DUBLIN
CALIFORNIA
THE NEW
AMERICAN
BACKYARD

May 30, 2019

Mr. Tom Holstein
Senior Environmental Planner
Caltrans D4 Office of Local Assistance
111 Grand Avenue
Oakland, CA 94612

Subject: ***Transmittal Letter***
Dublin Boulevard - Federal Project No. RTPL 5432(019)
Natural Environment Study (NES)

Dear Mr. Holstein

The City of Dublin (Dublin), in cooperation with the City of Livermore (Livermore), Alameda County (County), Alameda County Transportation Commission (ACTC), and the California Department of Transportation (Caltrans) as assigned by the Federal Highway Administration (FHWA), proposes to extend Dublin Boulevard approximately 1.5 miles eastward through eastern Dublin and an unincorporated portion of the County, terminating at the boundary between the County and Livermore city limits (Project).

In support of the environmental process providing California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) clearance for the Project, the City of Dublin is transmitting 1 signed copy of the following technical memorandum:

- **Natural Environment Study** – Dublin Boulevard-North Canyons Parkway Extension Project – Federal Project No. RTPL 5432(019) – HT Harvey – May, 2019

The City of Dublin has reviewed and agrees with the findings of the enclosed report.

If you have any questions, please contact myself (925) 833-6630.

Sincerely,

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Dublin Boulevard-North Canyons Parkway Extension Project

Natural Environment Study

Cities of Dublin and Livermore, Alameda County, California

Regional Transportation Plan Number: 17-01-0048

RTPL 5432 (019) Caltrans District 4

Fund Management System Identification Number: 6046.00

May 2019

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Natural Environment Study

Dublin Boulevard-North Canyons Parkway Extension Project
Federal Project Number 5432(019)

STATE OF CALIFORNIA
Department of Transportation and
City of Dublin, City of Livermore, and County of Alameda

Prepared By: _____ Date:_____

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Summary

The City of Dublin, in cooperation with the California Department of Transportation (Caltrans), City of Livermore, Alameda County, and Federal Highway Administration, proposes to extend Dublin Boulevard approximately 1.5 miles (mi) eastward through eastern Dublin and an unincorporated portion of the County, terminating at the boundary between the County and Livermore city limits (the Project).

The purpose of the project is to improve east-west local roadway connectivity between the City of Dublin and the City of Livermore, and improve mobility, multimodal access, safety and efficiency for all roadway users. The purpose is also to indirectly relieve vehicular congestion in the region by providing a completed freeway reliever route along the north side of I-580 between I-680 and Route 84 (Isabel Avenue).

The basic components of this Project include (from west to east):

- Intersection improvements at Fallon Road and the elimination of the existing intersection of Croak Road and Fallon Road
- Grading and earthwork northeast of the Dublin Boulevard/Fallon Road intersection to allow for the roadway extension
- Abandonment of a north-south portion of Croak Road parallel to Fallon Road
- The addition of a ”T” shaped turnaround at the new terminus of Croak Road adjacent to Fallon Road
- Removal of overhead utility lines between Fallon Road and Croak Road
- Creation of a new intersection between the Dublin Boulevard extension and Croak Road
- Construction of a new bridge over Cottonwood Creek
- Construction staging and laydown between the extension and Collier Canyon Road, along Doolan Road
- Intersection improvements at Doolan Road
- Grading throughout the road alignment to meet engineering and safety requirements
- The extension of underground utility lines into the project site, within the paved areas of the proposed roadway extension

This proposed project is a Local Assistance Project with funding provided by the Federal Highway Administration (FHWA), City of Dublin and City of Livermore, and administered by the California Department of Transportation (Caltrans); this Natural Environment

Study (NES) has been prepared following Caltrans' procedures. Caltrans has assumed FHWA responsibility for environmental review, consultation, and coordination on this project, as assigned by FHWA pursuant to 23 U.S. Code (USC) 327. Caltrans would act as the lead Federal agency for consultation under Section 7 of the Federal Endangered Species Act (FESA).

Project Impacts on Sensitive Biotic Habitats

Reconnaissance-level surveys of the Biological Study Area (BSA) were conducted by H. T. Harvey & Associates ecologists on March 14 and 17, 2017. A wetland technical assessment and rare plant survey was conducted on April 13 and 17, 2018, and additional focused rare plant surveys were conducted on May 8 and 10, 2018, and June 29, 2018.

Eight habitat types were identified within the 141.4-acre (ac) BSA: California annual grassland (121.3 ac), seasonal wetland (10.43 ac), perennial marsh (0.07 ac), perennial stream (0.33 ac), ephemeral stream (0.13 ac), mixed riparian woodland (0.33 ac), riparian grassland (3.09 ac), and developed/landscaped (5.71 ac). Temporary and permanent impacts to these eight habitats would occur through grading, placement of fill, pavement or roadway construction, culverting of streams, construction of the Cottonwood Creek bridge abutments and piers, construction access, and work within top of bank of the ephemeral and perennial streams.

Impacts to sensitive habitats include the permanent loss of 0.10 ac and 749 linear feet (ln ft) of ephemeral and perennial streams by culverting five stream crossings and placement of fill for grading and road construction; and 0.03 ac of temporary impacts to streams due to construction access and a temporary construction crossing of Cottonwood Creek. The proposed Project will also result in 0.12 ac of direct permanent impacts to seasonal wetlands as a result of pavement or road construction and grading or fill, including the culverting of 249 ln ft of in-channel seasonal wetlands, and 0.33 ac of direct temporary impacts to perennial marsh (<0.01 ac) and seasonal wetlands (0.33 ac) in the BSA due to construction access and utility relocation. Impacts to mixed riparian woodland would include permanent loss of 0.11 ac related to road construction and the removal of approximately eight red willow (*Salix laevigata*) trees, and direct temporary impacts to 0.05 ac related to construction access and possible trimming of one valley oak (*Quercus lobata*) tree. Project work will also have direct permanent impacts to 0.70 acres of riparian grassland through culverting of streams and grading, fill and structure placement associated with the Cottonwood Creek bridge abutments and piers; and 2.15 acres of temporary impacts to riparian grassland due to construction access and work within top-of-bank of the ephemeral and perennial streams.

From a biological perspective, the impacts to wetlands and all other waters and to sensitive riparian habitats are not expected to substantially impact the functions or values of the aquatic habitats in the BSA as the disturbance area is relatively small; the Project has been carefully designed to not interrupt hydrology to the wetlands and streams, including habitats downstream of the proposed Project; and the Project will adopt all necessary avoidance and minimization methods (AMMs), including the General Construction Municipal Regional Stormwater NPDES Permit (MRP), General Construction permit, and the East Alameda County Conservation Strategy (EACCS) AMM standards. Nevertheless, mitigation will be provided via preservation, enhancement, and management of replacement habitat as per EACCS guidelines, with ratios for preservation and enhancement set on ln ft of permanent impacts to streams and on area of permanent impacts for wetlands.

Special-status Plant Species

Twenty-two special-status species were considered to have some potential to occur within the BSA. Nineteen of these species were rejected for potential occurrence in the BSA because they were not observed during focused blooming period surveys conducted in the spring and summer of 2018, or in spring surveys in 2017 or rare plant surveys conducted on the western portion of the project area in 2002. An occurrence of one rare plant species, Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*) occurs in the BSA and Project footprint, and would be temporarily impacted by the proposed Project. Though not observed during focused rare plant surveys conducted during the species' blooming period, based on prior observations the BSA may also support long-lived seed banks of San Joaquin spearscale (*Extriplex joaquiniana*) and/or prostrate vernal pool navarretia (*Navarretia prostrata*); however, any dormant seed banks for these species are not expected to occur within the Project footprint in any substantial density, and AMMs and mitigation for impacts to Congdon's tarplant will avoid and minimize impacts to these species, if their seed banks are located in the Project footprint. Although the vast majority of the Congdon's tarplant occurrence (and suitable habitat for Congdon's tarplant, San Joaquin spearscale, and prostrate vernal pool navarretia) is located to the south of the Project footprint, the Project may result in 0.45 ac of direct and indirect temporary impacts to the Congdon's tarplant occurrence in the western part of the Project footprint. Impacts would occur from relocation of a utility line, which could involve trenching through the northern edge of the occurrence. Such work could lead to trampling or crushing of individual plants through construction access and stockpiling of trench soils, uprooting during trenching, and burying of seed banks to depths inconsistent with later germination, as well as indirect impacts such as application of dust to plants outside the work area. However, to the extent feasible, the Project will avoid all occupied habitat for Congdon's tarplant, and potentially suitable habitat for San Joaquin spearscale and prostrate vernal pool navarretia, plus a 50-foot

(ft) buffer. Additionally, measures will be implemented to reduce potential impacts from the utility relocation and preserve the seedbank in the area of the work. Incorporation of these avoidance and minimization measures will reduce potential Project-related impacts on these species to a less than substantial level.

Special-status Animal Species

A number of special-status animal species occur within the Project vicinity, but most do not occur in the BSA because it lacks suitable habitat and/or is outside the range of the species. Potentially suitable habitat exists within the BSA for several special-status wildlife species that may reside in or breed on or near the BSA, or may occur in the BSA as transients but in ways that may subject individuals to Project impacts (e.g., by occurrence in burrows on the site or roosting in trees on the site). These species include the American badger (*Taxidea taxus*), burrowing owl (*Athene cunicularia*), California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), golden eagle (*Aquila chrysaetos*), grasshopper sparrow (*Ammodramus savannarum*), loggerhead shrike (*Lanius ludovicianus*), pallid bat (*Antrozous pallidus*), San Joaquin kit fox (*Vulpes macrotis mutica*), Townsend's big-eared bat (*Corynorhinus townsendii*), tricolored blackbird (*Agelaius tricolor*), western pond turtle (*Actinemys marmorata*), and white-tailed kite (*Elanus leucurus*). The California red-legged frog and the California tiger salamander are known to occur in the immediate vicinity of the BSA, and there is mapped critical habitat for California red-legged frog in the BSA. The burrowing owl, grasshopper sparrow, loggerhead shrike, pallid bat, tricolored blackbird, and white-tailed kite could potentially breed in the BSA. The American badger, golden eagle, San Joaquin kit fox, Townsend's big-eared bat, and western pond turtle are less likely to breed in the BSA, and if they occur in the BSA they are most likely to occur as uncommon or rare visitors, migrants, or transients.

The Project would entail the permanent loss, through road construction, paving, and fill of wetlands or streams, of 22.70 ac of suitable non-breeding habitat for the California red-legged frog and California tiger salamander, primarily consisting of California annual grassland. Another 54.25 ac of suitable non-breeding habitat for these species would be temporarily impacted by grading and construction access. In accordance with the EACCS, AMMs will be implemented to reduce impacts on these species, and habitat mitigation will compensate for the minor, and predominantly temporary, impacts on these species' habitats. With respect to Project effects on species listed under FESA, the Project may affect, but is not likely to adversely affect, the San Joaquin kit fox, and may affect, and is likely to adversely affect, the California red-legged frog and California tiger salamander. With implementation of conservation measures, no adverse modification of designated critical habitat for California red-legged frog will occur.

Presence of Invasive Non-native Plant Species

Several non-native, invasive species occur in the BSA. Of these, fennel (*Foeniculum vulgare*), poison hemlock (*Conium maculatum*), bull thistle (*Cirsium vulgare*), and black mustard (*Brassica nigra*) are the most abundant, and are rated as having moderate ecological impacts by the California Invasive Plant Council. The spread of existing weeds resulting from Project actions would be avoided by implementing specific weed control measures such as seeding disturbed areas with a fast-growing native seed mix. Additionally, all machinery would be washed prior to entering the BSA and before being used at another construction site.

Permits Required

Activities conducted within the aquatic habitat and/or wetlands would require a Clean Water Act (CWA) Section 404 permit from the U.S. Army Corps of Engineers (USACE), and a Section 401 water quality certification from the Regional Water Quality Control Board (RWQCB). Incidental take approval from the U.S. Fish and Wildlife Service (USFWS) will be needed due to the potential for the Project to result in take of the California tiger salamander and California red-legged frog (i.e., the Project is likely to adversely affect these species). As a result, Section 7 consultation with the USFWS is expected to be necessary. It is likely that an ITP from the CDFW will be needed due to the potential for the Project to result in take of the California tiger salamander, which is listed under both FESA and the California Endangered Species Act.

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Acronym List

ac	acre(s)
AMMs	Avoidance and Minimization Measures
BMP	Best Management Practices
BSA	Biological Study Area
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CSSC	California Species of Special Concern
CWA	Clean Water Act
EACCS	East Alameda County Conservation Strategy
EDSP	Eastern Dublin Specific Plan
EEPA	Eastern Extended Planning Area
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
ft	feet / foot
GIS	Geographic Information Systems
I-580	Interstate 580
IP	Individual Permit
LSAA	Lake and Streambed Alteration Agreement
ln ft	linear feet
MHW	Mean High Water
MRP	Municipal Regional Stormwater NPDES Permit
MTC	Metropolitan Transportation Commission

mi	mile(s)
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OHWM	Ordinary High Water Mark
PG&E	Pacific Gas and Electric
Porter-Cologne	Porter-Cologne Water Quality Control Act
Project vicinity	All areas within a 5-mile radius of the proposed Project site
ROW	Right-of-way
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SCVWD	Santa Clara Valley Water District
sq ft	square feet
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey

Chapter 1 – Introduction

The City of Dublin (Dublin), in cooperation with the California Department of transportation (Caltrans), City of Livermore (Livermore), Alameda County (County), and Federal Highway Administration (FHWA), proposes to extend Dublin Boulevard approximately 1.5 miles (mi) eastward through eastern Dublin and an unincorporated portion of the County, terminating at the boundary between the County and Livermore city limits (henceforth referred to as the Dublin Boulevard-North Canyons Parkway Extension Project or the "Project").

Dublin is the lead agency under the California Environmental Quality Act (CEQA). Caltrans, as assigned by the FHWA, is the lead agency under the National Environmental Policy Act (NEPA).

The Project is in the Metropolitan Transportation Commission (MTC) non-attainment/maintenance area for air quality, and is listed in MTC's 2017 Transportation Improvement Program for the Nine-County San Francisco Bay Area (TIP identification number ALA150003, Fund Management System identification number 6046.00). The Project's Regional Transportation Plan identification number is 17-01-0048.

H. T. Harvey & Associates conducted a background review and field surveys for the Project on March 14 and 16, 2017, April 13 and 17, 2018, May 8 and 10, 2018, and June 29, 2018. Based on these studies and information about the Project received through July 2018, H. T. Harvey & Associates drafted this Natural Environment Study (NES). All documents were compiled according to template guidelines prepared by Caltrans. Caltrans has assumed FHWA responsibility for environmental review, consultation, and coordination on this Project, as assigned by FHWA pursuant to 23 USC 327. Caltrans will also act as the lead federal agency under Section 7 of the federal Endangered Species Act.

1.1. Project History

Dublin Boulevard is a major arterial facility connecting western parts of Dublin, Dublin's downtown area, and partially developed areas in the City's Eastern Extended Planning Area (EEPA); terminating at Fallon Road. North Canyons Parkway is a four-lane arterial facility in Livermore that provides access to commercial, industrial, residential development, and educational facilities in western Livermore and terminates at Doolan Road. I-580 is a major regional connector, beginning in Marin County in the North Bay Area, connecting through the cities of Berkeley and Oakland before traveling east through Dublin and Livermore, and ending in San Joaquin County south of Tracy.

Traffic congestion on I-580 is an ongoing issue throughout the region. The eastern extension of Dublin Boulevard from its current terminus at Fallon Road to the Doolan Road/North Canyons Parkway intersection has been planned since 1984 to provide capacity relief to I-580 and to provide access to potentially developed areas in Dublin, as described in Dublin's General Plan Environmental Impact Report (1984). The current Dublin General Plan and EIR (2016) describe the Project as a physical link connecting the EEPA to the rest of Dublin and Livermore. Livermore's General Plan Circulation Element (2014) also includes a roadway extension from North Canyons Parkway connecting Doolan Road with Fallon Road.

The Project is also described in various other regional and local land use planning documents which include Plan Bay Area (2035 update to 2040), Eastern Dublin Specific Plan (EDSP) and Fallon Village Supplemental Environmental Impact Report (2005). These planning documents anticipate new residential, commercial, office, and industrial development in the EEPA east of Fallon Road extending to the city limits, with up to 3,108 new dwelling units and over 2,500,000 square feet (sq ft) of new commercial, office, and industrial uses. However, the majority of this area is currently inaccessible from public roadways, with the exception of two private properties accessible from Croak Road and Collier Canyon Road. In order for planned development to occur, a major east-west roadway connection is needed and is anticipated to be provided through the extension of Dublin Boulevard.

The documents listed above describe a four to six lane roadway extension of Dublin Boulevard from Fallon Road to Doolan Road, providing a reliever route to I-580.

1.2. Purpose and Need

The purpose of the Project is to improve east-west local roadway connectivity between Dublin and Livermore, and improve mobility, multimodal access, safety and efficiency for all roadway users. The purpose is also to indirectly relieve vehicular congestion in the region by providing a completed freeway reliever route along the north side of I-580 between I-680 and Route 84. This roadway extension would provide four to six travel lanes and bicycle and pedestrian facilities (i.e., sidewalks and bike lanes).

The need for the Project is to:

- Eliminate a gap in local roadway network connectivity between the cities of Dublin and Livermore, including the five designated Priority Development Areas within these jurisdictions.

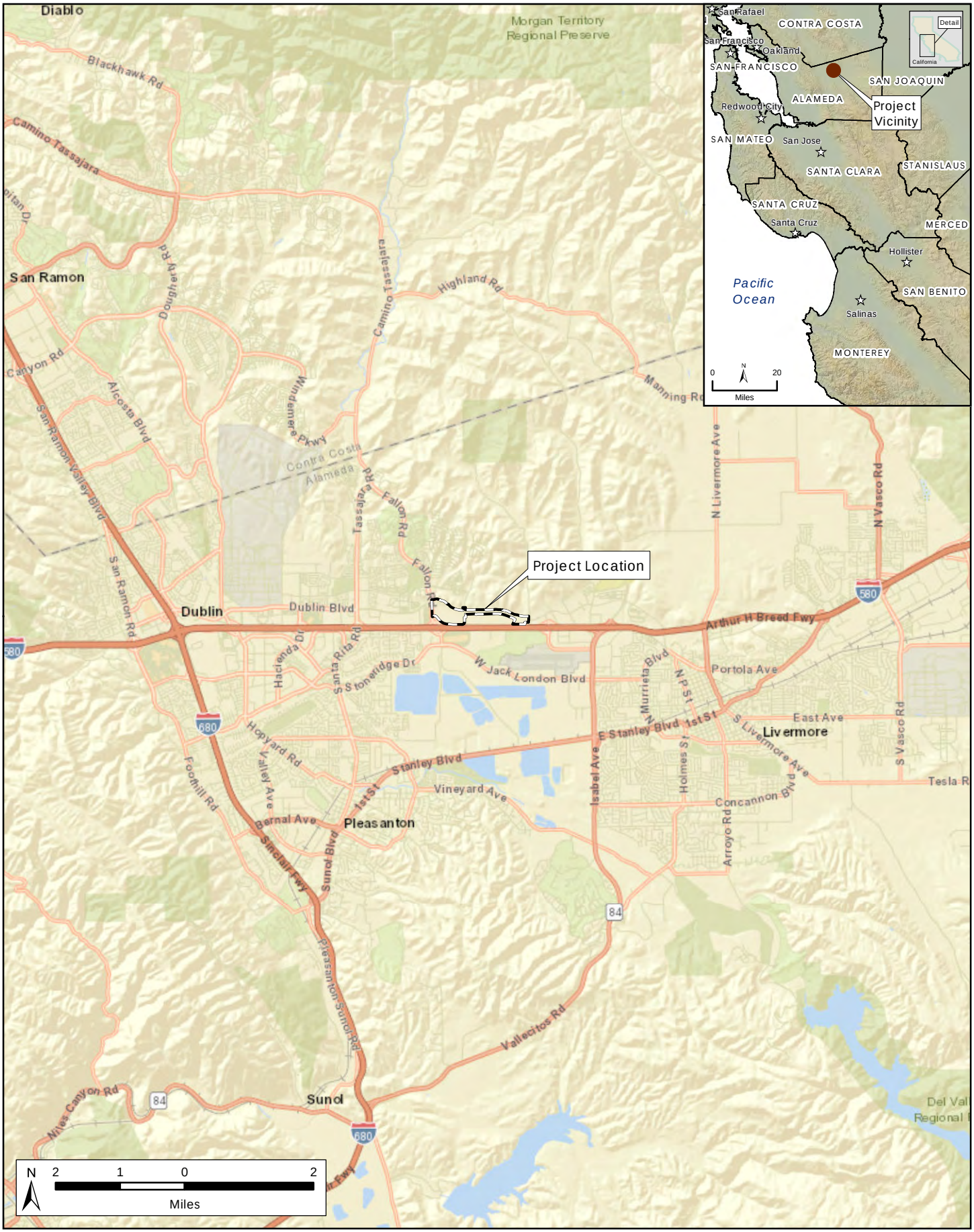
- Facilitate the buildout of eastern Dublin, as planned for in the Dublin General Plan, EDSP, and Plan Bay Area, by establishing the needed transportation facilities and other public infrastructure to serve planned development.
- Relieve congestion on I-580 by providing a completed reliever route between Dublin and Livermore, an integrated corridor management strategy.
- Reduce vehicle miles traveled on the regional highway system by providing local access to existing and planned land uses, including residential, commercial, industrial, and business uses, and local destinations on an alternate local route that is convenient to I-580.
- Reduce local trip lengths in Dublin and between Dublin and Livermore by diverting localized inter-city trips from I-580.
- Provide complete streets and multimodal access between Dublin and Livermore, particularly for key public facilities such as Las Positas College, consistent with the requirements of SB 375 and regional complete streets policies on multimodal roadways and sustainable transportation.

1.3. Project Description

1.3.1. PROJECT LOCATION

The Project is within Dublin, the County, and Livermore, north of I-580 between the existing terminus of Dublin Boulevard to the west and terminus of North Canyons Parkway to the east (Figure 1). The roadway extension would start from the current terminus of Dublin Boulevard at the Dublin Boulevard/Fallon Road intersection in Dublin and would end at the Doolan Road/North Canyons Parkway intersection along the boundary of the County and Livermore (Figure 2). This roadway extension would provide four to six travel lanes and bicycle and pedestrian facilities (i.e., sidewalks and bike lanes). Beginning at Fallon Road, the roadway extension would have six travel lanes (three in each direction). Continuing eastward, the roadway extension would narrow to four travel lanes (two in each direction) before intersecting with Croak Road. From Croak road to Doolan Road, the roadway extension would remain in the four lane configuration.

The Project footprint and Biological Study Area (BSA) are shown on Figure 2. The Project footprint encompasses the maximum area of direct permanent and temporary impacts related to the Project and includes the proposed roadway, sidewalks, intersections, cut-and-fill areas, staging, and land acquired for right-of-way. The BSA is expanded around this area to evaluate resources that are outside work limits but may be indirectly impacted by the Project. The total area BSA is 141.40 acres (ac) and the total area of the Project footprint is 81.30 ac.



N:\Projects3900\3922-01\Reports\NES\Fig 1 Project Location Map.mxd mlagarde

H. T. HARVEY & ASSOCIATES
Ecological Consultants

Figure 1. Project Location Map
Dublin Boulevard-North Canyons Parkway Extension Project - Natural Environment Study Report (3922-01)
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N:\Projects3900\3922-01\Reports\NES\Fig 2 Site Plan.mxd

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Ecological Consultants

Figure 2, Site Plan over Aerial
Dublin Boulevard-North Canyons Parkway Extension Project - Natural Environment Study Report (3922-01)
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1.3.2. PROPOSED PROJECT DESIGN FEATURES AND COMPONENTS

Project design features and components include (from west to east):

- Intersection improvements at Fallon Road and the elimination of the existing intersection of Croak Road and Fallon Road
- Grading and earthwork northeast of the Dublin Boulevard/Fallon Road intersection to allow for the roadway extension
- Abandonment of a north-south portion of Croak Road parallel to Fallon Road
- The addition of a ”T” shaped turnaround at the new terminus of Croak Road adjacent to Fallon Road
- Removal of overhead utility lines between Fallon Road and Croak Road
- Creation of a new intersection between the Dublin Boulevard extension and Croak Road
- Construction of a new bridge over Cottonwood Creek
- Construction staging and laydown between the extension and Collier Canyon Road, along Doolan Road
- Intersection improvements at Doolan Road
- Grading throughout the road alignment to meet engineering and safety requirements
- The extension of underground utility lines into the Project site, within the paved areas of the proposed roadway extension

Ancillary facilities associated with the Project include traffic signals, lighting, landscaping, irrigation, drainage, and stormwater treatment facilities.

1.3.3. PROJECT CONSTRUCTION

1.3.3.1. Intersection Improvements

The Project would require the modification of three existing intersections and the creation of one new intersection. Assumptions for each intersection are described below from west to east.

Eliminate Fallon Road / Croak Road Intersection

To allow for the extension of Dublin Boulevard, the existing north-south alignment of Croak Road parallel to Fallon Road would be abandoned, and the connection of Croak Road to Fallon Road at the Dublin Boulevard/Fallon Road intersection would be

removed. The abandoned segment of Croak Road would be left in place and would eventually be removed when Fallon Road is widened under a separate Project.

Since the intersection of Croak Road and Fallon Road would be eliminated and a portion of Croak Road abandoned, a new western terminus of Croak Road would be created. To allow continued use of Croak Road in this area, a new "T" shaped turn around would be constructed.

Modify Dublin Boulevard / Fallon Road Intersection

A new connection to the Dublin Boulevard/Fallon Road intersection would be construction on the eastern side of the intersection. Project improvements would include the connection of three eastbound travel lanes, three westbound travel lanes, two dedicated left turn lanes, and one dedicated right turn lane to the eastern side of the existing intersection. The roadway connection would also include a center median dividing the eastbound and westbound lanes. New overhead traffic signals and directional signage would be added to the intersection.

Create Dublin Road / Croak Road Intersection

A new intersection would be created where the Project intersects Croak Road in the generally undeveloped area east of Fallon Road. Currently, there is no intersection of Dublin Boulevard and Croak Road, or any other intersections with Croak Road in the immediate area. Croak Road is a two lane roadway in this area, with one travel lane in each direction.

Project improvements would create a four-way intersection. From the west, Dublin Boulevard would connect to Croak Road with two eastbound travel lanes, three westbound travel lanes, one dedicated left turn lane, and one dedicated right turn lane. From the east, Dublin Boulevard would connect to Croak Road with the same number of travel and turning lanes as the western side of the intersection.

Croak Road would be modified at this intersection to have a shared right hand turn lane in the current travel lane on both sides of the intersection and one dedicated left turn lane on each side of the intersection. New overhead traffic signals and directional signage would be added to the intersection.

Modify Doolan Road / North Canyons Parkway Intersection

A new connection to the Doolan Road/North Canyons Parkway intersection would be construction on the western side of the intersection. The intersection is currently a three-way or "T" intersection, with North Canyons Parkway terminating at Doolan Road.

Project improvements would include the connection of two eastbound travel lanes, two westbound travel lanes, and one dedicated left turn lane to the western side of the existing intersection. The southernmost eastbound travel lane would be a shared right turn lane. The roadway connection would also include a center median dividing the eastbound and westbound lanes. New overhead traffic signals and directional signage would be added to the intersection.

1.3.3.2. Culverts

Culverts would be installed under the roadway to allow existing drainage patterns to continue across the project area from north to south. Six culverts would be installed: one at the Dublin Boulevard/Fallon Road intersection, two between Fallon Road and Croak Road, and three between Croak Road and Doolan Road. Culvert design and sizing would be developed to ensure existing drainage is continued, and are anticipated to include pipe culverts and box culverts. The perennial stream and wetland crossing closest to Dublin Boulevard will be designed with a box culvert with an open, native channel bottom, and will allow water to spill from this feature into the field south of the road alignment as it does today.

1.3.3.3. Cottonwood Creek Bridge

Cottonwood Creek is a perennial stream with a connection to groundwater that flows through the BSA in a generally north-south direction, shown on Figure 3. The Project alignment requires the roadway to cross over Cottonwood Creek approximately 0.25 mi west of the existing North Canyon Parkway-Doolan Road junction. An approximately 102-foot (ft) wide bridge structure is proposed to carry four vehicular lanes, two 8-ft wide shoulders/bicycle facilities, a median, and two 10-ft wide sidewalks over the creek. As an alternative, two parallel narrower separate bridges (approximately 46-ft wide each) may be constructed, which will separate westbound traffic from eastbound traffic and eliminate the decked median area. The Project footprint analyzed in this NES assumes the larger footprint associated with the single bridge alternative.

Construction activities within the outer creek banks will be required during foundation excavation, pile installation and bridge pier construction. However, no bridge supports, piers or other permanent structures will be placed within the Ordinary High Water Mark (OHWM) of the perennial stream. Construction within the 100-year floodplain (100-year flood elevation at 393.9 ft) will occur to construct the bridge supports. A temporary access route may be required over the low-flow channel of Cottonwood Creek to the south of the proposed piers. For the purposes of impact assessment, a 50-ft-wide reach of the stream was assumed to be temporarily filled to provide this construction access. Any temporary fills would be fully removed and the low flow channel restored to existing topography following construction. Access routes from both the western and eastern

Inset1

Inset 2

Inset 3

50-ft of temporary impact to creek

Inset 4

Fallon Rd

Fallon/Croak Road

Croak Rd

I-580

Collier Canyon Road

Cottonwood Creek

Dooland Rd

Legend

Biological Study Area (141.39 ac)

Electrical Overhead Utility Line

Congdon's Tarplant Occurrence Location

Congdon's Tarplant Occurrence Area

Impacts

Permanent

Temporary

Temporary Congdon's Tarplant

Habitats

California Annual Grassland (121.31 ac)

Seasonal Wetland (10.43 ac)

Perennial Marsh (0.07 ac)

Perennial Stream (0.33 ac)

Mixed Riparian Woodland (0.33 ac)

Riparian Grassland (3.09 ac)

Ephemeral Stream (0.13 ac)

Developed/Landscaped (5.71 ac)

N 500 250 0 500

Feet

Aerial Source: DigitalGlobe (08/19/17)

N:\Projects3900\3922-01\Reports\NES\Fig 3 Habitats and Impacts.mxd

H. T. HARVEY & ASSOCIATES

Ecological Consultants

Figure 3. Habitats and Impacts Map

Dublin Boulevard-North Canyons Parkway Extension Project -
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outer banks may be required; these may be graded to achieve stable access roads. Following construction, any bank or floodplain areas graded or temporarily disturbed for construction access will be restored to the current bank and floodplain topography and revegetated using a native grassland seed mix appropriate for the region. All work within the riparian grassland within the outer banks will occur during the dry season construction window (April 15 to October 15). One construction season for work within the creek/floodplain will be required, though work above the top of bank of the outer banks may continue into the wet season.

1.3.3.4. Bicycle and Pedestrian Facilities

The Project would improve connectivity between Fallon Road and Doolan Road, where there are no pedestrian or bicycle facilities today. The Project would include bicycle and pedestrian facilities along the entire length of the roadway extension. A multiuse path with separated bike lane is proposed along the northern side of the roadway extension, and a sidewalk and dedicated bike lane is proposed along the south side. All bicycle facilities would be Class I. Pedestrian and bicycle facilities would be designed to meet current standards providing adequate separation between pedestrians, bicycles, and vehicle traffic. Pedestrian and bicycle access to the roadway extension would be from the Dublin Boulevard/Fallon Road and Doolan Road/North Canyons Parkway intersections. These intersections currently do not have pedestrian crosswalks east to west, and signal timing has not been designed to provide safe access for bicycles. The Project would include the addition of full pedestrian signals and crosswalks at both intersections and at the new intersection of Dublin Boulevard and Croak Road. Signal timing would be brought up to the latest standards to provide sufficient time to accommodate bicycle movements.

1.3.3.5. Transit Facilities

The primary goal of transit service in the Project area is to increase ridership, improve access to BART, and reduce system inefficiencies. The Project would provide a roadway connection on the north side of I-580, better connecting the cities of Dublin and Livermore and providing transit operators an alternative route that avoids the heavy congestion on I-580 during peak commute periods. This would improve the efficiency of local transit routes, by reducing delay and reducing trip distance by providing a more direct route. The Project would also provide the opportunity for transit connections to future development along the roadway extension.

As development is implemented along the roadway extension, transit stops are anticipated to be added. Since the location of transit stops would be correlated with the location of major development, access roads, and curb cuts, the precise number and location of transit stops would be determined at a later time, as a part of individual

development project approvals or under a separate project by Dublin. The Dublin Boulevard extension Project does not include specific transit facilities.

The Project design includes flexibility for future queue jumps to improve transit operations. A queue jump provides preference to transit vehicles by providing an additional approach lane to the intersection. This lane is often restricted to transit vehicles only, but may serve a dual purpose as a right turn lane. Once a transit vehicle is detected in these queue jump lanes, they receive signal priority reducing delay for the transit vehicle at the intersection. To accommodate queue jumps, the Project has been designed with long right turn lanes at the Dublin Boulevard/Fallon Road and future Dublin Boulevard/Croak Road intersections. These lanes can be converted to exclusive transit queue jump lanes in the future based on the needs of the local transit agency.

1.3.3.6. Ancillary Project Components

Stormwater Treatment

The proposed permanent stormwater treatment facilities for the Project would include biofiltration strips, biofiltration swales, and detention basins. Biofiltration is a pollution control technique using living material (vegetation) to capture sediment and pollutants from stormwater runoff. Biofiltration strips are vegetated sections of land that capture sediment and pollutants as stormwater passes over it in sheet flows. Biofiltration swales are vegetated ditches with a layer of imported biofiltration soil underneath and a layer of permeable material with an underdrain further below, where stormwater is directed in with a concentrated flow.

In locations where biofiltration would not sufficiently reduce stormwater flows off-site, detention basins would be proposed. Detention basins temporarily detain stormwater, letting sediment in the stormwater settle to the bottom of the basin, before discharging the water through an outlet. These facilities would provide stormwater storage and would regulate the discharge to the collecting water bodies. The precise number, location, and design of detention basins have not yet been determined, and would be developed at a later stage of Project design. For the purposes of this study, it was assume that detention basins could be required along the northern side of the roadway extension, up to 50 ft from the edge of pavement. No detention basins or other stormwater facilities will be placed in sensitive wetland, stream, or riparian habitats.

Safety Lighting

The Project would include new lighting to improve roadway visibility for drivers during nighttime hours. Lighting would be provided along the roadway extension through typical streetlights, similar to those used throughout Dublin. Street lights would be placed on

both sides of the roadway extension at approximately 200 ft intervals and at all intersections. Typical light shielding or directional devices would be used as required under Dublin's municipal code to reduce light pollution.

Utilities and Utility Easements

The following utility companies have known facilities adjacent to the project site:

- Dublin/San Ramon Services District
- Pacific Gas and Electric (PG&E)
- AT&T

To provide electrical power and communications to the traffic signals, streetlights, and development areas along the project, electrical and communications conduits would be extended underground from existing sources along the roadway in a joint trench system. Extending electrical and communication conduit would require trenching and/or horizontal directional drilling to bring these services. Installation of pull boxes, controller cabinets, and service enclosures for electrical and/or fiber optic conduits would also be required. Additionally, new underground water (potable) mains/services, recycled water mains/services, sewer mains/services, and storm drains would be provided along the roadway extension within the roadway operational footprint to provide utility access for future development.

Permanent utility easements would be required on seven private properties (identified by letters, Figure 2). Although the exact location and area of utility easements has not yet been determined, for the purposes of this NES it is anticipated to coincide with the permanent right-of-way acquisitions. The project would also include the relocation of existing overhead electrical transmission lines that run diagonally from Fallon Road to Croak Road. This would include removal of wooden poles and power lines and undergrounding of the relocated facilities as part of the proposed utility joint trenching to occur within the proposed right-of-way (ROW). Existing overhead lines would be removed and power poles would be removed or abandoned (contingent upon the utility easement language between PG&E and the property owner(s).

A number of public utilities may be planned on the bridge including a 14" diameter water main/emergency intertie system, a 16" diameter recycled water main, street lighting and fiber optic conduits on either or both the eastbound and westbound sides. In addition, other private utilities including gas, electrical, telephone and Community Access Television/Communication conduits are under consideration on the bridge structure at Cottonwood Creek.

Larger utilities such as the 14” diameter water main/emergency intertie system and the 16” diameter recycled water main may be supported by utility support brackets mounted to the side of the bridge superstructure. Alternatively, the bridge can be built slightly wider so that these utilities can be supported by the bridge deck outside of the concrete barriers by using utility cradles.

Smaller utilities including street lighting, fiber optic, electrical, telephone and Community Access Television /Communication conduits may be carried through formed holes within the concrete sidewalk and/or the concrete barriers. The 10-ft wide proposed sidewalks on both sides would be sufficient to accommodate all smaller utilities. Utility openings up to 4” diameter can be provided within the sidewalk.

Landscaping

Ornamental landscaping would be installed along the roadway extension in accordance with policies and design guidelines outlined in Dublin’s General Plan and the EDSP. Final landscaping plans would be developed at a later stage of Project design. However, preliminary opportunities for landscaping have been identified along either side of the shared bicycle and pedestrian path along the north side of the Project, along either side of the sidewalk along the south side of the Project, and in center medians. Landscaping would likely coincide with biofiltration strips and biofiltration swales. Landscaping would not be placed in avoided wetland, stream, or riparian habitats.

The EDSP requires the use of drought-resistant plants within public right-of-way, including medians, and requires that highly invasive plant species that could out-compete native species and threaten wildlife habitat are not used in these areas. All new vegetation would be planted outside of the clear recovery zone.

1.3.3.7. Project Funding and Schedule

Structure cost for the proposed bridge(s) is estimated to be $10.8 million, based on a per square foot (sq ft) cost of $400, including a 10% mobilization and a 25% contingency factor. Project construction activities would be scheduled at a later date, with Project completion targeted to 2025.

Chapter 2 – Study Methods

2.1. Regulatory Requirements

Based on the anticipated work, the Project will be subject to numerous regulatory requirements. The following laws, orders, and guidelines pertain to the regulation of biological resources that may occur within the BSA.

2.1.1. FEDERAL ENDANGERED SPECIES ACT

The Federal Endangered Species Act (FESA) protects listed wildlife species from harm or "take" which is broadly defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Take can also include habitat modification or degradation that directly results in death or injury to a listed wildlife species. An activity can be defined as "take" even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species. Listed plant species are legally protected from take under FESA if they occur on federal lands or if the project requires a federal action, such as a CWA Section 404 fill permit from the USACE.

The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have jurisdiction over federally listed, threatened and endangered species under the FESA. These agencies also maintain lists of proposed and candidate species. Species on these lists are not legally protected under the FESA, but may become listed in the near future and are often included in their review of a project.

Project Applicability: Federally listed species that may occur within the BSA include the federally endangered San Joaquin kit fox (*Vulpes macrotis mutica*) and the federally threatened California tiger salamander (*Ambystoma californiense*) and California red-legged frog (*Rana draytonii*).

Based on extensive prior surveys, the federally endangered conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*Branchinecta longiantenna*), and vernal pool fairy shrimp (*Lepidurus packardi*) are considered absent from the BSA. Similarly, rare plant surveys conducted throughout the BSA did not detect Johnny jump-up (*Viola pedunculata*), the larval host plant of the federally endangered Callippe silverspot (*Speyeria callippe callippe*). Thus the Callippe silverspot is considered absent from the BSA. The host plants of the federally threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) and San Bruno elfin butterfly (*Callophrys mossii bayensis*), or elderberry (*Sambucus* sp.) and broadleaf stonecrop (*Sedum spathulifolium*) respectively, are likewise absent and these species are thus also considered absent from the BSA.

Aquatic habitat in the BSA is not suitable for the federally threatened Central California coast steelhead (*Oncorhynchus mykiss*) or other anadromous fish (NMFS 2018), or delta smelt (*Hypomesus transpacificus*), and the BSA is inaccessible to these species due to downstream barriers; thus, these species are considered absent from the BSA. Likewise, the site lacks suitable open water foraging habitat or coastal flat nesting habitat to support the federally endangered least tern (*Sterna antillarum browni*), and this species is not expected to occur in the BSA. The BSA is outside the known range of the Alameda whipsnake (*Masticophis lateralis*), and suitable chaparral and scrub habitat are not present, so the species is considered absent from the BSA.

Only one federally listed plant species, the palmate-bracted bird's beak (*Chloropyron palmatum*), which is also a state listed endangered species is known to occur in the nine-quadrangle area encompassing the BSA (CNPS 2018, CNDDB 2018). No individuals of this endangered plant species were detected in the BSA during the surveys conducted during March 2017, or the follow up wetland delineation and rare plant surveys conducted in April - June of 2018. Therefore, this plant species is considered absent from the BSA.

It is expected that incidental take approval from the USFWS would be needed due to the potential for the Project to result in take of the California tiger salamander and California red-legged frog. Although the likelihood of the San Joaquin kit fox occurring in the BSA is extremely low, the East Alameda County Conservation Strategy (EACCS) models habitat in the BSA as being suitable for this species, and the USFWS and CDFW maintain that the BSA is within the range of the species. Implementation of avoidance and minimization measures will avoid take of individual kit foxes. Thus, take approval would not be sought for this species.

2.1.2. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The Magnuson-Stevens Fishery Conservation and Management Act governs all fishery management activities that occur in federal waters within the United States' 200-nautical-mile limit. The Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans to achieve the optimum yield from U.S. fisheries in their regions. These councils, with assistance from the NMFS, establish essential fish habitat (EFH) in fishery management plans for all managed species. Federal agencies that fund, permit, or implement activities that may adversely affect EFH are required to consult with the NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to recommendations by the NMFS.

Project Applicability: A species list downloaded from NMFS's California Species List Tools website in August 2014 (Appendix F) suggested that EFH for the Coho salmon (*Oncorhynchus kisutch*) and Chinook salmon (*Oncorhynchus tshawytscha*) is potentially present in the Livermore, California U.S. Geological Survey (USGS) quadrangle (NMFS 2018). However, aquatic habitat in the BSA is not suitable for these or other anadromous fish, and the BSA is inaccessible to these species due to downstream barriers. Furthermore, NMFS's species list indicates that the Coho and Chinook salmon are not present in this quadrangle (NMFS 2018). Therefore, no EFH for these or any other fish species is present in the BSA.

