater recharge are generally not

considered Waters of the State. For the proposed Bradshaw Road/Jackson Road Intersection Project, water quality protection would be covered via a National Pollutant Discharge Elimination System (NPDES) permit through an existing Construction General (GC) permit. The NPDES Program is a federal program which has been delegated to the State of California for implementation (Section 402 of the Clean Water Act) through the State Water Resources Control Board (State Water Board) and the nine Regional Water Quality Control Boards (Regional Water Boards), collectively Water Boards. In California, NPDES permits are also referred to as waste discharge requirements (WDRs) that regulate discharges to waters of the United States. If the project will disturb one acre or more of land, or if it is part of a larger common plan of development, the contractor would prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) on behalf of the applicant for coverage.

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APPENDIX A

Exhibits

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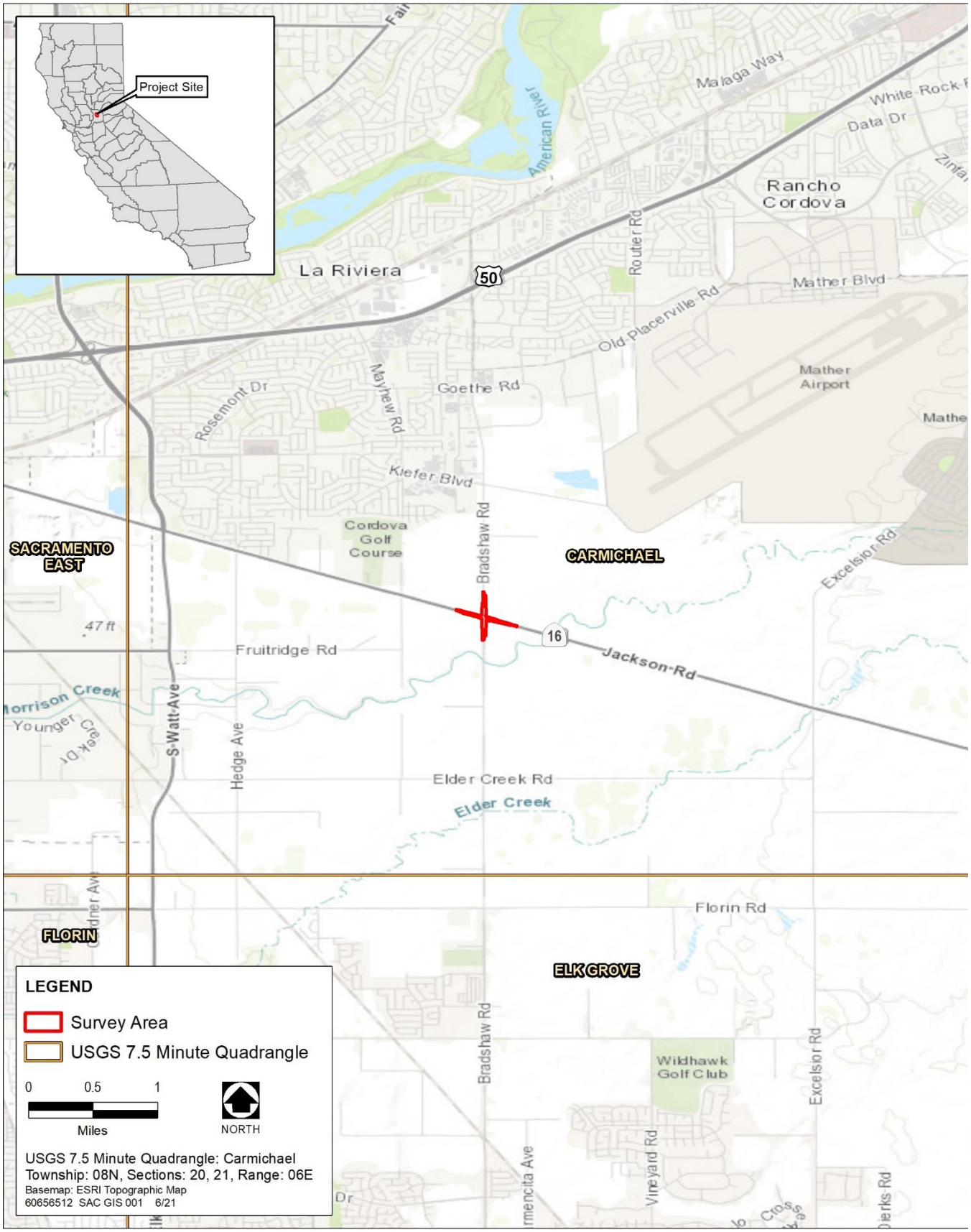
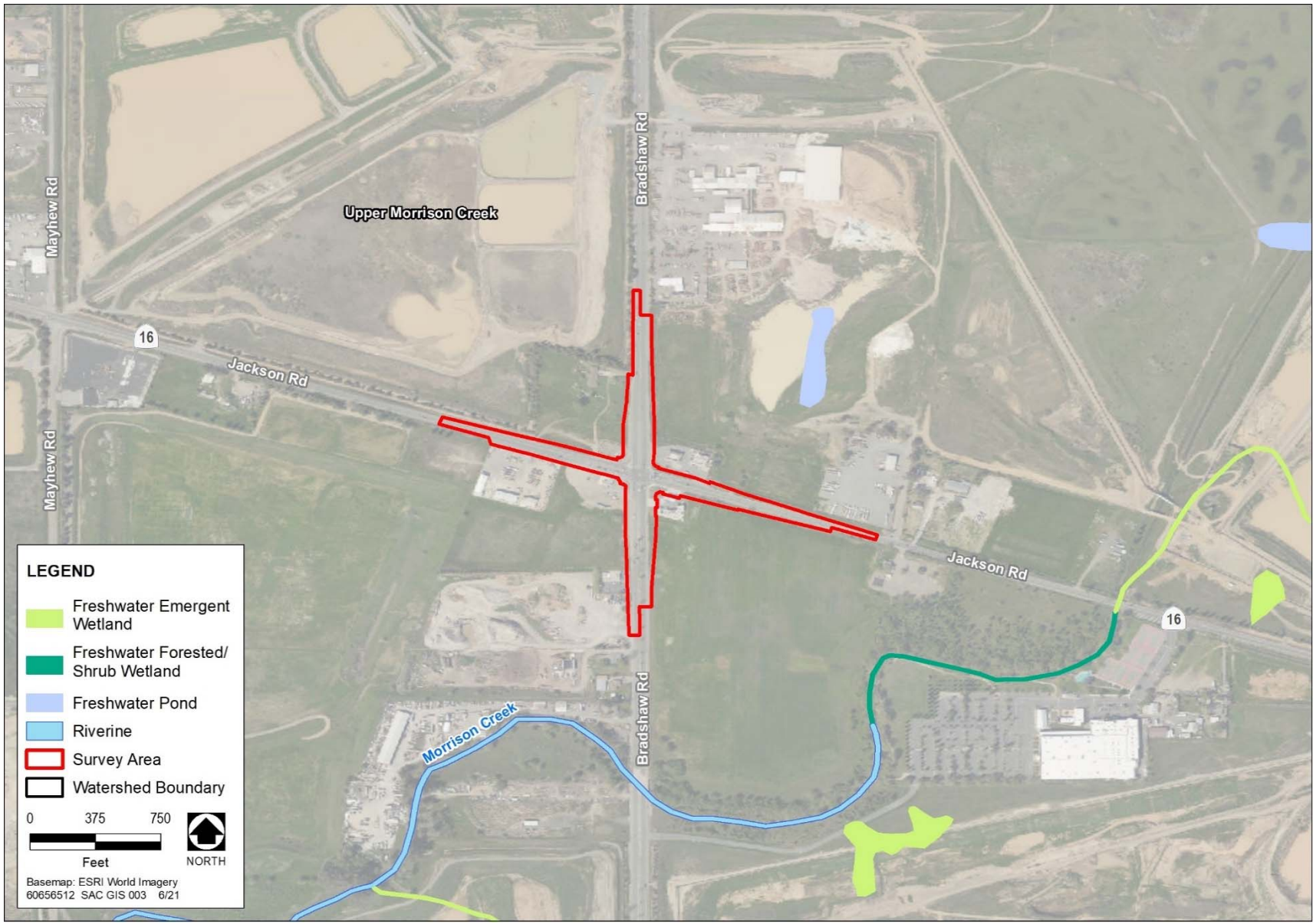