2.1.3. CALIFORNIA ENDANGERED SPECIES ACT

The California Endangered Species Act (CESA), California Fish and Game Code, Chapter 1.5, §§ 2050-2116, prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, the CDFW has jurisdiction over state-listed species (Fish and Game Code § 2070). The CDFW regulates activities that may result in "take" of individuals listed under the Act (i.e., "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not expressly included in the definition of "take" under the Fish and Game Code. The CDFW, however, has interpreted "take" to include the "killing of a member of a species which is the proximate result of habitat modification."

Project Applicability: State listed species that may occur within the BSA include the state endangered California tiger salamander, and the state threatened tricolored blackbird (*Agelaius tricolor*) and San Joaquin kit fox.

Historical records indicate that the California tiger salamander occurs within the immediate vicinity of the BSA and there is some potential, albeit very low, that a San Joaquin kit fox may occur in the BSA. Implementation of avoidance and minimization measures will avoid take (as defined by the CESA) of individual kit foxes. Thus take approval would not be sought for this species. It is expected that incidental take approval from CDFW would be needed due to the potential for the Project to result in take of the California tiger salamander.

There is a low potential for a nesting colony of tricolored blackbirds, state listed as threatened, to occur immediately adjacent to the BSA. However, with avoidance and minimization measures described in this NES for avoiding and minimizing impacts to nesting birds, including tricolored blackbirds (e.g. no activity buffers around active bird nests), take of nesting tricolored blackbirds as defined by the CESA is not expected to occur. Thus, take approval would not be sought for this species.

Two state-listed endangered plant species, palmate-bracted bird's beak, which is also a federally listed endangered plant species (see 2.1.1 above) and Livermore tarplant (*Deinandra bacigalupii*), are known to occur in the nine-quadrangle area encompassing the BSA (CNPS 2018, CNDDB 2018). No individuals of these state endangered plant species were detected in the BSA during the surveys conducted during March 2017, or the follow up wetland delineation and focused rare plant surveys conducted in April - June of 2018. Therefore, these two plant species are considered absent from the BSA.

2.1.4. CLEAN WATER ACT AND CALIFORNIA WATER QUALITY LAWS

Under Section 404 of the CWA, the USACE is responsible for regulating the discharge of fill material into Waters of the U.S (including wetlands and other waters). The USACE define wetlands in 33 CFR Part 323.2 as "areas defined as an area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions." The boundaries of wetlands that fall under USACE jurisdiction are delineated using an approach that relies on identification of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology indicators.

In aquatic habitat, the USACE jurisdiction extends to the OHWM, which is defined in 33 CFR Part 328.3 as "the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation or the presence of litter and debris."

Under the Porter-Cologne Water Quality Control Act (Porter Cologne), the State Water Resources Control Board has the ultimate authority over State water rights and water quality policy. The Porter-Cologne also establishes nine Regional Water Quality Control Boards (RWQCBs) to oversee water quality on a day-to-day basis. Pursuant to Section 401 of the Federal CWA, projects that are regulated by the USACE must obtain water quality certification from the RWQCB. This certification ensures that the project would uphold state water quality standards. The RWQCB also claims jurisdiction over areas not claimed by the USACE that directly impact water quality, such as areas below top of bank in streams, and may require a joint 401 water quality certification/Waste Discharge Requirement for impacts to areas within the bank but outside Federal CWA jurisdiction. The RWQCB may impose mitigation requirements even if the USACE does not, and it should be noted that California's jurisdiction to regulate its water resources is much broader than that of the federal government. The State Water Board works in coordination with the RWQCBs to preserve, protect, enhance, and restore water quality. Each RWQCB makes decisions related to water quality for its region, and have the authority to approve, with or without conditions, or deny projects that could impact waters of the State under the CWA Section 401 and Porter-Cologne. Porter-Cologne

broadly defines Waters of the State as “any surface water or groundwater, including saline waters, within the boundaries of the state.”

Project Applicability: Wetland delineation surveys conducted during April and May of 2018 identified six biotic habitats which may be considered waters of the U.S./state and may be claimed as waters of the U.S. by the USACE and/or waters of the state by the RWQCB. Waters of the U.S./state would include seasonal wetlands, perennial marsh, perennial streams, and ephemeral streams. Waters of the state that would not also be considered waters of the U.S. include riparian grassland and mixed riparian woodland (Figure 3, Table 1).

Table 1. Potential Jurisdictional Habitats and Corresponding Size and Jurisdictional Status in the Biological Study Area

Biotic Habitat	Acres	Potential Jurisdiction
Perennial stream	0.33	Waters of the U.S./State
Ephemeral stream	0.13	Waters of the U.S./State
Perennial marsh	0.07	Waters of the U.S./State
Seasonal wetland	10.43	Waters of the U.S./State
Mixed riparian woodland	0.33	Waters of the State
Riparian grassland	3.09	Waters of the State

Project impacts to the above discussed potential jurisdictional (waters of the U.S.) habitats may be covered under one or more USACE Section 404 NWPs, such as NWP 14 for Linear Transportation Crossings. However, although current impact estimates would keep permanent impacts to waters of the U.S. to less than the NWP impact cap of 0.5 ac, current grading plans indicate that permanent impacts to streams could exceed the 300 linear feet (ln ft) impact cap (140 ln ft in perennial streams, 609 ln ft in ephemeral streams, and 249 ln ft in in-channel seasonal wetlands). As detailed grading plans have not yet been developed, it is possible that enough impacts can be avoided to these streams to allow the project to conform to the NWP impact caps on stream length. If this is not the case, the project may be required to procure an Individual Permit (IP) under the CWA. A Pre-Construction Notification to the USACE for either an IP or a NWP would be required.

This permit and impacts to waters of the state would trigger the need for Section 401 water quality certification or joint 401 water quality certification/Waste Discharge Requirement from the RWQCB. Further details on the limits of Section 404 and RWQCB jurisdiction on the site are presented in the Preliminary Delineation of Waters of the U.S. Wetland Technical Assessment provided in Appendix A.

2.1.5. FEDERAL MIGRATORY BIRD TREATY ACT

The Federal Migratory Bird Treaty Act (MBTA), 16 U.S.C. § 703, prohibits killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Most native bird species are covered by this Act. In addition, Title 50 CFR Part 10 protects nesting birds.

Project Applicability: All native bird species within the site are covered by this Act. As described in Chapter 4, the Project would incorporate measures to avoid impacts on nesting birds to comply with the MBTA and 50 CFR Part 10.

2.1.6. EXECUTIVE ORDER 13112 – INVASIVE SPECIES

On 3 Feb 1999, Executive Order 13112 “Invasive Species” was signed establishing the National Invasive Species Council. The Executive Order requires that a Council of Departments dealing with invasive species be created. It states:

“(a) Each Federal agency whose actions may affect the status of invasive species shall, to the extent practical and permitted by law,

(3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions”.

Project Applicability: Several plant species ranked as having moderate ecological impacts by the California Invasive Plant Council (Cal-IPC 2018) occur in the BSA. These include but are not limited to fennel (*Foeniculum vulgare*), poison hemlock (*Conium maculatum*), bull thistle (*Cirsium vulgare*), and black mustard (*Brassica nigra*). Invasive plants are known to cause moderate to severe ecological impacts on physical processes, plant and animal communities, and vegetation structure (Cal-IPC 2018). Project activities could introduce or spread weeds to and from, or within the BSA and surrounding areas. Given the federal nexus of the proposed Project; per Executive Order 13112, the Project is required to implement avoidance and minimization measures intended to reduce impacts of development related to weed introduction or spread. These avoidance and minimization measures are described in Chapter 5.

2.1.7. EXECUTIVE ORDER 11988 – FLOODPLAIN MANAGEMENT

Executive Order 11988, dated 24 May 1977, "Floodplain Management", establishes a national policy "to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative." The order further provides that each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities, (2) providing federally undertaken, financed, or assisted construction and improvements, and (3) conducting federal activities and programs impacting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. Executive Order 11988 applies to federally funded projects occurring within the 100-year floodplain or critical actions within the 500-year floodplain. “Critical actions” are defined as activities for which even a slight chance of flooding is too great a risk.

Proposed Project Applicability: The Project complies with Executive Order 11988 because construction of the road, culvert, and bridge [are not within a FEMA designated floodplain and] have been designed to avoid impacts within the 100-year floodplain to the minimum necessary, to convey floods from north to south under the proposed road without altering these flows, and to accommodate flood flows associated with the 100 year flood of Cottonwood Creek. Moreover, the Project has been designed to minimize floodplain impacts, such as channel scour, to the greatest extent feasible. Therefore, the Project would not result in the substantial or adverse modification of any floodplain, and would not directly or indirectly support further development within the floodplain.

2.1.8. EXECUTIVE ORDER 11990 – PROTECTION OF WETLANDS

Executive Order 11990, dated May 24, 1977, "Protection of Wetlands", establishes a national policy "to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." The order further provides that each agency shall provide leadership to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities, (2) providing federally undertaken, financed, or assisted construction and improvements, and (3) conducting federal activities and programs impacting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

Project Applicability. Wetlands occur within the BSA and will be impacted by the Project. Because these impacts will be minimized to the extent feasible and will be mitigated to avoid net loss of wetlands, the Project is in compliance with Executive Order 11990.

2.1.9. CALIFORNIA FISH AND GAME CODE

Pursuant to Fish and Game Code, Section 1603, CDFW regulates any project proposed by any person that will "substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds." Fish and Game Code, Section 1602 requires an entity to notify CDFW of any proposed activity that may modify a river, stream, or lake. If CDFW determines that proposed activities may substantially adversely impact fish and wildlife resources, a Lake and Streambed Alteration Agreement (LSAA) must be prepared, which sets reasonable conditions necessary to protect fish and wildlife, and must comply with California Environmental Quality Act (CEQA).

Sections 1600-1607 of the California Fish and Game Code require that a Notification of Lake or Streambed Alteration Agreement (LSAA) application be submitted to CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." CDFW reviews the proposed actions in the application and, if necessary, prepares a LSAA that includes measures to protect affected fish and wildlife resources.

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. The CDFW typically considers a river, stream, or lake to include its riparian vegetation, but it may also extend to its floodplain. The term "stream", which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life". This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). Riparian is defined as "on, or pertaining to, the banks of a stream"; therefore, riparian vegetation is defined as, "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG 1994).

Certain sections of California Fish and Game Code describe regulations pertaining to protection of certain wildlife species. For example, Fish and Game Code, Section 2000 prohibits take of any bird, mammal, fish, reptile, or amphibian except as provided by

other sections of the code. Fish and Game Code, Sections 3503, 3513, and 3800 (and other sections and subsections) protects native birds, including their nests and eggs, from all forms of take. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the CDFW. Raptors (i.e., eagles, hawks, and owls) and their nests are specifically protected in California under the Fish and Game Code, Section 3503.5. Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

Bats and other non-game mammals are protected by Fish and Game Code, Section 4150, which states that all non-game mammals or parts thereof may not be taken or possessed except as provided otherwise in the code or in accordance with regulations adopted by the commission. Activities resulting in mortality of non-game mammals (e.g., destruction of an occupied non-breeding bat roost, resulting in the death of bats) or disturbance that causes the loss of a maternity colony of bats (resulting in the death of young) may be considered "take" by the CDFW.

Project Applicability: The BSA supports four perennial streams, Cottonwood Creek and an unnamed tributary, as well as three ephemeral streams that are likely to be considered jurisdictional by CDFW per Fish and Game Code Section 1602. Therefore, work within the bed and banks of the unnamed streams and Cottonwood Creek is expected to require an LSAA from CDFW. In addition, CDFW may also impose compensatory mitigation requirements for permanent impacts to stream, in-channel wetlands, and riparian habitat in the BSA. Also, most native birds, mammals, reptiles, and amphibians in the BSA are protected by the Fish and Game Code. Chapter 4 describes measures that would be taken to avoid and minimize or mitigate impacts to animals protected by California Fish and Game Code.

2.1.10. STATE REQUIREMENTS TO CONTROL CONSTRUCTION-PHASE AND POST-CONSTRUCTION WATER QUALITY IMPACTS

2.1.10.1. Construction Phase

Caltrans projects in California must comply with State requirements to control the discharge of stormwater pollutants under the NPDES Statewide Storm Water Permit (State Water Board Order No. 2014-0077-DWQ) and the Statewide Construction General Permit (State Water Board Order No. 2009-0009-DWQ). Prior to the start of construction/demolition, a Notice of Intent must be filed with the State Water Board describing the project. A Storm Water Management Plan must be developed and maintained during the project and it must include the use of BMPs to protect water quality until the site is stabilized.

Standard permit conditions under both of these permits requires that the applicant utilize various measures, including on-site sediment control BMPs, damp street sweeping, temporary cover of disturbed land surfaces to control erosion during construction, and utilization of stabilized construction entrances and/or wash racks, among other factors. Additionally, both the Construction General Permit and Statewide Storm Water Permit do not extend coverage to projects if stormwater discharge-related activities are likely to jeopardize the continued existence, or result in take of any federally-listed endangered or threatened species.

Project Applicability: The proposed Project will comply with the requirements of the NPDES Statewide Storm Water Permit and Statewide Construction Permit, thus, construction phase activities would not result in detrimental water quality effects upon biological/regulated resources.

2.1.10.2. Post-construction Phase

In many Bay Area counties, including Alameda County, projects must also comply with the RWQCB, San Francisco Bay Region, Municipal Regional Stormwater NPDES Permit (MRP) (Water Board Order No. R2-2009-0074). These policies, which are in line with the Statewide Storm Water Permit measures, require that all projects implement BMPs and incorporate Low Impact Development practices into the design that prevents stormwater runoff pollution, promotes infiltration, and holds/slows down the volume of water coming from a site. In order to meet these permit and policy requirements, projects must incorporate the use of green roofs, impervious surfaces, tree planters, grassy swales, bioretention and/or detention basins, among other factors.

Project Applicability: The proposed Project will comply with the requirements of the MRP Permit, and the NPDES Statewide Storm Water Permit, thus, post-construction activities would not result in detrimental water quality effects upon biological/regulated resources.

2.1.11. EAST ALAMEDA COUNTY CONSERVATION STRATEGY

The EACCS (ICF International 2010) is designed to serve as a coordinated approach to conservation in the eastern portion of Alameda County, in which the County and the Cities of Dublin and Livermore are active participants.

Project Applicability. The BSA for the proposed Project overlaps with the study area for the EACCS, and occurs within Conservation Zone 4 (see Table 3-1, ICF International 2010). This conservation zone covers the northern-central portion of the Livermore Valley and includes land cover types that are of high conservation priority and require compensatory mitigation should any permanent impacts have the potential to occur as a

result of proposed projects. Sensitive land cover types within Conservation Zone 4 include alkali meadows and scalds (Figure 3-1, ICF International 2010), California annual grasslands (Figure 3-2, ICF International 2010), mixed riparian forest and woodland (Figure 3-3, ICF International 2010), alkali wetlands (Figure 3-5, ICF International 2010), and seasonal wetlands (Figure 3-5, ICF International 2010). Focal plant and wildlife species of the EACCS are addressed below.

Three land cover types of high conservation priority in the EACCS were identified within the BSA: 1) seasonal wetlands, 2) California annual grasslands, and 3) mixed riparian woodland (Figure 3). As discussed in Chapter 3 below, several plant species known to be adapted to alkaline soils were recorded in the BSA's grasslands and seasonal wetlands, such as alkali barley (*Hordeum depressum*), alkali pepperweed (*Lepidium dictyotum*), California semaphore grass (*Pleuropogon californicus*), and Congdon's tarplant (*Centromadia parryi* spp. *congdonii*). However, there were no plant communities representative of Holland's (1986) definitions of alkali meadows or scalds, so we considered these land cover types to be absent from the BSA.

All non-developed portions of the BSA are considered to provide habitat for one or more EACCS focal species. Most often mitigation for impacts on land cover types that are considered high conservation priority by the EACCS is determined at the focal species level, but direct impacts on California annual grasslands as a result of the proposed Project must be avoided and minimized through the implementation of measures listed in Tables 3-2 and 3-3 of the EACCS (ICF International 2010). Moreover, compensatory mitigation will be required for the permanent loss of California annual grasslands.

Four of the six focal plant species covered by the EACCS were initially determined to have at least some potential to occur in the BSA, including the aforementioned state and federally endangered palmate-bracted bird's beak and Livermore tarplant, in addition to Congdon's tarplant and San Joaquin spearscale (*Extriplex joaquiniana*). Per the EACCS, any loss of habitat for these species must be mitigated. Congdon's tarplant and San Joaquin spearscale occur on the site and impacts to these species must be avoided, minimized, and if necessary, mitigated as per EACCS guidance for focal plant species. Palmate-bracted bird's beak and Livermore tarplant were not detected in rare plant surveys conducted in March of 2017 or April – June of 2018 and are considered absent. The two remaining EACCS focal species, big tarplant (*Blepharizonia plumosa*) and recurved larkspur (*Delphinium recurvatum*), are not known from the Project region and are also considered absent (EACCS 2010, CNDDB 2018).

Seven of the 13 focal wildlife species covered by the EACCS are known to occur, or have suitable habitat modelled by the EACCS, in the BSA and may be present within the BSA, including: California red-legged frog, California tiger salamander, San Joaquin kit fox, tricolored blackbird, western burrowing owl (*Athene cunicularia*), golden eagle

(*Aquila chrysaetos*), and American badger (*Taxidea taxus*). Mitigation for impacts to these species and their habitats must conform to conditions required by the EACCS.

2.1.12. ALAMEDA COUNTY TREE ORDINANCE

The County of Alameda protects trees within the County right-of-way that are at least 10 ft tall and 2-inches diameter at breast height (dbh) on the mainstem. Removal of such trees requires an encroachment permit from the County. Typically such a permit requires, if feasible, replacement of the ordinance tree (Alameda County General Code Chapter 12.11, inclusive).

Project Applicability. An ordinance-sized valley oak (*Quercus lobata*) tree present in unincorporated County lands will be preserved by the project and therefore no encroachment permit will be necessary.

2.1.13. CITY OF DUBLIN HERITAGE TREE ORDINANCE

The City of Dublin defines heritage trees as any oak, bay, cypress, maple, redwood, buckeye and sycamore tree having a trunk or main stem of twenty-four inches or more in diameter measured at four feet six inches above natural grade. Additionally, any tree preserved as part of an approved development plan, zoning permit, use permit, site development review, or subdivision map is protected as a heritage tree as is any tree planted as a replacement for an unlawfully removed tree. Heritage trees may not be removed unless a tree removal permit is granted or the removal is approved as part of other approved development permits. If a development site contains heritage trees that are to be preserved under approved development plan, these trees must be protected during site development. A tree protection plan must be approved prior to commencement of work unless the Community Development Director of the City of Dublin has specifically waived this requirement (City of Dublin Municipal Code, Chapter 5.60, inclusive).

Project Applicability. A small number (approximately 8) of red willow (*Salix laevigata*) trees would be removed by the project from within the Dublin City limits. A eucalyptus (*Eucalyptus* sp.) tree may also be removed. These trees are not considered heritage tree species under the ordinance and also the red willows are all smaller than the 24-inch size requirement. Therefore, no tree removal permit will be needed. A heritage-sized valley oak tree to be preserved by the project is located in unincorporated Alameda County, and therefore does not trigger the requirement for a tree protection plan (but see Section 4.1.2).

2.2. Studies Required

The Project footprint includes all areas expected to be directly affected, either temporarily or permanently, by Project construction, while the BSA is a larger area encompassing the Project footprint intended to allow for analysis of indirect impacts and resources adjacent to the project. A graphical illustration of the extent and location of the Project footprint and BSA is included as Figure 2. “Project vicinity” or “Project region” will be used to describe the wider area that includes the BSA and a 5-mi radius surrounding the Project boundaries.

2.2.1. SURVEY AND MAPPING METHODS

H. T. Harvey & Associates biologists surveyed the BSA to describe biotic habitats within the Project site, identified plants and animals found or likely to be found on the site, and performed reconnaissance-level surveys for wildlife species and their habitats. In 2018, focused rare plant surveys were conducted on several different dates chosen to coincide with the blooming periods of all 22 rare plant species with some potential to occur in the BSA. All surveys included inspections of the Cottonwood Creek channel, perennial and ephemeral drainages, as well as the entire footprint of proposed road and surrounding areas as appropriate.

H. T. Harvey & Associates mapped all biotic habitats within the BSA onto an aerial photograph of the Project location. Where appropriate, plant communities were named according to Holland’s system of classification (1986) and the EACCS (ICF International 2010). Habitat acreages were calculated for all habitat types within the BSA using GIS, on-site mapping with a submeter Trimble, and aerial photograph interpretation. Habitats may be considered to be sensitive if they are limited in distribution, are regulated (e.g., by the CWA), or provide habitat for a sensitive species in this region. Reconnaissance-level surveys, including a by-stem tree survey, were deemed adequate to assess the effects of the Project on biological resources for the purposes of this NES.

2.2.2. RESOURCES REVIEWED

Prior to field work several environmental documents relevant to the Project Site were reviewed. These included:

- EACCS (ICF International 2010)
- Eastern Dublin Specific Plan (City of Dublin 1994)
- Site Assessment for the California Red-legged Frog and Tiger Salamander Focused Surveys in Dublin Corporate Center Study Area, Dublin, Alameda County (Sycamore Associates, LLC 2002a and 2002b)

- The 404 (b)(1) Alternatives Analysis for the Dublin Ranch Project and Pao Yeh Lin Property, Dublin, Fairy Shrimp Surveys (H. T Harvey & Associates 2000a and 2000b)
- Biological Assessment for Fallon Village Project (H. T. Harvey & Associates 2006)

Maps and aerial imagery of the Study Area were obtained from:

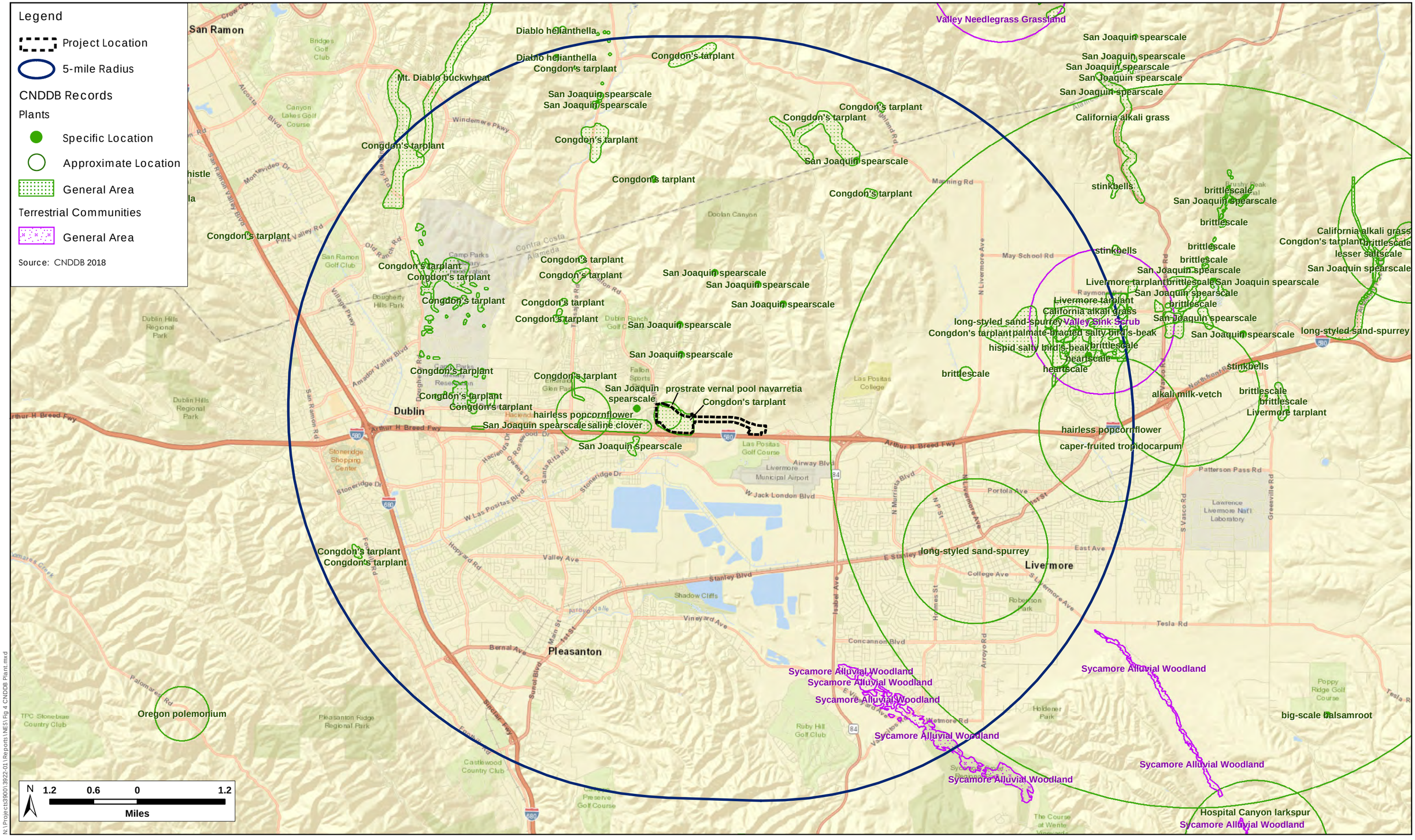
- USGS
- National Wetlands Inventory (NWI) (2018)
- Nationwide Environmental Title Research (NETR) (2018)
- Google Earth Pro software (Google Inc. 2018)

H. T. Harvey & Associates biologists collected and reviewed information concerning threatened, endangered, or other special-status species or habitats of concern from several sources to develop a list of species and habitats of concern that may occur in the Project vicinity. These sources included Rarefind (California Natural Diversity Database [CNDDB] 2018) for the *Livermore*, California USGS 7.5-minute quadrangle in which the BSA occurs, as well as the surrounding eight quadrangles: *Diablo, Tassajara, Byron Hot Springs, Dublin, Altamont, Niles, La Costa Valley, and Mendenhall Springs.* Records within the Project vicinity are shown in Figures 4 and 5. We also reviewed relevant information available through the USFWS, NMFS, CDFW, the California Native Plant Society (CNPS), and technical publications, as well as information gathered during prior H. T. Harvey & Associates projects in the vicinity.

2.2.2.1. California Environmental Quality Act

Section 15380(b) of the CEQA Guidelines provides that a species not listed on the federal or state lists of protected species may be considered rare if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definitions in the FESA and CESA and the section of the state Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a Project that may have a substantial effect on a species that has not yet been listed by either the USFWS or the CDFW or species that are locally or regionally rare.

The CDFW has produced three lists (amphibians and reptiles, birds, and mammals) of "species of special concern" that serve as "watch lists." Species on these lists either are of limited distribution or the extent of their habitats has been reduced substantially, such that threat to their populations may be imminent. Thus, their populations should be monitored. They may receive special attention during environmental review as potential rare species, but do not have specific statutory protection.



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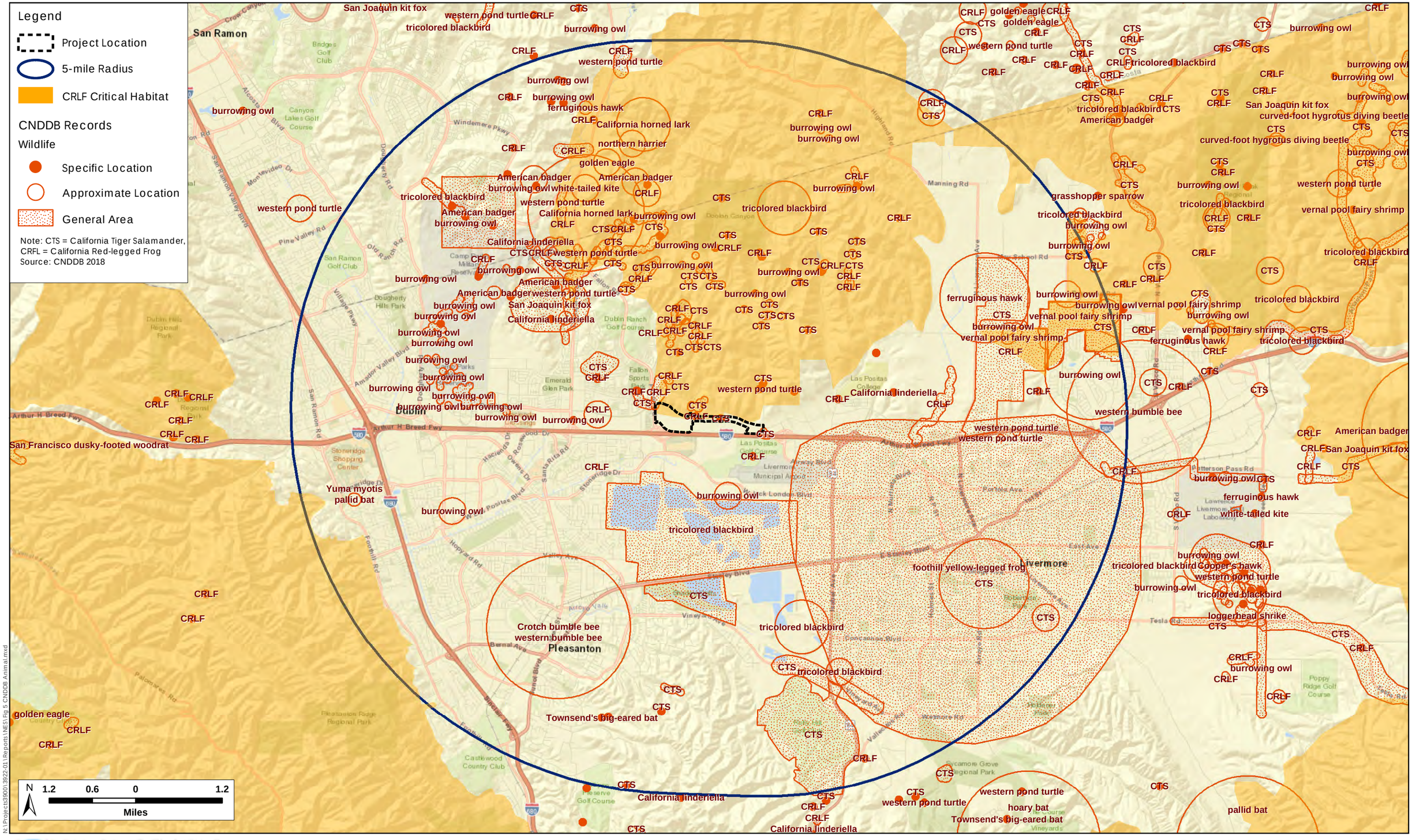
Ecological Consultants

Figure 4. CNDDB Plant Records
Dublin Boulevard-North Canyons Parkway Extension Project
Biological Resources Report (3922-01)
February 2019



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Ecological Consultants

Figure 5. CNDDB Animal Records
Dublin Boulevard-North Canyons Parkway Extension Project - Natural Environment Study Report (3922-01)
February 2019

All potentially rare or sensitive species, or habitats capable of supporting rare species, were considered for environmental review in this NES as per CEQA §15380(b) (see Chapters 3 and 4).

2.2.2.2. USFWS Species list

H. T. Harvey & Associates biologists generated lists of USFWS-regulated federally threatened and endangered species potentially occurring in the region which is defined as the *Livermore*, California USGS 7.5-minute quadrangle and surrounding eight quadrangles (*Diablo, Tassajara, Byron Hot Springs, Dublin, Altamont, Niles, La Costa Valley, and Mendenhall Springs*) via the USFWS Sacramento Fish & Wildlife Office website on April 16, 2018 (Appendix B).

2.2.2.3. NMFS Species list

H. T. Harvey & Associates biologists generated a list of NMFS-regulated federally threatened and endangered species potentially occurring in the region (i.e., within the *Livermore*, California USGS 7.5-minute quadrangle) via NMFS's California Species List Tool on August 24, 2018 (Appendix F).

2.2.2.4. California Native Plant Society

The CNPS, a non-governmental conservation organization, has developed a ranked list of plant species of concern in California. Vascular plants included on these lists are defined as follows:

Rank 1A—Plants considered extinct.

Rank 1—Plants rare, threatened, or endangered in California and elsewhere.

Rank 2—Plant rare, threatened, or endangered in California but more common elsewhere.

Rank 3—Plants about which more information is needed - review list.

Rank 4—Plants of limited distribution - watch list.

These CNPS listings are further described by the following threat code extensions:

1—seriously endangered in California

2—fairly endangered in California

3—not very endangered in California

Although the CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection, plants appearing on CNPS lists are, in general, are considered to meet CEQA's §15380 criteria (see Section 2.2.2.1 above) and adverse effects on these species may be considered substantial.

The CNPS *Online Inventory of Rare Plants* (CNPS 2018) supplied information regarding the distribution and habitats of vascular plants on CNPS Lists of category 1A, 1B, 2, and 3 in the *Livermore*, *California* USGS 7.5-minute quadrangle, and the eight surrounding quadrangles. Quadrangle-level records are not maintained for List 4 species, so we also consulted the *Inventory* records for List 4 species occurring in Alameda County. Additional information on special-status plant species and their distribution within the area were obtained from *The Jepson Manual, Second Edition* (Baldwin et al. 2012),

All CNPS lists and applicable records were consulted to determine the probability of occurrence for all special-status plant species within the BSA. These lists were combined with the USFWS lists, the CNDDB records from within the nine-quadrangle area, records from the Consortium of California Herbaria (CCH 2018), and all other sources to create an initial list of species to consider for occurrence within the BSA.

2.2.2.5. Special-status Species

For the purposes of this assessment, special-status species include:

- Species listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under the FESA (73 Federal Register [FR] 75176, November 9, 2009).
- Species listed or proposed for listing by the state of California as threatened or endangered under the CESA (14 CCR 670.5).
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380).
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.).
- Plants considered by CNPS to be "rare, threatened, or endangered in California" (California Rare Plant Rank [CRPR] 1A, 1B, 2, 3, and 4).
- Animal species listed as California Species of Special Concern (CSSC) by the CDFW.

- Animals listed as State Fully Protected by the CDFW (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).
- Plants and animals that are considered EACCS focal species.

2.3. Personnel and Survey Dates

This report was prepared by the following personnel at H. T. Harvey & Associates:

- Kelly Hardwicke, Ph.D., Principal-in-charge, Senior Plant Ecologist/Wetland Specialist
- Steve Rottenborn, Ph.D., Division Head, Senior Wildlife Ecologist
- Bridget Sousa, Ph.D., Wildlife Ecologist
- Shahin Ansari, Ph.D., Senior Plant Ecologist
- David Gallagher, M.S., Plant Ecologist
- Maya Goklany, M.S., Plant Ecologist
- Elan Alford, Ph.D., Senior Plant Ecologist

2.3.1. RECONNAISSANCE-LEVEL SURVEYS

Maya Goklany, M.S. and Bridget Sousa, Ph.D., conducted reconnaissance-level surveys of the site on March 14 and 16, 2017. Reconnaissance-level surveys were conducted in March 2017 by walking the entire BSA and noting special-status species and habitats potentially suitable for these species. The purpose of these surveys was to: 1) assess existing biotic habitats, 2) assess the area for its potential to support special-status species and natural communities of concern, 3) identify potential jurisdictional habitats, including Waters of the U.S. and State, and 4) provide information for the initial Project impact assessment. The reconnaissance survey identified eight biotic habitat types within the Study Area: (1) California annual grassland, (2) perennial marsh, (3) seasonal wetland, (4) perennial stream, (5) ephemeral stream, (6) mixed riparian woodland, (7) riparian grassland, and (8) developed/landscaped. A map of these biotic habitats is provided as Figure 3.

2.3.2. RARE PLANT SURVEYS

In addition to the reconnaissance surveys in 2017, rare plant surveys were conducted in the BSA by Elan Alford, Ph.D. on April 13 and 17, 2018, and by David Gallagher, M.S. on May 8, 10, and June 29, 2018. The purpose of these surveys was to identify the presence of special-status plants species (see 2.2.2.3 above) in the BSA. Particular

attention was paid to the suitability of habitat for special-status species known or expected to occur in the vicinity of the BSA. Though these surveys were not done to protocol level (which involves dedicated reference population tracking), they were targeted and all plant species within the BSA were identified to the level necessary to determine if a target rare plant species could be present.

2.3.3. WETLAND TECHNICAL ASSESSMENT SURVEYS

On April 13 and April 17, 2018 Dr. Alford performed a formal wetland technical assessment of the BSA. On May 8 and 10, and June 29, 2018, Mr. Gallagher completed delineation of jurisdictional habitats in the BSA. Details regarding the delineation can be found in the Wetland Technical Assessment report provided in Appendix A. Surveys determined that jurisdictional wetland features including perennial marsh and seasonal wetlands occurred within the BSA. The survey also identified the presence of perennial and ephemeral streams as potential waters of the U.S. CDFW-jurisdictional mixed riparian woodland and riparian grassland habitats also occurs in the BSA below top of the banks of the streams.

2.4. Agency Coordination and Professional Contacts

The USFWS and CDFW were contacted in April 2017 to discuss permitting requirements and mitigation strategies for the Project. Participants in that meeting included Ryan Olah and Joseph Terry of USFWS, Marcia Grefsrud of CDFW, Obaid Khan of City of Dublin, Ruben Izon of Alameda County, Gordon Sweet of BKF Engineers, Audrey Zagazeta of Circlepoint, and Kelly Hardwicke, Steve Rottenborn, and Danielle Tannourji of H. T. Harvey and Associates.

2.5. Limitations That May Influence Results

Focused or presence/absence protocol-level surveys were not conducted for special-status animal species for the preparation of this NES. Instead, reconnaissance-level surveys were conducted. Additional focused, species-specific surveys or surveys conducted during different times of year are not, however, necessary to make determinations regarding potential presence or absence of special-status species given the conditions of this particular Project and its BSA.

Chapter 3 – Results: Environmental Setting

3.1. Description of the Existing Biological and Physical Conditions

3.1.1. STUDY AREA

The BSA is located in the *Livermore* U.S. Geological Survey (USGS) 7.5-minute quadrangle in Alameda County (Figure 1). The BSA, as shown in Figure 3, is 141.4 acres and is located immediately to the north of I-580 between the existing terminus of Dublin Boulevard to the west and terminus of North Canyons Parkway to the east. The BSA encompasses all areas and features that may be temporarily or permanently impacted by the Project, as well as surrounding areas that may be indirectly impacted, or where important biological resources occur and were considered in the NES analysis. The BSA was extended south to the full extent of parcel A (Figure 2) to observe a large wetland complex and rare plant habitat.

The land uses in the immediate vicinity of the BSA include residential, industrial, open space, and commercial uses in Dublin; resource management and large parcel agricultural uses in the County; and business and commercial uses in Livermore. In Dublin, residential, industrial, and commercial land uses have not yet been developed in the Project area, although these are planned to occur and discussed in the EDSP, and existing land uses are largely agricultural or rural-residential. Parcel F contains a landscaping business/commercial development (Figure 2).

The BSA consists of primarily undeveloped grazing ranchland and open space, with intermittent residences and outbuildings. Improvements to the agricultural lands generally consist of private paved and unpaved roads used to access private property, fences, barns, corrals, wells, water tanks, single-family homes and various outbuildings.

3.1.2. PHYSICAL CONDITIONS

Elevations in the BSA range from approximately 380 ft to approximately 410 ft above sea level (Google 2018). The topography of the BSA ranges from relatively flat in the southern portion near I-580, to gently rolling hills to the north. The topography slopes slightly northward, and Cottonwood Creek drains from north to west in the eastern half of the BSA.

The BSA is underlain by five soil types: 1) CdB-Clear Lake clay, drained, 3 to 7 percent slopes; 2) DvC-Diablo clay, very deep, 3 to 15 percent slopes; 3) LaC-Linne clay loam, 3 to 15 percent slopes; 4) LaD-Linne clay loam, 15 to 30 percent slopes; and 5) RdA-Rincon clay loam, 0 to 3 percent slopes. The Clear Lake clay, drained, 3 to 7 percent slopes soil type is listed as a hydric soil (NRCS 2018). Soil properties, such as pH,

landform position, drainage class, and frequency of ponding or flooding were taken into account when mapping biotic habitats in the BSA.

The NWI identifies five features in or adjacent to the BSA (also see Appendix A and Figures 2 and 3). From east to west:

- Cottonwood Creek crosses the BSA in a north-south direction in the east. It is mapped by NWI as freshwater emergent wetland—palustrine, emergent, persistent, temporary flooded.
- An unnamed ephemeral stream which originates to the north, and runs in north-south direction in the center of the Project area to terminate in parcel F is identified by NWI as freshwater emergent wetland—palustrine, emergent, persistent, temporary flooded.
- An unnamed perennial stream tributary to the west of the eastern portion of Croak Road originates in the north and runs diagonally into parcel A. It is identified as freshwater emergent wetland—palustrine, emergent, persistent, temporary flooded in the northern reach, and as it turns westward it is identified as riverine—intermittent, streambed, seasonally flooded.
- A mixed riparian woodland to the north of the BSA occurs to the east of the western portion of Croak Road and is identified by NWI as freshwater forested/shrub wetland—palustrine, scrub-shrub, seasonally flooded. This feature flows into a perennial stream that discharges onto the BSA.
- The unnamed perennial stream which flows parallel to western Croak Road along the western border of the BSA is identified by NWI as riverine, intermittent, streambed, seasonally flooded.

3.1.3. BIOLOGICAL CONDITIONS

We identified eight biotic habitats within the BSA (Figure 3): perennial stream (0.33 ac), ephemeral stream (0.13 ac), perennial marsh (0.07 ac), seasonal wetland (10.43 ac), mixed riparian woodland (0.33 ac), riparian grassland (3.09 ac), California annual grassland (121.31 ac), and developed/landscaped habitat (5.71 ac). Appendix C includes pictures of various habitats across the BSA. Appendix D provides a list of all plant species identified within or directly adjacent to the site.

3.1.3.1. Perennial Streams

Four perennial streams comprise the perennial stream habitat in the BSA (Figure 3). These are the existing floodplain of Cottonwood Creek in the east and three additional unnamed streams in the western half of the BSA.

Cottonwood Creek is a perennial stream with a connection to groundwater and flows overland through the eastern portion of the BSA (Photo 1, Appendix C). It originates 4 mi north of the BSA in the Diablo Mountains near Collier Canyon Road, and flows southward to exit the BSA through a double box culvert beneath I-580, and then empties to Arroyo Las Positas after just 0.15 mi. Arroyo Las Positas flows into Arroyo Mocho, and historically, this watercourse went underground shortly thereafter, exhibiting no overland connection to the San Francisco Bay. During the present day, Arroyo Mocho flows through an aboveground engineered channel, draining into Alameda Creek and ultimately reaching the Bay, a traditionally navigable water. The main stem of Cottonwood Creek is split into two low flow channels just upstream of the BSA, and these channels converge in the central portion of the BSA. Although historical aerial photos indicate that this section of Cottonwood Creek generally conveys water year-round, it is possible that in periods of drought, sections of the stream may dry up or retreat underground. The inner stream banks are sharply incised and generally lined with exposed soil, providing little stabilization. As a result, numerous erosional features, such as headcuts and gullies, were apparent during surveys.

A second, smaller perennial stream is located along the western portion of Croak Road along the western boundary of parcel A (Photo 2, Appendix C, Figures 2 and 3). A portion of this stream has been culverted and capped with concrete for roughly 350 ln ft. (Photo 3, Appendix C). Substantial flows of water emanated from a culvert outlet in both 2017 and 2018 where the stream daylights, and a portion of the stream's water spills into the northern portion of the wetland complex to the south of the road alignment (Photo 5, Appendix C). Shortly thereafter, the aboveground, wetted streambed supports perennial marsh vegetation (described below) and continues to flow southward, parallel to western Croak Road.

To the west of the eastern portion of Croak Road, another small perennial stream emerges from the hills and flows into a seasonal wetland swale as the topography becomes less steep.

In the southwest corner of the BSA, an additional reach of perennial stream drains into the southern portion of the large wetland complex. This stream flows from parcel B to be conveyed under Fallon/Croak Road into parcel A. The stream then crosses to the west under Fallon Road and runs outside the BSA parallel to I-580 before discharging to a culvert under the highway and entering a flood control channel. This channel then drains to Arroyo Las Positas to the south.

The above discussed perennial streams generally convey water year round. Vegetation within perennial stream habitat is either consistent with that of the adjacent perennial marsh described below or absent due to ponding and flows.

Wildlife. Perennial streams in Alameda County can provide habitat for a variety of fish and wildlife species. However, the perennial stream habitat on the site provides limited habitat for fish and aquatic wildlife species for reasons discussed below.

The reach of Cottonwood Creek in the Study Area is shallow, steeply incised, unshaded, and contains little to no instream vegetation, which limits its value for fish and aquatic wildlife. No fish were observed within Cottonwood Creek during reconnaissance surveys, and the creek's shallow waters and lack of large pools make it unsuitable for most fish species. Small fish adapted to warm waters, such as the native California roach (*Hesperoleucus symmetricus*) and non-native mosquitofish (*Gambusia affinis*), may occur in limited numbers within the creek.

The unnamed tributaries in parcel A and along Fallon/Croak Road are shallow, generally holding no more than a few inches water. Nevertheless, instream vegetation along this tributary provides habitat for common amphibians and reptiles, as well as small numbers of non-native mosquitofish. Aquatic reptiles, such as the common garter snake (*Thamnophis sirtalis*) and western pond turtle, may forage and disperse along this stream. Common amphibians such as the native Sierran chorus frog (*Pseudacris sierrae*), as well as the non-native bullfrog (*Lithobates catesbeianus*), were observed in shallow pools and may utilize these streams for breeding and dispersal.

Medium-sized mammals such as the raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), gray fox (*Urocyon cinereoargenteus*), and non-native Virginia opossum (*Didelphis virginiana*) may forage in this habitat. Several species of bats and insectivorous birds, including the Yuma bat (*Myotis yumanensis*), Mexican free-tailed bat (*Tadarida brasiliensis*), and barn swallow (*Hirundo rustica*) forage for insects over stream habitats.

3.1.3.2. Ephemeral Streams

Three ephemeral streams occur in the BSA (Figure 3). These streams convey water during and immediately following rain events, and dry out during the summer months. As a result of heavy rains occurring just prior to the March 2017 reconnaissance survey, flowing water was present in sections of all ephemeral streams. But, no flowing water was present in any of these ephemeral streams during the surveys conducted in April and May 2018 (Photo 6, Appendix C).

A rocked area occurs in one ephemeral stream in parcel F (Photo 7, Appendix C). Otherwise, the majority of the ephemeral stream banks were vegetated with plants found in the surrounding California annual grasslands described below.

Wildlife. The ephemeral nature of these drainages precludes the presence of fish. Similarly, aquatic wildlife species are not expected to occur regularly within these drainages, but may utilize this habitat for dispersal when water is present. Wildlife using adjacent habitats are expected to forage and take shelter in the vegetation within the drainage. However, due to the limited extent of this habitat type within the study area, it is not expected to support wildlife species not found in the adjacent, more extensive, habitat types (i.e., California annual grassland and seasonal wetland).

3.1.3.3. Perennial Marsh

The perennial marsh habitat in the BSA supports strongly hydrophytic, emergent plants, and the marsh within the BSA is within the OHWMs of the perennial stream along Fallon/Croak Road. This features contained surface water and was codominated by Mexican rush (*Juncus mexicanus*) and iris-leaved rush (*Juncus xiphioides*), although some patches of hardstemmed bulrush (*Schoenoplectus acutus*) were also observed. Surface water was evident during all survey dates. Along the fenceline, dominant vegetation included alkali bulrush (*Bolboschoenus maritimus*), water parsnip (*Berula erecta*), creeping buttercup (*Ranunculus repens*), water speedwell (*Veronica anagallis-aquatica*), and hardstemmed bulrush.

Wildlife. The perennial marsh habitat within the Study Area is confined to a narrow roadside channel. Thus, many wildlife species that inhabit more extensive marshes, such as the Virginia rail (*Rallus limicola*), are not expected to be present. Nevertheless, the presence of water in the marsh and existing vegetation support a diverse and abundant invertebrate fauna, which provides ample foraging opportunities for insectivores. Aerial insectivores such as the cliff swallow (*Petrochelidon pyrrhonota*), violet-green swallow (*Tachycineta thalassina*), and free-tailed bat frequently forage over marsh habitats.

Limited numbers of marsh associated birds, such as song sparrows (*Melospiza melodia*) and red-winged blackbirds (*Agelaius phoeniceus*), may nest in the small stands of bulrush along Fallon/Croak Road. However, the majority of the marsh vegetation is too short and sparse to host nesting birds, although birds nesting elsewhere in the Project area may forage in this habitat. Common species of waterfowl, such as mallards (*Anas platyrhynchos*), Canada geese (*Branta canadensis*), and American coots (*Fulica americana*), were observed in the perennial marsh habitat during reconnaissance surveys. Amphibian species similar to those described above under *Perennial Stream,* and common garter snakes may also occur here.

The California vole (*Microtus californicus*) is a common small mammal species found in marshes in the Project vicinity and will breed in adjacent terrestrial habitats and forage in

freshwater marshes. Other common foragers in this habitat are the great blue heron (*Ardea herodias*), great egret (*Ardea alba*), and snowy egret (*Egretta thula*). Terrestrial wintering and migrating songbirds, including golden-crowned sparrows (*Zonotrichia atricapilla*), white-crowned sparrows (*Zonotrichia leucophrys*), and Lincoln's sparrows (*Melospiza lincolnii*), forage in the Study Area in cattails and other tall vegetation, as well as in adjacent upland habitats. In addition, urban-adapted wildlife species such as native raccoons and non-native roof rats (*Rattus rattus*) will make use of aquatic habitat in the site as a source of water and for foraging.

3.1.3.4. Seasonal Wetland

Large wetland patches scattered in parcel A comprise the seasonal wetland complex in the western part of the BSA (Figure 3). The seasonal wetlands occur in low lying areas and the largest patch is directly connected to the perennial marsh habitat that runs parallel to Fallon Road.

Historically, narrowleaf cattails (*Typha angustifolia*) dominated the central portion of the seasonal wetland in parcel A. However, these cattails had entirely died back at the time of reconnaissance level surveys in 2017, possibly from the disruption of the hydrological source to this feature (Photo 8, Appendix B). Historic aerials show that the cattail stand had only recently developed in the past approximately 8 years, and seems to have represented a temporary condition (Google 2018). Further changes in the site's hydrology were noted during the 2018 wetland delineation, and signs of marsh rewetting and some cattail regeneration were observed in April 2018; however, by May 2018 these areas were drying again and the area exhibited seasonal hydrology.

In general, this habitat supported seasonal ponding that ranged from very shallow to several feet deep at the southern end in March and April, and was associated with Clear Lake clay soils in the southwestern portion of the BSA. Typical seasonal wetland habitat within this large complex is depicted in Photo 9 (Appendix C).

Seasonal wetland vegetation in the parcel A was dominated by native forbs and grasses. Plants such as popcorn flower (*Plagiobothrys sp*.), bird's eye speedwell (*Veronica persicaria*), alkali pepperweed, annual semaphore grass, alkali barley, bristled downingia (*Downingia bicornuta* var. *bicornuta*), woolly marbles (*Psilocarphus brevissimus* var. *brevissimus*), and meadow barley (*Hordeum brachyantherum* subsp*. brachyantherum*) were observed during spring surveys.

Non-native grasses such as seaside barley (*Hordeum marinum* ssp. *gussoneanum*), and Italian ryegrass (*Festuca perennis*) were common in the more limited seasonal wetlands scattered along ephemeral drainages across the BSA.

The seasonal wetlands and mesic grasslands surrounding seasonal wetlands in the BSA support a large population of Congdon's tarplant (Figure 3). A previous survey conducted by Sycamore & Associates (2002a) identified several thousand individuals in seasonal wetlands (and California annual grassland) in parcel A. A focused survey on June 29, 2018 revealed the persistence of the Congdon's tarplant population within 11 separate locations; four within the seasonal wetlands and seven along the southwestern end of Croak Road (Photo 10, Appendix C). Approximately 77,000 individuals are estimated to occur across these locations.

Wildlife. Seasonal wetlands can provide habitat for a unique array of special-status and common wildlife species that rely specifically on the particular features they provide. However, because the seasonal wetlands in the BSA are regularly disturbed by grazing cattle that compress soils and inhibit use by wetland-associated invertebrate and amphibian species that might take refuge in the moist soils, the habitat provided by these features is functionally similar to the adjacent grasslands and perennial marsh from the perspective of wildlife use.

3.1.3.5. Mixed Riparian Woodland and Riparian Grassland

Mixed riparian woodlands in the BSA are composed of stands of mature trees rooted in the banks of perennial streams. Tree species include red willow and valley oak. Valley oaks in and near the BSA that occur along Cottonwood Creek are very large (up to 4.8 ft dbh). Additionally, about 3.09 acres of riparian grassland occur within the top of the bank of Cottonwood Creek and the unnamed perennial stream to the west of Croak Road. The understory of mixed riparian woodlands intergrades with that of the surrounding habitats, and the areas of riparian grassland lacking tree cover support similar species to the surrounding California annual grassland, with species such as soft chess (*Bromus hordeaceus*) and Italian ryegrass.

Wildlife. Riparian habitat is typically of high value to wildlife, with water and streamside vegetation supporting a diverse and abundant fauna. However, the extremely limited extent of riparian woodland within the Study Area greatly limits its value for wildlife. Riparian woodlands mapped to the Study Area consist of isolated trees intergrading into the surrounding habitats. Thus, the species occurring within the surrounding perennial marsh (described above) and California annual grassland (described below) are expected to utilize this habitat as well. The trees themselves provide potential foraging and nesting habitat for a variety of common birds, including the oak titmouse (*Baeolophus inornatus*), chestnut backed chickadee (*Poecile rufescens*), and Anna's hummingbird (*Calypte anna*). These trees may also provide hunting perches and nesting substrate for native raptors, such as the great horned owl (*Bubo virginianus*) and red-tailed hawk (*Buteo jamaicensis*). Trees with cavities or loose bark may provide roosting

habitat for bat species, including the pallid bat (*Antrozous pallidus*) and California myotis (*Myotis californicus*), year-round. The riparian grassland provides similar habitat values and functions as the surrounding California annual grassland, though along the outer banks of Cottonwood Creek contained a higher density of California ground squirrel burrows (*Otospermophilus beecheyi*).

3.1.3.6. Calfornia Annual Grassland

The majority (121.31 ac) of the BSA consists of California annual grassland habitat. Much of this grassland is currently grazed by cattle and is dominated by a suite of non-native grasses, such as seaside barley (*Hordeum marinum* ssp. *gussoneanum*), meadow barley (*H. murinum*), soft chess, wild oat (*Avena* sp.), and Italian ryegrass. Common weedy (and non-native) forbs include various species of filaree and geranium (*Erodium* spp. *and Geranium* spp., respectively), bristly ox tongue (*Helminthotheca echioides*), and wild radish (*Raphanus sativus*). Large monocultures of bull thistle and black mustard (*Brassica nigra*) were also scattered across the BSA within the California annual grasslands.

Several invasive species occur in the BSA, including but not limited to black mustard, wild oat, and Italian ryegrass. While the majority of the grasslands in the BSA are composed of non-native, ruderal vegetation, grasslands interspersed between patches of seasonal wetlands in the Tseng parcel exhibited higher species diversity and frequency of native wildflowers, such as common gumplant (*Grindelia camporum*), Itherial's spear (*Triteleia laxa*), annual lupine (*Lupinus bicolor*), blue eyed grass (*Sisyrinchium bellum*), blow wives (*Achyrachaena mollis*), shining peppergrass (*Lepidium nitidum*), and small flowered fiddleneck (*Amsinkia* menziesii).).

Wildlife. Small mammals such as California ground squirrels and Botta's pocket gophers (*Thomomys bottae*) are common residents of annual grasslands, and burrows of these species were observed in the BSA. Deer mice (*Peromyscus maniculatus*) and California voles are likely common throughout this habitat. Black-tailed deer (*Odocoileus hemionus columbianus*) are common browsers in this habitat, and coyotes (*Canis latrans*) hunt prey in the grassland portions of the Study Area.

Bird species that nest in nearby marsh, woodland, and urban habitats forage within grassland areas during the nesting season; these include the western bluebird (*Sialia mexicana*), violet-green swallow, mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*), and California scrub-jay (*Aphelocoma californica*). Raptors such as the red-tailed hawk and white-tailed kite (*Elanus leucurus*) may forage for small mammals within grassland habitats.

Several reptile species regularly occur in annual grassland habitat, including the western fence lizard (*Sceloporus occidentalis*), gopher snake (*Pituophis catenifer*), northern Pacific rattlesnake (*Crotalus oreganus*), and California kingsnake (*Lampropeltis californiae*). Burrows of Botta's pocket gophers provide refuges for these reptile species, as well as for common amphibians such as the western toad (*Anaxyrus boreas*) and Sierran chorus frog.

3.1.3.7. Developed/Landscaped

About 5.71 acres of developed/landscaped habitat is present in the BSA as hardscaped areas along Fallon Road and Croak Road in parcels A, B, and C. Additional hardscaped areas such as parking, storage, and sheds and landscaped areas occur around buildings, fences, parking areas, and a landscaping company in parcels D, F, and G of the BSA.

Small patches of non-native of horticultural plant species such as filaree are scattered around the buildings in the developed/landscaped parts of the BSA. Several patches of ornamental trees, primarily eucalyptus, occur near fence lines and buildings in the BSA.

Wildlife. Wildlife that can occur in developed/landscaped portions of the site includes species that are typically accustomed to urban environments and high levels of disturbance from human activities. These include native bird species such as house finches, non-native European starlings (*Sturnus vulgaris*) and rock pigeons (*Columba livia*). Additional bird species, such as Anna's hummingbird, American robins (*Turdus migratorius*), American crows (*Corvus brachyrhynchos*), and lesser goldfinches, may utilize trees or other vegetation within landscaped areas for nesting. Mammals such as the house mouse (*Mus musculus*), Norway rat (*Rattus norvegicus*) and raccoon can also occur in developed portions of the site. Abandoned buildings, sheds and other structures may also provide habitat for migrating Mexican free-tailed bats or resident pallid bats. Reptiles such as western fence lizards and gopher snakes may bask on the paved surfaces in order to raise their body temperature.

3.2. Regional Species, Habitats, and Natural Communities of Concern

3.2.1. OVERVIEW AND METHODS

Special-status fish, wildlife, and plant species that occur in the Project region are presented in Table 2. Special-status plant and animal species for which potential habitat is present in the BSA are noted and are discussed in further detail in Sections 4.2 and 4.3 respectively. Natural communities of special concern are discussed in Chapter 4.1.

3.2.2. SPECIAL-STATUS PLANT SPECIES

An inventory of CNPS (2018) and CNDDB (2018) (Figure 4) databases revealed a total of 81 extant or historical records of special-status plant species that occur within the Project region (defined by the nine-quadrangle and the Alameda County search areas). These 81 plant taxa were further analyzed for their presence in the BSA using the following criteria: (1) absence of suitable habitat types; (2) lack of specific microhabitat or edaphic requirements (e.g. serpentine soils); (3) the elevational range of the species being outside of the range of the that in the BSA; and/or (4) the species is presumed to be extirpated from the Project vicinity (which is the 5-mi radius around the BSA). Based on this analysis and the habitat types observed in the BSA during the 2017 and 2018 reconnaissance survey of, 22 special-status plant species were preliminarily determined to have some potential to occur in the BSA.

The 22 special-status plant species could not be eliminated from consideration for their occurrence in the BSA for several reasons, including (1) CNDDB records of extant populations that occur in proximity to or even overlap with the limits of the BSA, (2) the majority of these species prefer alkaline soils, which occur in the southwestern portion of the BSA; and (3) many are known to occur in disturbed grassland and wetland habitats, which occur in the BSA.

The following three species in particular were further evaluated and determined to be present in the BSA because prior surveys in the vicinity revealed their presence in the southwestern portion of the BSA: Congdon's tarplant (CRPR 1B.1), San Joaquin spearscale (CRPR 1B.2) (Sycamore & Associates 2002a), and prostrate vernal pool navarretia (*Navarretia prostrata*) (CRPR 1B.1) (Figure 4, CNDDB 2018). San Joaquin spearscale was observed by Sycamore Associates, LLC (2002a), whereas the prostrate vernal pool navarretia was observed multiple times in 2001, 2008, and 2010 as reported by the CNDDB (2018). However, neither San Joaquin spearscale nor prostrate vernal pool navarretia were observed during focused surveys in either 2017 or 2018, at a time when these species were within the identifiable blooming period and confirmed to be germinated at known reference sites. Despite the fact that the surveys in 2017 and focused rare plant surveys in 2018 identified neither of these two species, possibly as a result of the hydrology that was significantly altered in approximately 2010 (which created the large cattail marsh), it is likely seed bank still exists for these species on the site. Suitable habitat for both San Joaquin spearscale and prostrate vernal pool navarretia would be located in the alkaline-affected seasonal wetland areas exhibiting vernal pool-like ponding to the south of the project footprint. Congdon's tarplant was confirmed on the site and the extent of the population was mapped during the June 2018 surveys (Figure 3).

3.2.3. SPECIAL-STATUS FISH AND WILDLIFE SPECIES

The list of special-status fish and wildlife species that occur in the site region, developed from the resources described in Chapter 2, were considered for their potential to occur within the site (Table 1). CNDDB (2018) records of special-status animals within the site vicinity are shown on Figure 5. A number of special-status animal species are known to occur in eastern Alameda County, but are considered absent from the site because of the lack of suitable habitat or because the site is outside of the known range of the species. These species are included in Table 1 to indicate the rationale for considering them absent from the site.

A few other special-status wildlife species that occur in the site region may occur in the site only as uncommon to rare visitors, migrants, or transients, but are not expected to reside or breed on the site, to occur in large numbers, or otherwise to make substantial use of the site. Wildlife species that may winter or breed on the site include the California tiger salamander, California red-legged frog, western pond turtle white-tailed kite, burrowing owl, loggerhead shrike, grasshopper sparrow, tricolored blackbird, pallid bat, Townsend's big eared bat, and American badger. These species, as well as species that are presumed absent but require additional discussion (e.g., Longhorn fairy shrimp, vernal pool fairy shrimp and Callippe silverspot) are assessed in further detail in Chapter 4.

Table 2. Listed, Proposed Species, Natural Communities, and Critical Habitat Potentially Occurring or Known to Occur in the BSA

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
Federal or State Endangered or Threatened Species					
Plants					
Palmate-bracted bird's beak	*Chloropyron palmatum*	FE, SE, CNPS Rank 1B.1	Alkaline flats or barrens within chenopod scrub and valley/foothill grassland. 16 – 512 ft.	A	There are no suitable alkaline flat or barrens within the BSA. Only known in Alameda County from the Livermore Wetlands Preserve, approximately six mi east of the BSA. Not observed during focused surveys in 2018. Considered absent due to lack of suitable habitat and negative survey results.
Livermore tarplant	*Deinandra bacigalupii*	SE, CNPS Rank 1B.1	Alkaline meadows and along edges of alkali barrens or sinks. 495 – 611 ft.	A	There is marginally suitable habitat along the southern edge of the BSA near the intersection of Fallon and Croak Roads. Only known from the Livermore Wetlands Preserve in eastern Alameda County. The species was not observed during focused surveys in 2018. Considered absent due to the limited suitable habitat and negative survey results.
Animals					
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	Ephemeral freshwater and playa pools in the Central Valley and the San Francisco Bay Area.	A	Extensive wet-season and dry-season protocol-level branchiopod surveys conducted in and near the Study Area were negative for listed species (H.T. Harvey & Associates 1997a-b, 1998, 2000, Condor Country Consulting 2002, 2003, Helm Biological Consulting 2004). Furthermore, the Study Area is outside of the species' range. Determined to be absent.
Longhorn fairy shrimp	*Branchinecta longiantenna*	FE	Ephemeral freshwater and vernal pools in the Central Valley and the San Francisco Bay Area.	A	Extensive wet-season and dry-season protocol-level surveys have been conducted on the Study Area where suitable habitat was considered to occur (parcels A, D, E, and F). Dry season samples were collected and analyzed following the USFWS protocol on these same parcels and were negative for listed species (Helm Biological Consulting 2004). No suitable habitat was identified on parcel G, H or I, or on the nearby Mandeville and Croak parcels (Condor Country Consulting 2002, 2003). Extensive

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
					protocol-level surveys were also conducted in adjacent and nearby sites at Dublin Ranch and at the Pao Yeh Lin parcels between 1995 and 2000 (H.T. Harvey & Associates 1997a-b, 1998, 2000). All of these surveys failed to detect special-status fairy shrimp. Further, the EACCS does not map any portions of the Study Area (or adjacent areas) as suitable habitat for these species (ICF International 2010). Determined to be absent.
Vernal pool fairy shrimp	*Lepidurus packardi*	FE	Ephemeral freshwater and vernal pools in the Central Valley and the San Francisco Bay Area.	A	Extensive wet-season and dry-season protocol-level surveys have been conducted on the Study Area where suitable habitat was considered to occur (parcels A, D, E, and F). Dry season samples were collected and analyzed following the USFWS protocol on these same parcels and were negative for listed species (Helm Biological Consulting 2004). No suitable habitat was identified on the G, H, or I parcels, or on the nearby Mandeville and Croak parcels (Condor Country Consulting 2002, 2003). Extensive protocol-level surveys were also conducted in adjacent and nearby sites at Dublin Ranch and at the Pao Yeh Lin parcels between 1995 and 2000 (H.T. Harvey & Associates 1997a-b, 1998, 2000). All of these surveys failed to detect special-status fairy shrimp. Further, the EACCS does not map any portions of the Study Area (or adjacent areas) as suitable habitat for these species (ICF International 2010). Determined to be absent.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	Elderberry shrubs (*Sambucus* sp.) associated with riparian forests that occur along rivers and streams.	A	No elderberry shrubs are present in the BSA, and the BSA is outside the range of this beetle. Determined to be absent.
San Bruno elfin butterfly	*Callophrys mossii bayensis*	FE	Grassland and chaparral containing stonecrop (*Sedum spathulifolium*), the larval host plant.	A	The BSA is outside the current range of the species and the host plant does not occur on the site. Determined to be absent.

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
Callippe silverspot	*Speyeria callippe callippe*	FE	Grassland habitat containing Johnny jump-up (*Viola pedunculata*), the larval host plant.	A	The EACCS maps the BSA as potential habitat for the Callippe Silverspot butterfly. However, the butterfly's occurrence is dependent on the presence of its larval host plant, Johnny jump-up. Extensive botanical surveys have been conducted within the BSA. Repeated surveys were conducted from March through May 1999-2001, which encompasses the bloom period of Johnny jump-up. All of these surveys failed to detect the Callippe silverspot host plant (Sycamore and Associates 2002a, WRA 2004). In addition, surveys of the entirety of the BSA by H.T. Harvey & Associates botanist in 2017 and 2018 also failed to detect Johnny jump-up. Therefore, Johnny jump-up, and thus the Callippe silverspot butterfly, are determined to be absent from the Study Area.
Central California Coast steelhead	*Oncorhynchus mykiss*	FT	Cool streams with suitable spawning habitat and conditions allowing migration between spawning and marine habitats.	A	Cottonwood Creek lacks sufficient instream vegetation and depth to support steelhead. Similarly, the unnamed perennial tributaries along Croak Road and Fallon/Croak Road lack sufficient depth to support steelhead. In addition, neither creek was connected to the ocean, either historically or currently, and steelhead are not known from this watershed (NMFS 2018). Thus, suitable aquatic habitat is absent from the site. Determined to be absent.
Delta smelt	*Hypomesus transpacificus*	FT, SE	Shallow, tidal water in the Sacramento/San Joaquin River Delta.	A	Cottonwood Creek and ephemeral drainages on site do not provide suitable tidal habitat, and the BSA is outside the species' range. Determined to be absent.
California tiger salamander	*Ambystoma californiense*	FT, SE	Vernal or temporary pools in annual grasslands or open woodlands.	HP	Based on prior surveys of the BSA, and on CNDDB records, this species is known to occur within the immediate vicinity of the BSA. A site assessment and focused surveys for breeding tiger salamanders, conducted from 2001 through 2003, detected several adult tiger salamanders immediately north of to the BSA (Sycamore Associates 2001a, 2003). Numerous additional records of tiger salamanders occur within ponds, intermittent streams and their tributaries in the vicinity of the BSA, including breeding records in ponds in close proximity to the

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
					site (H. T. Harvey & Associates 2001, Sycamore 2001b, CNDDB 2018). While suitable breeding ponds are absent from the BSA, perennial and ephemeral stream, perennial marsh, and seasonal wetland habitats on-site may provide suitable dispersal and foraging habitat for the species, while California annual grasslands in the BSA support California ground squirrel and pocket gopher colonies whose burrows can provide suitable refugia for California tiger salamander. The species is therefore determined to be present.
California red-legged frog	*Rana draytonii*	FT, CSSC	Streams, freshwater pools, and ponds with emergent or overhanging vegetation.	HP, CH	A site assessment and a focused survey for breeding California red-legged frogs, conducted in 2001 on parcels A, D, E, F, and G failed to detect any California red-legged frogs, although the quarry pond to the north of the BSA on parcel D was considered to provide suitable breeding habitat (Sycamore Associates 2001b-c). Additional surveys conducted in 2003 detected an adult California red-legged frog at the head of an unnamed drainage within the immediate vicinity of the BSA (H. T. Harvey & Associates 2006). Suitable breeding habitat for red-legged frogs is absent from the BSA. However, perennial and ephemeral stream, perennial marsh, seasonal wetland, and California annual grassland habitats on site provide suitable foraging, dispersal and refugial habitat for red-legged frogs. Thus, the species is determined to be present. The northern portion of the Study Area has been designated as critical habitat by the USFWS.
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT, ST	Primarily associated with scrub and chaparral. Also may occur in any inner Coast Range plant community.	A	No suitable scrub or chaparral habitat occurs within the BSA, which is also outside the species' range. Determined to be absent.

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
California least tern	*Sterna antillarum browni*	FE, SE	Nests along the coast on bare or sparsely vegetated, flat substrates. In S.F. Bay, nests in salt pannes and on an old airport runway. Forages for fish in open waters.	A	No suitable open water foraging habitat is present in the BSA. Furthermore, no suitable nesting or roosting habitat is present in the site vicinity. Determined to be absent.
Bank swallow	*Riparia riparia*	ST	Colonial nester on vertical banks or cliffs with fine-textured soils near water.	A	No suitable vertical banks or cliffs are present in the BSA. In addition, the low flow reach of Cottonwood Creek within the BSA is too shallow and narrow to support a nesting colony of bank swallows. Determined to be absent.
Tricolored blackbird	*Agelaius tricolor*	ST	Nests in extensive emergent vegetation and fields.	HP	Foraging habitat for this species occurs in the perennial marsh, seasonal wetlands, and California annual grassland habitats on parcel A and B. Dense stands of emergent vegetation and mustard (*Brassica* sp.) occurring in parcel B between Fallon/Croak Road and the I-580 off ramp provide marginally suitable habitat for a nesting colony of tricolored blackbirds. Furthermore, the species has been recorded in the BSA and was known to breed in the vicinity (Cornell Laboratory of Ornithology 2018). Thus, there is some potential, albeit low, for a breeding colony of tricolored blackbirds to become established in perennial marsh habitat in parcel B.
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, ST	Extensive open grasslands or grasslands with scattered shrubby vegetation.	HP	EACCS habitat modeling places the BSA within the extreme northwestern edge of the current range of the species. Extensive surveys of the BSA in the 1990s and early 2000s failed to detect any kit fox or evidence of their presence and all available data indicate that the current range of the San Joaquin kit fox does not extend as far south/west as the Dublin Boulevard area (H. T. Harvey & Associates 1997c-f, Sycamore Associates 2002c, Sycamore Associates and Townsend 2002a, b, CNDDB 2018). Only a single kit fox has been recorded in the area, approximately 5 mi northeast of the BSA along

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
					Morgan Territory Road (H. T. Harvey & Associates 1997c, d). Because California annual grasslands in the BSA offer ostensibly suitable foraging and denning habitat for kit foxes, and because an individual has been detected to the northeast, we cannot rule out the possibility that individual kit foxes may occur on-site. If the species were to be present, it would likely occur only as a rare and irregular dispersant. Given the existing high levels of human disturbance and lack of recent records anywhere in the vicinity, in spite of the presence of ostensibly suitable habitat, this species is considered absent from the site.
California Native Plant Society (CNPS) Rare Species					
California androsace	*Androsace elongata* ssp. *acuta*	CNPS Rank 4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland; generally on rocky, grassy slopes; 490 – 4,280 ft.	A	This species is considered absent from the BSA due to the lack of suitable rocky micro-habitat. Known from eastern Alameda County within the Diablo range. Not observed during focused surveys in 2018 and determined to be absent.
Heartscale	*Atriplex cordulata* var. *cordulata*	CNPS Rank 1B.2	Chenopod scrub, meadows and seeps with saline or alkaline soils;valley and foothill grassland in sandy soils; 0 – 560 ft.	HP/SA	There is marginally suitable habitat along the southern edge of the BSA near the intersection of Fallon and Croak Roads. Known primarily from the Livermore Wetlands Preserve in eastern Alameda County. This species was not detected during the 2018 focused plant surveys. Therefore, this species is determined to be absent from the BSA.
Crownscale	*Atriplex coronata* var. *coronata*	CNPS Rank 4.2	Chenopod scrub, valley and foothill grassland, vernal pools in clay alkaline soils; 0 – 1,935 ft.	HP/SA	There is marginally suitable habitat along the southern edge of the BSA near the intersection of Fallon and Croak Roads. Known primarily from the Livermore Wetlands Preserve in eastern Alameda County. This species was not detected during the 2018 focused plant surveys. Therefore, this species is determined to be absent from the BSA.

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
Brittlescale	*Atriplex depressa*	CNPS Rank 1B.2	Chenopod scrub, valley and foothill grassland, vernal pools in clay alkaline soils; 0 – 1,050 ft.	HP/SA	There is marginally suitable habitat along the southern edge of the BSA near the intersection of Fallon and Croak Roads. Known primarily from the Livermore Wetlands Preserve in eastern Alameda County. This species was not detected during the 2018 focused plant surveys. Therefore, this species is determined to be absent in the BSA.
Lesser saltscale	*Atriplex minuscula*	CNPS Rank 1B.1	Chenopod scrub, playas, valley and foothill grassland in clay alkaline soils; 45 – 655 ft.	HP/SA	There is marginally suitable habitat along the southern edge of the BSA near the intersection of Fallon and Croak Roads. Known primarily from the Livermore Wetlands Preserve in eastern Alameda County. This species was not detected during the 2018 focused plant surveys. Therefore, this species is determined to be absent from the BSA.
Johnny-nip	*Castilleja ambigua* var. *ambigua*	CNPS Rank 4.2	Coastal bluff scrub, coastal prairie, coastal scrub, and marshes and swamps in coastal areas.0 – 1,425 ft.	A	There is no suitable habitat present within the BSA. This species is only known from coastal areas in Alameda County. This species is determined to be absent due to the lack of suitable habitat and not having been detected during the 2018 focused surveys.
Congdon's tarplant	*Centromadia parryi* ssp. *congdonii*	CNPS Rank 1B.1	Valley and foothill Grassland in depressions, swales floodplains with alkaline soils; usually disturbed areas;0 – 755 ft.	HP/P	The species was observed during the 2018 focused plant surveys of the BSA. The statewide population includes 91 occurrences, and of these, approximately one occurs within the southwestern portion of the BSA and 19 occur within the immediate vicinity. The CNDDB has recorded up to 114,000 individuals of Congdon's tarplant in the southwestern portion of the BSA between Fallon Road and Croak Road, and 77,000 individuals were estimated in 2018. Determined to be present.
Hispid bird's beak	*Chloropyron molle* ssp. *hispidum*	CNPS Rank 1B.1	Saline marshes, playas, and flats within valley and foothill grassland; 0 – 510 ft.	HP/SA	There is marginally suitable habitat along the southern edge of the BSA near the intersection of Fallon and Croak Roads. Known primarily from the Livermore Wetlands Preserve in eastern Alameda County. This species was not detected during the 2018 focused plant surveys. Therefore, this species is determined to be absent from the BSA.
San Joaquin spearscale	*Extriplex joaquinana*	CNPS Rank 1B.2	Chenopod scrub,	HP/SP (seedbank)	Suitable habitat and suitable alkaline soils occur on site. Although not observed during the March 2017

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
			meadows and seeps, playas, valley and foothill grassland in alkaline soils; 0 – 2,740 ft.		or 2018 surveys, it was observed in the BSA in 2002. It produces a long-lived seed bank, which germinates in response to soil disturbances and can exist in weedy grasslands dominated by exotic species. The statewide population is composed of approx.111 extant occurrences; and of these, 11 are or were within the immediate vicinity of the BSA. The CNDDB has recorded several occurrences near the BSA, some of which have likely been extirpated by recent development. Assumed to be potentially present as seedbank within the alkaline-affected seasonal wetlands in the southern portion of parcel A.
Diablo helianthella	*Helianthella castanea*	CNPS Rank 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland generally in rocky alluvial soils; 195 – 4,265 ft.	HP/SA	There is marginally suitable habitat within the BSA. Known only from the Berkeley Hills in Alameda County. This species was not detected during the 2018 focused plant surveys. Therefore, this species is considered absent from the BSA.
Hogwallow starfish	*Hesperevax caulescens*	CNPS Rank 4.2	Drying shrink-swell clay of shallow vernal pools and flats/depressions in Valley and foothill grassland; sometimes in alkaline soil; 0 – 1,655 ft.	HP/SA	Suitable habitat occurs in the seasonal wetlands in the BSA. Known mainly from the Diablo Range in Alameda County. This species was not detected during the 2018 focused plant surveys. Therefore, this species is determined to be absent from the BSA.
Ferris' goldfields	*Lasthenia ferrisiae*	CNPS Rank 4.2	Wet saline flats and vernal pools with clay soils; 65 – 2,295 ft.	HP/SA	There is suitable habitat along the southern edge of the BSA near the intersection of Fallon and Croak Roads. This species was not detected during the 2018 focused plant surveys. Therefore, this species is determined to be absent from the BSA.
Mt. Diablo cottonweed	*Micropus amphibolus*	CNPS Rank 3.2	Broadleafed upland forest, chaparral, cismontane woodland, valley and foothill	A	This species is considered absent from the BSA due to the lack of suitable rocky micro-habitat. This species was not observed during the 2018 focused plant surveys, and the BSA is likely out of the

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
			grassland with rocky or shallow soils; 145 – 2,705 ft.		species' range as it is known only from the Berkeley Hills in Alameda County. Determined to be absent.
Little mousetail	*Myosurus minimus* ssp. *apus*	CNPS Rank 3.1	Wet fields, vernal pools (alkaline soils), streambanks in valley and foothill grassland; 65 – 2,100 ft.	HP/SA	There is suitable habitat along the southern edge of the BSA in parcel A near the intersection of Fallon and Croak Roads. Known primarily from the Livermore Wetlands Preserve and the Diablo range in eastern Alameda County. This species was not detected during the 2018 focused plant surveys. Therefore, this species is determined to be absent from the BSA.
Cotula navarretia	*Navarretia cotulifolia*	CNPS Rank 4.2	Occurs in wetlands with heavy soils within chaparral, cismontane woodland, valley and foothill grassland; 10 – 6,005 ft.	HP/SA	There is suitable habitat along the southern edge of the BSA in parcel A near the intersection of Fallon and Croak Roads. Known primarily from the Livermore Wetlands Preserve and the Diablo range in eastern Alameda County. This species was not detected during the 2018 focused plant surveys, and has never been recorded in prior plant surveys of the site. Therefore, this species is determined to be absent from the BSA.
Adobe navarretia	*Navarretia nigelliformis* ssp. *nigelliformis*	CNPS Rank 4.2	Valley and foothill grassland in clay depressions, vernal pools; 325 – 3,280 ft.	HP/SA	There is suitable habitat within the BSA in parcel A. The only recent occurrence in Alameda County is from the Diablo range. This species was not detected during the 2018 focused plant surveys, and has never been recorded in prior plant surveys of the site. Therefore, this species is determined to be absent from the BSA.
Prostrate vernal pool navarretia	*Navarretia prostrata*	CNPS Rank 1B.1	Coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools; 5 – 3,970 ft.	HP/SP (seedbank)	The CNDDB has recorded a small population of prostrate vernal pool navarretia within a roughly bounded polygon that occurs within the western portion of the BSA. This polygon is non-specific, but appears to be centered on the central or southern portions of the seasonal wetland complex in parcel A, which also represents the area of suitable habitat for the species in the BSA. It was observed multiple times in 2001, 2008, and 2010 as reported by the CNDDB, but was not detected in 2017 or 2018, possibly due to changing hydrologic conditions after 2010. The statewide population is composed of

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
					approx.51 extant occurrences. Although not observed during the March 2017 and May 2018 surveys, it was observed on the site in several recent years and therefore it is assumed to be potentially present in the central and southern portions of the seasonal wetland complex in parcel A as seedbank.
California alkali grass	*Puccinellia simplex*	CNPS Rank 1B.2	Coastal salt marsh; 5 – 3,050 ft.	A	There is no suitable habitat within the BSA. Known from only two locations along the coast in Northern California, and not detected during focused surveys in 2018. Determined to be absent.
Lobb's aquatic buttercup	*Ranunculus lobbii*	CNPS Rank 4.2	Vernal pools and ponds in cismontane woodland, North Coast coniferous forest, valley and foothill grassland; 45 – 1,540 ft.	HP/SA	There is suitable habitat within the wetlands in parcel A of the BSA. Primarily known from the Berkeley Hills in Alameda County. This species was not detected during the March 2017 reconnaissance surveys or 2018 focused plant surveys. Therefore, this species is determined to be absent from the BSA.
Caper-fruited tropidocarpum	*Tropidocarpum capparideum*	CNPS Rank 1B.1	Valley and foothill grassland in alkaline soils; 0 – 1495 ft.	HP/SA	Suitable habitat occurs in the BSA in the alkaline-affected areas in the southern portion of parcel A. Known mainly from the Diablo Range in Alameda County. This species was not detected during the 2018 focused plant surveys. Therefore, this species is determined to be absent from the BSA.
California Species of Special Concern					
California horned lizard	*Phrynosoma coronatum frontale*	CSSC	Open habitats with sandy, loosely textured soils, such as chaparral, coastal scrub, annual grassland, and clearings in riparian woodlands with the presence of native harvester ants (*Pogonomyrmex barbatus*).	A	No suitable sandy habitat is present in the BSA. Determined to be absent.
Foothill yellow-legged frog	*Rana boylii*	CSSC	Partially shaded shallow streams and	A	No suitable habitat occurs in the BSA, as creeks in this area are shallow, steep banked, and lack the

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
			riffles with a rocky substrate. Occurs in a variety of habitats in coast ranges.		riffles and cobble-sized stones preferred by the species. Thus, the species is considered absent from the BSA.
Western spadefoot	*Scaphiopus hammondii*	CSSC	Grasslands and occasionally valley-foothill hardwood woodlands; vernal pools or similar ephemeral pools required for breeding.	A	The species is not known to occur as far west as Livermore, and no records of the species occur in the vicinity. Determined to be absent.
Western pond turtle	*Emys marmorata*	CSSC	Occurs in and around a wide variety of perennial or nearly perennial aquatic habitats including canals, stock ponds, lakes, streams, and rivers. Nests in uplands, typically in close proximity to aquatic habitat.	HP	Aquatic habitat for the western pond turtle occurs within the reaches of Cottonwood Creek, in the unnamed tributary along Fallon/Croak Road, and in ponded water at culverts along Croak Road. Although western pond turtles have been observed within Cottonwood Creek north of the BSA (CNDDB 2018), the reaches of the creek within the Study Area provides only marginally suitable foraging habitat for the species. Within the BSA, Cottonwood Creek is shallow, steep banked, and lacks suitable basking sites and food resources; thus western pond turtles are not expected to occur regularly in the reaches within the BSA. Similarly, the shallow waters of the unnamed tributaries along Fallon/Croak Road provide only marginally suitable foraging habitat for the species. Nevertheless, the pond turtles may utilize perennial and ephemeral stream habitats in the BSA for dispersal or to move between suitable aquatic foraging and upland breeding habitats. Annual grasslands throughout the BSA, but in particular near Cottonwood Creek and the other perennial streams, provide suitable nesting habitat for the species. Thus western pond turtles may occur within the BSA, primarily as transients in aquatic and marsh habitat, but potentially as breeders in upland habitat.