Source: Data compiled by AECOM in 2021

Exhibit 1. Project Vicinity Map



Source: SSURGO

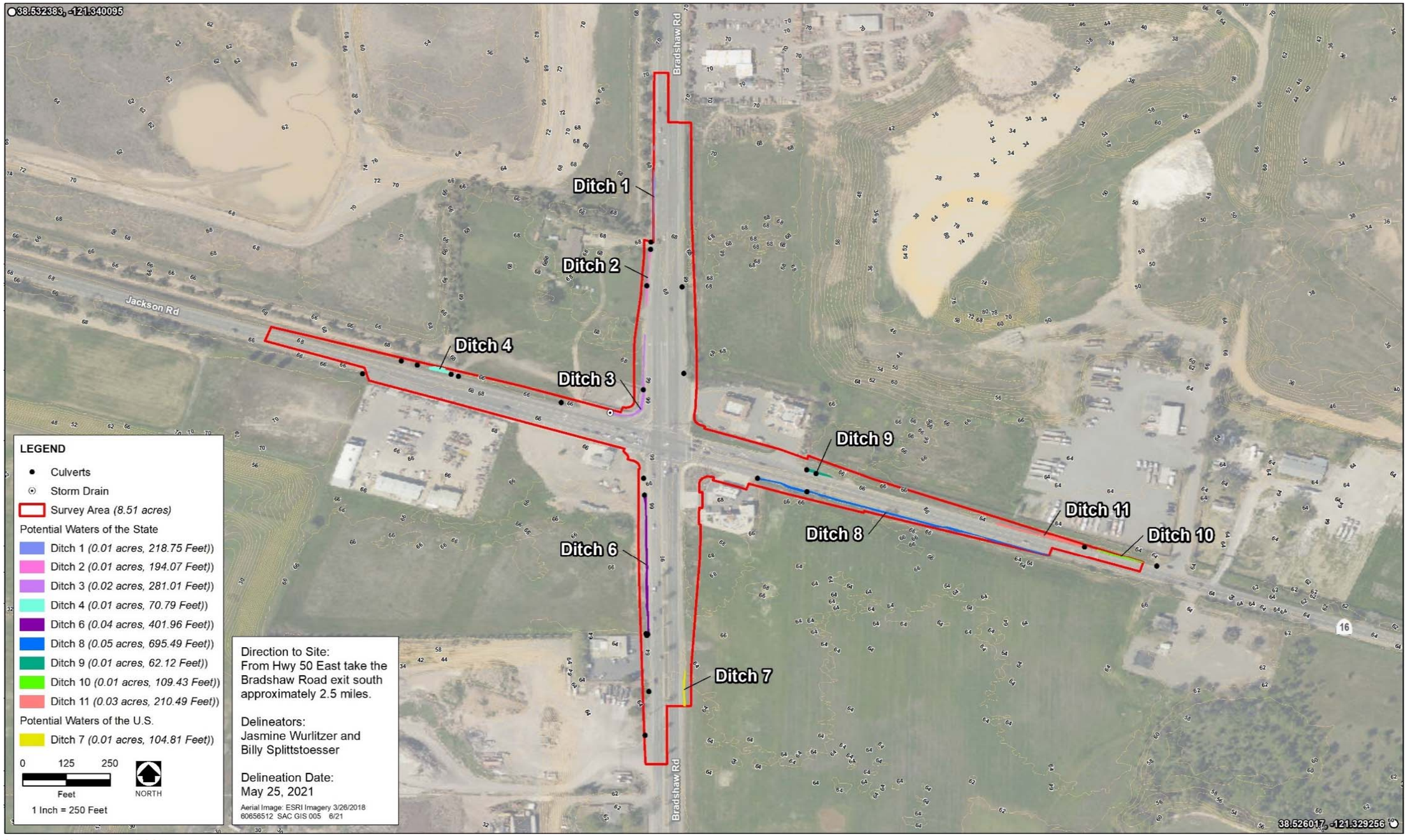
Exhibit 2. Watershed and National Wetlands Inventory Map