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
Burrowing owl	*Athene cunicularia*	CSSC (burrows)	Grasslands and ruderal habitats where ground squirrel or other burrows are present.	HP	Burrowing owls and evidence of their presence (i.e., whitewash and/or pellets) were within the immediate vicinity of the BSA during focused surveys conducted in 2002 (Sycamore Associates 2002d). Burrowing owls have also been observed in grasslands within 2.0 mi of the BSA, primarily located on properties to the north (Sycamore Associates 2002e, CNDDB 2018). Burrows of California ground squirrels and active ground squirrel colonies were observed during the 2002 habitat assessment of the sites (Sycamore 2002d, e), and were also observed during the 2017 and 2018 surveys. Because suitable breeding and foraging habitat for burrowing owls is present throughout the BSA, particularly in the upland grasslands, burrowing owls may utilize California annual grasslands and portions of abandoned developed/landscaped habitats within the BSA.
Loggerhead shrike	*Lanius ludovicianus*	CSSC (nesting)	Nests in tall shrubs and dense trees; forages in grasslands, marshes, and ruderal habitats.	HP	Suitable foraging habitat for loggerhead shrikes is available throughout the grassland habitat on site, and a loggerhead shrike was observed in the BSA during surveys in 2017 and 2018. Suitable nesting habitat is available within the BSA in isolated shrubs or trees, and up to two pairs of this species may nest in the BSA.
Yellow warbler	*Setophaga petechia*	CSSC (nesting)	Nests in riparian woodlands, especially dominated by cottonwood (*Populus* spp.), willow (*Salix* spp.), and alder (*Alnus* spp.).	HP	No suitable riparian habitat occurs within the BSA. As migrants, yellow warblers may occur as occasional foragers on the BSA, but are not expected to nest on or adjacent to the BSA.
Yellow-breasted chat	*Icteria virens*	CSSC (nesting)	Nests in dense stands of willow and other riparian habitat.	A	No suitable riparian or willow habitat occurs within the BSA. Determined to be absent.
Grasshopper sparrow	*Ammodramus savannarum*	CSSC (nesting)	Breeds and forages in meadows, fallow fields, and pastures.	HP	Suitable nesting and foraging habitat is present throughout grasslands in the BSA.

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
Pallid bat	*Antrozous pallidus*	CSSC	Forages over many habitats; roosts in caves, rock outcrops, buildings, and hollow trees.	HP	Suitable roosting and breeding habitat for individuals or a moderate number of pallid bats may be present in larger trees (if cavities are present) or abandoned buildings in the BSA. Abandoned buildings within parcel D could provide habitat for a medium sized roosting or maternity colony, although no evidence of large numbers of bats was observed during reconnaissance surveys in 2017.
Townsend's big-eared bat	*Corynorhinus townsendii*	CSSC	Roosts in caves and mine tunnels, and occasionally in deep crevices in trees such as redwoods or in abandoned buildings, in a variety of habitats.	HP	No suitably large tree cavities were observed in the BSA. Abandoned buildings within parcel D may provide habitat for individual roosting or breeding Townsend's big eared bats. Therefore, they may occur in the BSA as occasional foragers/dispersants.
Western red bat	*Lasiurus blossevillii*	CSSC	Riparian woodlands; riparian obligate that roosts in the foliage of large trees.	A	The species does not breed in the region and suitable riparian roosting habitat is not available in the BSA.
American badger	*Taxidea taxus*	CSSC	Burrows in grasslands and occasionally in infrequently disked agricultural areas.	HP	Badgers are not known to occur within the BSA and none were observed during reconnaissance level surveys in 2017. However, badgers have been recorded in the surrounding vicinity (CNDDB 2018; Figure 5). Suitable denning and foraging habitat for badgers is present in the grassland habitats, although badgers are unlikely to den on-site due to the surrounding high levels of human disturbance. Should badgers occur in the BSA, they would most likely represent dispersing or foraging individuals. Nevertheless, there is some potential for badgers to den in the Study Area, albeit low.
State Fully Protected Species					
White-tailed kite	*Elanus leucurus*	SP	Nests in tall shrubs and trees, forages in grasslands, marshes, and ruderal habitats.	P	White-tailed kites are known to occur in the BSA and were observed during reconnaissance level surveys in 2017. Grassland habitat provides suitable foraging habitat for kites, and isolated trees on site may provide suitable nesting habitat for up to one pair of nesting white-tailed kites.

Common Name	Scientific Name	Status[1]	General Habitat Description	Habitat Present/Absent[2]	Rationale
Golden eagle	*Aquila chrysaetos*	SP	Breeds on cliffs or in large trees (rarely on electrical towers), forages in open areas.	HP	No golden eagle nests are known from the BSA or vicinity and suitably large trees or structures that could support an eagle nest are largely absent from the BSA and surrounding area. In addition, the EACCS models the BSA as potential foraging habitat for the species, but does not model any potential nesting habitat in the vicinity. Thus, golden eagles may occur as occasional foragers on the BSA, but are not expected to nest on or adjacent to the BSA.

[1] Status: Federally Endangered (FE); Federally Threatened (FT); State Endangered (SE); State Threatened (ST); California Fully Protected Species (SP); California Species of Special Concern (CSSC); California Native Plant Society (CNPS).

CNPS Rare Plant Ranks

1A = Plants presumed extinct in California

1B = Plants that are rare, threatened, or endangered in California and elsewhere

2 = Plants rare, threatened, or endangered in California, but more common elsewhere

3 = Plants about which more information is needed—a review list

4 = A watch list of plants of limited distribution

CNPS Threat Code Extensions

0.1: Seriously endangered in California

0.2: Fairly endangered in California

0.3: Not very endangered in California

[2] Absent [A] - no habitat present and no further work needed. Habitat Present [HP] - habitat is, or may be present. The species may be present. Present [P] - the species is present. Habitat Present/Species Absent [HP/SA] – there is suitable habitat for the plant species, but focused surveys have ruled out its potential presence on the site. Critical Habitat [CH] – Project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present.

Chapter 4 – Results: Biological Resources, Discussion of Impacts and Mitigation

Various biological resources including sensitive or regulated habitats of and special-status plants and animals will be impacted by the Project. This section describes these biological resources, potential impacts to them, avoidance and minimization measure incorporated into the Project to protect them, as well as measures to mitigate for the impact to these biological resources in accordance with applicable environmental laws and regulations.

4.1. Habitats and Natural Communities of Special Concern

The 141.4-ac BSA supports six sensitive and regulated biotic habitats: 1) perennial streams, 2) ephemeral streams, 3) perennial marsh, 4) seasonal wetlands, 5) mixed riparian woodland, and 6) riparian grassland (grassy areas within floodplain benches and below top-of-bank). As described in Chapter 2, these areas may be considered waters of the U.S./state and may be claimed by the USACE, RWQCB, and/or the CDFW.

Impacts to wetlands, streams, and riparian habitat may be considered significant under CEQA, and thus may require the implementation of measures to avoid and minimize impacts to these sensitive and regulated habitats. Moreover, the USACE, RWQCB, and CDFW all may impose compensatory mitigation requirements for the permanent loss of these habitats in the BSA.

Permanent and temporary impacts to the above mentioned habitats are summarized in Table 3 and discussed in sections 4.1.1 and 4.1.2 below. Project impacts on biotic habitats in the 81.3-ac Project footprint are also illustrated on Figure 3.

Table 3. Habitat and Impact Acreages within the Project Footprint for the Dublin Boulevard Extension Project

	Temporary Impact (ac)	Permanent Impact (ac)	Total (ac)
Sensitive Habitats			
Perennial stream	0.01	0.02	0.03
Ephemeral stream	0.02	0.08	0.10
Perennial marsh	<0.01	0	<0.01
Seasonal wetland	0.33	0.12	0.45
Mixed riparian woodland	0.05	0.11	0.16
Riparian grassland	2.15	0.70	2.85
Subtotal	**2.56**	**1.03**	**3.59**
Non-Sensitive Habitats			
California annual grassland	51.69	21.67	73.36

	Temporary Impact (ac)	Permanent Impact (ac)	Total (ac)
Landscaped/Developed	2.18	2.17	4.35
Subtotal	**53.87**	**23.84**	**77.71**
GRAND TOTAL	**56.43**	**24.87**	**81.30**

4.1.1. WETLANDS AND WATERS

Throughout California, the quality and quantity of aquatic and wetland habitats have dramatically declined because of the construction of dams, dikes, levees, and flood control structures, as well as because of culverting, channelization, water diversions, and the filling of aquatic and wetland habitat for development. Additionally, there has been an overall degradation of water quality in many watersheds because of inputs of runoff from agricultural and urban development. Aquatic habitats are important to numerous aquatic wildlife species and provide a source of water for terrestrial species. Wetlands also provide high functions and values for wildlife and contribute to maintaining water quality within larger watershed systems.

4.1.1.1. Survey Results

There are 10.50 ac of wetlands occurring as seasonal wetlands and perennial marsh, and 0.46 ac of streams, all considered potential waters of the U.S. within the BSA. These comprised of 0.07 ac of perennial marsh which runs parallel to and on the east side of old Fallon Road and a complex of seasonal wetlands covering 10.43 ac with the largest seasonal wetland patch directly connected to the perennial marsh. Other waters in the BSA comprised of 0.07 ac in four perennial streams, which includes the low flow channel of Cottonwood Creek, and 0.13 ac within three ephemeral streams.

4.1.1.2. Project Impacts

The Project will result in direct permanent effects to 0.10 ac and 749 ln ft of stream habitats through culverting of five streams that intersect the proposed road alignment (Table 3), and placement of fill through grading and road construction. The Project will also result in direct temporary impacts to 0.03 ac of stream habitats (Table 3) due to construction access, movement of equipment and personnel, and a temporary crossing of Cottonwood Creek. The Cottonwood Creek crossing may be clearspan across the low flow channel, or it may be constructed with temporary fill such as rock placed within the OHWMs to create a temporarily culverted access road. Indirect impacts could include interruption or alteration of hydrology to waters downstream of the Project improvements, or reduction in water quality of downstream waters, if not avoided.

The Project activities will also result in 0.12 ac of direct permanent impacts to seasonal wetlands (including 249 ln ft of in-channel seasonal wetlands) as a result of pavement or road construction and 0.33 ac of direct temporary impacts to perennial marsh (<0.01 ac) and seasonal wetlands (0.33 ac) in the BSA due to grading and construction access.

4.1.1.3. Avoidance and Minimization Efforts

- All impacts to wetlands and waters have been designed to be the minimum necessary. Work areas in wetlands and streams will be restricted to areas immediately adjacent to permanent impact locations.
- The Project has been carefully designed to not interrupt hydrology to wetlands and streams to the south of the proposed road through appropriately sized and placed culverts, and a clearspan bridge over Cottonwood Creek that avoids placement of bridge supports within the OHWMs of the creek.
- The culvert conveying the perennial stream along the east side of the western portion of Croak Road on the western boundary of parcel A has been carefully designed as a native channel bottom, wide box culvert to allow water to flow out into the field wetland complex, as it does today.
- Work within streams and wetlands would be restricted to the dry season from April 15 to October 15 [or as directed by regulatory permitting agency] to protect water quality.
- All appropriate Avoidance and Minimization Measures (AMMs) listed in the EACCS that would apply to and protect these aquatic habitats will be enacted (Appendix E).
- No bioswales or other stormwater infrastructure, or non-critical Project elements such as landscaping, will be placed in wetlands or streams.
- All temporary fills placed in the Cottonwood Creek low-flow channel for construction access will be clean fills (such as clean rock) of a size that can be fully removed from the low-flow channel and the channel then restored to its former topography.

Minimization of Effects on Water Quality. The Project applicant will implement BMPs as recommended or required by the State or RWQCB to protect water quality. These measures will include, but are not limited to the following:

- No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products or other organic or earthen material will be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the U.S./State or aquatic habitat.
- No equipment will be operated in the live stream channel.

- Equipment staging and parking areas shall occur within established access areas in upland habitat above the top of bank.
- Machinery or vehicle refueling, washing, and maintenance shall occur at least 60 ft from the top-of-bank. Equipment shall be regularly maintained to prevent fluid leaks. Any leaks shall be captured in containers until the equipment is moved to a repair location. A spill prevention and response plan will be prepared prior to construction and will be implemented immediately for cleanup of fluid or hazardous materials spills.
- Standard erosion control and slope stabilization measures will be required for work performed in any area where erosion could lead to sedimentation of a waterbody.
- The Project will comply with the MRP and General Construction permit to prevent increases in peak flow, erosion, or reduction in water quality for downslope waters.

4.1.1.4. Compensatory Mitigation

All wetlands and streams shall be clearly depicted on final Project plansets. Areas to be avoided shall be indicated and protected at the site using orange sensitive area fencing to ensure inadvertent impacts do not occur.

Final grading plans shall be developed that minimize grading-related fill and cut in wetlands and streams to the maximum extent feasible to achieve Project goals and improvements.

The Project will mitigate permanent loss of waters and wetlands as per the EACCS. Mitigation will be provided via preservation, enhancement, and management as per EACCS guidelines, with ratios set on ln ft of permanent impacts to streams and on area of permanent impacts for wetlands. This may be purchased as bank credits or managed as a project-specific mitigation site. Because all wetland and stream habitats in the Project footprint provide habitat for focal species, the mitigation ratio for the impacts will be at least 2.5:1 and because these wetland and stream habitats all provide dispersal and foraging habitat for California red-legged frog and California tiger salamander, the final mitigation ratio must be as high as the determined EACCS requirements for focal species (ICF International 2010, see also California red-legged frogs and California tiger salamanders, below). The required mitigation ratio will vary based on the location and quality of the mitigation lands, which have not been selected yet. Additionally, compensatory mitigation for wetlands and waters must be provided in-kind (wetlands for wetlands and streams for streams).

Temporary impacts to these habitats will be restored in place at a 1:1 ratio through re-establishment of original contours in stream channels and wetlands, decompaction of compacted soils where necessary, and seeding with a native wetland seed mix

developed by a qualified restoration ecologist containing species such as alkali barley and Mexican rush. Temporary impact areas will be monitored for 2 years and the criteria for success will be 75% vegetation cover or more compared to pre-Project conditions and no more than 5% cover of Cal-IPC-rated moderate and high impact weed species (excluding Cal-IPC-rated annual grasses).

4.1.1.5. Cumulative Impacts

Wetlands and streams surrounding the Project site have been impacted by several past development projects within the Dublin area and wetlands within the BSA may also be impacted by future development. Each prior development was required to mitigate for impacts to wetlands and waters in project-specific CEQA analysis and regulatory permitting, while future development of parcels A – G that may occur under the EDSP due to road construction will be required to mitigate all impacts to wetlands and waters as per the EACCS guidelines and conditions. Therefore, this Project will not contribute substantially to cumulative impacts on wetlands and waters.

4.1.2. RIPARIAN HABITATS

Riparian habitats are found along streams, rivers, creeks, and lakes. Riparian habitat can range from dense thickets of shrubs to closed canopy of large mature trees, to non-forested, grassy areas below the top-of-bank and above the OHWMs of streams. Riparian systems have been removed, degraded, and disturbed since the first settlers arrived in California, with losses estimated to be as high as 95% of historic levels.

4.1.2.1. Survey Results

There are 0.33 ac of mixed riparian woodlands and 3.09 acres of riparian grasslands within the top of banks of perennial and ephemeral streams in the BSA (Figure 3).

4.1.2.2. Project Impacts

Project work will have direct permanent impacts to 0.70 ac of riparian grassland through culverting of streams, construction of the Cottonwood Creek bridge abutments and piers, and grading associated with bridge supports; and 2.15 ac of temporary impacts due to construction access and work within top of bank of the ephemeral and perennial streams. Culverting and installation of structures will cause the Project-related loss of small amounts of this habitat type, while grading will simply permanently alter topography within these areas. Access has the potential to remove vegetation, cause compaction or erosion of soils, and may also include temporary grading that is later restored to pre-Project contours.

Project work will result in 0.11 ac of direct permanent impacts to riparian woodland habitat due to construction of the roadway and removal of approximately 8 red willow trees, and 0.05 ac of temporary impacts related to potential trimming of a large valley oak tree in the Cottonwood Creek corridor to construct the bridge.

4.1.2.3. Avoidance and Minimization Efforts

- The Project will comply with the MRP and General Construction permit to prevent increases in peak flow, erosion, or reduction in water quality for downslope waters, which will prevent stream downcutting, riparian bank erosion, or other dowstream impacts.
- All impacts to riparian habitats have been designed to be the minimum necessary. Work areas in riparian areas will be restricted to areas immediately adjacent to permanent impact locations. Access within the outer banks of Cottonwood Creek will be minimized and will not utilize long access paths from top-of-bank to the floodplain below.
- No equipment will be staged or refueled in the Cottonwood Creek riparian floodplain.
- Riparian woodland trees along Cottonwood Creek were carefully avoided in the bridge design.
- All appropriate AMMs listed in the EACCS (Appendix E) that would apply to and protect these riparian habitats will be enacted.

4.1.2.4. Compensatory Mitigation

All riparian areas and riparian trees to be preserved will be clearly depicted on final Project plansets. Areas to be avoided shall be indicated and protected at the site using orange sensitive area fencing to ensure inadvertent impacts do not occur.

The valley oak tree to be avoided by the Project will be protected with a tree protection zone, developed under the consultation of a qualified, International Society of Arborists-certified arborist. This tree protection zone may be larger than the drip line of the tree, as determined by the qualified arborist, and will be delineated with orange construction fencing. No fill placement, equipment access, or materials stockpiling may occur within the tree protection zone, unless approved by the qualified arborist (for example for crown trimming, if needed).

The Project shall mitigate permanent loss of riparian habitat types as per the EACCS. Mitigation will be provided via preservation, enhancement, and management as per EACCS guidelines. Because all riparian habitats in the Project footprint provide habitat for focal species, the mitigation ratio for the impacts will be at least 2.5:1 and because

these wetland and stream habitats all provide dispersal and foraging habitat for California red-legged frog and California tiger salamander, the final mitigation ratio must be as high as the determined EACCS requirements for focal species (ICF International 2010, see also California red-legged frogs and California tiger salamanders, below). Mitigation ratios will vary based on the location and quality of the mitigation lands, which have not been selected yet. Mitigation must be in-kind for mixed riparian woodland impacts but riparian grassland impacts may be mitigated with either grassy or wooded riparian habitat.

Temporary impacts to these habitats shall be restored in place at a 1:1 ratio through re-establishment of original contours along banks, decompaction of compacted soils where necessary, and seeding with a native seed mix developed by a qualified restoration ecologist and containing species such as alkali barley, meadow barley, purple needlegrass (*Stipa purpurea*), and/or other native grass and forb species that occur in the Project vicinity. Temporary impact areas will be monitored for 2 years and the criteria for success will be 75% vegetation cover or more compared to pre-project conditions and no more than 5% cover of Cal-IPC-rated moderate and high impact weed species (excluding Cal-IPC-rated annual grasses).

4.1.2.5. Cumulative Impacts

Riparian habitats in the Project vicinity have been impacted by several past development projects within the Dublin area and riparian habitats within the BSA may also be impacted by future development. Each prior development was required to mitigate for impacts to riparian habitats in project-specific CEQA analysis, while future development in parcels A-H that may occur under the EDSP due to road construction will be required to mitigate all impacts to riparian habitats as per the EACCS guidelines and conditions. Therefore, this Project will not contribute substantially to cumulative impacts on riparian habitats.

4.2. Special-status Plant Species

As discussed in Chapter 3, 22 special-status plant species with some potential to occur in the BSA are indicated in Table 2. A number of these species were rejected for potential occurrence in the BSA because of a lack of suitable habitat within the BSA or negative survey results following surveys in 2002, March 2017, and several focused rare plant surveys conducted for this NES in 2018. The following sections discuss the three special-status plant species which were determined to occur or potentially occur in the BSA, have the potential to be impacted by the Project, and are of particular concern to resource agencies and require further discussion.

4.2.1. CONGDON'S TARPLANT, SAN JOAQUIN SPEARSCALE, AND PROSTRATE VERNAL POOL NAVARRETIA

Congdon's tarplant is an annual herb in the composite family (Asteraceae) that is endemic to California and ranked as CRPR 1B.1 by the CNPS. Thus, adverse effects on this species may be considered significant under CEQA. It has a variable blooming period extending from May through November. Congdon's tarplant occurs in valley and foothill grassland habitat, floodplains, and swales, particularly those with moderately alkaline substrates, which underlie the shallow valleys in the Livermore and Tassajara areas where the BSA is located. The species can occur in disturbed areas with non-native grasses such as wild oats, ripgut brome, Italian ryegrass, and seaside barley (CNDDB 2018, CNPS 2018, Baldwin et al. 2012). It tends to occur on soils primarily belonging to the Clear Lake, Pescadero, Rincon, and Cropley series. Within this broad habitat type, Congdon's tarplant is most successful along the boundaries of seasonal wetlands or in other areas where competing vegetation is sparse (i.e. heavily grazed areas or recently disturbed areas). This is a focal species of the EACCS (ICF International 2010).

The statewide population includes at least 78 extant occurrences (CNPS 2018), and of these, approximately one occurs within the southwestern portion of the BSA. Nineteen occurrences occur or did at one time occur within the Project vicinity (i.e., the area within a 5-mi radius) (Figure 4). The CNDDB has recorded up to 114,000 individuals of Congdon's tarplant in the southwestern portion of the BSA between Fallon Road and Croak Road (CNDDB 2018). This species was also detected in seasonal wetlands in the southern portion of parcel A in 2002 (Sycamore and Associates 2002a). At that time, the population was estimated to contain 6,000 individuals, and another census in 2005 by H.T. Harvey & Associates detected approximately 40,000 individuals.

San Joaquin spearscale is endemic to California and is ranked as CRPR 1B.2 by the CNPS. Thus, adverse effects on this species may be considered significant under CEQA. It is an herbaceous annual plant in the goosefoot family (Chenopodiaceae), and has a highly variable blooming period from May through September. The statewide population is composed of at least 111 extant occurrences; and 11 occurrences are or were at one time located within the vicinity of the BSA (Figure 4, CNDDB 2018). The species grows in seasonal, moderately to strongly alkaline wetlands and vernal pools, and alkali sinks in chenopod scrub, meadows, playas, and valley and foothill grassland. San Joaquin spearscale apparently produces a long-lived seed bank, which germinates in response to soil disturbances, and the species can persist in weedy grasslands dominated by exotic species. This is a focal species of the EACCS (ICF International 2010).

The CNDDB has recorded a “small colony” of San Joaquin spearscale within a roughly bounded polygon that occurs immediately adjacent to the BSA, but the CNDDB does not show an on-site population (Figure 4, CNDDB 2018). This species was detected in seasonal wetlands in the southern portion of parcel A in 2002 (Sycamore and Associates 2002a).

Prostrate vernal pool navarretia is an annual herb in the phlox family (Polemoniaceae) that blooms from April to July. The species has a CRPR of 1B.1, and as such, adverse effects on this species may be considered significant under CEQA. This plant grows in alkaline vernal pools and flats in coastal scrub, meadows and seeps, and valley and foothill grassland communities, at elevations between 49 and 2,297 ft (CNPS 2018). Prostrate vernal pool navarretia is known to occur in areas of moderate to high alkalinity and typically shallow ponding. There are at least 51 extant occurrences statewide (CNPS 2018), although only one record – the record located on the BSA (Figure 4) - occurs in the 7.5-minute *Livermore* USGS quadrangle that the BSA is located in.

4.2.1.1. Survey Results

Focused rare plant surveys completed on June 29, 2018 confirmed the presence of Congdon’s tarplant on the BSA, and the occurrence was mapped as polygon and point features for the purposes of impact assessment (Figure 3). Approximately 77,000 plants distributed over approximately 8.2 ac were observed in the seasonal wetlands along the southern edge of the BSA near the intersection of Fallon and Croak Road and extending in lower densities to the north. Smaller numbers occurred in scattered areas to the west of the main population (Figure 3).

Neither San Joaquin spearscale nor prostrate vernal pool navarretia were observed during the March 2017 reconnaissance survey or April - June 2018 focused rare plant surveys. The CNDDB record (CNDDB 2018, Occurrence #61) for the prostrate vernal pool navarretia occurrence recorded from the BSA indicates that the species was found in seasonal wetlands near the Fallon/Croak Road junction, in a “vernal mud depression”. The San Joaquin spearscale detected by Sycamore and Associates (2002a) was mapped outside the Project footprint in the southern area of parcel A.

As hydrology has shifted on the site over the past 8-10 years, conditions may have been less suitable for these two species and germination may have been suppressed, but as the navarretia was last observed in the BSA in 2010 (CNDDB 2018) and San Joaquin spearscale was observed in the BSA in 2002 (Sycamore and Associates 2002a) and is known to have a long-lived seed bank, it is assumed both species may still be present within the BSA as seed banks. Because both of these species are adapted to alkaline wetlands, it is very likely the seed banks do not extend into the Project footprint, as alkalinity lessens to the north in parcel A, outside the Clear Lake clay soils. The

maximum extent of the anticipated seed bank distribution of either species, based on habitat suitability, would be the northernmost extent of the Congdon's tarplant that was mapped on the site (Figure 3). It is unlikely that seed banks for either species exist in the Project footprint, but if either does, the impact analysis for Congdon's will serve as a reasonable proxy for potential impacts to either species' seed banks, if such impacts occur.

4.2.1.2. Project Impacts

The project will have up to 0.45 ac of direct and indirect temporary impacts to Congdon's tarplant (and seed banks of San Joaquin spearscale or prostrate vernal pool navarretia, if these occur in the Project footprint). This could directly affect up to approximately 400 Congdon's tarplant individuals and indirectly affect up to 2,000 plants within 50 feet of the direct impact area, though it should be noted that annual plant populations fluctuate over time in response to climate and other factors, and the 77,000 plants estimated to occur on the site in 2018 was on the higher end of recorded population numbers for this occurrence. Impacts may be as minor as construction access needed to remove the utility line and poles, which would then be located elsewhere. The maximum impact that could occur would be if the line were trenched underground in the same location as it is currently. No permanent impacts are anticipated to occur to this species or to the seed banks of San Joaquin spearscale or prostrate vernal pool navarretia from the Project.

Impacts to these species will or may occur for one or more of the following reasons:

- Direct temporary impacts could include access related impacts such as trampling or crushing of individuals where no ground disturbance related to utility line access occurs.
- Indirect impacts could include alteration of hydrology, or application of dust to foliage of avoided plants from nearby work activities, or a decrease in water quality within wetland areas supporting these species downslope of the Project footprint.

4.2.1.3. Avoidance and Minimization Efforts

To the extent feasible, the Project will avoid all occupied habitat for Congdon's tarplant plus a 50-ft buffer. This avoidance has been depicted on Figure 3, except in the utility relocation area.

The Project will implement General Construction Permit conditions for dust control, such as watering, and control of stormwater and dust-control water on the site during construction. Following construction, water quality will be protected in downslope habitats through implementation of stormwater treatment features such as bioswales or other C.3-approved measures allowed by the MRP.

All appropriate AMMs listed in the EACCS (Appendix E) for these species and habitats capable of supporting these species will be enacted.

4.2.1.4. Compensatory Mitigation

The mapped Congdon's tarplant will be clearly shown on all plans. Avoided plants and a buffer of at least 50 ft will be clearly protected from the active work areas through installation of environmental sensitive area fencing to prevent inadvertent access. The work area for the utility line will be similarly bounded by environmental sensitive area fencing. The placement of the fencing shall be overseen by a qualified plant ecologist.

The utility line shall be relocated to the proposed ROW north of, and outside the Congdon's tarplant population. Work to remove the current line will proceed using the least impactful equipment necessary to minimize crushing, soil compaction, and erosion.

Following impacts, to track recovery of the temporarily impacted population, the actual area of impacts will be mapped and then will be monitored for at least 3 years by a qualified plant ecologist. Prior to impacts, a reference area to the south, outside the project footprint and of a similar size and similar density of tarplant to the area to be impacted, will be identified and used as a reference area. Objectives during the monitoring will include removing any weed populations that may have become introduced due to disturbance, and to encourage grazing that benefits the tarplant. By year 3, if the Congdon's tarplant density within the impacted area is not at least 50% of the reference area, or if there is more than 5% cover of Cal-IPC high or moderate ecological impact invasive plants within the recovery area (not including non-native grasses), the portion of the population impacted by the Project will be considered permanently impacted and the Project will then be required to mitigate for the impacts as per the EACCS, which would require preservation in perpetuity and management per EACCS guidelines of a similar-sized area and number of plants at a 5:1 ratio.

4.2.1.5. Cumulative Impacts

Rare plant occurrences surrounding the Project site have been impacted by several past development projects within the Dublin area and the Congdon's tarplant, San Joaquin spearscale, or prostrate vernal pool navarretia within the BSA may also be impacted by future development. Each prior development where Condon's tarplant and San Joaquin spearscale were found, were required to address impacts to these species in project-specific CEQA analysis. Also, because the EACCS requires existing populations of focal species to be preserved, it is expected that future projects developed under the EDSP will be required to retain at least a portion of the existing Congdon's tarplant population in the BSA, which overlaps suitable habitat for the other two species. Therefore, this Project will not contribute substantially to cumulative impacts to these taxa.

4.3. Special-status Animal Species

Reconnaissance-level wildlife surveys were conducted in the BSA and surrounding areas in March 2017 by walking the entire BSA and noting special-status species and habitats potentially suitable for these species. Particular attention was paid to the suitability of habitat for special-status species known or expected to occur in the site vicinity, defined for the purposes of this report as areas within a 5-mi radius of the site (Figure 5).

Special-status wildlife species known to occur in the region of the site are indicated in Table 2. A number of these species were rejected for potential occurrence in the BSA because of a lack of suitable habitat and/or because the BSA is outside of the range of the species. The following sections discuss the remaining special-status animal species which have the potential to breed on the site and/or regularly use it, may inadvertently disperse into the site despite it being outside of their normal range, have the potential to be substantially impacted by the Project (e.g., because of their rarity), and/or are of particular concern to resource agencies and require additional discussion.

4.3.1. CONSERVANCY FAIRY SHRIMP, LONGHORN FAIRY SHRIMP, AND VERNAL POOL FAIRY SHRIMP

The conservancy fairy shrimp and longhorn fairy shrimp, federally listed as endangered, and vernal pool fairy shrimp, federally listed as threatened, are members of the aquatic crustacean order Anostraca and are endemic to ephemeral fresh water habitats and vernal pools in California. Vernal pools form in Mediterranean climates where shallow depressions fill with rainwater during fall and winter and then dry via the evaporative process in spring. Percolation of the water is prevented by an impervious layer, which may be clay pan, hardpan, or a volcanic stratum.

The present distribution of the longhorn fairy shrimp is restricted to vernal pools in four locales in Contra Costa, Alameda, Merced, and San Luis Obispo counties (Sugnet & Associates 1993, USFWS 2007a). The present distribution of the vernal pool fairy shrimp in California is restricted to vernal pools within a geographic range extending from Shasta County south through the Central Valley into Tulare County, and along the central coast range from northern Solano County south into Ventura County (USFWS 2003). These two species of fairy shrimp may occur together in the same vernal pool. The Conservancy fairy shrimp is known from only eight populations in Butte, Tehama, Glenn, Yolo, Solano, Stanislaus, and Merced (USFWS 1994). Conservancy fairy shrimp typically does not occur in the same types of pools that support the other two species, more frequently occurring in larger, cold water pools that pond for longer hydroperiods.

The longhorn fairy shrimp ranges in size from 0.5 to 0.8 inches (USFWS 1994) and the Conservancy fairy shrimp is 0.5 to 1.0 inch (USFWS 1994), while the slightly larger vernal pool fairy shrimp ranges in size from 1.2 to 1.5 inches (USFWS 2007a). Both species mature rapidly to take advantage of the short lived nature of vernal pools (USWFS 2005a), but may persist in pools that persist longer.

In general, these shrimp eat algae, bacteria, protozoa, other smaller invertebrates, and bits of detritus (Pennak 1989, USFWS 1994). Populations survive through the dry summer months as dormant eggs in the pool sediment. Some of the eggs hatch when the pool fills with water in subsequent seasons, while the remaining eggs remain in the sediment. Eggs contained within the sediment at any given point can represent eggs deposited from several breeding seasons.

Amphibians, predatory water beetle larvae (family Notonectidae), caddis fly larvae (*Trichoptera* sp.), and waterfowl are the chief predators of fairy shrimp (Pennak 1989). These fairy shrimp are in danger of extinction principally as the result of flood control, highway and utility projects, urban development, conversion of native habitats to agriculture and by virtue of the small isolated nature of many of the remaining populations (USFWS 1994). In fact, any activity or disturbance that alters the hydrologic regime of an area containing vernal pools may reduce the population size or reproductive success of these animals or eliminate them altogether. All three fairy shrimp species were listed as endangered on September 19, 1994 by the USFWS largely because of the significant threats associated with future habitat loss and fragmentation (USFWS 1994). The state of California has not designated these species with any special status (CDFG 2008).

4.3.1.1. Survey Results

The EACCS does not map the BSA as potential habitat for special-status fairy shrimp. Vernal pool fairy shrimp have been reported approximately 3.5 mi east of the BSA at the Springtown Preserve. Longhorn fairy shrimp have been reported approximately 4.9 mi northeast of the Study Area at Byron Hot Springs. Marsh and wetland habitats within the BSA may contain water for sufficient periods of time to support longhorn and vernal pool fairy shrimp in some years, but likely not the type of long-term, cold temperature playa pool that typically provides habitat for the Conservancy fairy shrimp.

Extensive wet-season and dry-season protocol-level surveys have been conducted on the Study Area where suitable habitat was considered to occur (parcels A, D, E, and F, Figure 2). Dry season samples were collected and analyzed following the USFWS protocol on these same parcels and were negative for listed species (Helm Biological Consulting 2004). No suitable habitat was identified in parcels G, H, or I or on the nearby Mandeville and Croak parcels (Condor Country Consulting 2002, 2003). Extensive

protocol-level surveys were also conducted in adjacent and nearby sites at Dublin Ranch and at the Pao Yeh Lin parcels between 1995 and 2000 (H.T. Harvey & Associates 1997a, 1997b, 1998, 2000b). All of these surveys failed to detect special-status fairy shrimp.

The BSA is not located within designated vernal pool critical habitat (i.e., critical habitat for listed vernal pool species, such as the Conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool fairy shrimp). Furthermore, the EACCS does not map any portions of the BSA (or adjacent areas) as suitable habitat for these species (ICF International 2010). In addition, no special-status branchiopods were observed within suitable habitat located on the BSA despite intensive survey efforts. Therefore, these species are considered absent from the BSA.

4.3.1.2. Project Impacts

Because Conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool fairy shrimp are considered absent from the BSA, no impacts to these species will occur.

4.3.1.3. Avoidance and Minimization Efforts

Because Conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool fairy shrimp are considered absent from the BSA, no avoidance and minimization measures to reduce impacts to these species are necessary.

4.3.1.4. Compensatory Mitigation

Because Conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool fairy shrimp are considered absent from the BSA, no compensatory mitigation for impacts to these species is necessary.

4.3.1.5. Cumulative Impacts

Because Conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool fairy shrimp are considered absent from the Project site, the Project will not contribute to cumulative impacts to these species.

4.3.2. CALLIPPE SILVERSPOT

The Callippe silverspot was listed as endangered by the USFWS on December 5, 1997 (USFWS 1997). Critical habitat has not been designated for this species. The species' occurrence is dependent upon the availability of its larval host plant, Johnny jump-up. Historically, the callippe silverspot butterfly occupied much of the grasslands in the San Francisco Bay region. It is now restricted to a few locations in San Mateo County,

Sonoma County, the hills between Vallejo and Cordelia, and the hills near Pleasanton (USFWS 2007b).

Adults have one flight period, which is typically from mid-May to July, but largely depends on environmental conditions (USFWS 2007b). Males seek hilltops and hillsides of native grasslands for mates. Females lay their eggs in the dead or dying larval food plant or in nearby woody debris.

4.3.2.1. Survey Results

The EACCS maps the Study Area as potential habitat for the Callippe Silverspot butterfly. However, the butterfly's occurrence is dependent on the presence of its larval host plant, Johnny jump-up. Extensive botanical surveys have been conducted within the western parcels of the Study Area (parcels A, D, E, and F). During these surveys, the entirety of all four parcels was traversed on foot, and all plant species encountered were identified and recorded. Repeated surveys were conducted from March through May 1999-2001, which encompasses the bloom period of Johnny jump-up. All of these surveys failed to detect the Callippe silverspot host plant (Sycamore and Associates 2002a, WRA 2004). In addition, no Johnny jump-up was detected in reconnaissance-level surveys of the entirety of the Study Area by H. T. Harvey & Associates botanists in March of 2017 when the species was known to be flowering at other sites in the region, or in April 2018. Therefore, Johnny jump-up, and thus the Callippe silverspot butterfly, is considered absent from the BSA.

4.3.2.2. Project Impacts

Because the Callippe silverspot is considered absent from the BSA, no impacts to this species will occur.

4.3.2.3. Avoidance and Minimization Efforts

Because the Callippe silverspot is considered absent from the BSA, no avoidance and minimization measures to reduce impacts to this species are necessary.

4.3.2.4. Compensatory Mitigation

Because the Callippe silverspot is considered absent from the BSA, no compensatory mitigation for impacts to these species is necessary.

4.3.2.5. Cumulative Impacts

Because the Callippe silverspot is considered absent from the BSA, the Project will not contribute to cumulative impacts to this species.

4.3.3. CALIFORNIA RED-LEGGED FROG AND CALIFORNIA TIGER SALAMANDER[1]

The USFWS listed the California red-legged frog as threatened in 1996, due to continued habitat degradation throughout the species' range and population declines (USFWS 1996). It is listed by the CDFW as a California species of special concern. Critical habitat was most recently designated in 2010 (USFWS 2010) and approximately 33.95 acres of the BSA are located within the designated critical habitat for the California red-legged frog (Figure 5). The California red-legged frog is California's largest native frog. The species is generally restricted to riparian and lacustrine habitats in California and northern Baja California. Red-legged frogs prefer deep, calm pools (usually more than 2 ft deep) in creeks, rivers, or lakes below 5000 ft in elevation (Jennings and Hayes 1994). Breeding habitat requirements include freshwater emergent or dense riparian vegetation, such as willows adjacent to shorelines. Red-legged frogs can survive in seasonal bodies of water that are dry for short periods if a permanent water body or dense vegetation stands are nearby.

Adult red-legged frogs are normally active at night and breed in still water during the late winter or early spring after waters recede. Females attach eggs in a single cluster to vegetation just under the surface of the water. The eggs hatch in approximately one week and larvae feed on plant and animal material. It takes a minimum of approximately 4 months for the larvae to metamorphose into juvenile frogs. On rare occasions larvae over winter. Red-legged frogs can move considerable distances overland. Dispersal often occurs within creek drainages, but movements of more than a mile over upland habitats have been reported (Bulger et al. 2003). Red-legged frogs are often found in summer months in habitat that would not be suitable for breeding; these individuals presumably move seasonally between summer foraging habitat and winter breeding habitat.

The California tiger salamander was listed as threatened under the FESA throughout its range by the USFWS on August 4, 2004 (USFWS 2004) and was listed as threatened under the CESA by the CDFW on August 19, 2010. Critical habitat for the California tiger salamander was designated in August 2005 (USFWS 2005b). The BSA is not located within designated critical habitat for this species.

The California tiger salamander occurs in areas of the Central Valley and California Coast Ranges where temporary ponded environments (e.g., vernal pools or human-

[1] These species are described in one impact statement because aside from the critical habitat being present in the Project footprint for California red-legged frog and not California tiger salamander, these species share the same impact areas, impact types, avoidance and minimization measures, and compensatory mitigation requirements

made ponds providing water for at least 3 months) are surrounded by uplands that support small mammal burrows. Breeding pools are usually ephemeral pools (e.g., vernal pools), but they must retain water long enough for metamorphosis to occur. Permanent ponds are also used for breeding, but larger ponds often contain predators that consume eggs and larvae, and prevent successful breeding.

During summer months, California tiger salamanders occur in subterranean refuge sites, usually in small mammal burrows, but also in crevices in the soil. After winter rains have moistened the ground, the salamanders emerge from their refugia and migrate to breeding pools. Females deposit eggs one, or occasionally up to four, at a time in the water and attach them to submerged vegetation or debris. Females may lay eggs twice in a single season (USFWS 2004). Lifetime reproductive success of females is fairly low; females in one study bred an average of 1.4 times in their lives, producing about 11 young each (Trenham et al. 2000). Adults may live more than 10 years, but do not reproduce until they are 4 to 5 years old (Trenham et al. 2000). Eggs take 10 to 14 days to hatch. Aquatic juveniles usually complete metamorphosis after 3 to 6 months. Generally, ephemeral breeding ponds dry up during summer months, but over-summering larvae have been observed (Shaffer et al. 1993). Following metamorphosis, juveniles spend a few days at the pond margin, and then migrate to refuge sites. Overland migration may extend up to 1.2 mi, but most California tiger salamanders remain within 0.4 mi of their breeding ponds (USFWS 2004).

4.3.3.1. Survey Results

The EACCS maps areas within the BSA as potential upland and movement habitat for the California red-legged frog and potential upland habitat for the California tiger salamander. Based on prior surveys of the BSA, and on CNDDB records, these species are known to occur within the immediate vicinity of the BSA. A site assessment and a focused survey for breeding California red-legged frogs, conducted in 2001 on parcels A, D, E, F, and G, failed to detect any red-legged frogs, although the quarry pond north of the Study Area was considered to provide suitable breeding habitat (Sycamore Associates 2001b, 2001c). Additional surveys conducted in 2003 detected an adult California red-legged frog at the head of an unnamed drainage immediately north of the BSA (H. T. Harvey & Associates 2006). Cottonwood Creek also provides potentially suitable foraging and dispersal habitat for the red-legged frog within the BSA.

A site assessment and focused surveys for breeding California tiger salamanders, conducted from 2001 through 2003, detected several adult tiger salamanders within the immediate vicinity of the BSA (Sycamore Associates 2001a, 2003). In addition, larval tiger salamanders were detected within the quarry pond, located approximately 0.15 mi north of the BSA in 2003, but not in 2001. Thus California tiger salamanders may breed in close proximity to the Project, at least in some years.

Numerous additional records of California red-legged frogs and California tiger salamanders occur within ponds, intermittent streams, and their tributaries in the Project vicinity, including breeding records in ponds located in close proximity to the BSA (H. T. Harvey & Associates 2001, Sycamore 2001b, CNDDB 2018). Many of these ponds have been altered or removed by development of the surrounding properties, reducing or eliminating their suitability for breeding red-legged frogs and tiger salamanders. Nevertheless, some of these areas, including a retention basin located 0.16 mi north of the BSA along Fallon Road, may still provide suitable breeding habitat for red-legged frogs and tiger salamanders.

The California annual grasslands in the BSA support California ground squirrels and Valley pocket gophers; the burrows of both of these animals can provide suitable refugia for red-legged frogs and tiger salamanders (Jennings and Hayes 1994). Ground squirrel and gopher burrows were observed on the hillslopes in the northern portion of the BSA, and in disturbed areas within and near the BSA during reconnaissance level surveys. Mammal burrows were scarce in the lower elevation flats of the Study Area, likely due to the wet conditions in these low-lying areas. Perennial and ephemeral stream, perennial marsh, and seasonal wetland habitats in the BSA may provide suitable dispersal and foraging habitat for both species, but the marsh and wetland habitats in the BSA do not pond deep enough to provide suitable breeding habitat for either species, and the on-site creeks do not provide pools suitable for use by breeding California red-legged frogs (California tiger salamanders are not expected to breed in any of the creeks).

4.3.3.2. Project Impacts

Construction activities associated with the Project could result in the direct loss and indirect disturbance of California red-legged frogs and California tiger salamanders and their habitats. The Project could impact individual red-legged frogs and tiger salamanders as a result of:

- direct mortality during construction as a result of trampling by construction personnel or equipment;
- increased mortality due to roadkill caused by the construction and vehicular use in and around the vicinity of the Project;
- direct mortality from the collapse of underground burrows, resulting from soil compaction; and
- direct mortality or loss of suitable habitat resulting from the loss of dispersal habitat and refugia.

No known or potential California red-legged frogs or California tiger salamander breeding habitat would be directly or indirectly impacted by the Project's construction

activities, as no breeding habitat is present in or downslope from the BSA. Nevertheless, in the event that either species were to attempt breeding in pools in the BSA, construction could also potentially impact these species through mortality of eggs or larvae if dewatering of pools was not avoided.

The Project could result in impacts to as much as 76.94 ac of non-breeding habitat, including perennial stream, perennial marsh, seasonal wetland, ephemeral stream, riparian grassland, mixed riparian woodland, and California annual grassland habitat that may serve as foraging, dispersal or upland refugial habitat for both species.

Permanent Direct Impacts. Approximately 22.70 ac of potential California tiger salamander foraging, dispersal, and upland refugial habitat would be permanently lost due to the construction of pavement and other hardscape in areas that currently provide natural habitat that may be used by California tiger salamanders. Approximately 22.70 ac of potential California red-legged frog foraging, dispersal and upland refugial habitat would be permanently lost due to the construction of pavement and other hardscape in areas that currently provide natural habitat that may be used by the California red-legged frog. Of this permanent impact acreage, approximately 11.44 ac are considered California red-legged frog critical habitat.

Permanent Indirect Impacts. Approximately 133.47 ac of potential California red-legged frog and California tiger salamander foraging, dispersal, and upland refugial habitat south of the new road, in areas that would not be directly permanently impacted by construction related activities for the Project, may be indirectly but permanently impacted as a result of being disconnected from breeding sites north of the new road. Although the habitat in these areas would continue to be ostensibly suitable for use by California red-legged frogs and California tiger salamanders following road construction (at least unless and until this habitat is developed in the future), individual frogs and salamanders associated with breeding habitat north of the road would no longer be able to use the habitat between the new road and I-580, therefore representing an effective loss of habitat. In the unincorporated Alameda County portion of the Project, no future development is currently envisioned for the lands between the new road and I-580, and the use of a free-span bridge over Cottonwood Creek would allow California red-legged frogs and California tiger salamanders to continue to move back and forth under the new road between aquatic habitat to the north and the Alameda County portion of the Study Area (Parcel , Figure 2).

Temporary Direct Impacts. Approximately 37.12 ac of potential California red-legged frog and California tiger salamander habitat will be impacted by being used for construction access and staging while the Project is being constructed or by grading (cut/fill) activities as part of the Project. Areas used for construction access and staging

during construction would be subject to grading but would not be paved or otherwise permanently altered. These areas are expected to provide habitat of similar quality to existing conditions shortly (i.e., in less than one year) after the completion of construction. Of this temporary impact acreage, approximately 22.52 ac are considered California red-legged frog critical habitat.

In summary, the Project **may affect, and is likely to adversely affect**, the California red-legged frog and California tiger salamander. However, the implementation of the avoidance and minimization measures and the compensatory mitigation described below will mitigate Project impacts, and no adverse modification of designated critical habitat will occur.

4.3.3.3. Avoidance and Minimization Efforts

The Project will employ the general and species-specific AMMs detailed in the EACCS and the General Minimization Measures listed in the Programmatic Biological Opinion (PBO) for the EACCS to protect special-status amphibians. These AMMs are listed in Appendix E. Types of AMMs include general measures that apply to all work, activity-specific measures designed to address anticipated effects of certain work activities or particular types of resources, and standard best management practices (BMPs). The following measures are the AMMs prescribed by the EACCS that pertain to the California red-legged frog and California tiger salamander, and that will be incorporated into the Project. The description of each measure is verbatim from the EACCS, except for some measures where we have added italicized text in square brackets to indicate more specifically how the project will implement those measures.

EACCS Measure AMPH-2

- A qualified biologist will conduct pre-construction surveys prior to activities. If individuals are found, work will not begin until they are moved out of the construction zone to a USFWS/CDFW approved relocation site.
- A USFWS/CDFW-approved biologist should be present for initial ground disturbing activities.
- If the work site is within the typical dispersal distance (contact USFWS/CDFW for latest research on this distance for species of interest) of potential breeding habitat, barrier fencing will be constructed around the worksite to prevent amphibians from entering the work area. Barrier fencing will be removed within 72 hours of completion of work. [*The Project area is known to be within dispersal distance of potential breeding habitat for California red-legged frog and California tiger salamander, and therefore barrier fencing consisting of silt fence and orange construction zone fencing will be installed on the northern and southern boundaries*

of the Project area where construction activities border grassland habitat. The barrier fencing will be at least 3 ft high and the lower 6 inches of the fence will be buried in the ground to prevent animals from crawling under. The remaining 2.5 ft will be left above ground to serve as a barrier for animals moving on the ground surface.]

- No monofilament plastic will be used for erosion control.
- Construction personnel will inspect open trenches in the morning and evening for trapped amphibians.
- A qualified biologist possessing a valid FESA Section 10(a)(1)(A) permit or USFWS-approved under an active biological opinion, will be contracted to trap and to move amphibians to nearby suitable habitat if amphibians are found inside a fenced area. [*No trapping, such as the use of upland traplines for California red-legged frogs or California tiger salamanders, is proposed for this Project. However, a biologist approved by the USFWS under the Project's Biological Opinion and by the CDFW under the Project's ITP will survey for and relocate any individuals found within the impact area. The applicant will prepare a relocation plan for the Project to be reviewed and approved by the USFWS and CDFW prior to the onset of construction.*]
- Work will be avoided within suitable habitat from 15 October (or the first measurable fall rain of 1 inch or greater) to 1 May.

4.3.3.4. Compensatory Mitigation

Compensatory mitigation for the loss of California red-legged frog and California tiger salamander habitat would be required in accordance with the measures outlined in Tables 3-7 and 3-8 of the EACCS (ICF International 2010). The ratio of mitigation to impact varies with the location of the proposed mitigation, and would be 2.5:1 at minimum, but may be as high as 4:1 (on an acreage basis). Mitigation will take the form of purchase of mitigation credits from a mitigation bank or project specific mitigation (see above for specific requirements on mitigation for wetland, stream, and riparian habitats).

4.3.3.5. Cumulative Impacts

Cumulative impacts arise due to the linking of impacts from past, current, and reasonably foreseeable future projects in the region. Future development activities in the City of Dublin, and around the BSA, will result in impacts on the same types of habitats and species that will be affected by the Project. The Project, in combination with other projects in the area and other activities that impact the species that are affected by this Project, could have cumulative effects on sensitive habitats and special-status species. Other projects in the area include past and planned residential and commercial

development projects that could adversely affect these species and restoration projects that will benefit these species.

However, the EACCS contains conservation measures that would benefit biological resources, as well as measures to avoid, minimize, and mitigate impacts on these resources. Projects in the region that impact resources similar to those impacted by the Project will be subject to CEQA requirements, and many will necessitate regulatory permits as well. It is expected that such projects will mitigate their impacts on sensitive habitats and special-status species through the incorporation of mitigation measures and compliance with permit conditions. Required mitigation values under the EACCS for future projects in parcels A-H between the road extension and I-580 will be provided by the road extension Project as this habitat will be indirectly but permanently impacted by the extension Project. Future impacts resulting from any future development south of the proposed road extension in parcel I would be subject to the conditions of the EACCS if they are developed in the future. Thus, provided that this Project successfully incorporates the mitigation measures described in the EACCS, the Project will not have a cumulatively considerable contribution to cumulative effects on biological resources.

4.3.4. TRICOLORED BLACKBIRD

The tricolored blackbird was given Threatened status under the California Endangered Species Act on April 19, 2018. The species' populations have declined significantly in recent years due to habitat loss, shooting to protect crops, pesticide use, and annual losses of nests and nesting habitat thorough agricultural harvests (Center for Biological Diversity 2015).

Tricolored blackbirds are found primarily in the Central Valley and in central and southern coastal areas of California. The tricolored blackbird is highly colonial in its nesting habits and forms dense breeding colonies that, in some parts of the Central Valley, may consist of up to tens of thousands of pairs. Colonies occur in emergent vegetation, grain fields, fallow fields, extensive thickets of blackberry, and occasionally in early-successional riparian habitat. Nesting colonies are usually located near fresh water. Tricolored blackbirds form large, often multi-species flocks during the non-breeding period and range more widely than during the breeding season.

4.3.4.1. Survey Results

The EACCS maps portions of the BSA as foraging habitat for the tricolored blackbird. Suitable foraging habitat for the tricolored blackbird occurs in the perennial marsh, seasonal wetlands, and California annual grassland habitats on parcel A. Breeding tricolored blackbird colonies require dense stands of emergent vegetation. Until recently, the perennial marsh habitat on the Tseng parcel supported dense stands of cattails

(*Typha* sp.) in most years. Recent diversion of flows away from this marsh have reduced the amount of emergent vegetation; however, such vegetation is expected to return if flows are reestablished.

Earlier surveys reported a tricolored blackbird breeding colony in the quarry pond located on parcel D in 1999 (WRA 2004). However, emergent vegetation within the pond has been greatly reduced by grazing since the time of this observation (WRA 2004), and no tricolored blackbirds or appropriate nesting habitat were observed at the quarry pond during reconnaissance level surveys in March 2017.

Tricolored blackbirds have been observed recently (from 2011 to 2014) on parcel A (Cornell Laboratory of Ornithology 2018). The majority of these observations were of isolated individuals in the non-breeding season. However, up to 50 tricolored blackbirds have been observed in the seasonal wetlands just south of the Project footprint during the breeding season (Cornell Laboratory of Ornithology 2018). Because tricolored blackbirds have been recorded breeding in the Project vicinity in the past, and have been observed in the BSA in recent years, there is some potential that a tricolored blackbird breeding colony could occur in the perennial marsh on-site if flows sufficient to maintain perennial marsh are reestablished and dense stands of cattails regenerate.

4.3.4.2. Project Impacts

The tricolored blackbird is not expected to nest in the BSA under current conditions. However, if nesting habitat were to improve prior to Project initiation, there is some potential for the loss of suitable nesting habitat, loss of active nests, and/or disturbance of active nests (possibly causing the abandonment of eggs or young) as a result of construction activity. In addition, the Project will result in the permanent loss of approximately 22.70 ac of potential tricolored blackbird foraging habitat due to the construction of pavement and other hardscape and temporary impacts to approximately 54.25 ac of potential tricolored blackbird foraging habitat that will be used for construction access and staging while the Project is being constructed or by grading (cut/fill) activities as part of the Project.

4.3.4.3. Avoidance and Minimization Efforts

Because the hydrology on site appears to have undergone several changes in recent years, there is some potential for dense stands of cattails to regenerate on the Project footprint. Thus, the following AMMs will be implemented to avoid impacts to a nesting colony of tricolored blackbirds.

If work is initiated within the nesting season (i.e., February 1 to August 31), then a preconstruction survey for an active nesting colony of tricolored blackbirds shall be

conducted within all perennial marsh and seasonal wetland habitats on and within 250 ft of the Study Area.

EACCS Measure BIRD-3

If an active nest colony is identified within 250 ft of a proposed work area, work within 250 ft of the colony will be conducted outside of the nesting season (March 15 to September 1).

In addition the General Minimization Measures listed in the Programmatic Biological Opinion (PBO) for the EACCS (Appendix E) will be followed.

4.3.4.4. Compensatory Mitigation

The tricolored blackbird is unlikely to nest in the Project footprint, and therefore the Project is not expected to result in the loss of suitable breeding habitat. In the event that habitat conditions improve and tricolored blackbirds nest in the large wetland in the western portion of the BSA, these wetlands will not be impacted directly by the Project, and therefore the Project will not result in the loss of breeding habitat.

Although the Project will result in permanent and temporary impacts to foraging habitat for this species, such foraging habitat is regionally abundant and does not limit tricolored blackbird distribution or populations. Therefore, no compensatory mitigation for habitat impacts is necessary.

4.3.4.5. Cumulative Impacts

Because no loss of nesting habitat will occur, the loss of potential foraging habitat will not adversely affect the species' distribution or populations, and AMMs will avoid impacts to active nesting colonies, the Project will not contribute to cumulative impacts to this species.

4.3.5. WESTERN POND TURTLE

The western pond turtle occurs in ponds, streams, and other aquatic habitats in the Pacific Slope drainages of California and northern Baja California, Mexico. Ponds or slack-water pools with suitable basking sites (e.g., logs) are an important habitat component for pond turtles. Its nesting season typically occurs from April through July, with the peak occurring in late May to early July. Females lay eggs in upland habitats, typically in clay or silty soils in unshaded (often south-facing) areas within a few hundred yards of aquatic habitat. Nesting sites typically consist of open habitat with full sun exposure and are typically located along stream or pond margins, but if no suitable habitat is available, adults have been documented making considerable overland

journeys and nesting as far as 1300 ft (0.25 mi) from the water (Jennings and Hayes 1994, Bury and Germano 2008). Juveniles feed and grow in shallow aquatic habitats (often creeks) with emergent vegetation and ample invertebrate prey. Although degradation of aquatic habitats because of development, introduction of non-native predators, and water diversions all impact western pond turtles, the destruction of non-aquatic habitat (e.g., basking areas and nesting habitats) is equally detrimental to their long-term persistence.

4.3.5.1. Survey Results

Western pond turtles are known to occur within Cottonwood Creek north of the BSA (CNDDB 2018). Within the BSA, suitable habitat occurs within the reaches of Cottonwood Creek, the unnamed tributary along Croak Road, and within upland areas near these features. However, the low flow channel in the reach of Cottonwood Creek in the BSA are typically shallow and deeply cut, and lack suitable basking sites and food resources for western pond turtles. Similarly, the unnamed tributary is typically no more than a few inches deep, largely precluding its use by pond turtles, except for movement between habitats. The quarry pond located north of the BSA provides more suitable habitat for pond turtles, although no pond turtles have been reported at that pond despite extensive aquatic surveys of the pond for California red-legged frogs and California tiger salamanders (Sycamore Associates 2001a-c, 2003). These surveys reported aquatic wildlife observed within the quarry pond during sampling, and no observations of western pond turtles were described.

Nevertheless, potentially suitable habitat for the species is present within the BSA. Thus western pond turtles may occur within the BSA, primarily in aquatic habitats but possibly nesting in upland areas. Based on the absence of prior records from the immediate BSA, the occurrence of this species is expected to be infrequent.

4.3.5.2. Project Impacts

There is a low probability that individual western pond turtles would be directly impacted by this Project. If a turtle were to be present in the site when construction occurs, there is some potential for turtles or eggs to be crushed by personnel or equipment during Project work. Implementation of the measures indicated below would minimize impacts to individuals of this species.

4.3.5.3. Avoidance and Minimization Efforts

AMMs implemented as described above in order to protect the California red-legged frog and California tiger salamander; compliance with the MRP and Construction General Permit, as well as standard CDFW permit conditions; and implementation of the General

Minimization Measures listed in the PBO for the EACCS (Appendix E) will avoid potential deleterious impacts on western pond turtles within and downstream of the site.

4.3.5.4. Compensatory Mitigation

Because of the unlikely and limited nature of Project impacts on western pond turtles, no compensatory mitigation is warranted for this species. The highest-quality habitat for the species in the BSA (Cottonwood Creek) will only be temporarily impacted for construction access, as the bridge over this creek is a free-span bridge. Also, compensatory mitigation for impacts on the California red-legged frog and California tiger salamander will contribute to the conservation of western pond turtles regionally.

4.3.5.5. Cumulative Impacts

Because of the very low probability that the Project would impact western pond turtles, the Project is not expected to contribute substantially to cumulative impacts on this species. Nevertheless, the EACCS contains conservation measures that would benefit biological resources, as well as measures to avoid, minimize, and mitigate impacts on these resources. Projects in the region that impact resources similar to those impacted by the Project will be subject to CEQA requirements, and many will necessitate regulatory permits as well. It is expected that such projects will mitigate their impacts on sensitive habitats and special-status species through the incorporation of mitigation measures and compliance with permit conditions. In addition, future projects that would be served by the new road extension would be required to mitigate such developments at current conditions for this Project (i.e., 2018 conditions). Thus, the Project will not have a cumulatively considerable contribution to cumulative effects on western pond turtles.

4.3.6. SAN JOAQUIN KIT FOX

The San Joaquin kit fox is the largest subspecies of the kit fox, the smallest canid species in North America. The San Joaquin kit fox was listed as endangered by the USFWS in 1967 and by the State of California in 1971. Loss of habitat from urban, agricultural, and industrial development are the principal factors in the decline of the San Joaquin kit fox. Subpopulations of the San Joaquin kit fox appear to be increasingly isolated from one another due to development within its range (USFWS and CDFG 2003). Critical habitat has not been designated for this species.

The San Joaquin kit fox is primarily nocturnal and typically occurs in annual grassland or mixed shrub/grassland habitats throughout low, rolling hills and in the valleys. It requires underground dens for temperature regulation, shelter, reproduction, and predator avoidance. Kit foxes commonly modify and use dens constructed by other animals and

human-made structures (USFWS 1998). Dens are usually located on loose-textured soils on slopes less than 40 degrees, but San Joaquin kit fox dens vary across the fox's geographic range in regard to the number of openings, shape, and the slope of the ground on which they occur (USFWS 1998). Kit foxes change dens frequently, often using numerous dens each year.

Breeding occurs from December through February with pups usually born in February or March. One litter per year, with an average of four pups per litter, is typical (McGrew 1979). The pups remain with the parents until June or July at which time the juveniles usually disperse distances of 0.6 to 4.4 mi. A six year study at Elk Hills Naval Petroleum Reserves in California reported average dispersal distances of 5.0 $\pm$ 0.9 mi (Scrivner et al. 1987).

4.3.6.1. Survey Results

San Joaquin kit foxes are not known to occur on or in the vicinity of the BSA. Focused surveys for San Joaquin kit fox were conducted on parcels A, D, and E in 2002 (Figure 2). Monitoring of suitably sized burrows with remote cameras and tracking media failed to detect any evidence of kit fox use of these areas (Sycamore Associates 2002c, Sycamore Associates and Townsend 2002a, b). Extensive surveys of the east Dublin and north Livermore areas were conducted in the 1990s. These surveys detected only a single kit fox, at a location approximately 5 mi northeast of the BSA along Morgan Territory Road (H. T. Harvey & Associates 1997c, d). With the exception of the Morgan Territory Road detection, none of the surveys conducted by H. T. Harvey & Associates in eastern Dublin and northern Livermore have detected kit foxes, and all available data indicate that the current range of the San Joaquin kit fox does not extend as far south/west as the Dublin Boulevard area (H. T. Harvey & Associates 1997d-f, CNDDB 2018). We therefore consider the likelihood of kit foxes occurring in the BSA to be extremely low.

Nevertheless, the San Joaquin kit fox is predicted to occur in the Project BSA and in surrounding areas by the EACCS habitat model for the species (ICF International 2010). According to this habitat modeling, the BSA is located on the extreme northwestern edge of the current range of the kit fox. Grasslands in the BSA and undeveloped lands to the north offer moderately suitable habitat for kit foxes, but populations of coyotes, a natural predator of kit foxes, are high in the area. The BSA offers suitable foraging habitat for dispersing individuals, as it is contiguous with large areas of annual grasslands that fall within the range of the species. However, the lack of recent records in the general vicinity and the high levels of human disturbance associated with dense urban development in the surrounding properties suggest that the probability of San Joaquin kit fox utilizing the BSA is extremely low.

Because California annual grasslands in the BSA offer ostensibly suitable foraging and denning habitat for kit foxes, and because an individual has been detected to the northeast, we cannot rule out the possibility that individual kit foxes may occur on-site. If the species were to be present, it would likely occur only as a rare and irregular dispersant, and it is not expected to den on-site due to existing high levels of human disturbance.

4.3.6.2. Project Impacts

If a kit fox were to be present in the site when construction occurs, there is some potential for a kit fox to be struck by a vehicle or equipment during Project work. Implementation of the measures indicated below would minimize impacts to individuals of this species, in the unlikely event that one occurs on site. Therefore the Project may affect but, is not likely to adversely affect the San Joaquin kit fox.

4.3.6.3. Avoidance and Minimization Efforts

In order to avoid the take of individual San Joaquin kit fox, should one occur on the Study Area, the following measures will be implemented. A preconstruction survey of the Study Area for San Joaquin kit fox and their dens by a qualified biologist prior to the start of construction activities. In the unlikely event that the species is detected during the preconstruction survey, avoidance of impacts to occupied kit fox dens will be implemented per the *Standardized Recommendations For Protection Of The San Joaquin Kit Fox Prior To Or During Ground Disturbance* (USFWS 1999) and EACCS Measure MAMM-1. In addition, implementation of the General Minimization Measures listed in the PBO for the EACCS (Appendix E) will further avoid impacts.

4.3.6.4. EACCS Measure MAMM-1

If potential dens are present, their disturbance and destruction will be avoided.

If potential dens are located within the proposed work area and cannot be avoided during construction, a qualified biologist will determine if the dens are occupied or were recently occupied using methodology coordinated with the USFWS and CDFW. If unoccupied, the qualified biologist will collapse these dens by hand in accordance with USFWS procedures (USFWS 1999).

Exclusion zones will be implemented following USFWS procedures (USFWS 1999) or the latest USFWS procedures available at the time. The radius of these zones will follow current standards or the following standards listed in the PBO for the EACCS:

- Potential Den— A total of 4-5 flagged stakes will be placed 50 feet from the den entrance to identify the den location;

- Known Den— Orange construction barrier fencing will be installed between the construction work area and the known den site at a minimum distance of 100 feet from the den. The fencing will be maintained until all construction-related disturbances have been terminated. At that time, all fencing will be removed to avoid attracting subsequent attention to the den;
- Natal or Pupping Den— The Service will be contacted immediately if a natal or pupping den is discovered at or within 200 feet from the boundary of the construction area.

Pipes will be capped and trenches will contain exit ramps to avoid direct mortality while construction areas are active.

4.3.6.5. Compensatory Mitigation

Because high-quality habitat does not occur on-site and the BSA is not currently occupied by kit foxes, no compensatory mitigation for impacts on kit fox habitat is warranted.

4.3.6.6. Cumulative Impacts

Because the Project may impact but, is not likely to adversely impact the San Joaquin kit fox, the Project is not expected to contribute substantially to cumulative impacts on this species. Nevertheless, compensatory mitigation for California red-legged frog and California tiger salamander will likely benefit San Joaquin kit fox as well. In addition, projects in the region that impact resources similar to those impacted by the Project will be subject to CEQA requirements, and many will necessitate regulatory permits as well. It is expected that such projects will mitigate their impacts on sensitive habitats and special-status species through the incorporation of mitigation measures and compliance with permit conditions. Finally, future projects that would be served by the new road extension would be required to mitigate such developments at current conditions for this Project (i.e., 2018 conditions). Thus, the Project will not have a cumulatively considerable contribution to cumulative effects on the San Joaquin kit fox.

4.3.7. BURROWING OWL AND AMERICAN BADGER

Burrowing owls and American badgers are California species of special concern. Burrowing owls are also protected by the MBTA and the California Fish and Game Code, which prohibit take of individuals (including active nests).

The burrowing owl is a small, terrestrial owl of open country. It prefers annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies. In California, burrowing owls are found in close association with California ground squirrels;

owls use the abandoned burrows of ground squirrels for shelter and nesting. The nesting season as recognized by the CDFW runs from February 1 through August 31. After nesting is completed, adult owls may remain in their nesting burrows or in nearby burrows, or they may migrate (Gorman et al. 2003); young birds disperse across the landscape from 0.1 to 35 mi from their natal burrows (Rosier et al. 2006). Burrowing owl populations have declined substantially in the San Francisco Bay area in recent years, with declines estimated at 4-6% annually (DeSante et al. 2007).

The American badger is a stocky, burrowing mammal that occurs in grassland habitats throughout the western United States. Badgers can have large territories, up to 21,000 acres in size, with territory size varying by sex and by season. They are strong diggers and feed primarily on other burrowing mammals, such as ground squirrels. In central California, American badgers typically occur in annual grasslands, oak woodland savannas, semi-arid shrub/scrublands, and any habitats with stable ground squirrel populations or other fossorial rodents (Zeiner et al. 1990a). They occur to a lesser extent in agricultural areas, where intensive cultivation inhibits den establishment and reduces prey abundance. Badgers are primarily nocturnal, although they are often active during the day. They breed during late summer, and females give birth to a litter of young the following spring.

4.3.7.1. Survey Results

The EACCS models areas within the Study Area as potential habitat for the burrowing owl and American badger. Burrowing owls and evidence of their presence (i.e., whitewash and/or pellets) were detected in the Study Area during focused surveys conducted in 2002 (Sycamore Associates 2002d). Burrowing owls have also been observed in grasslands within 2.0 mi of the Study Area, primarily located on properties to the north (Sycamore 2002e, CNDDB 2018), although no more recent observations of burrowing owls have been recorded. Burrows of California ground squirrels and active ground squirrel colonies were observed during the 2002 habitat assessment of the sites (Sycamore 2002d,e), and were also observed in our 2017 reconnaissance level surveys. These burrows were located primarily in the hills and disturbed areas near abandoned farm buildings. Very few burrows were present in the flat lowlands that constitute the majority of the BSA. Parts of those areas are saturated with water in the winter months, precluding ground squirrel presence. Nevertheless, these areas provide potential foraging habitat for burrowing owls. Because suitable breeding and foraging habitat for burrowing owls is present throughout the BSA, particularly in the upland grasslands, burrowing owls may utilize California annual grasslands and portions of abandoned developed/landscaped habitats within the BSA.

No American badgers or potential badger dens were observed in the BSA during the reconnaissance-level survey. Badgers are not known to occur on-site, but have been

recorded in the surrounding vicinity (CNDDB 2018; Figure 5). Suitable denning and foraging habitat for badgers is present in grassland habitats, although badgers are unlikely to den on-site due to the surrounding high levels of human disturbance. Should badgers occur in the BSA, they would most likely represent dispersing or foraging individuals. Nevertheless, there is some potential (albeit low) for badgers to den in the BSA.

4.3.7.2. Project Impacts

The number of burrowing owls and American badgers that could potentially occur in the Project footprint is low due to the lack of burrows observed on the majority of the BSA. However, individuals could potentially be present in burrows within and nearby the Project footprint when Project activities occur. Construction activities associated with the Project could result in the direct loss and indirect disturbance of burrowing owls and American badgers and their habitats. The Project could impact individual burrowing owls and American badgers as a result of:

- direct mortality during construction as a result of collision with by construction vehicles or equipment;
- increased mortality due to roadkill caused by the construction and vehicular use in and around the vicinity of the Project;
- direct mortality from the collapse of underground burrows, resulting from soil compaction;
- direct mortality or loss of suitable habitat resulting from the loss of breeding, foraging, or dispersal habitat; and
- loss of eggs (in the case of burrowing owls) or young (in the case of either species) as a result of abandonment of occupied nests/dens due to construction-related disturbance.

The Project could result in permanent or temporary impacts to as much as 76.95 ac of habitat, including all undeveloped habitat types that will be impacted, that may serve as foraging, dispersal, or refugial habitat, and possibly nesting/denning habitat, for burrowing owls or American badgers. Two categories of habitat impacts were identified:

Permanent impacts. Approximately 22.70 ac of potential burrowing owl and American badger habitat would be permanently lost due to the construction of pavement and other hardscape in areas that currently provide natural habitat that may be used by burrowing owls or American badgers.

Temporary impacts. Approximately 54.25 ac of potential burrowing owl and American badger foraging habitat would be used for construction access and staging while the

Project is being constructed or will be impacted by grading (cut/fill) activities as part of the Project. Areas used for construction access and staging during construction would be subject to grading but would not be paved or otherwise permanently altered. These areas are expected to provide habitat of similar quality to existing conditions shortly (i.e., in less than one year) after the completion of construction.

No recent breeding records for either burrowing owls or American badgers were found in CNDDB (2018) records, and it is highly unlikely for badgers to den on site. However, there is some potential for portions of the Study Area to serve as breeding habitat for these species, and these areas may be permanently or temporarily impacted as described above.

In summary, if not avoided and minimized, the Project could have substantial effects on burrowing owl and/or American badger. Implementation of the avoidance and minimization measures, and compensatory mitigation, described below would mitigate these impacts.

4.3.7.3. Avoidance and Minimization Efforts

Conduct preconstruction surveys for nesting burrowing owls and denning American badgers. As feasible, all suitable habitat within 0.5 mi of the Project footprint shall be surveyed for nesting burrowing owls and for American badgers. The survey should be conducted during the owl's nesting season, defined by the EACCS as March 15 to September 1. The survey shall be conducted by a qualified biologist prior to the start of construction. This survey shall consist of two or more site visits, with the biologist examining all potential burrows within 0.5 mi, as access permits, for signs of nesting burrowing owls (i.e., owls, pellets, feathers, and/or whitewash) and for American badger dens.

Should burrowing owls or American badgers be discovered on or near the BSA, avoidance of disturbance to the burrow or den will be conducted per EACCS Measure BIRD-2 below, or EACCS Measure MAMM-1 (above under *San Joaquin Kit Fox*), as appropriate. In addition, implementation of the General Minimization Measures listed in the PBO for the EACCS (Appendix E) will further avoid impacts.

4.3.7.4. EACCS Measure BIRD-2

- If an active burrowing owl nest is identified near a proposed work area, work will be conducted outside of the nesting season (March 15 to September 1).
- If an active nest is identified near a proposed work area and work cannot be conducted outside of the nesting season, a no-activity zone will be established by a

qualified biologist. The no activity zone will be large enough to avoid nest abandonment and will at minimum be 250-ft radius from the nest.

- If burrowing owls are present at the site during the non-breeding period, a qualified biologist will establish a no-activity zone of at least 150 ft.
- If an effective no-activity zone cannot be established in either case, an experienced burrowing owl biologist will develop a site-specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, and the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls.

4.3.7.5. Compensatory Mitigation

The EACCS identifies burrowing owl nesting habitat as suitable habitat within 0.5 mi of a documented nest occurrence during the previous 3 years, and it recommends compensatory mitigation in the event of any impacts to such habitat. In the event that burrowing owls are found to be nesting on or within 0.5 mi of the Project footprint during preconstruction surveys, or if owls need to be evicted from burrows (which can only occur when they are not actively nesting) to implement the Project, compensatory mitigation will be necessary to mitigate for impacts on occupied burrowing owl habitat. If the California red-legged frog/California tiger salamander habitat mitigation provides suitable habitat for burrowing owls as well, then no additional mitigation for impacts to burrowing owls would be necessary. Otherwise, additional habitat mitigation would be necessary, in the form of purchase of mitigation credits from a mitigation bank or Project specific mitigation in an area that supports such habitat. The EACCS prescribes mitigation ratios of 3:1 to 3.5:1 (mitigation:impact), depending on the location of the mitigation site.

4.3.7.6. Cumulative Impacts

Because of the very low probability that American badgers would occur or den on the BSA, the Project is not expected to contribute substantially to cumulative impacts on this species. Similarly, the number of burrowing owls likely to be impacted by construction activities is low due to a lack of available burrows on most of the BSA. Nevertheless, compensatory mitigation for the California red-legged frog and California tiger salamander will likely benefit these species as well. In addition, projects in the region that impact resources similar to those impacted by the Project will be subject to CEQA requirements, and many will necessitate regulatory permits as well. It is expected that such projects will mitigate their impacts on sensitive habitats and special-status species through the incorporation of mitigation measures and compliance with permit conditions. Finally, future projects that would be served by the new road extension would be

required to mitigate such developments at current conditions for this Project (i.e., 2018 conditions). Thus, the Project will not have a cumulatively considerable contribution to cumulative effects on the burrowing owl or American badger.

4.3.8. COMMON AND SPECIAL-STATUS BATS

Several species of bats are known or expected to occur in the region of the Project. Special-status bats include the pallid bat and Townsend's big-eared bat, both of which are considered California species of special concern.

The pallid bat is a light brown or sandy colored, long-eared, moderate-sized bat that occurs throughout California with the exception of the northwest corner of the state and the high Sierra Nevada (Zeiner et al. 1990b). Pallid bats are most commonly found in oak savannah and in open dry habitats with rocky areas, trees, buildings, or bridges for roosting. Coastal colonies commonly roost in deep crevices in rocky outcroppings, in buildings, under bridges, and in the crevices, hollows, and exfoliating bark of trees. Colonies can range from a few individuals to over a hundred (Barbour and Davis 1969), and usually this species occurs in groups larger than 20 individuals (Wilson and Ruff 1999). Males and females typically occupy the same late-fall and winter roosts found in canyon bottoms and riparian areas (Johnston et al. 2006). After mating with males during the late-fall and winter season, females leave to form a separate maternity colony, often on ridge tops or other warmer situations (Johnston et al. 2006). Although crevices are important for day roosts, night roosts often include open buildings, porches, garages, highway bridges, and mines. Pallid bats may travel up to several miles for water or foraging sites if roosting sites are limited. This bat prefers foraging on terrestrial arthropods in open habitats and regional populations and individuals may show selective prey preferences (Johnston and Fenton 2001). Pallid bat roosts are very susceptible to human disturbance, and urban development has been cited as the most significant factor contributing to their regional decline (Miner and Stokes 2005).

The Townsend's big-eared bat is a colonial species, and females aggregate in the spring at maternity colonies to begin their breeding season, which may extend through the end of August. Females give birth to one young, and females and young show a high fidelity to both their group and their specific roost site (Pearson et al. 1952). Although the Townsend's big-eared bat is usually a cave dwelling species, many colonies are found in anthropogenic structures, such as the attics of buildings or old abandoned mines. Known roost sites in California include limestone caves, lava tubes, mine tunnels, buildings, and other structures (Williams 1986). This species also roosts in deep crevices of redwood trees. Radio tracking studies suggest that movement from a colonial roost during the maternity season is confined to the area within 9 mi of the roost (Pierson and Rainey 1998). This species is easily disturbed while roosting in buildings, and females are

known to abandon their young when disturbed (Humphrey and Kunz 1976). Townsend's big-eared bats feed primarily on moths and other soft-bodied insects (Kunz and Martin 1982).

In addition to special-status bats, several non-special-status species, such as the Mexican free-tailed bat, hoary bat (*Lasiurus cinereus*) and California myotis occur in the vicinity of the BSA as well.

4.3.8.1. Survey Results

Suitable roosting habitat for several species of common bats (e.g., the Yuma myotis and Mexican free-tailed bat) and for the pallid bat occurs in the buildings in the BSA. Townsend's big eared bat infrequently roosts and forms maternity colonies in abandoned buildings; this species is sensitive to human disturbance, and so is unlikely to occur within the buildings on-site, which are either occupied by humans or located adjacent to high levels of human disturbance (i.e., highway I-580). No CNDDB records exist for any bats in the Project vicinity; however, this does not preclude occurrence of these highly mobile species in the BSA. We were unable to survey the buildings in the BSA for bats because they were occupied at the time of our site visit, or because bulls were present around the unoccupied buildings. Thus, we cannot rule out the possibility that bats may be roosting on-site, or may roost within the BSA in the future.

4.3.8.2. Project Impacts

The Project would result in the removal of a small amount of potential roosting sites for bats (e.g., small stands of mixed riparian woodland habitat or small abandoned buildings such as sheds). Construction activities near potential roosting habitat could flush a small number of roosting bats during daylight hours, which could increase the potential for predation by predatory birds. However, the Project is expected to result in impacts to few such bats, if any. If common species of bats are displaced (e.g., due to demolition), sufficient alternative night-roosting habitat is present that displacement during construction would not result in substantial loss of individuals from local and regional populations.

Project-related disturbance in close proximity to a maternity roost could potentially cause females to abandon their young. Loss of a small to moderate sized maternity roost of common bats (no large roost would be present in any of the trees or structures that may be removed) would not result in a substantial impact on these species as a whole. However, the loss of even a small maternity roost of pallid bats or Townsend's big eared bats could result in population-level impacts to these species given their regional rarity. The avoidance and minimization measures described below, including measures to prevent the loss of active maternity roosts and the injury or mortality of individuals of

both common and special-status bat species during Project construction, would minimize the potential for such impacts.

Impacts on natural habitats would result in the loss of some foraging habitat and prey production areas as well as a temporary impact on foraging individuals through the alteration of foraging patterns (e.g., avoidance of work areas because of increased noise and activity levels during Project activities). However, because the Project would not result in substantial changes to the availability of foraging habitat in the vicinity, the Project is not expected to have a substantial long-term impact on foraging habitat or prey availability. Therefore, this Project would not result in substantial adverse effects on any bat species.

4.3.8.3. Avoidance and Minimization Efforts

- A pre-construction/pre-demolition survey for roosting bats will be conducted within 15 days prior to the commencement of any construction activities within 400 ft of trees or buildings providing potential roosting habitat. Such a survey will focus on detecting bats that may be day-roosting in trees within or immediately adjacent to (i.e., within 100 ft of) the impact areas. The survey will be conducted by a qualified bat biologist. If suitable roost sites are found and a visual survey is not adequate to determine presence or absence of bats (which would be particularly likely in the case of potential roost trees), acoustical equipment will be used to determine occupancy. If no evidence of bat roosts is found, any buildings or trees that contain potential roosting sites and that are proposed for removal will be removed within 15 days following completion of the survey.
- If a day roost is found during the maternity season (1 April until the young are flying, typically by 31 August) within 400 ft of the impact areas, a qualified bat biologist (in consultation with the CDFW) will determine the width of a buffer that will be established around the roost. No construction-related activity shall occur within the buffer during the maternity season. Typical buffers recommended between intense construction activity and pallid bat roosts are: 90 ft for motor vehicles and foot traffic, 120 ft for heavy equipment, 150 ft for trenching, 250 ft for idling equipment or generators, 250 ft for shielded lighting, and 400 ft for unshielded lighting (H. T. Harvey & Associates 2016, Johnston et al. 2017). No tree or structure containing a maternity roost will be removed or otherwise physically disturbed during the maternity season.
- Outside the maternity season, a day roost may be removed after individual bats are safely evicted under the direction of a qualified bat biologist. Eviction will occur between 1 September and 31 March, but will not occur during long periods of inclement or cold weather (as determined by the bat biologist) when prey are not available or bats are in torpor. If feasible, one-way doors will be used to evict bats. If

use of a one-way door is not feasible, or the exact location of the roost entrance is not known, the roosts that need to be removed shall first be disturbed by the bat biologist. Such disturbance will occur at dusk to allow bats to escape during the darker hours. These buildings or trees shall then be removed the following day. All of these activities will be performed under the supervision of the bat biologist.

In addition, implementation of the General Minimization Measures listed in the PBO for the EACCS (Appendix E) will further avoid impacts.

4.3.8.4. Compensatory Mitigation

Compensatory mitigation for impacts on active bat roosts would not be warranted unless a maternity roost of pallid bats or Townsend's big-eared bats will be lost. In this instance, the provision of one or more alternate roost structures would be appropriate to reduce impacts on special-status bat species.

If a pallid bat or Townsend's big-eared bat day roost is located within a tree or building to be removed, an alternative bat roost structure will be provided by the City and its partners. The design and placement of this structure will be determined by a bat biologist, in consultation with the CDFW, based on the location of the original roost and the habitat conditions in the vicinity. The roost structure will be built to specifications as determined by a bat biologist and CDFW, or it may be purchased from an appropriate vendor. The structure will be placed as close to the impacted roost site as feasible. This bat structure will be erected at least one month (and preferably a year or more) prior to removal of the original roost structure. A bat biologist will monitor this structure during the breeding season for up to two years following completion of the Project, or until it is found to be occupied by bats (whichever occurs first), to provide information for future projects regarding the effectiveness of such structures in minimizing impacts to bats.

4.3.8.5. Cumulative Impacts

Because of the very low probability that the Townsend's big-eared bat would roost or breed on the BSA, the Project is not expected to contribute substantially to cumulative impacts on this species. Similarly, few or no pallid bats are likely to be impacted by construction activities given the low likelihood of their occurrence in the BSA. Implementation of the above AMMs and compensatory mitigation in the event that these species do occur on site would minimize any potential impacts on these species. In addition, projects in the region that impact resources similar to those impacted by the Project will be subject to CEQA requirements, and many will necessitate regulatory permits as well. It is expected that such projects will mitigate their impacts on sensitive habitats and special-status species through the incorporation of mitigation measures and compliance with permit conditions. Finally, future projects that would be served by the new road extension would be required to mitigate such developments at current

conditions for this Project (i.e., 2018 conditions). Thus, the Project will not have a cumulatively considerable contribution to cumulative effects on special-status bat species.

4.3.9. SPECIAL-STATUS NESTING BIRDS

The white-tailed kite (a state fully protected species), and the loggerhead shrike and grasshopper sparrow (both CSSCs), may nest in the extensive grasslands present on the BSA. These species are assessed together because potential impacts of the Project on these species would be similar. Habitat for the white-tailed kite and loggerhead shrike consists of extensive grasslands interspersed with trees or shrubs, in which these species will nest. Habitat for the grasshopper sparrow consists of extensive grasslands.