Source: NRCS 2021

Exhibit 3. Soils Map

Source: Data compiled by AECOM in 2021

Exhibit 4. Vegetation Communities and Land Cover Types Map



Source: Data Compiled by AECOM in 2021

Exhibit 5. Aquatic Resources Delineation Map

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APPENDIX B

Plant Species Observed

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Plant Species Observed in Study Area

Scientific Name	Common Name	Indicator Status[1]
Asclepias fascicularis	Narroe-leaf milkweed	FAC
Avena sp.	Wild oats	-
Brassica nigra	Black mustard	NL
Bromus diandrus	Ripgut brome	NL
Bromus hordeaceus	Soft-chess brome	FACU
Carduus pycnocephalus	Italian thistle	NL
Centaurea solstitialis	Yellow star thistle	NL
Croton setigerus	Dove-weed	NL
Cynodon dactylon	Bermuda grass	FACU
Datura stranonium	Stinkwort	NL
Elymus caput-medusae	Medusa head	NL
Eliocharis palustruis	Spike rush	OBL
Epilobium brachycarpum	Willowherb	FAC
Erodium botrys	Long-beak stork's bill	FACU
Festuca perrenis	Italian rye grass	NL
Geranium molle	Dove's foot geranium	NL
Hirschfeldia incana	Field mustard	NL
Juncus bufonius	Toad rush	FACW
Leontodon saxatilis	Hawkbit	NL
Polygonum aviculare	Prostate knotweed	FAC
Quercus lobata	Valley oak	FACU
Raphanus raphanistrum	Wild radish	NL
Rumex crispus	curly dock	FAC
Salsola tragus	Russian thistle	FACU
Vicia villosa ssp. *villosa*	Hairy vetch	NL

[1] 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

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APPENDIX C

Representative Photographs

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E
SE
S
SW
W
90
120
150
180
210
240
270
179°S (T) 10 N 645118 4266082 ±16ft 41ft
Ditch 1
Jasmine Wurlitzer AECOM
Jackson Bradshaw
25 May 2021, 09:46:45


E
SE
S
SW
W
90
120
150
180
210
240
270
182°S (T) 10 N 645120 4265989 ±16ft 44ft
Ditch 2
Jasmine Wurlitzer AECOM
Jackson Bradshaw
25 May 2021, 10:01:00


E
SE
S
SW
W
90
120
150
180
210
240
270
179°S (T) 10 N 645117 4265864 ±16ft ▲ 41ft
Ditch 3
Jasmine Wurlitzer AECOM
Jackson Bradshaw
25 May 2021, 10:22:42


NE
E
SE
S
30
60
90
120
150
180
106°E (T) 10 N 644990 4265881 ±16ft ▲ 46ft
Ditch 4 east side
Jasmine Wurlitzer AECOM
Jackson Bradshaw
25 May 2021, 10:47:05


NW
N
NE
E
300
330
0
30
60
90
7°N (T) 10 N 645124 4265654 ±32ft 66ft
Ditch 6 OHWM
Jasmine Wurlitzer AECOM
Jackson Bradshaw
25 May 2021, 12:09:37


E
SE
S
SW
90
120
150
180
210
240
166°S (T) 10 N 645148 4265661 ±16ft 41ft
North of ditch 7, ruderal and developed land cover
Jasmine Wurlitzer AECOM
Jackson Bradshaw
25 May 2021, 12:38:39


S
SW
W
NW
N
80
210
240
270
300
330
0
273°W (T) 10 N 645107 4265849 ±16ft ▲ 44ft
Ditch 3 end at storm drain
Jasmine Wurlitzer AECOM
Jackson Bradshaw
25 May 2021, 10:23:58


SW
W
NW
N
210
240
270
330
0
30
300°NW (T) 10 N 645065 4265858 ±16ft ▲ 43ft
Ruderal grassland northwest side
of Jackson
Jasmine Wurlitzer AECOM
Jackson Bradshaw
25 May 2021, 10:26:38