White-tailed Kite

White-tailed kites are year-round residents, establishing breeding territories in grasslands, agricultural fields, cismontane woodlands, and other open habitats that encompass open areas with healthy prey populations, and snags, shrubs, trees, or other nesting substrates (Polite et al. 1990, Dunk 1995, Erichsen et al. 1996). Nonbreeding birds typically remain in the same area over the winter, although some movements do occur (Polite et al. 1990). The presence of white-tailed kites is closely tied to the presence of prey species, particularly voles, and prey base may be the most important factor in determining habitat quality for white-tailed kites (Dunk and Cooper 1994, Skonieczny and Dunk 1997).

Loggerhead Shrike

Loggerhead shrikes establish breeding territories in open habitats with relatively short vegetation that allows for visibility of prey; they can be found in grasslands, scrub habitats, riparian areas, other open woodlands, ruderal habitats, and developed areas including golf courses and agricultural fields (Yosef 1996). Ideal breeding habitat for loggerhead shrikes is open, with short grassy vegetation punctuated by many perches, shrubs, or trees for nesting, and sharp branches or barbed wire fences for impaling prey (Yosef 1996). Shrikes nest earlier than most other passerines, especially in the west where populations are sedentary (Yosef 1996). The breeding season may begin as early as late February, and lasts through July (Yosef 1996). Nests are typically established in shrubs and low trees including sagebrush (*Artemisia* spp.), willow (*Salix* spp.), and mesquite (*Prosopis* spp.), through brush piles may also be used when shrubs are not available (Yosef 1996, Humple 2008).

Grasshopper sparrow

In California, the distribution of breeding grasshopper sparrows includes the Coast Ranges, the northern Central Valley, and areas west of the southeastern deserts (Lyon 2000, Unitt 2008). The grasshopper sparrow breeds in open, short grasslands with scattered clumps of shrubby vegetation, constructing domed ground nests with grasses in patches of dense vegetation (Vickery 1996, Sutter and Ritchison 2005, Unitt 2008). Prime breeding habitat features very large, unfragmented areas of grassland with patches of bare ground, and clumps of shrubby vegetation surrounded by denser grass cover for singing perches and nest sites (Vickery 1996, Lyon 2000, Sutter and Ritchison 2005). Grasshopper sparrows breed from mid-March to August in California, after which they migrate to wintering grounds that are presumed to be in Mexico and Central America (Vickery 1996, Unitt 2008).

4.3.9.1. Survey Results

The grasslands within the BSA provide suitable breeding habitat for white-tailed kites, loggerhead shrikes, and grasshopper sparrows. Mixed riparian woodland habitat also provides suitable nesting habitat for the white-tailed kite and loggerhead shrike. Individual white-tailed kites and loggerhead shrikes were observed during reconnaissance level surveys in March 2017, indicating that these species may nest in the area. No grasshopper sparrows were observed on the BSA during reconnaissance surveys. Because of the relatively large territory requirements of white-tailed kites and loggerhead shrikes, and the rarity of grasshopper sparrows in the region, we would not expect more than two nesting pairs of any of these species to occur within the BSA.

4.3.9.2. Project Impacts

With implementation of the conservation measures described in the Migratory Birds Section (Section 4.3.11) below, the Project will avoid the potential to cause the death or injury of any migratory bird species, including white-tailed kites, loggerhead shrikes, grasshopper sparrows, or their active nests, eggs, or young.

Suitable habitat is present for the white-tailed kite, loggerhead shrike, and grasshopper sparrow in many areas surrounding the BSA, particularly in the hills north of the BSA, and the Project itself represents a very small fraction of the total breeding habitat available to these species. Furthermore, no more than one or two nests of any of these species are likely to be impacted. Therefore, the Project is not expected to substantially reduce these species' populations or habitats and any Project impacts will be minimal.

However, these bird species, along with other native bird species in the vicinity of the BSA, are protected by both the MBTA and the California Fish and Game Code, which prohibit the take of any individual bird, egg, or nest. This Project will implement measures to avoid and minimize effects (described in Section 4.3.11 below) to active

nests of such protected birds. If any white-tailed kites, loggerhead shrikes, or grasshopper sparrows nest in or near the BSA, these measures will result in the avoidance of effects to these species.

4.3.9.3. Avoidance and Minimization Efforts

The white-tailed kite, loggerhead shrike, and grasshopper sparrow, along with other native bird species that breed in the vicinity of the site, are protected by both the MBTA and the California Fish and Game Code, which prohibit the take of migratory birds and their nests. This Project will implement measures to avoid and minimize impacts (described in Section 4.3.11 below) on active nests of all birds protected under these regulations. In the event that any special-status bird species nest in or near the site, these measures will minimize any potential impacts on this species. In addition, implementation of the General Minimization Measures listed in the PBO for the EACCS (Appendix E) will further avoid impacts.

4.3.9.4. Compensatory Mitigation

The Project would have no substantial impact on the regional abundance of the white-tailed kite, loggerhead shrike, or grasshopper sparrow, and thus no substantial impacts on these species or their habitat. As a result, no compensatory mitigation is warranted.

4.3.9.5. Cumulative Impacts

Because this Project would have no impacts on the white-tailed kite, loggerhead shrike, or grasshopper sparrow, it would not contribute to cumulative impacts to these species.

4.3.10. NON-BREEDING SPECIAL-STATUS BIRDS

The golden eagle (a state fully protected species), and the yellow warbler (a CSSC) are expected to occur only as occasional foraging birds during the nonbreeding season and are not expected to nest in the BSA. These species are assessed together because potential impacts of the Project on these species would be similar.

Golden eagle

The golden eagle is protected by the MBTA and the Bald and Golden Eagle Protection Act. It is an uncommon permanent resident and migrant throughout the state. The species' breeding range in California excludes only the Central Valley, the immediate coast in the far north, and the southeastern corner of the state (Zeiner et al. 1990a). The golden eagle nests in a range of open habitats, including desert scrub, foothill cismontane woodlands, and annual or perennial grasslands. Nesting habitat is characterized by large, remote patches of grassland or open woodland; a hilly

topography that generates lift; an abundance of small mammal prey; and tall structures that serve as nest platforms and hunting perches. Once a breeding pair establishes a territory, they may build a number of nests in tall structures such as tall trees or snags, cliffs, or utility towers (Zeiner et al. 1990a, Kochert et al. 2002), only one of which is used in any given year. Such structures are largely absent from the Study Area and the surrounding area. The nesting season begins in late January and continues through August. Following nesting, adult eagles usually remain in or near their breeding territory (Zeiner et al. 1990a). Young birds in California tend to be sedentary, remaining in or near their parental home ranges (Kochert et al. 2002).

Yellow warbler

The yellow warbler occupies wooded riparian habitats along the coast, on both eastern and western slopes of the Sierra Nevada, and throughout the northern portion of the state (Heath 2008). This species prefers riparian corridors with an overstory of mature cottonwoods and sycamores, a midstory of box elder and willow, and a substantial shrub understory (Bousman 2007), particularly in areas with more open space adjacent to the riparian habitat. Yellow warblers construct open-cup nests in upright forks of shrubs or trees in dense willow thickets or other dense vegetation (Lowther et al. 1999).

4.3.10.1. Survey Results

No nests of the yellow warbler are known from the BSA or surrounding vicinity, and no nests of the golden eagle are known from the BSA but individuals and nests are known from approximately 4.0 mi north, northeast of the BSA (CNDDB 2018; Figure 5). No individuals or nests of these species were observed on the BSA during reconnaissance level surveys, which also determined that the upland within the BSA does not provide suitable breeding habitat for these species.

4.3.10.2. Project Impacts

Because these species are not expected to nest in the BSA, no impacts to nesting pairs of these species will occur. Impacts on the non-developed habitats in the BSA would result in the loss of some foraging habitat and/or prey production areas as well as a temporary impact on foraging individuals through the alteration of foraging patterns (e.g., avoidance of work areas because of increased noise and activity levels during Project activities). However, because the Project would not result in substantial changes to the availability of foraging habitat in the area, the Project is not expected to have a substantial long-term impact on foraging habitat or prey availability. Therefore, this Project would not result in substantial adverse effects on any of these species.

4.3.10.3. Avoidance and Minimization Efforts

During preconstruction surveys for nesting birds (described in Section 4.3.11 below), nests for these and all protected species will be searched on and nearby the BSA. Though not expected, should an eagle nest occur on or nearby the BSA, non-disturbance buffers of up to 0.25 mi, or 0.5-mi line-of-sight, may be required during the breeding season, while the nest is active. In addition, implementation of the General Minimization Measures listed in the PBO for the EACCS (Appendix E) will further avoid impacts.

4.3.10.4. Compensatory Mitigation

Because the golden eagle and yellow warbler are not expected to nest in the BSA, and lost foraging habitat will not result in a substantial impact on foraging habitat or prey availability for regional populations, no compensatory mitigation for impacts to these species is necessary.

4.3.10.5. Cumulative Impacts

Because the golden eagle and yellow warbler are not expected to nest in the BSA, the Project will not contribute to cumulative impacts to these species.

4.3.11. MIGRATORY BIRDS

As described in Chapter 2, the MBTA and California Fish and Game Code protect migratory birds, including their eggs, nests, and young. With the exception of the burrowing owl, tricolored blackbird, white-tailed kite, loggerhead shrike, and grasshopper sparrow discussed above, all birds that have the potential to nest within the site are not special-status species and are regionally common. It has been determined that the Project would not substantially impact certain special-status avian species potentially present in the site. Nevertheless, the Project will implement measures to avoid impacts on active nests of migratory birds to comply with the MBTA and California Fish and Wildlife Code.

4.3.11.1. Survey Results

Several species of birds protected under the MBTA and the California Fish and Game Code may nest within or adjacent to the BSA. These include the red-winged blackbird, western meadowlark (*Sturnella neglecta*), mourning dove, Say's phoebe (*Sayornis saya*), song sparrow, black phoebe, Bewick's wren (*Thryomanes bewickii*), Anna's hummingbird, red-tailed hawk and house finch.

4.3.11.2. Project Impacts

With implementation of the AMMs described below, the Project is not expected to result in the death or injury of migratory birds or their active nests, eggs, or young. The Project would impact a relatively small amount of potential nesting habitat for migratory birds and would have no measurable impact on regional populations of these species because the impacted habitat represents such a small proportion of regionally available habitat.

4.3.11.3. Avoidance and Minimization Efforts

Some combination of the following measures will be implemented to ensure that Project activities comply with the MBTA and California Fish and Game Code.

- **Avoidance of the Nesting Bird Season.** If feasible, Project activities will be scheduled to avoid the avian nesting season. If such activities are scheduled to take place outside the nesting season, all impacts on nesting birds, including raptors, protected under the MBTA and California Fish and Game Code, would be avoided. The nesting season for most birds in Alameda County typically extends from February 1 through August 31, although in most years, a majority of birds have finished nesting by August 1.
- **Vegetation Removal during the Non-Nesting Season.** If Project activities will not be initiated until after the start of the nesting season, potential nesting substrate (e.g., bushes, trees, grasses, and other vegetation) that is scheduled to be removed by the Project may be removed prior to the start of the nesting season (e.g., prior to 1 February) to reduce the potential for initiation of nests. If it is not feasible to schedule vegetation removal during the nonbreeding season, or where vegetation cannot be removed (e.g., in areas immediately adjacent to the site), then pre-construction surveys for nesting birds will be conducted as described below. It is not recommended to remove sensitive and/or regulated wetland vegetation prior to construction, because of the potential water quality impacts such activities could enact.
- **Pre-construction/Pre-disturbance Surveys for Nesting Birds.** If it is not possible to schedule Project activities between September 1 and February 1, then pre-construction surveys for nesting birds will be conducted by a qualified biologist to ensure that no nests will be disturbed during Project implementation. These surveys will be conducted no more than one week prior to the initiation of Project activities. During this survey, a qualified biologist will inspect all potential nesting habitats (e.g., trees, shrubs, grasslands, and structures) within 300 ft of impact areas for raptor nests and within 100 ft of impact areas for nests of non-raptors. Surveys for

burrowing owls and nesting golden eagles will extend out to 0.5 mile from the Project site (to the extent that such areas are accessible)

- **Buffers around Active Nests.** If an active nest (i.e., a nest with eggs or young, or any completed raptor nest attended by adults) is found sufficiently close to work areas to be disturbed by these activities, the biologist, in consultation with CDFW, will determine the extent of a disturbance-free buffer zone to be established around the nest to ensure that no nests of species protected by the MBTA and California Fish and Game Code will be disturbed during Project implementation. Typical buffers are 0.25 mile (or 0.5 mile line-of-sight) for golden eagles, 250 ft for burrowing owls, 300 ft for other raptors, and 50-100 ft for non-raptors. Because the majority of the site is already subject to disturbance by vehicles and pedestrians, activities that will be prohibited from occurring within the buffer zone around a nest will be determined on a case-by-case basis. In general, activities prohibited within such a buffer while a nest is active will be limited to new construction-related activities (i.e., activities that were not ongoing when the nest was constructed) involving significantly greater noise, human presence, or vibrations than were present prior to nest initiation.
- **Nest Deterrence.** If necessary to avoid impacts to active nests (i.e., nests containing eggs or young), nest starts may be removed on a regular basis (e.g., every second or third day), starting in late January or early February to prevent active nests from becoming established.

In addition, implementation of the General Minimization Measures listed in the PBO for the EACCS (Appendix E) will further avoid impacts.

4.3.11.4. Compensatory Mitigation

Because the Project would avoid impacts to individual birds and their active nests, and would have a limited impact on habitats for migratory birds, no compensatory mitigation is warranted.

4.3.11.5. Cumulative Impacts

With implementation of the Avoidance and Minimization Efforts described above, the Project would make no measurable contribution to cumulative impacts on populations, or habitat, of any migratory bird species.

4.4. Summary of FESA Impact Determination

Although not specifically directed to do so in the recent Caltrans NES Guidelines, we have included a summary of determination of effect within this chapter for information purposes. Table 4 provides a summary of our determination of effects under FESA.

Table 4. Summary of Potential Project Impacts on Federally Listed, Proposed, or other Special-Status Species or Critical Habitat for these Species in Relation to FESA

Common Name	Scientific Name	Status	Potential Effect Under FESA
Longhorn fairy shrimp	*Branchinecta longiantenna*	FE	No effect
Vernal pool fairy shrimp	*Lepidurus packardi*	FE	No effect
Conservancy fairy shrimp	*Branchinecta conservation*	FE	No effect
Callippe silverspot	*Speyeria callippe callippe*	FE	No effect
California red-legged frog	*Rana draytonii*	FT, CSSC	May affect, likely to adversely affect*
California tiger salamander	*Ambystoma californiense*	FT, ST	May affect, likely to adversely affect*
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, ST	May affect, not likely to adversely affect*

* With implementation of the Avoidance and Minimization Efforts described herein

A No Effect determination was also made for all other federally listed species included in the USFWS & NMFS Species lists in Appendices B & F.

Key to Table 5 Abbreviations: Status: Federal Endangered (FE); Federal Threatened (FT); State Threatened (ST); California Species of Special Concern (CSSC)

Chapter 5 – Conclusions and Regulatory Determinations

5.1. Federal Endangered Species Act Consultation Summary

Caltrans, as part of its NEPA assignment of federal responsibilities by the FHWA, effective October 1, 2012 and pursuant to 23 USC 327, is the lead federal agency for Section 7 of the FESA. Provisions of the FESA, as amended (16 USC 1531), protect federally listed threatened and endangered species and their habitats from unlawful take. “Take” under FESA includes activities such as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” The USFWS regulations define harm to include some types of “significant habitat modification or degradation.” The U.S. Supreme Court ruled on June 29, 1995, that “harm” may include habitat modification “...where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.”

Three federally listed species could potentially occur within the BSA: California red-legged frog, California tiger salamander, and San Joaquin kit fox. Measures to avoid, minimize, and compensate for impacts on these species are described in Sections 4.3.3 and 4.3.6 above. Nevertheless, it is likely that incidental take approval from the USFWS will be needed due to the potential for the Project to result in take of the California tiger salamander and California red-legged frog (i.e., the Project is likely to adversely affect these species). As a result, Section 7 consultation with the USFWS is expected to be necessary. Caltrans, with its delegated NEPA authority, is the lead federal agency for Section 7 consultation.

5.2. Essential Fish Habitat Consultation Summary

No Essential Fish Habitat exists within the BSA, since no fish species subject to any fisheries management plans are present. Therefore, consultation with NMFS regarding EFH is not warranted.

5.3. California Endangered Species Act Consultation Summary

Provisions of the CESA (Fish and Game Code of California, Chapter 1.5, Sections 2050-2116) protect state-listed threatened and endangered species. The CDFW regulates activities that may result in “take” of individuals. Take is defined as, “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill”.

Three state-listed species could potentially occur within the BSA: the California tiger salamander, tricolored blackbird, and San Joaquin kit fox. Measures to avoid, minimize,

and compensate for impacts on these species are described in Sections 4.3.3, 4.3.4 and 4.3.6 above. Nevertheless, it is likely that an ITP from the CDFW will be needed due to the potential for the Project to result in take of the California tiger salamander.

5.4. Federal Migratory Bird Treaty Act

As described in Section 4.3.11, the Project incorporates measures to avoid effects on nesting birds.

5.5. Wetlands and Other Waters and CDFW Riparian Jurisdictional Coordination Summary

Cottonwood Creek and other perennial and ephemeral streams in the study area were mapped to each opposing bank within the BSA as aquatic and wetland habitat (Figure 3). These habitats are regulated as Waters of the U.S. and state by the USACE and the RWQCB, respectively. The OHWM represents the upper limit of "other waters" of the U.S. under Section 404 of the CWA, and includes some areas covered in upland vegetation but that technically occur below the OHWM as determined by the change in topography and/or the incised stream banks. Wetlands within this channel are also claimed by both agencies. Both the RWQCB and CDFW are expected to regulate riparian habitat to each opposing top-of-bank of the Cottonwood Creek channel as well as that of other perennial and ephemeral streams as waters of the State. The RWQCB will regulate these areas under the Porter Cologne Act as areas that influence water quality within the Project region, although the CDFW will regulate these areas as "bed and banks" riparian habitat.

All work within the wetland and waters in the BSA, including dewatering activities, would require the Project proponent to notify the USACE prior to construction and apply for appropriate permits. The Project may qualify for NWP 14, Linear Transportation Projects, if impacts to streams are minimized enough to adhere to the 300 ln ft impact cap. Otherwise, the Project would require an IP, which involves an Alternatives Analysis conducted according to Section 404(b)(1) guidelines of the CWA. In addition, the Project proponent would apply for 401 water quality certification or joint 401 water quality certification/Waste Discharge Requirement from the RWQCB, and a LSAA from the CDFW; and will comply with all measures required by these permits.

5.6. Invasive Species

Several invasive plant species were observed in the BSA, occurring in the California annual grassland and developed/landscaped habitats. Weed species rated as having a moderate high ecological impact or invasive potential by the Cal-IPC are of particular concern and include fennel, poison hemlock, bull thistle, and black mustard. Soil

disturbance (an impact expected from this Project) is often followed by an invasion of the disturbed area by these species. However, BMPs for weed control will be implemented for this Project and include the following measures:

1. Prior to access to the site, all construction equipment will be washed to prevent the introduction of new infestations. Prior to being used at another construction site, the equipment will be washed again, to prevent spread of invasives from the Project footprint to new locations. If equipment if washed on site, it will be done in such a manner that soil, weed seeds, and other materials are collected and not allowed to drain into avoided areas, or into sensitive and regulated habitats.

2. Following proposed Project implementation, native seed from a local source (within the same watershed if practicable) will be planted on all disturbed ground or ground denuded of vegetation by proposed Project activities.

Therefore, with the implementation of these measures, proposed Project-related impacts are not expected to cause an increase in invasive species populations within the site.

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Appendix A. – Preliminary Delineation of Waters of the U.S./Wetland Technical Study

Preliminary Delineation of Wetlands and Other Waters

Dublin Boulevard-North Canyons Parkway Extension Project

Cities of Dublin and Livermore, Alameda County, California

Regional Transportation Plan Number: 17-01-0048

Federal Project Number “RTPL 5432 (019)”

Caltrans District 4

Fund Management System Identification Number: 6046.00

August 2018

H. T. HARVEY & ASSOCIATES

Ecological Consultants

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Preliminary Delineation of Wetlands and Other Waters

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Summary

On April 13 and 17, 2018, H. T. Harvey & Associates' biologists performed a delineation of wetlands and other waters on the Dublin Boulevard North Canyon Extension project area in Alameda County, California. 141.40 acres were surveyed for jurisdictional waters (wetlands and other waters) that may be subject to regulation under Section 404 of the Clean Water Act administered by the U.S. Army Corps of Engineers (USACE). The survey also delineated the extent of waters of the state that may be subject to regulation under the Section 401 of the CWA and the Porter Cologne Water Quality Control Act administered by the Regional Water Quality Control Board (RWQCB) and riparian habitat that may be subject to regulation under Section 1600 of the Fish and Game Code administered by the California Department of Fish and Wildlife (CDFW).

The on-site determination assumed normal circumstances, and the results are based on the conditions present at the time of the surveys. H. T. Harvey & Associates' biologists conducted the surveys during the end of the wet season. This report is part of a request to USACE to verify maps of the extent and distribution of waters of the United States on the site. The on-site determination assumed normal circumstances, and the results are based on the conditions present at the time of the surveys. The Biological Study Area (BSA) is located in the San Francisco Bay East (Hydrologic Unit Code 18050004) watershed.

Approximately 10.96 acres of potentially jurisdictional waters of the U.S. were identified in the biological study area, comprising 10.5 acres of Section 404 wetlands and 0.46 acres of Section 404 other waters situated below the ordinary high water mark of Cottonwood Creek, six additional unnamed perennial streams, streams and within associated culverts. Additionally, approximately 4.02 acres constituting riparian bed and banks were identified as riparian waters of the state. These potentially jurisdictional waters are summarized in the table below.

Summary of Potentially Jurisdictional Waters in the Project Area

Potentially Jurisdictional Waters	Acres[1]
Total Section 404/401 Wetlands	**10.5**
Perennial Marsh	0.07
Seasonal Wetlands	10.43
Total Section 404/401 Other Waters of the U.S	**0.46**
Ephemeral stream	0.13
Perennial stream	0.33
Total of potentially jurisdictional waters of the U.S.	**10.96**
Riparian Waters of the State	**4.02**
Ephemeral stream (stream bed)	0.13
Perennial stream (stream bed)	0.33
In-stream seasonal wetland (stream bed)	0.14
Riparian vegetation within top of bank (stream banks above OHWM)	3.42
Total of Potentially Jurisdictional Waters	**14.38**

[1] Acreage totals are rounded.

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Acronym List

Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CWA	Clean Water Act
FAC	Facultative
FACU	Facultative Upland Species
FACW	Facultative Wetland Species
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OBL	Obligate Wetland Species
OHWM	Ordinary High Water Mark
PM	Post Mile
PRISM	Parameter-elevation Regressions on Independent Slope Model
RWQCB	Regional Water Quality Control Board
UPL	Upland Species
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service

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Chapter 1 – Introduction

1.1. Project Background

Traffic congestion on I-580 is an ongoing issue throughout the region. The eastern extension of Dublin Boulevard from its current terminus at Fallon Road to the Doolan Road/North Canyons Parkway intersection has been planned since 1984 to provide capacity relief to I-580 and to provide access to potentially developed areas in Dublin, as described in Dublin's General Plan Environmental Impact Report (City of Dublin 1984) as well as in various other regional and local land use planning documents such as Plan Bay Area (2035 update to 2040) (MTC and ABAF 2017), Eastern Dublin Specific Plan (EDSP) (City of Dublin 2016), Livermore's General Plan Circulation Element (City of Livermore 2014), and Fallon Village Supplemental Environmental Impact Report (SEIR) (2005).

The City of Dublin (Dublin), in cooperation with the California Department of Transportation (Caltrans), City of Livermore (Livermore), Alameda County (County), and Federal Highway Administration (FHWA), proposes to extend Dublin Boulevard approximately 1.5 miles eastward through eastern Dublin and an unincorporated portion of the County, terminating at the boundary between the County and Livermore city limits (the project).

The purpose of the project is to improve east-west local roadway connectivity between Dublin and Livermore, and improve mobility, multimodal access, safety and efficiency for all roadway users. The purpose is also to indirectly relieve vehicular congestion in the region by providing a completed freeway reliever route along the north side of I-580 between I-680 and Route 84.

The project will pass through undeveloped lands and will affect areas where jurisdictional waters or other waters of the state may occur. Therefore, a wetland delineation survey was performed for the project.

1.2. Project Description

The project is located within Dublin, the County, and Livermore, north of I-580 between the existing terminus of Dublin Boulevard to the west and terminus of North Canyons Parkway to the east. The roadway extension would start from the current terminus of Dublin Boulevard at the Dublin Boulevard/Fallon Road intersection in Dublin and would end at the Doolan Road/North Canyons Parkway intersection along the boundary of the County and Livermore. This roadway extension would provide four to six travel lanes and bicycle and pedestrian facilities (i.e., sidewalks and bike lanes). Beginning at Fallon Road, the roadway extension would have six travel lanes (three in each direction). Continuing eastward, the roadway extension would narrow to four travel lanes (two in

each direction) before intersecting with Croak Road. From Croak road to Doolan Road, the roadway extension would remain in the four lane configuration.

The Biological Study Area or BSA is approximately 141.4 acres and is located in the *Livermore* U.S. Geological Survey (USGS) 7.5-minute quadrangle in Alameda County.

The project location and BSA are depicted in **Figures 1 and 2** respectively.

1.3. General Study Area Conditions

In April, May, and June of 2018, H. T. Harvey & Associates plant and wetland ecologists performed a delineation of potentially jurisdictional waters on the proposed Dublin Boulevard Extension Project (project) site in the Cities of Dublin and Livermore, and unincorporated Alameda County, California (**Figure 1**). The 141.4-acre BSA (Figure 2) was surveyed to identify wetlands and other waters of the U.S. that may be subject to regulation under the Clean Water Act, as administered by the U.S. Army Corps of Engineers (USACE). This report documents the findings of the preliminary delineation survey and forms part of a request to the USACE to verify the mapped extent and distribution of potentially jurisdictional waters of the U.S.

The BSA is situated on the toe of rolling hills to the north, with relatively flat terrain to the south of the proposed road alignment (**Figure 1**). It is located immediately to the north of I-580 between the existing terminus of Dublin Boulevard to the west and terminus of North Canyons Parkway to the east. At the time of the delineation, the project site included a developed residential area, a landscaping business, Croak Road, and undeveloped grasslands used primarily for cattle grazing. Surrounding land uses are primarily developed, including residential and commercial developments to the west, northwest, and east, and I-580 to the south (**Figure 2**). The BSA is located in the *Livermore* U.S. Geological Survey (USGS) 7.5-minute quadrangle (**Figure 3**).

The topography of the BSA ranges from relatively flat in the southern portion near I-580, to gently rolling hills to the north. The topography slopes slightly northward, and Cottonwood Creek drains from north to west in the eastern half of the BSA.

Chapter 2 – Chapter 2 – Study Methods

2.1. Personnel and Survey Dates

A technical delineation of wetlands and other waters on the project site was performed on April 13 (9 a.m. to 4 p.m.) and April 17 (9 a.m. to 4 p.m.), 2018, in accordance with the Corps Manual (Environmental Laboratory 1987), the Regional Supplement (USACE 2008), and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM)*

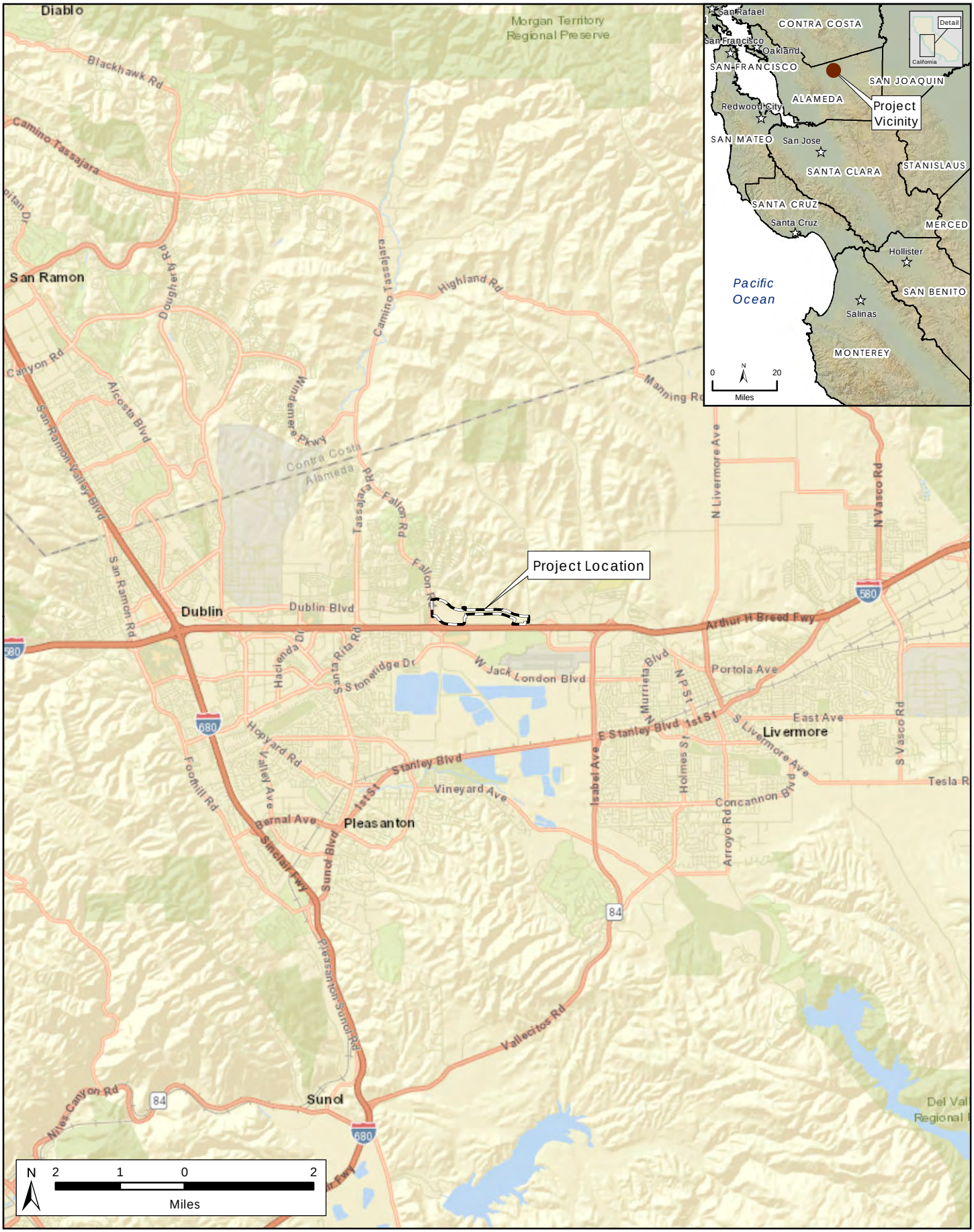

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Figure 1. Vicinity Map
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N:\Projects3900\3922-01\Reports\Wetland Delineation\Fig 2 Study Area & Photo Points .mxd

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Figure 2, Study Area over Aerial Photo and Photo Points
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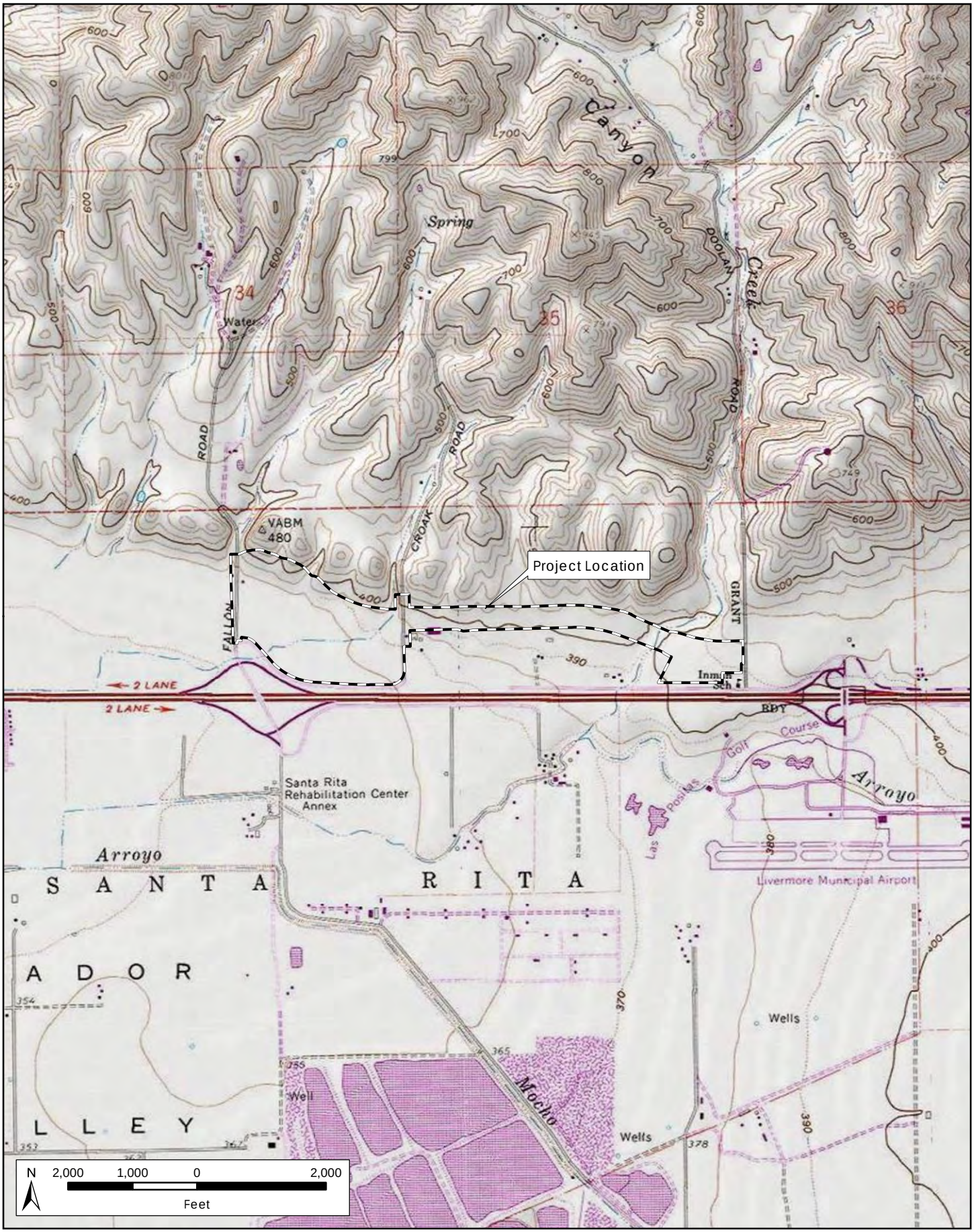

N:\Projects3900\3922-01\Reports\Wetland Delineation\Fig 3 Topo Map.mxd mlagarde

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Figure 3. USGS Topographic Map
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in the Arid West Region of the Western United States: A Delineation Manual (USACE 2008b). The purpose of the survey was to identify the extent and distribution of wetlands and other waters that may be subject to regulation by the USACE, RWQCB, and CDFW. Weather conditions on April 13 and 17, 2018, were cool to warm, dry, and clear. Unsafe or inaccessible portions of the project site were assessed remotely for potentially jurisdictional features. Additional survey dates that contributed to the conclusions in this delineation include reconnaissance site visits on March 14 and 16, 2017, and hydrology monitoring site visits on May 8, 10, and June 29, 2018.

The entire Project site was covered on foot to find all potential features and to map these features using a submeter Global Positioning System (GPS). The wetland delineation was conducted during the end of the wet season. The following sections present descriptions of the methods used to identify Section 404 jurisdictional waters (wetlands and other waters).

Chapter 3 – Identification of Jurisdictional Waters

In general, surveys examining the vegetation, soils, and hydrology of an area use the routine determination method “On-Site Inspection Necessary” (Section D) outlined in the Corps Manual (Environmental Laboratory 1987) and use the updated data forms, vegetation sampling methods, and hydric soil and hydrology indicators developed for the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Regional Supplement) (USACE 2008). This three-parameter approach to identifying wetlands is based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Alternatively, on some sites, a two-parameter approach to identifying wetlands is used in situations where the vegetation, soils, or hydrology indicator is absent because of human activities or natural events (described in Chapter 5, “Difficult Wetland Situations in the Arid West” of the Regional Supplement).

At the project site, the vegetation, soils, and hydrology were examined following the guidelines outlined in the routine determination method discussion in the Corps Manual. In addition, the Regional Supplement was followed to document site conditions relative to hydrophytic vegetation, hydric soils, and wetland hydrology. The methods in the Corps Manual were followed except where superseded by instruction issued in the more recent and location-specific Regional Supplement. This delineation report was also compiled in accordance with guidance provided in *Information Requested for Verification of Corps Jurisdiction* (USACE 2007a), *Updated Map and Drawing Standards for the South Pacific Regulatory Division Regulatory Program* (USACE 2016a), and *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports* (USACE 2016b). These documents identify information that must be submitted as part of a request for a jurisdictional determination, including a vicinity map (Figure 1), BSA (Figure 2), topographic map (Figure 3), soils map (Figure 4), National Wetland Inventory map

(Figure 5), habitats map (Figure 6), and Waters of the U.S. identification map (Figures 7a and 7b), a list of plant species observed (**Appendix A**), a copy of applicable sections of the current soil survey report (**Appendix B**), data forms for wetlands sample points (**Appendix C**), written rationale for sample point choice (**Chapter 5**), color photographs (**Appendix D**), the aquatic resources table (**Appendix E**), and a signed statement from the property owners allowing access (**Appendix F**).

Before the site surveys were conducted, topographic maps and aerial photographs of the project site were obtained from several sources and reviewed. These sources included USGS, the U.S. Fish and Wildlife Service's (USFWS's) National Wetland Inventory, Nationwide Environmental Title Research (NETR) (2018), and Google Earth (Google 2018). The project site was examined for topographic features, drainages, alterations to site hydrology or vegetation, and areas of significant recent disturbance. A determination was then made as to whether normal environmental conditions were present at the time of the field surveys. Paired sample point data were used to document which portions of the project site where wetlands and where the wetlands-uplands boundary occurred.

Overall, the approach used to identify wetlands included digging soil pits to sample soil from various depths, observing vegetation growing in proximity to the soil sample areas, and determining current surface and subsurface hydrologic features present near the sample areas. Features meeting these criteria were then mapped in the field using a Trimble GeoXT™ Global Positioning System (GPS) unit capable of submeter accuracy and augmenting the GPS data through aerial imagery interpretation.

A brief overview of the USACE methodology specifically applicable to the identification of jurisdictional wetlands and other waters on the site is provided in the following sections.

3.1. Identification of Section 404 Jurisdictional Wetlands (Special Aquatic Sites)

Where wetland field characteristics were present, the surveyor examined vegetation, soils, and hydrology using the routine determination method outlined in the Corps Manual (Environmental Laboratory 1987) and using the updated data forms, vegetation sampling methods, and hydric soil and hydrology indicators developed for the Regional Supplement (USACE 2008). This three-parameter approach to identifying wetlands is based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.

Vegetation. Plants observed at each of the sample points were identified to species, when possible, using *The Jepson Manual: Vascular Plans of California*, second edition (Jepson Manual) (Baldwin et al. 2012, Jepson Flora Project 2017). The wetland indicator status of each species was obtained from the *National Wetland Plant List*: *2016 Wetland Ratings* (Lichvar et al. 2016). The recent revision of plant names in the Jepson Manual

has led to several differences in nomenclature between the latest Jepson Manual and the 2016 National Wetland Plant List. In these cases, the indicator status of recognized synonyms were also determined. A list of species for each sample point was then compiled, and a visual estimate of the percent cover of plant species was made following guidance provided in the Regional Supplement. Which of the sample points supported wetland vegetation was then determined using the applicable indicator (i.e., 1-Dominance Test, 2-Prevalence Test, or 3-Morphological Adaptations) as described in the Regional Supplement.

Wetland indicator species are designated according to their frequency of occurrence in wetlands. For instance, a species with a presumed frequency of occurrence of 67–99% in wetlands is designated a facultative wetland (FACW) indicator species. The wetland indicator groups, indicator symbol, and the frequency of occurrence of species within them in wetlands are presented in **Table 1**.

Table 1. Wetland Indicator Status Categories for Vascular Plants

Indicator Category	Symbol	Frequency of Occurrence
Obligate	OBL	Greater than 99%
Facultative wetland	FACW	67–99%
Facultative	FAC	34–66%
Facultative upland	FACU	1–33%
Upland	UPL	Less than 1%

Source: Environmental Laboratory 1987.

Obligate (OBL) and facultative wetland indicator species are hydrophytes that occur “in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present” (Environmental Laboratory 1987). Facultative indicator species may be considered wetland indicator species when found growing in hydric soils that experience periodic saturation. Plant species not on the regional list of wetland indicator species are considered upland species. A complete list of the vascular plants observed on the project site, as well as their current indicator status, is presented in **Appendix A**.

Soils. Where possible, the top 20 inches of the soil profile were examined for hydric soil indicators. Diagnostic features include numerous indicators defined and described by the National Technical Committee for Hydric Soils. These indicators include the presence of organic soils (Histosols, A1), histic epipedons (A2), depleted matrix (F3), redox depressions (F8), redox dark surface (F6), and mottling indicated by the presence of gleyed or bright spots of colors (in the former case, blue grays; in the latter case, orange

red or red brown) in the soil horizons observed, among other features. Mottling of soils usually indicates poor aeration and lack of good drainage.

Munsell soil notations (Munsell 2009) were recorded for the soil matrix for each soil sample. The Munsell color system is based on three color dimensions: hue, value, and chroma. A brief description of each component of the system is presented below in the order in which they are used in describing soil color, (i.e., hue/value/chroma)*:*

- **Hue**. The Munsell Soil Color Chart is divided into five principal hues: yellow (Y), green (G), purple (P), blue (B), and red (I). It also includes intermediate hues, such as yellow-red (YR) and green-yellow (GY). Examples of commonly encountered hue numbers are 2.5YR, 10YR, and 5Y.

- **Value**. *Value* refers to lightness ranging from white to gray to black. Common numerical values for value in the Munsell Soil Color Chart range from 2 for saturated soils to 8 for faded or light colors. Hydric soils often show low-value colors when soils have accumulated organic material sufficient to indicate development under wetland conditions but can show high-value colors when iron depletion has occurred, removing color value from the soil matrix. Value numbers are commonly reported as 8/, 2.5/ and 6/.

- **Chroma**. *Chroma* refers to the purity of the color from “true” or “pure” colors to “pastel” or “washed out” colors. Chromas commonly range from 1 to 8 but can range higher for gley pages in the chart. Soil matrix chroma values that are 1 or less, or 2 or less when mottling is present, are typical of soils that have developed under anaerobic conditions. Chroma numbers are listed as /1, /5 and /8 as examples.

The Soil Survey: Supplement to the Soil Survey of Alameda Area, California (USDA 1966) and Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2018) were consulted to determine which soil types have been mapped on the project site (**Table 2, Figure 4**). Detailed descriptions of these soil mapping units are provided in **Appendix B**.

Hydrology. Each of the sample sites was examined for positive field indicators (primary and secondary) of wetland hydrology following the guidance provided in the Regional Supplement. Such indicators might include visual observation of inundation (A1) and/or soil saturation (A3), surface soil cracks (B6), inundation visible on aerial imagery (B7), waterborne sediment deposits (B2), water-stained leaves (B9), and drainage patterns in wetlands (B10).

3.2. Identification of Section 404 Jurisdictional Other Waters

In concert with USACE's efforts to revise the wetland delineation manuals and make them more specific to different geographic regions of the United States, as described above, efforts have been initiated by USACE to develop an OHWM delineation manual. In particular, five relatively recent publications have attempted to further refine the definition of OHWM and the delineation of the OHWM in the Arid West (including California):

- Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States (USACE 2004)

- Distribution of Ordinary High Water Mark (OHWM) Indicators and Their Reliability in Identifying the Limits of "Waters of the United States" in Arid Southwestern Channels (USACE 2006)

- Review and Synopsis of Natural and Human Controls on Fluvial Channel Processes in the Arid West (USACE 2007b)

- A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (USACE 2008b)

- Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (USACE 2010)

Historically, in nontidal waters, USACE jurisdiction extends to the OHWM, as defined in 33 CFR 328.3 (see "Regulatory Requirements"). This guidance is based on the identification of the OHWM by examining physical evidence of surface flow in the stream channel; there is no hydrologic definition of the OHWM.

In addition, Regulatory Guidance Letter 05-05 (dated December 7, 2005) deals specifically with the topic of OHWM identification (USACE 2005). That publication lists the following physical characteristics that should be considered when making an OHWM determination: (1) natural line impressed on the bank; (2) shelving; (3) changes in the character of the soil; (4) destruction of terrestrial vegetation; (5) wracking; (6) vegetation matted down, bent, or absent; (7) sediment sorting; (8) leaf litter disturbed or washed away; (9) scour; (10) deposition; (11) multiple observed flow events; (12) bed and banks; (13) water staining; and (14) and change in plant community.

Just as with the Corps Manual, development of the definition of the OHWM and description of the field indicators to be used were based primarily on environmental conditions present in more temperate climates of the United States. In these areas, rain

distribution and amounts are more consistent from one year to the next, and the channel geomorphology has responded by developing field characteristics that reflect a system in relative equilibrium. Such “ordinary” precipitation events occurring in these temperate climates are more likely to cause the development of “ordinary” features commonly used by USACE to identify the OHWM as defined under 33 CFR 328.3.

The difficulty with this approach is that the environmental conditions present in the Arid West are different from those encountered in temperate climates. In particular, the Mediterranean climate present throughout central California is characterized by a high degree of seasonal and inter-annual variability in precipitation. Occurrences of drought conditions followed by extreme discharges are more common in the Arid. Thus, much of what is observed in the field in terms of geomorphic features, such as channel down-cutting, erosion, and channel formation, is not in response to “ordinary” precipitation events but to relatively high-intensity and infrequent rainfall events.

For purposes of the current study, the identification of the OHWM in the field was based on observation of a suite of natural geomorphic field indicators that have formed during channel-forming events. These features included staining of rocks and culverts, erosion of soil to bedrock, and channel bed morphology, among other factors.

The presence of one or more of the natural geomorphic field indicators listed above, taking into consideration such factors as size of the watershed, channel slope, landscape setting, elevation, gradient, land use practices, and soil type, was taken as direct evidence of an OHWM, and such channels were identified as “other waters.”

3.3. Identification of Waters of the State

All areas mapped as Section 404 jurisdiction were also confirmed to constitute Section 401 jurisdiction under the CWA, and would be claimed by the RWQCB under the CWA and the state Porter Cologne Water Quality Control Act as waters of the State.

3.4. Identification of CDFW Riparian Jurisdiction

Several streams and associated riparian vegetation in the BSA that qualified as CDFW jurisdiction were mapped using aerial imagery in ArcGIS and were also verified for top of bank location in the field.

Chapter 4 – Results: Environmental Setting

The BSA, as shown in **Figure 2**, is 141.4 acres and is located immediately to the north of I-580 between the existing terminus of Dublin Boulevard to the west and terminus of North Canyons Parkway to the east. The BSA was extended south to the full extent of parcel A (Figure 2) to observe a large wetland complex and rare plant habitat.

The land uses in the immediate vicinity of the BSA include residential, industrial, open space, and commercial uses in Dublin; resource management and large parcel agricultural uses in the County; and business and commercial uses in Livermore. In Dublin, residential, industrial, and commercial land uses have not yet been developed in the Project area, although these are planned to occur, and existing land uses are largely agricultural or rural-residential. Parcel F contains a landscaping business/commercial development (**Figure 2**).

The BSA consists of primarily undeveloped grazing ranchland and open space, with intermittent residences and outbuildings. Improvements to the agricultural lands generally consist of private paved and unpaved roads used to access private property, fences, barns, corrals, wells, water tanks, single-family homes and various outbuildings.

4.1. Existing Physical Conditions

Elevations in the BSA range from approximately 380 ft. to approximately 410 ft. above sea level (**Figure 3**) (Google 2018). The topography of the BSA ranges from relatively flat in the southern portion near I-580, to gently rolling hills to the north. The topography slopes slightly northward, and Cottonwood Creek drains from north to west in the eastern half of the BSA. The BSA is located in the San Francisco Bay East (Hydrologic Unit Code 18050004) watershed.

Normal climate conditions from 1981 through 2010 were estimated for the BSA using the Parameter-elevation Regressions on Independent Slope Model (PRISM, Lat: 37.7049, Lon: -121.8381, Elevation: 505ft), a high-spatial-resolution climate model developed in conjunction with the NRCS and Oregon State University. The mean annual low and high temperatures are 48°F and 72.2°F, respectively, and the mean annual precipitation is approximately 16.11 inches (PRISM Climate Group 2018).

The BSA is underlain by five soil types (**Figure 4**): 1) CdB-Clear Lake clay, drained, 3 to 7 percent slopes; 2) DvC-Diablo clay, very deep, 3 to 15 percent slopes; 3) LaC-Linne clay loam, 3 to 15 percent slopes; 4) LaD-Linne clay loam, 15 to 30 percent slopes; and 5) RdA-Rincon clay loam, 0 to 3 percent slopes. **Table 2** provides a summary of all the soil units mapped in the BSA, along with their associated textures, drainage classification, and hydric soil status. The Clear Lake clay, drained, 3 to 7 percent slopes soil type is listed as a hydric soil (NRCS 2018).

Table 2. Type, Texture, Drainage Classification, and Hydric Soil Status for Soil Types in the BSA

Soil Symbol	Soil Name	Drainage Classification	Hydric Soil Status
CdB bb3l	Clear Lake clay, drained, 3 to 7 percent slopes	Moderately well drained	Yes
DvC hb3b	Diablo clay, very deep, 3 to 15 percent slopes	Well drained	No
LaC	Linne clay loam, 3 to 15 percent slopes	Well drained	No
LaD 2w63l	Linne clay loam, 15 to 30 percent slopes	Well drained	No
RdA hb4j	Rincon clay loam, 0 to 3 percent slopes	Well drained	No

N:\Projects\3900\3922-01\Reports\Wetland Delineation\Fig 4 Soils Map.mxd

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Figure 4. NRCS Soils Map

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4.2. Existing Biological Conditions

The NWI identifies five features in the project area (**Figure 5**) (NWI 2018).

1) Cottonwood Creek crosses the BSA in a north-south direction in the east. It is mapped by NWI as freshwater emergent wetland—palustrine, emergent, persistent, temporary flooded.

2) The second NWI feature is an unnamed ephemeral stream which originates to the north, and runs in north-south direction in the center of the BSA to terminate in parcel A. It is identified by NWI as freshwater emergent wetland—palustrine, emergent, persistent, temporary flooded.

3) The third NWI feature is also an unnamed perennial stream tributary to the west of the eastern portion of Croak Road. It originates in the north and runs diagonally into parcel A. It is identified as freshwater emergent wetland—palustrine, emergent, persistent, temporary flooded in the northern reach, and as it turns westward it is identified as riverine—intermittent, streambed, seasonally flooded.

4) The fourth NWI occurs in the northwestern corner of the BSA occurs to the east of the western portion of Croak Road and is identified by NWI as freshwater forested/shrub wetland—palustrine, scrub-shrub, seasonally flooded. This feature flows into a perennial stream that discharges onto the BSA.

5) The fifth NWI feature is an unnamed perennial stream which flows parallel to western Croak Road along the western border of the BSA and is identified by NWI as riverine, intermittent, streambed, seasonally flooded.

We identified eight biotic habitats within the BSA (**Figure 6**): perennial stream (0.33 ac), ephemeral stream (0.13 ac), perennial marsh (0.07 ac), seasonal wetland (10.43 ac), mixed riparian woodland (0.33 ac), riparian grassland (3.09 ac), California annual grassland (121.31 ac), and developed/landscaped habitat (5.71 ac). These are described below. Appendix A provides a list of all plant species identified in the BSA.

Perennial Streams

Four perennial streams comprise the perennial stream habitat in the BSA (0.33 acres) (**Figure 6**). These are the existing floodplain of Cottonwood Creek in the east and three additional unnamed streams in the western half of the BSA.

Cottonwood Creek is a perennial stream with a connection to groundwater and flows overland through the eastern portion of the BSA. It originates 4 miles north of the BSA in the Diablo Mountains near Collier Canyon Road, and flows southward to exit the BSA

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N:\Projects3900\3922-01\Reports\Wetland Delineation\Fig 5 NWI Map.mxd mlagarde

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Figure 5. National Wetlands Inventory Map
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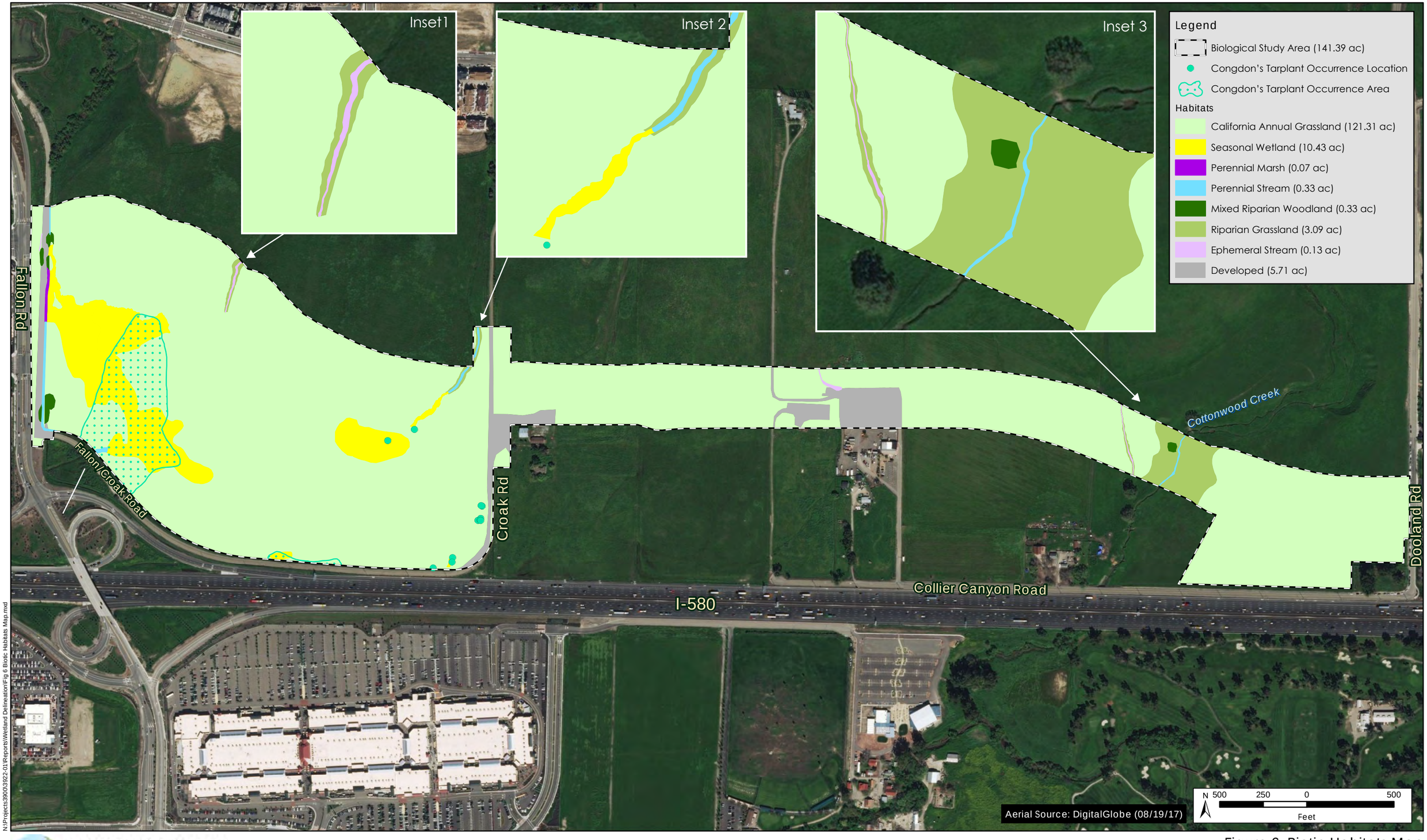

N:\Projects3900\3922-01\Reports\Wetland Delineation\Fig 6 Biotic Habitats Map.mxd

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Figure 6. Biotic Habitats Map
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through a double box culvert beneath I-580, and then empties to Arroyo Las Positas after just 0.15 mi. Arroyo Las Positas flows into Arroyo Mocho, and historically, this watercourse went underground shortly thereafter, exhibiting no overland connection to the San Francisco Bay. During the present day, Arroyo Mocho flows through an aboveground engineered channel, draining into Alameda Creek and ultimately reaching the Bay, a traditionally navigable water. The main stem of Cottonwood Creek is split into two low flow channels just upstream of the BSA, and these channels converge in the central portion of the BSA. Although historical aerial photos indicate that this section of Cottonwood Creek generally conveys water year-round, it is possible that in periods of drought, sections of the stream may dry up or retreat underground. The inner stream banks are sharply incised and generally lined with exposed soil, providing little stabilization. As a result, numerous erosional features, such as headcuts and gullies, were apparent during surveys.

A second, smaller perennial stream is located along the western portion of Croak Road along the western boundary of parcel A (**Figure 6**). A portion of this stream has been culverted and capped with concrete for roughly 350 ln ft. Substantial flows of water emanated from a culvert outlet in both 2017 and 2018 where the stream daylights, and a portion of the stream's water spills into the northern portion of the wetland complex to the south of the road alignment. Shortly thereafter, the aboveground, wetted streambed supports perennial marsh vegetation (described below) and continues to flow southward, parallel to western Croak Road (**Figure 6**).

To the west of the eastern portion of Croak Road, another small perennial stream emerges from the hills and flows into a seasonal wetland swale as the topography becomes less steep.

In the southwest corner of the BSA, an additional reach of perennial stream drains into the southern portion of the large wetland complex. This stream flows from parcel B to be conveyed under Fallon/Croak Road into parcel A. The stream then crosses to the west under Fallon Road and runs outside the BSA parallel to I-580 before discharging to a culvert under the highway and entering a flood control channel. This channel then drains to Arroyo Las Positas to the south.

The above discussed perennial streams generally convey water year round. Vegetation within perennial stream habitat is either consistent with that of the adjacent perennial marsh described below or absent due to ponding and flows.

Ephemeral Streams

Three ephemeral streams covering 0.13 acres occur in the BSA (**Figure 6**). These streams convey water during and immediately following rain events, and dry out during the summer months. No flowing water was present in any of these ephemeral streams during the surveys conducted in April and May 2018. A rocked area occurs in one

ephemeral stream in parcel F, Otherwise, the majority of the ephemeral stream banks were vegetated with plants found in the surrounding California annual grasslands described below.

Perennial Marsh

The perennial marsh habitat (0.07 acres) in the BSA supports strongly hydrophytic, emergent plants, and the marsh within the BSA is within the OHWMs of the perennial stream along Fallon/Croak Road. This feature contained surface water and was codominated by Mexican rush (*Juncus mexicanus,* FACW) and iris-leaved rush (*Juncus xiphioides,* OBL), although some patches of hardstemmed bulrush (*Schoenoplectus acutus*, OBL) were also observed. Surface water was evident during all survey dates. Along the fenceline, dominant vegetation included alkali bulrush (*Bolboschoenus maritimus* [*Schoenoplectus maritimus*], OBL), water parsnip (*Berula erecta*, OBL), creeping buttercup (*Ranunculus repens*, FAC), water speedwell (*Veronica anagallis-aquatica*, OBL), and hardstemmed bulrush.

Seasonal Wetland

Large wetland patches scattered in parcel A comprise the seasonal wetland complex (10.43 acres) in the western part of the BSA (**Figure 6**). The seasonal wetlands occur in low lying areas and the largest patch is directly connected to the perennial marsh habitat that runs parallel to Fallon Road.

Historically, narrowleaf cattails (*Typha angustifolia*, OBL) dominated the central portion of the seasonal wetland in parcel A. During a reconnaissance survey done in March 2017, these cattails were observed to have died back, possibly from the disruption of the hydrological source to this feature. Historic aerials show that the cattail stand had only recently developed in the past approximately 8 years, and seems to have represented a temporary condition (Google 2018). Further changes in the site's hydrology were noted during the 2018 wetland delineation, and signs of marsh rewetting and some cattail regeneration were observed in April 2018. However, in surveys in May and June, 2018, the area was observed to be dry again and the new cattail shoots had died, indicating the existing hydrology in this area is seasonal.

Seasonal wetland vegetation in the parcel A was dominated by native forbs and grasses. Plants such as popcorn flower (*Plagiobothrys sp*.), alkali pepperweed (*Lepidium dictyotum*, FAC), annual semaphore grass (*Pleuropogon californicus* var. *californicus*, OBL), alkali barley (*Hordeum depressum*, FACW), flatface downingia (*Downingia pulchella,* OBL), woolly marbles (*Psilocarphus brevissimus* var. *brevissimus*, FACW), and meadow barley (*Hordeum brachyantherum* subsp*. brachyantherum,* FACW) were observed during spring surveys, mixed with some upland vegetation such as bird's eye speedwell (*Veronica persica,* UPL). The California Native Plant Society-ranked plant

species Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*, FACW) also occurred in this habitat type and in the uplands surrounding the wetland complex.

Non-native grasses such as seaside barley (*Hordeum marinum* ssp. *gussoneanum*, FAC), and Italian ryegrass (*Festuca perennis* [*Lolium perenne*], FAC) were common in the more limited seasonal wetlands scattered along ephemeral drainages across the BSA.

Mixed Riparian Woodland and Riparian Grassland

Mixed riparian woodlands (0.33 acres) in the BSA are composed of stands of mature trees rooted in the banks of perennial streams. Tree species include red willow (*Salix laevigata*, FACW) and valley oak (*Quercus lobata*, FACU). Valley oaks in and near the BSA that occur along Cottonwood Creek are very large (up to 4.8 feet [ft] diameter at breast height [dbh]). Additionally, about 3.09 acres of riparian grassland occur within the top of the bank of Cottonwood Creek and the unnamed perennial stream to the west of Croak Road. The understory of mixed riparian woodlands intergrades with that of the surrounding habitats, and the areas of riparian grassland lacking tree cover support similar species to the surrounding California annual grassland, with species such as soft chess (*Bromus hordeaceus,* FACU) and Italian ryegrass.

California Annual Grassland

The majority (121.31 ac) of the BSA consists of California annual grassland habitat. Much of this grassland is currently grazed by cattle and is dominated by a suite of non-native grasses, such as seaside barley, meadow barley (*Hordeum murinum*, FACU), soft chess, wild oat (*Avena* sp., UPL), and Italian ryegrass. Common weedy (and non-native) forbs include various species of filaree and geranium (*Erodium* spp., FACU *and Geranium* spp., FACU, respectively), bristly ox tongue (*Helminthotheca echioides*, FAC), and wild radish (*Raphanus sativus*, UPL). Large monocultures of bull thistle and black mustard (*Brassica nigra,* UPL) were also scattered across the BSA within the California annual grasslands.

While the majority of the grasslands in the BSA are composed of non-native, ruderal vegetation, grasslands interspersed between patches of seasonal wetlands in parcel A exhibited higher species diversity and frequency of native wildflowers, many adapted to more mesic soils, including but not limited to common gumplant (*Grindelia camporum,* FACW), Itherial's spear (*Triteleia laxa*, UPL), annual lupine (*Lupinus bicolor*, UPL), blue eyed grass (*Sisyrinchium bellum*, FACW), blow wives (*Achyrachaena mollis*, FAC), shining peppergrass (*Lepidium nitidum*, FAC), and small flowered fiddleneck (*Amsinkia* menziesii, UPL).

Developed/Landscaped

About 5.71 acres of developed/landscaped habitat is present in the BSA as hardscaped areas along Fallon Road and Croak Road in parcels A, B, and C (**Figure 6**). Additional hardscaped areas such as parking, storage, and sheds and landscaped areas occur around buildings, fences, parking areas, and a landscaping company in parcels D, F, and G of the BSA.

Small patches of non-native of horticultural plant species such as filaree are scattered around the buildings in the developed/landscaped parts of the BSA. Several patches of ornamental trees, primarily eucalyptus (*Eucalyptus* sp., UPL) occur near fence lines and buildings in the BSA.

Chapter 5 – Chapter 5 – Results: Biological Resources

5.1. Survey Results and Discussion

Nine formal sample points (SP) were taken throughout the BSA during the 2018 wetland delineation surveys (Figures 7a and 7b, Appendix C). Nine wetland data forms and one OHWM data form were prepared during the April 2018 survey and are included in Appendix C. Approximately 10.96 acres of potentially jurisdictional waters of the U.S. (wetlands and other waters) were identified in the BSA. Potentially jurisdictional waters of the U.S. in the BSA are illustrated in Figures 7a and 7b and summarized below in Table 3.

Table 3. Summary of Potentially Jurisdictional Waters in the Project Area

Potentially Jurisdictional Waters	Acres[1]
Total Section 404 Wetlands	**10.5**
Perennial Marsh	0.07
Seasonal Wetlands	10.43
Total Section 404 Other Waters of the U.S	**0.46**
Ephemeral stream	0.13
Perennial stream	0.33
Total of potentially jurisdictional waters of the U.S.	**10.96**
Riparian Waters of the State	**4.02**
Ephemeral stream (stream bed)	0.13
Perennial stream (stream bed)	0.33
In-stream seasonal wetland	0.14
Riparian vegetation within top of bank (stream banks above OHWM)	3.42
Total of Potentially Jurisdictional Waters	**14.38**

[1] Acreage totals are rounded.

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Ecological Consultants

Figure 7a. ID of Waters Map
Dublin Boulevard-North Canyons Parkway Extension Project -
Wetland Delineation Report (3922-01)
August 2018

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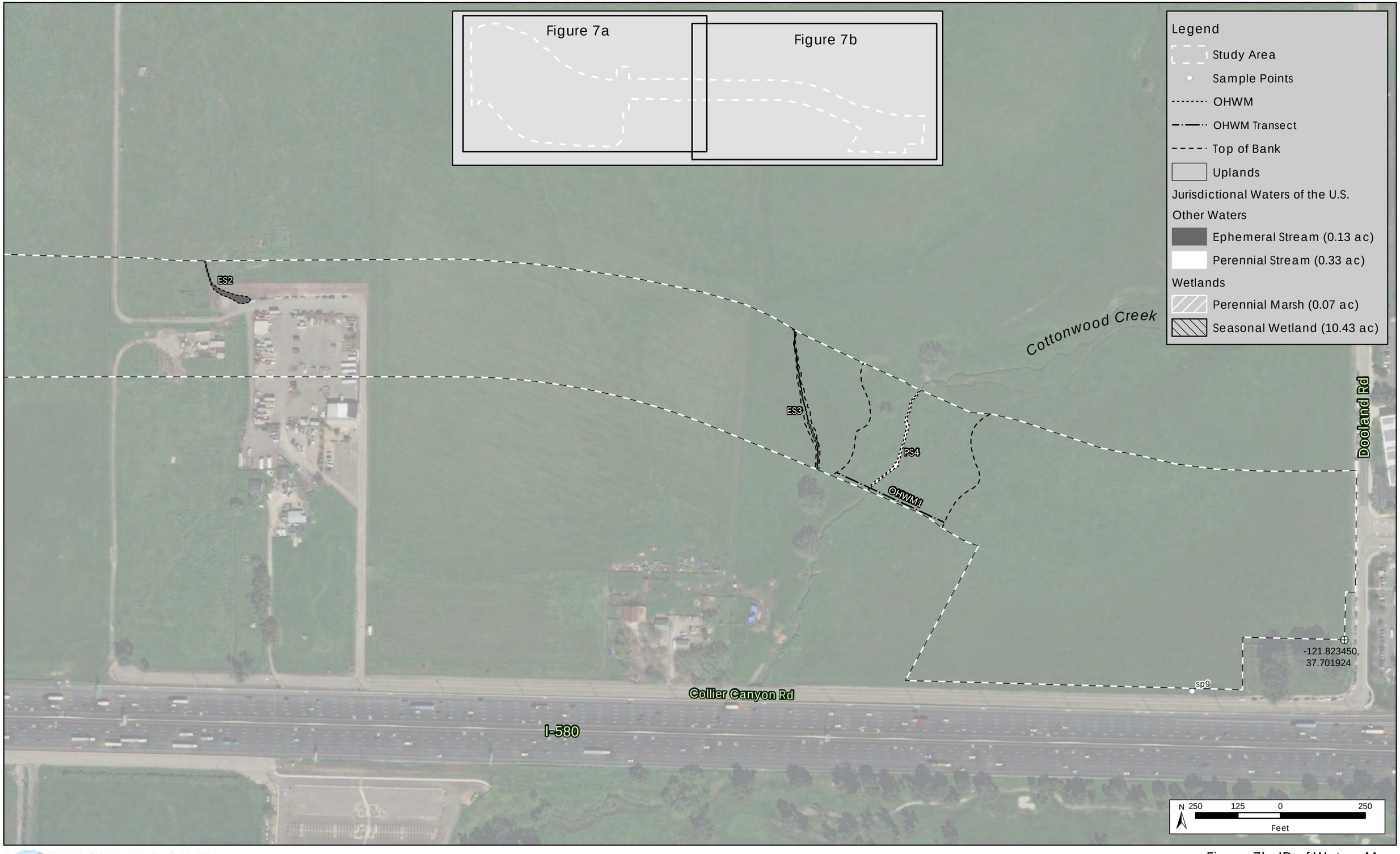

N:\Projects\3900\3922-01\Reports\Wetland Delineation\Fig 7b ID of Waters Map.mxd

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Ecological Consultants

Figure 7b. ID of Waters Map
Dublin Boulevard-North Canyons Parkway Extension Project - Wetland Delineation Report (3922-01)
August 2018

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Information pertinent to the identification of jurisdictional wetlands and other waters assembled during this investigation is presented in six appendices to this report:

- **Appendix A**, "Plants Observed in the BSA"
- **Appendix B**, "Soil Survey of Alameda County"
- **Appendix C**, "USACE Arid West Wetland Determination Data Forms"
- **Appendix D**, "Photographs of the BSA"
- **Appendix E**, "Aquatic Resources Table"
- **Appendix F**, "Signed Statement from the Property Owner Allowing Access"

5.2. Assumptions, Observations, and Rationale

Conditions observed during the delineation site visits and are reported here along with pertinent background information and precipitation records.

5.2.1. Assumptions and Observations

This preliminary delineation assumes that normal circumstances prevailed at the time of the April 2018 survey, and results are based upon the conditions present. The survey was performed using the "Routine Method of Determination" using three parameters, as outlined in the Corps Manual and the Arid West Regional Supplement.

The survey took place toward the end of the 2017–2018 wet season. Relative to the 30-year climate normals, the BSA experienced drier-than-normal conditions during the beginning of the 2017–2018 wet season, prior to the survey. Additionally, the site experienced wetter-than-normal conditions during the 2016–2017 wet season. These conditions were taken into account when assessing the waters present on the site.

At the time of the April 2018 survey, the project area had received 13.23 inches of precipitation, which is approximately 82% of the 30-year average annual precipitation (1981–2010) (16.11 inches) (PRISM Climate Group 2018). The area received a total of 25.93 inches (183% of average) in the 2016–2017 rain year prior to March 2017 reconnaissance surveys (PRISM Climate Group 2018).

The boundaries of wetlands were clear owing to the presence of strongly hydrophytic vegetation and active hydrology indicators. The OHWM for streams was clear and delineated based on presence of break in slope, change in sediment characteristics, and

change in vegetation characteristics, along with other supporting features such as drift, bank undercutting, and root exposure.

The following observations were made at the project site during the surveys:

- No water was observed flowing in ephemeral streams ES1 and ES2 at the time of the 2018 surveys. The stream bed and banks were vegetated except for a rocked area in ES2 in parcel F. The OHWM for these stream was observed and mapped in the field on evidence that included bank incision, topography, soil development, and distinct transition of vegetation composition and structure.

- At the time of the 2018 delineation survey, no flowing water was present in ephemeral stream ES3. The banks were vegetated and the OHWM for ES3 was mapped in the field based on topography and where an incision was observed. The upstream portion was incised while the downstream portion formed a swale.

- The upstream portion of perennial stream PS1 was cemented and culverted and capped with concrete for about 350 ln ft, extending to the north of the BSA (D1 in **Figure 7a**). Flowing water was observed in downstream portion of perennial stream PS1 which flows along the western portion of Croak Road and along the western boundary of parcel A.

- PS2 was flowing during all surveys in 2017 and 2018. This stream flows from parcel B (**Figure 2**) to be conveyed under Fallon/Croak Road into parcel A. The stream then crosses to the west under Fallon Road and runs outside the BSA parallel to I-580 before discharging to a culvert under the highway and entering a flood control channel. This channel then drains to Arroyo Las Positas to the south.

- No flowing water was observed in the perennial stream PS3 in June 2018, but the streambed was lined with wet exposed soil. The stream has been flowing in 2017 and April 2018 and may be intermittent, but due to the lower than average precipitation in 2018, was mapped as perennial. PS3 was observed and mapped based on topography, incised bank, a distinct change in vegetation.

- Cottonwood Creek is a perennial stream that flows overland through the eastern portion of the BSA. It originates 4 miles north of the BSA in the Diablo Mountains near Collier Canyon Road, and flows southward to exit the BSA through a double box culvert beneath I-580, and then empties to Arroyo Las Positas after just 0.15 mile. Arroyo Las Positas flows into Arroyo Mocho, and historically, this watercourse went underground shortly thereafter, exhibiting no overland connection to the San Francisco Bay. During the present day, Arroyo Mocho flows through an aboveground engineered channel, draining into Alameda Creek and ultimately reaching San Francisco Bay, a traditionally navigable water.

- At the time of the 2018 delineation surveys overland flows were observed in Cottonwood Creek, identified as a perennial stream PS4, with connection to ground water.

- The OHWMs of Cottonwood Creek were observed and mapped in the field based on topography and the stream banks being sharply incised and lined with exposed soil subject to erosion.

- Several inches of standing water with numerous cow punches were observed in the perennial marsh PM1.

- More saturated soils than ponding were observed in the seasonal wetland complex. Regeneration of narrowleaf cattails was observed in the center of the largest seasonal wetland patch SW1 in April 2018, but this area had dried considerably by May and June of 2018.

Riparian waters of the state were mapped at either the top of bank or extent of riparian vegetation and are shown on **Figure 6** as mixed riparian woodland or riparian grassland. Grassy-banked streams lacking riparian canopy were mapped at top of bank, while functional riparian canopy was mapped lower gradient streams. The current practice of the RWQCB is to claim all areas up to the top of bank, plus any associated riparian canopy that could contribute deadfall and leaf litter, as waters of the state. Riparian waters of the state also include all potential waters of the U.S. mapped on the BSA.

5.2.2. Rationale for Sample Point Choice

Wetland data form sample points (**Appendix C**) were placed in areas that captured the diversity of wetland types or lack of wetland indicators in various features on the project site and where an upland or wetland habitat determination was aided by sample point data collection. Not every individual feature was sampled if it was well characterized by other sample points, or if access was limited at the time of the survey. The Wetland Determination Data Form – Arid West Region, Version 2.0 (USACE 2008a) was used for data collection. In total, nine sample points (SPs) and one OHWM transect were taken at the project site:

- SP 1 was selected to document the lack of wetland characteristics at culvert outlet in the northwestern corner of the BSA.

- SP2 was selected to document the upland-wetland boundary for SW1, where parameters are mesic but not wetland. It is the upland point for the SP2/SP3/SP6 triad, or the drier eastern and northern side of SW1.

- SP3 was selected to document the northern wetland boundary for SW1. It represents the seasonal wetland with more saturation than ponding in April 2018.

- SP4 was selected to document the upland-wetland boundary for the more mesic western side of SW1, where parameters are mesic but not wetland. It is the upland point for SP4/SP5 pair.

- SP5 was selected to document wetland boundary for PM1. It represents the wetland point for SP4/SP5 pair and is example of seasonal wetland with several inches of ponding in April.

- SP6 was selected to document eastern wetland extent for SW1, part of SP2/SP3/SP6 triad. This is an example of a portion of this seasonal wetland with more saturation than ponding in April.

- SP7 was selected to document floodplain swale wetland SW4, and is the wetland point for SP7/SP8 pair.

- SP8 was selected to document upland-wetland boundary, where parameters are mesic but not wetland. It is the upland point for the SP7/SP8 pair.

- SP9 (Figure 7b) was selected to document an area of standing water observed in April 2018 which did not qualify as a regularly flooded wetland.

- OHWM1 was chosen to characterize Cottonwood Creek.

5.2.3. Photodocumentation

Table 4 lists the labels of the photographs taken to document conditions at the project site, along with the coordinates of the photo points and a description that indicates the rationale for photodocumentation at that point. All photodocumentation is available in **Appendix D**.

Table 4. Coordinates and Descriptions of Photographs

Label*	Latitude, Longitude	Description
Photo 1	37.422445 -121.510057	Concreter lined portion of perennial stream PS1.
Photo 2	37.422072, -121.505909	Culvert outlet which empties into the perennial marsh habitat in the northwestern corner of the project area.
Photo 3	37.422072 -121.505909	Perennial marsh (PM1) habitat with pooled water.

Label*	**Latitude, Longitude**	**Description**
Photo 4	37.421469 -121.505578	Regrowth of *Typha* sp. seen in the seasonal wetland SW1.
Photos 5A and B	37.422144 -121.505984	A-wetland sample point SP5 representing perennial marsh (PM1) habitat with several inches of ponding, and B-paired upland sample point SP4 showing conditions that are mesic but not wetland.
Photos 6A and B	37.421949 -121.510006	A-wetland sample point SP3 for seasonal wetland (SW1) with more saturation than ponding and extensive cow punches. B-paired upland sample point (SP2) where conditions are mesic but not wetland.
Photos 7A and B	37.421734 -121.503493	A-wetland sample point, SP7, in the floodplain swale wetland, SW4 formed by the perennial stream PS3. B-paired upland boundary sample point, SP8, for SW3.
Photo 8	37.411685 -121.503400	Perennial stream, PS3 showing both OHWM and top of bank as defined by distinct change in vegetative cover and composition.
Photo 9	37.422027. -121.504652	Ephemeral stream, ES1 in the northwestern part of the project area as defined by change in slope and topography and no flowing water.
Photo 10	37.421214 -121.494466	(A)-the upstream incised portion of ephemeral stream ES3. (B)-downstream portion of ES3 where it fans out to form a swale.
Photo 11	37.421226 -121.494151	Cottonwood Creek perennial stream (PS4) habitat showing OHWM as defined by sharp incised banks.
Photo 12	37.421226 -121.494151	Riparian woodland habitat on the upper banks of Cottonwood Creek.
Photo 13	37.421475 -121.494842	Typical California annual grassland habitat which dominated majority of the project area.
Photo 14	37.420749 -121.493239	Location of sampling point 9 where water had pooled but no wetland parameter were found.

* Labels list the Photo_#-direction (N = north; W = west; E = east; NE = northeast; NW = northwest; SW = southwest; SE = southeast; ESE = east-southeast; SSW = south-southwest; NA = not applicable, for photos taken facing down for soil pictures, etc.)

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Chapter 6 – Wetlands and Other Waters Coordination Summary

6.1. Areas Meeting the Regulatory Definition of Section 404 Jurisdictional Waters

6.1.1. Identification of Section 404 Potentially Jurisdictional Wetlands (Special Aquatic Sites)

Section 404 potentially jurisdictional wetlands were identified in the project area.

Four of the nine sample point locations had sufficient three-parameter characteristics to meet the definition of a jurisdictional wetland. Perennial marsh wetland was represented by PM1 (Figure 7a) and seasonal wetlands were represented by SW1, SW2, SW3, and SW4 (Figures 7a). These wetlands and sample points are described below.

Perennial Marsh. The perennial marsh wetland, PM1, toward the western boundary of the project area is considered potentially USACE jurisdictional. This feature occupies approximately 0.07 acres. A summary of wetland data form results is presented in Table 5. The data are also presented on the completed delineation forms in Appendix C.

The perennial marsh habitat was identified based on the dominance of hydrophytic species such as alkali bulrush and iris-leaved rush, inundated soils with redox concentrations; and the primary hydrology indicators, surface water (A1) and saturation (A3). At every site visit in 2017 and 2018, this habitat was inundated with flowing water.

Seasonal Wetland. Four seasonal wetlands (SW1 to SW4) scattered in low lying portions in the western half of the project area are considered potentially USACE jurisdictional. These features occupy a total of approximately 10.43 acres. A summary of wetland data form results is presented in Table 5. The data are also presented on the complete forms in **Appendix C**.

The triad of sampling points SP2, SP3, and SP6 were used to demarcate the seasonal wetland SW1 in the northwestern part of the project area which is approximately 8.589 acres. SP2 and SP6 were selected to represent the northern and eastern boundaries of this seasonal wetland while SP2 represented the upland boundary where conditions were mesic but not wetland. Seasonal wetland, SW1, was identified based on the saturation visible in the aerial imageries from October 2011 and April 2012; GPS recording of the boundary in the field; observation of a break in hydrophytic vegetation communities; a substantial amount of cattle hoof punches approximately 2 – 6 inches deep; and deep clayey soils with redox concentrations conforming to redox dark surface (F6).

Seasonal wetlands SW2, SW3, SW4, and the southern portion of SW1 were demarcated based on saturation observed on the aerial imagery and the presence of wetland vegetation such as popcornflower (OBL), woolly marbles (FACW*),* annual semaphore grass (OBL), and flatface downingia (OBL).

SW3 represents the floodplain of the perennial stream (PS3) and is approximately 1.730 acres in size. The sampling point, SP 7 represents the northern boundary of this wetland and is paired with SP8 where parameters are mesic but not wetland. In addition to the saturation observed in the aerial imagery, SW3 was identified in the field based on the dominance of Italian ryegrass (FAC) and moist soil with redox concentrations (F6).

SW2 and SW4 along the southern boundary of the project area represent approximately 0.102 and 0.010 acres respectively.

Table 5. Summary of Wetland Data Forms Pertaining to BSA

Name	Sampling Rationale	Hydrophytic Vegetation?	Hydric Soil?	Wetland Hydrology?	Overall Wetland Assessment
SP1	Selected to document lack of wetland characteristics at culvert outlet	No	No	No	Not a 3-parameter wetland
SP2	Upland point of seasonal wetland to document wetland boundary with mesic but not wetland conditions	No	No	No	Not a 3-parameter wetland
SP3	Example of seasonal wetland with more saturation than ponding	Yes	Yes	Yes	A 3-parameter wetland
SP4	Upland point of perennial marsh with mesic but not wetland conditions.	No	No	No	Not a 3-parameter wetland
SP5	Example of marsh wetland with several inches of ponding	Yes	Yes	Yes	A 3-parameter wetland
SP6	Example of seasonal wetland with more saturation than ponding	Yes	Yes	Yes	A 3-parameter wetland
SP7	Example of seasonal wetland SW4 in the swale floodplain	Yes	Yes	Yes	A 3-parameter wetland

Name	Sampling Rationale	Hydrophytic Vegetation?	Hydric Soil?	Wetland Hydrology?	Overall Wetland Assessment
SP8	Upland point for seasonal wetland SW4	No	No	No	Not a 3-parameter wetland
SP9	Area of standing water that did not qualify as regulatory wetland.	Yes	Yes	Yes	A 3-parameter wetland

6.1.2. Identification of Section 404 Potentially Jurisdictional Other Waters of the U.S.

Section 404 potentially jurisdictional other waters were identified in the BSA.

Section 404 potential other waters include four perennial streams; Cottonwood Creek or PS4 and three unnamed streams, PS1, PS2, and PS3. Potential other waters also include a concrete lined ditch associated with the perennial stream and two culverts associated with the ephemeral streams. These features are discussed separately below.

Perennial Stream. The BSA comprises of four perennial streams occupying a total of approximately 0.33 acre and 1,671 ln. ft., and are situated at or below the OHWMs of Cottonwood Creek (0.039 acre, 352 linear feet); PS3 (0.076 acres, 380 ln, ft.); PS2 (0.034 acres, 72 ln. ft.); and PS1 (0.163 acres, 704 ln. ft.).

Cottonwood Creek (PS4) is a perennial stream with a connection to the ground water and flows overland through the eastern portion of the BSA. Substrate was exposed soil and the banks were vegetated with grass. One OHWM point was taken at the perennial stream PS4 (**Appendix C**). This point was defined by a break in slope, change in vegetation characteristics, and change in sediment characteristics. This perennial stream was mapped as occurring in areas below the OHWM that are devoid of emergent vegetation.

The unnamed perennial stream PS3 is present at the northern border of the project area just west of the eastern part of Croak Road and is approximately 0.076 acre (380 linear feet). Flowing water was not observed in the stream at the time of the April 2018 survey but, the stream bed comprised of exposed moist soil. One OHWM point was taken at this perennial stream. This point was defined by a break in slope and change in vegetation characteristics. This perennial stream was mapped as occurring in areas below the OHWM that are devoid of emergent vegetation.

The unnamed perennial stream PS1 runs along the western boundary of parcel A parallel to Croak Road and covers approximately 0.163 acre (704 linear feet) in the project area. Flowing water was observed in the stream at the time of the survey in April 2018. No OHWM transects were taken but, the OHWM was defined by break in slope,

change in vegetation characteristics, and change in sediment characteristics. This perennial stream was mapped as occurring in areas below the OHWM that are devoid of emergent vegetation.

The unnamed perennial stream PS2 occurs in the southwestern corner of the project area and covers approximately 0.034 acre (72 linear feet). This stream drains the perennial marsh wetland (discussed below) and flowing water was observed in the stream at the time of the survey in April 2018. No OHWM transects were taken but, the OHWM was defined by break in slope, change in vegetation characteristics, and change in sediment characteristics. Similar to PS1, this perennial stream was also mapped as occurring in areas below the OHWM that are devoid of emergent vegetation.

Ephemeral Stream. Three ephemeral streams and one culverted ephemeral stream (see below) occur within the BSA. The three non-culverted ephemeral streams are ES1 (0.052 acre, 314 ln ft, **Figure 7a**) and ES2 and ES3 (0.047 and 198 ln ft., 0.020 and 427 ln ft., respectively, **Figure 7b**). These all flow from north to south. Both ES1 and ES2 become swale-like or disappear before I-580, which ES3 flows into Cottonwood Creek (PS4) to the south of the BSA.

Ditch. One cemented ditch approximately 0.018 acre (D1, 163 linear feet) within the project area is associated with potentially jurisdictional waters. At the time of the survey in April 2018, standing water was seen in this ditch. Because this feature exhibits indicator of hydrology without a hydric vegetation community, it would be considered other waters of the USACE.

Culverts. Two culverts connect potentially jurisdictional waters. Both these features exhibit indicators of hydrology without a hydric vegetation community and thus would be considered other waters by USACE. These culverts occupy 0.008 acre and are approximately 109 linear feet.

6.2. Areas Meeting the Regulatory Definition of Historic or current Section 10 Waters

No Section 10 potentially jurisdictional waters were identified in the project area.

6.3. Riparian Areas Meeting the Regulatory Definition of Waters of the State

Areas meeting the regulatory definition of waters of the state include the perennial and ephemeral streams which meet the definition of the waters of the U.S (discussed above) as well as the associated riparian vegetation up to the top of the bank. The USACE does not consider the areas between OHWMs and top of bank to be jurisdictional, so these are referred to as riparian waters of the State (**Figure 6**). Approximately 3.42 acre of riparian vegetation was identified within the top of bank of the mapped jurisdictional streams of approximately 0.46 acre (Table 3) in the BSA. Thus the full area meeting the regulatory definition of riparian waters of the state in the BSA, including streambeds claimed by the USACE as potential waters of the U.S. is approximately 4.02 acres. All out of stream wetlands that are potential waters of the U.S. are also expected to be claimed by the RWQCB as waters of the state.

6.4. Areas Not Meeting the Regulatory Definition of Waters of the United States/State

The remainder of the project area (totaling approximately 127.02 acres) meets none of the regulatory definitions of jurisdictional waters. The majority of these areas, classified as uplands (**Figure 7a** and **7b**), support California annual grassland and Developed/Landscaped areas. The majority of the project area, approximately 121.31 acres was mapped as California annual grassland and is dominated by a suite of non-native grasses, such as seaside barley (FAC), meadow barley (FACU), and wild oat (UPL).

Developed/Landscaped areas in the project area cover approximately 5.71 acres and include rural residential structures, office space and storage space, and barns and other areas used for storing farming and landscaping equipment.

Although a portion of a NWI wetland feature described as riverine, intermittent, streambed, seasonally flooded, appears to connect PS2 and PS3 (**Figure 5**), no feature on the ground surface was observed to correspond to regulatory definitions under the Clean Water Act. This riverine feature previously mapped by the NWI may provide some hydrology to the seasonal wetlands. However, at the time of the survey in April 2018, no incision, drainage patterns, or discernable wetland swale was evident.

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Appendix A – Plants Observed on the Project Site

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Family	Scientific Name	Common name	Indicator Status
Anacardiaceae	*Toxicodendron diversilobum*	Poison oak	FACU
Apiaceae	*Berula erecta*	Cut leaved water parsnip	OBL
	Conium maculatum	Poison hemlock	FACW
	Foeniculum vulgare	Fennel	UPL
	Sanicula bipinnatifida	Purple sanicle	UPL
Asclepiadaceae	*Asclepias fascicularis*	Mexican whorled milkweed	FAC
Asteraceae	*Achyrachaena mollis*	Blow wives	FAC
	Anthemis cotula	Dog fennel	FACU
	Baccharis pilularis	Coyote brush	UPL
	Carduus pycnocephalus	Italian thistle	UPL
	Centaurea solstitialis	Yellow star thistle	UPL
	Centromadia parryi ssp. *congdonii*	Congdon's tar plant	FACW
	Cirsium vulgare	Bull thistle	FACU
	Grindelia camporum	Common gumplant	FACW
	Helminthotheca echioides	Bristly oxtongue	FAC
	Hypochaeris glabra	Smooth cat's ear	UPL
	Logfia gallica	Narrowleaf cottonrose	UPL
	Matricaria discoidea	Pineapple weed	FACU
	Picris echioides	Bristly ox tongue	UPL
	Psilocarphus brevissmus var. *brevissimua*	Short woollyheads	FACW
	Silybum marinum	Blessed milkthistle	UPL
	Sonchus arvensis ssp. *arvensis*	Field sowthistle	FACU
	Xanthium spinossum	Spiny cockleburr	FACU
Boraginaceae	*Amsinckia menziesii*	Menzies' fiddleneck	UPL
	Plagiobothrys (leptocladus)	Alkali popcorn flower	OBL
	Plagiobothrys sp.	Popcorn flower	FAC-OBL
Brassicaceae	*Brassica nigra*	Black mustard	UPL
	Capsella bursa-pastoris	Shepherd's purse	FACU
	Cardamine oligosperma	Bitter cress	FAC
	Hirschfeldia incana	Mediterranean hoary mustard	UPL
	Lepidium dictyotum	Alkali pepperweed	FAC
	Lepidium nitidum	Shining peppergrass	FAC
	Raphanus sativus	Wild raddish	UPL

Family	Scientific Name	Common name	Indicator Status
Campanulaceae	*Downigia bicornuta* var. *bicornuta*	Doublehorn calicoflower	OBL
Caryophyllaceae	*Stellaria (media)*[1]	Chickweed	FACU
Convolvulaceae	*Convolvulus arvensis*	Field bindweed	UPL
Cyperaceae	*Bolboschoenus maritimus*	Alkali bulrush	UPL
	Carex sp.	sedge	FAC-OBL
	Cyperus eragrostis	Tall cyperus	UPL
	Eleocharis macrostachya	Common spikerush	UPL
	Schoenoplectus acutus	Hardstem bulrush	OBL
Fabaceae	*Lupinus bicolor*	Annual lupine	UPL
	Medicago polymorpha	Bur medic	FACU
	Melilotus indicus	Annual yellow sweetclover	FACU
	Quercus agrifolia	Coast live oak	UPL
	Quercus lobata	Valley oak	FACU
	Triticum aestivum	Common wheat	UPL
	Trifolium hirtum	Rose clover	UPL
	Trifolium sp.	Clover	?
	Vicia sativa	Spring vetch	FACU
	Vicia villosa ssp. *villosa*	Winter vetch	UPL
Geraniaceae	*Erodium botrys*	Big heron bill	FACU
	Erodium cicutarium	red stemmed filaree	UPL
	Erodium moschatum	Musky stork's bill	UPL
	Geranium dissectum	Cutleaf geranium	UPL
	Geranium molle	Crane's bill geranium	UPL
Iridaceae	*Sisyrinchium bellum*	Western blue eyed grass	FACW
Juncaceae	*Juncus bufonius*	Toad rush	FACW
	Juncus mexicanus	Mexican rush	FACW
	Juncus xiphioides	Iris leaved rush	OBL
Malvaceae	*Malva nicaeensis*	Bull mallow	UPL
	Malvella leprosa	Alkali mallow	FACU
Myrsinaceae	*Lysimachia arvensis*	Scarlet pimpernel	FAC
Myrtaceae	*Eucalyptus* sp.	Eucalyptus	UPL
Oleaceae	*Olea europa*	Common olive	UPL
Onagraceae	*Epilobium ciliatum*	Fringed willowherb	FACW
Orobanchaceae	*Bellardia trixago*	Mediterranean lineseed	UPL

Family	Scientific Name	Common name	Indicator Status
	Castilleja exserta ssp. *exserta*	Exserted indian paintbrush	UPL
Pappavaraceae	*Eschscholzia californica*	California poppy	UPL
Plantaginaceae	*Plantago lanceolata*	Narrowleaf plantain	FAC
	Veronica persica	Bird's eye speedwell,	UPL
Poaceae	*Avena barbata*	Slender oat	UPL
	Avena fatua	Wild oat	UPL
	Avena sp.	Oat	UPL
	Bromus diandrus	Ripgut brome	UPL
	Bromus hordeaceus	Soft brome	FACU
	Festuca perennis	Italian rye grass	UPL
	Hordeum brachyatherum ssp. *brachyantherum*	Meadow barley	FACW
	Hordeum depressum	Alkali barley	FACW
	Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	FAC
	Hordeum murinum	Meadow barley	FACU
	Poa annua	Annual Blue Grass	FAC
	Pleuropogon californicus var. *californicus*	annual semaphoregrass	OBL
Polygonaceae	*Polygonum* sp.	Polygonum	FACU-OBL
	Rumex conglomeratus	Clustered dock	FACW
	Rumex crispus	Curly dock	FAC
Portulacaceae	*Claytonia* sp.	Miner’s lettuce	FACU-FAC
Ranunculaceae	*Ranunculus repens*	Creeping buttercup	FAC
	Ranunculus sceleratus var. *sceleratus*	Cursed buttercup	OBL
Salicaceae	*Salix laevigata*	Polished willow	FACW
Scrophulariaceae	*Triphysaria eriantha* ssp. *eriantha*	Butter 'n' eggs	UPL
	Veronica americana	Water speedwell	OBL
	Veronica anagallis-aquatica	Water speedwell	OBL
Themidaceae	*Triteleia laxa*	Ithuriel's spear	UPL
Typhaceae	*Typha (angustifolia)*[1]	Cattail	OBL

[1] The use of parentheses around a specific epithet denotes uncertainty about the species identification attributable to the time of year when surveys were conducted. The species given, such as Erigeron (canadensis), denotes the species that was likely encountered and the best judgment of the plant ecologist, while reflecting the fact that this specific identification could not be confirmed by plant morphology. This approach is used in contrast to using “sp.” (e.g., Eucalyptus sp.), which indicates a greater level of uncertainty regarding which species is present or even a possibility that multiple unidentified species in that genus are present.

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Appendix B – Supplement to the Soil Survey of Alameda County Area, California

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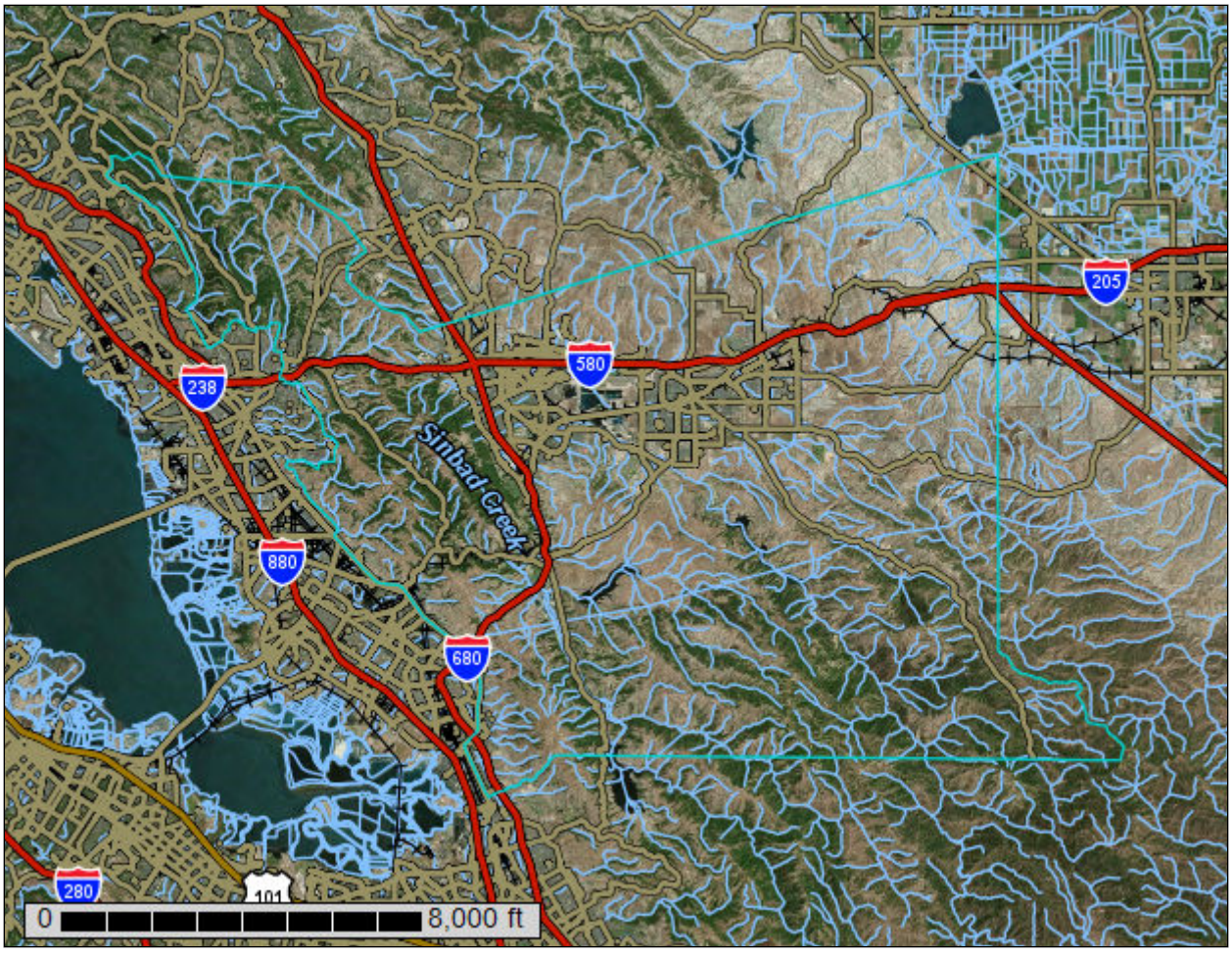
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Alameda Area, California



May 23, 2018

CdB—Clear Lake clay, drained, 3 to 7 percent slopes

Map Unit Setting

National map unit symbol: hb31
Elevation: 100 to 900 feet
Mean annual precipitation: 14 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Clear lake and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clear Lake

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 36 inches: clay
H2 - 36 to 65 inches: clay

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: Yes

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Capay

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

San ysidro

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

CeBcc—Conejo clay loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: vx7g
Elevation: 10 to 1,000 feet
Mean annual precipitation: 14 to 25 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 260 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Conejo and similar soils: 85 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conejo

Setting

Landform: Fans, valleys
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 27 inches: clay loam
H2 - 27 to 60 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches

Hydric soil rating: No

Minor Components

Clear lake

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pescadero

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Landslips

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

DvC—Diablo clay, very deep, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: hb3b
Elevation: 300 to 1,700 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Diablo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Diablo

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from shale and siltstone

Typical profile

H1 - 0 to 15 inches: clay
H2 - 15 to 42 inches: silty clay
H3 - 42 to 60 inches: silty clay

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Available water storage in profile: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Altamont

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

Linne

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

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pescadero

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Natural drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 15 percent
Hydric soil rating: No

Los osos

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

Los gatos

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

Vallecitos

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

LaC—Linne clay loam, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: hb3l
Elevation: 700 to 1,700 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Linne and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Linne

Setting

Landform: Hills
Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 36 inches: clay loam
H2 - 36 to 40 inches: weathered bedrock

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Altamont

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

Diablo

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

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pescadero

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

LaD—Linne clay loam, 15 to 30 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2w63l
Elevation: 20 to 2,010 feet
Mean annual precipitation: 12 to 22 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 260 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Linne and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Linne

Setting

Landform: Mountain slopes, hillslopes
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Residuum weathered from calcareous shale

Typical profile

Ap - 0 to 9 inches: clay loam
A1 - 9 to 14 inches: clay loam
A2 - 14 to 29 inches: clay loam
AC - 29 to 32 inches: sandy clay loam
Ck - 32 to 36 inches: fine sandy loam
Cr - 36 to 51 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 35 to 50 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Diablo
Percent of map unit: 5 percent
Landform: Mountain slopes, hillslopes
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Ecological site: CLAYEY (R015XD001CA)
Hydric soil rating: No

Altamont
Percent of map unit: 4 percent
Landform: Hillslopes
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Clear lake
Percent of map unit: 3 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Pescadero
Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave, convex
Across-slope shape: Concave
Hydric soil rating: Yes

Haploxerolls, landslides
Percent of map unit: 1 percent
Landform: Landslides, slumps
Hydric soil rating: No

LaE2—Linne clay loam, 30 to 45 percent slopes, eroded

Map Unit Setting
National map unit symbol: hb3n
Elevation: 700 to 1,700 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition
Linne and similar soils: 85 percent

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

Description of Linne

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 36 inches: clay loam
H2 - 36 to 40 inches: weathered bedrock

Properties and qualities

Slope: 30 to 45 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: CLAYEY HILLS (R014XD092CA)
Hydric soil rating: No

Minor Components

Altamont

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

Diablo

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

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pescadero

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

LbDcc—Linne clay loam, 5 to 15 percent slopes

Map Unit Setting

National map unit symbol: vx7s
Elevation: 150 to 1,000 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 260 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Linne and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Linne

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from calcareous shale and/or residuum weathered from calcareous sandstone

Typical profile

H1 - 0 to 29 inches: clay loam
H2 - 29 to 33 inches: weathered bedrock

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent

Pd—Pescadero clay

Map Unit Setting

National map unit symbol: hb48
Elevation: 100 to 1,700 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Pescadero and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pescadero

Setting

Landform: Rims
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 2 inches: clay
H2 - 2 to 20 inches: clay
H3 - 20 to 72 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 90.0
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D

Hydric soil rating: Yes

Minor Components

Clear lake

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Diablo

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

Solano

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

PgA—Pleasanton gravelly loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hb49
Elevation: 220 to 800 feet
Mean annual precipitation: 14 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Pleasanton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pleasanton

Setting

Landform: Fluvial terraces, alluvial fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 21 inches: gravelly loam
H2 - 21 to 64 inches: gravelly clay loam
H3 - 64 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

San ysidro

Percent of map unit: 10 percent
Hydric soil rating: No

Pleasanton

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

RdA—Rincon clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hb4j
Elevation: 10 to 600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 260 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Rincon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rincon

Setting

Landform: Fans, valley floors

Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 16 inches: clay loam
H2 - 16 to 52 inches: sandy clay
H3 - 52 to 60 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Clear lake

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

San ysidro

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

Pleasanton

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

RdB—Rincon clay loam, 3 to 7 percent slopes

Map Unit Setting

National map unit symbol: hb4k
Elevation: 10 to 600 feet
Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 57 degrees F
Frost-free period: 260 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Rincon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rincon

Setting

Landform: Valley floors, fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 16 inches: clay loam
H2 - 16 to 52 inches: sandy clay
H3 - 52 to 60 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

San ysidro

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

Pleasanton

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

Clear lake

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

YmA—Yolo loam, calcareous substratum, 0 to 6 percent slopes, MLRA 14

Map Unit Setting

National map unit symbol: 2w89t
Elevation: 70 to 480 feet
Mean annual precipitation: 15 to 24 inches
Mean annual air temperature: 59 to 61 degrees F
Frost-free period: 260 to 360 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Yolo, calcareous substratum, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yolo, Calcareous Substratum

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

A - 0 to 8 inches: loam
A - 8 to 16 inches: loam
C1 - 16 to 24 inches: very fine sandy loam
C2 - 24 to 46 inches: fine sandy loam
C3 - 46 to 60 inches: loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline (0.3 to 0.5 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Unnamed
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Livermore
Percent of map unit: 5 percent
Hydric soil rating: No

Sycamore
Percent of map unit: 5 percent
Hydric soil rating: No

YmB—Yolo loam, 0 to 8 percent slopes, MLRA 15

Map Unit Setting
National map unit symbol: 2w89h
Elevation: 70 to 2,530 feet
Mean annual precipitation: 16 to 29 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 260 to 360 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Yolo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yolo

Setting
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium derived from metamorphic and sedimentary rock

Typical profile
Ap - 0 to 8 inches: loam
A - 8 to 16 inches: loam
C1 - 16 to 24 inches: very fine sandy loam
C2 - 24 to 46 inches: fine sandy loam
C3 - 46 to 60 inches: loam

Properties and qualities
Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium

Appendix C – USACE Arid West Wetland Determination Data Forms

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Dublin Boulevard/ North Canyons City/County: Dublin/ Alameda Sampling Date: April 13, 2018
Applicant/Owner: State: California Sampling Point: SP1
Investigator(s): Elan Alford Section/Township/Range:
Landform (hillslope, terrace, etc.): excavated swale Local Relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): California Lat: Long: Datum:
Soil Map Unit Name: NWI classification
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes No X
Wetland Hydrology Present? Yes No X

Is the Sampled Area within a Wetland? Yes No X

Remarks:
Sedimented culvert outlet. Little live vegetation is present in excavated swale.

VEGETATION

Tree Stratum (Plot size: *30 ft*)	Absolute Cover %	Dominant Species?	Indicator Status
1. *None*	0		
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum (Plot size: *15 ft*)			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum (Plot size: *5 ft x 5 ft*)			
1. *Geranium molle*	<1	X	UPL
2. *Brassica sp.*	<1	X	NI
3. *Unk. grass*	<1		NI
4. *Unk grass*	<1		NI
5.			
6.			
7.			
8.			
Total Cover:	2		

Woody Vine Stratum (Plot size: *15 ft*)			
1. *None*	0		
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0/2 = 0% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks:
Cover is dominated by dead thatch

SOIL

Sampling Point: SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 3/2	100					loamy sand	with sand
6-15	10 YR 2/2	95					clay loam	mixed soil, sand
	10 YR 4/3	5						
15-17	10 YR 2/2	83	10 YR 5/8	2	C	M	clay loam	
	10 YR 4/3	15						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes ___ No X

Remarks:

Sediment deposits from culvert outlet. Soil is moist. Mixed sands from deposition.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): NA

Water Table Present? Yes ___ No X Depth (inches): NA

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

Insufficient indicators.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Dublin Boulevard/ North Canyons City/County: Dublin/ Alameda Sampling Date: April 13, 2018
Applicant/Owner: State: California Sampling Point: SP2
Investigator(s): Elan Alford Section/Township/Range:
Landform (hillslope, terrace, etc.): flat Local Relief (concave, convex, none): None Slope (%): 0-1%
Subregion (LRR): California Lat: Long: Datum:
Soil Map Unit Name: NWI classification
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes No X
Wetland Hydrology Present? Yes No X

Is the Sampled Area within a Wetland? Yes No X

Remarks:
Near apparent vegetation break where more grasses of higher stature are predominant at this location. This is approximately 10-ft north and on upland side the vegetation break.

VEGETATION

Tree Stratum (Plot size: 30 ft)	Absolute Cover %	Dominant Species?	Indicator Status
1. None	0		
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. None	0		
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum (Plot size: 5 ft x 5 ft)			
1. Hordeum murinum	40	X	FACU
2. Bromus hordeaceus	27	X	FACU
3. Brassica sp.	5		
4. Erodium cicutarium	2		
5. Helminthotheca eichioides	1		FAC
6. Veronica americana	1		
7. Navarettia sp.	1		
8. Geranium molle	3		
Total Cover:	80		
Woody Vine Stratum (Plot size: 15 ft)			
1. None	0		
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0/2 = 0% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** **No** X

Remarks:
Grass thatch cover is approximately 20%.

SOIL

Sampling Point: SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10 YR 3/2	99	10 YR 4/8	1	C	M	sandy clay loam	brown roots, no stained pore linings, many roots
9-20	10 YR 2/1	100					clay loam	fewer roots

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

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

Deep clay, no hydrogen sulfide.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): NA

Water Table Present? Yes ___ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): NA

Wetland Hydrology Present? **Yes** ___ **No** **X**

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

Remarks:

Notably less hoof punch than nearby sample area.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Dublin Boulevard/ North Canyons City/County: Dublin/ Alameda Sampling Date: April 13, 2018
Applicant/Owner: State: California Sampling Point: SP3
Investigator(s): Elan Alford Section/Township/Range:
Landform (hillslope, terrace, etc.): flat Local Relief (concave, convex, none): None Slope (%): 0-1
Subregion (LRR): California Lat: Long: Datum:
Soil Map Unit Name: NWI classification
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present? Yes X No
Is the Sampled Area within a Wetland? Yes X No

Remarks:
On wetter side of vegetation break with SP2. Approximately 10 ft from the break. Distinct cattle hoof punch is present, approximately 2"-6" deep.

VEGETATION

Tree Stratum (Plot size: *30 ft*)	Absolute Cover %	Dominant Species?	Indicator Status
1. *None*	0		
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum (Plot size: *15 ft*)			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:			

Herb Stratum (Plot size: *5 ft x 5 ft*)			
1. *Lolium perenne*	60	X	FAC
2. *Picris eichioides*	20	X	FAC
3. *Geranium dissectum*	10		
4. *Brassica sp.*	3		
5. *Hordeum sp.*	1		
6. *Bromus hordeaceus*	1		
7.			
8.			
Total Cover:	95		

Woody Vine Stratum (Plot size: *15 ft*)			
1. *None*	0		
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 2/2 = 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

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

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

Hydrophytic Vegetation Present? **Yes X No**

Remarks:
Lots of microtopography from hoof punches. Some more upland species persist on top position of mounds from hoofprint. Lolium is the dominant vegetation.

SOIL

Sampling Point: SP3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 2/2	99	10 YR 5/6	1	C	PL	clay loam	roots
6-20	10 YR 2/1	57	10 YR 4/6	3	C	PL	clay loam	mixed soil
	10 YR 3/1	40					sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (If present):

Type: None

Depth (inches): No

Hydric Soil Present? **Yes X** **No ___**

Remarks:

Deep clayey soil.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): NA

Water Table Present? Yes ___ No X Depth (inches): NA

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? **Yes X** **No ___**

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

Remarks:

Aerial imagery date from April 2012 shows saturation. Extensive cow punch present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Dublin Boulevard-North Canyons City/County: Dublin/ Alameda Sampling Date: April 13, 2018
Applicant/Owner: State: California Sampling Point: SP4
Investigator(s): Elan Alford Section/Township/Range:
Landform (hillslope, terrace, etc.): flat Local Relief (concave, convex, none): None Slope (%): 0-1
Subregion (LRR): California Lat: Long: Datum:
Soil Map Unit Name: NWI classification
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes No X
Wetland Hydrology Present? Yes No X

Is the Sampled Area within a Wetland? Yes No X

Remarks:
A small area that is elevated 6" to 1 ft above surrounding soil and supports distinct vegetation type than surrounding wetter area.

VEGETATION

Tree Stratum (Plot size: *30 ft*)	Absolute Cover %	Dominant Species?	Indicator Status
1. *None*	0		
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum (Plot size: *15 ft*)			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum (Plot size: *5ft x 5ft*)			
1. *Hordeum murinum*	40	X	FACU
2. *Erodium cicutarium*	30	X	UPL
3. *Geranium dissectum*	8		
4. *Picris eichioides*	10		
5. *Brassica sp*	2		
6.			
7.			
8.			
Total Cover:	90		

Woody Vine Stratum (Plot size: *15ft*)			
1. *None*	0		
2.			
Total Cover:	0		

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

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0/2 = 0% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks:
Distinctive vegetation change occurs on this mound and is dominated by Hordeum grasses and forbs.

SOIL

Sampling Point: SP4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	97	10YR 3/4	3	C	M	clay loam	roots present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (If present):

Type: None

Depth (inches): No

Hydric Soil Present? Yes ____ No X

Remarks:

Insufficient redox concentrations to make this soil F6.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): None

Water Table Present? Yes ____ No X Depth (inches): None

Saturation Present? Yes ____ No X Depth (inches): None

(includes capillary fringe)

Wetland Hydrology Present? Yes ____ No X

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

Remarks:

This is approximately 5-10 ft away from an area with ponded surface water. Ponded water is not present in this location.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Dublin Boulevard/ North Canyons City/County: Dublin/ Alameda Sampling Date: April 13, 2018
Applicant/Owner: State: California Sampling Point: SP5
Investigator(s): Elan Alford Section/Township/Range:
Landform (hillslope, terrace, etc.): flat Local Relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): California Lat: Long: Datum:
Soil Map Unit Name: NWI classification
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present? Yes X No
Is the Sampled Area within a Wetland? Yes X No

Remarks:
This area is inundated with several inches of water.

VEGETATION

Tree Stratum (Plot size: *30ft*)	Absolute Cover %	Dominant Species?	Indicator Status
1. *None*	0		
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum (Plot size: *15ft*)			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum (Plot size: *5ft x 5ft*)			
1. *Lolium perenne*	30	X	FAC
2. *Rumex sp.*	10		
3. *Picris eichioides*	10		
4. *Geranium dissectum*	5		
5. *Bromus hordeaceus*	5		
6. *Cyperus eragrostis*	5		
7. *Medicago polymorpha*	5		
8.			
Total Cover:	70		

Woody Vine Stratum (Plot size: *15 ft*)			
1. *None*	0		
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 1/1 = 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

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

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

Hydrophytic Vegetation Present? **Yes X No**

Remarks:
Distinct break in which grass species is dominant compared to SP4.

SOIL

Sampling Point: SP5

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	97	10YR 4/6	3	C	PL	clay loam	roots

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (If present):

Type: None

Depth (inches): No

Hydric Soil Present? Yes X No ___

Remarks:

Inundated soil. This soil smells of manure so I was unable to note hydrogen sulfide.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0

Water Table Present? Yes ___ No X Depth (inches): no

Saturation Present? Yes X No ___ Depth (inches): 0

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Water is approximately 4 inches deep. The soil has 6-inch deep cattle punches.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Dublin Boulevard/ North Canyons City/County: Dublin/ Alameda Sampling Date: April 17, 2018
Applicant/Owner: State: California Sampling Point: SP6
Investigator(s): Elan Alford Section/Township/Range:
Landform (hillslope, terrace, etc.): flat Local Relief (concave, convex, none): None Slope (%): 0-1
Subregion (LRR): California Lat: Long: Datum:
Soil Map Unit Name: NWI classification
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present? Yes X No
Is the Sampled Area within a Wetland? Yes X No

Remarks:
This area is shown in historic aerials (Google Earth 10/2011) to be saturated or inundated. There is substantial amount of cow punch here and a distinctive grass signature compared to the surrounding adjacent areas considered to be upland. Paired pit with SP2 as upland and this site is used to verify continuing extent of conditions at SP3.

VEGETATION

Tree Stratum (Plot size: *30ft*)	Absolute Cover %	Dominant Species?	Indicator Status
1. *None*	0		
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum (Plot size: *15ft*)			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum (Plot size: *5ft x 5ft*)			
1. *Lolium perenne*	25	X	FAC
2. *Hordeum depressum*	25	X	FACW
3. *Geranium dissectum*	4		
4. *Bromus hordeaceus*	5		
5. *Convolvulus sp.*	5		
6. *Plagiobothrys (leptocladus)*	1		
7. *Medicago polymorpha*	5		
8.			
Total Cover:	70		

Woody Vine Stratum (Plot size: *15 ft*)			
1. *None*	0		
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 21/2= 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

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

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

Hydrophytic Vegetation Present? **Yes X No**

Remarks:
Bare or thatch on ground.

SOIL

Sampling Point: SP6

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	94	10YR 5/8	1	C	M	clay loam	roots
			10YR 3/6	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (If present):

Type: None

Depth (inches): No

Hydric Soil Present? Yes X No ___

Remarks:

Clayey soil with redox concentrations.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)				Secondary Indicators (2 or more required)	
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
___	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (Riverine)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	___	Drainage Patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	___	Oxidized Rhizospheres along Living Roots (C3)	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	X	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
___	Water-stained Leaves (B9)	X	Other (Explain in Remarks)	___	FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 0

Water Table Present? Yes ___ No X Depth (inches): 0

Saturation Present? Yes ___ No X Depth (inches): 0

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

October 2011 aerial imagery evidence of saturation. There are many 2-inch deep cattle punches.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Dublin Boulevard/ North Canyons City/County: Dublin/ Alameda Sampling Date: April 17, 2018
Applicant/Owner: State: California Sampling Point: SP7
Investigator(s): Elan Alford Section/Township/Range:
Landform (hillslope, terrace, etc.): swale Local Relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): California Lat: Long: Datum:
Soil Map Unit Name: NWI classification
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present? Yes X No

Is the Sampled Area within a Wetland? Yes X No

Remarks:
The area is in a swale location where an ephemeral stream empties into a broader floodplain. Lolium is a dominant grass.

VEGETATION

Tree Stratum (Plot size: *30ft*)	Absolute Cover %	Dominant Species?	Indicator Status
1. *None*	0		
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum (Plot size: *15ft*)			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum (Plot size: *5ft x 5ft*)			
1. *Lolium perenne*	50	X	FAC
2. *Hordeum murinum*	10		
3. *Bromus hordeaceus*	5		
4. *Hirschfeldia incana*	4		
5. *Erodium cicutarium*	5		
6. *Avena fatua*	1		
7.			
8.			
Total Cover:	75		

Woody Vine Stratum (Plot size: *15 ft*)			
1. *None*	0		
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1/1 = 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes X No**

Remarks:
Lolium grass is dominant and there is cow punch.

SOIL

Sampling Point: SP7

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/1	100				PL	clay loam	many roots
7-12	10YR 2/1	97	10YR 5/8	3	C	M	clay loam	many roots

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (If present):

Type: None

Depth (inches): No

Hydric Soil Present? Yes X No ___

Remarks:

Soil is moist.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)				Secondary Indicators (2 or more required)	
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
___	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (Riverine)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	___	Drainage Patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	___	Oxidized Rhizospheres along Living Roots (C3)	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
___	Water-stained Leaves (B9)	X	Other (Explain in Remarks)	___	FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 0

Water Table Present? Yes ___ No X Depth (inches): 0

Saturation Present? Yes ___ No X Depth (inches): 0

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

The area is in a swale feature with a distinctive lolium vegetation and hoof punch.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Dublin Boulevard/ North Canyons City/County: Dublin/ Alameda Sampling Date: April 17, 2018
Applicant/Owner: State: California Sampling Point: SP8
Investigator(s): Elan Alford Section/Township/Range:
Landform (hillslope, terrace, etc.): flat Local Relief (concave, convex, none): None Slope (%): 0-1
Subregion (LRR): California Lat: Long: Datum:
Soil Map Unit Name: NWI classification
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes No X
Wetland Hydrology Present? Yes No X

Is the Sampled Area within a Wetland? Yes No X

Remarks:
Avena dominated area located in upland setting outisde ephemeral stream/swale. Few 1-inch deep cow punch present.

VEGETATION

Tree Stratum (Plot size: *30ft*)	Absolute Cover %	Dominant Species?	Indicator Status
1. *None*	0		
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum (Plot size: *15ft*)			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum (Plot size: *5ft x 5ft*)			
1. *Avena fatua*	30	X	UPL
2. *Vicia sativa*	3		
3. *Lolium perenne*	1		
4. *Bromus hordeaceus*	25	X	FACU
5. *Erodium botrys*	1		
6.			
7.			
8.			
Total Cover:	60		

Woody Vine Stratum (Plot size: *15 ft*)			
1. *None*	0		
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0/2 = 0% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks:
Grass thatch is present.

SOIL

Sampling Point: SP8

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

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

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (If present):

Type: None

Depth (inches): No

Hydric Soil Present? Yes ____ No X

Remarks:

No indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): 0
Water Table Present?	Yes ____	No X	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): 0

Wetland Hydrology Present? Yes ____ No X

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

Remarks:

Uplands, no indicators.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Dublin Boulevard/ North Canyons City/County: Dublin/ Alameda Sampling Date: April 17, 2018
Applicant/Owner: State: California Sampling Point: SP9
Investigator(s): Elan Alford Section/Township/Range:
Landform (hillslope, terrace, etc.): flat Local Relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): California Lat: Long: Datum:
Soil Map Unit Name: NWI classification
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes No X
Wetland Hydrology Present? Yes No X

Is the Sampled Area within a Wetland? Yes No X

Remarks:
The location holds standing water.

VEGETATION

Tree Stratum (Plot size: *30ft*)	Absolute Cover %	Dominant Species?	Indicator Status
1. *None*	0		
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum (Plot size: *15ft*)			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum (Plot size: *5ft x 5ft*)			
1. *Erodium botrys*	10	X	FACU
2. *Bromus hordeaceus*	5	X	FACU
3. *Poa annua*	5	X	FAC
4. *Polygonum sp.*	2		
5.			
6.			
7.			
8.			
Total Cover:	22		

Woody Vine Stratum (Plot size: *15 ft*)			
1. *None*	0		
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 78 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1/3 = 33% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks:
Bare soil present with cow punches.

SOIL

Sampling Point: SP9

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/1	100					clay loam	few roots

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (If present):

Type: None

Depth (inches): No

Hydric Soil Present? Yes ____ No X

Remarks:

Inundated spot but no hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 0

Water Table Present? Yes ____ No X Depth (inches): no

Saturation Present? Yes X No ____ Depth (inches): 0

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ____

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

Remarks:

Standing water present and surface cracks. However the review of historic aerials does not show that the area is frequently and extensively saturated.

Appendix D – Photographs of the Biological Study Area

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Photo 1. Concrete lined section of perennial stream PS1 that runs parallel to Croak Road and parcel A.

Photo2. Culvert outlet which empties into the perennial marsh habitat in the northwestern corner of the BSA.

Photo 3. Perennial marsh (PM1) habitat with pooled water and extensive cow punches.

Photo 4. Regrowth of *Typha* sp. in the seasonal wetland SW1.

Photo 5A. Wetland sample point, SP5, representing seasonal wetland habitat with several inches of ponding and
Photo 5B. Paired upland sample point, SP4, where conditions are mesic but not wetland.

Photo 6A. Wetland sample point (SP3) for seasonal wetland (SW1) with more saturation than ponding and several cow punches and Photo 6B. Paired upland sample point (SP2) where conditions are mesic but not wetland.

Photo 7A. Wetland sample point, SP7, in the floodplain swale wetland of SW4 formed by the perennial stream PS3 and
Photo 7B. Paired upland boundary sample point, SP8, for SW3.

Photo 8. Unnamed perennial stream (PS3) showing the ordinary high water mark and the top of bank as defined here by the distinct change in vegetative cover and composition.

Photo 9. Ephemeral stream (ES1) in the northwestern part of the project area as defined by change in slope and topography and no flowing water.

Photo 10A. The upstream portion of ephemeral stream ES3 with more incised banks and
Photo 10B. The downstream swale forming portion of PS3.

Photo 11. Cottonwood creek perennial stream (PS4) habitat showing cattle crossing, cow punches, and the ordinary high water mark as defined by the incised banks.

Photo 12. Riparian woodland habitat (in background) on the upper banks of Cottonwood.

Photo 13. Typical California annual grassland habitat dominated majority of the BSA.

Photo 14. Location of sampling point 9 in April 2018 showing water pooled at the southeastern corner of the BSA. However, this was determined to be ephemeral ponding and did not display any wetland characteristics such as hydrophytic vegetation. This area was dry in both March 2017 and May 2018.

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Appendix E – Aquatic Resources Table

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3922 Aquatic Resources Table

Waters Name	Waters Name Label	State	Cowardin Code	HGM Code	Measurement Type	Amount	Units	Measurement Type	Linean feet (ln. ft.)	Waters Type	Latitude	Longitude	Local Waterway
Delineate/NRPW	C1	California	R4	riverine	Area	0.007	Acre	100	ln. ft.	Waters of the U.S.	-121.850554	37.706661	
Delineate/NRPW	C2	California	R4	riverine	Area	0.001	Acre	9	ln. ft.	Waters of the U.S.	-121.850370	37.706781	
Delineate/RPW	D1	California	R3	riverine	Area	0.018	Acre	163	ln. ft.	Waters of the U.S.	-121.850377	37.707013	
Delineate/NRPW	ES1	California	R4	riverine	Area	0.052	Acre	314	ln. ft.	Waters of the U.S.	-121.846711	37.706052	
Delineate/NRPW	ES2	California	R4	riverine	Area	0.047	Acre	198	ln. ft.	Waters of the U.S.	-121.834853	37.704636	
Delineate/NRPW	ES3	California	R4	riverine	Area	0.020	Acre	427	ln. ft.	Waters of the U.S.	-121.828953	37.703747	
Delineate/RPW	PM1	California	R3	riverine	Area	0.066	Acre	310	ln. ft.	Wetland	-121.850412	37.705829	
Delineate/RPW	PS1	California	R3	riverine	Area	0.163	Acre	704	ln. ft.	Waters of the U.S.	-121.850376	37.704512	
Delineate/RPW	PS2	California	R3	riverine	Area	0.034	Acre	72	ln. ft.	Waters of the U.S.	-121.849294	37.703402	
Delineate/RPW	PS3	California	R3	riverine	Area	0.076	Acre	380	ln. ft.	Waters of the U.S.	-121.842097	37.704879	
Delineate/RPW	PS4	California	R3	riverine	Area	0.039	Acre	352	ln. ft.	Waters of the U.S.	-121.828039	37.703459	
Delineate/RPWWD	SW1	California	PAB	depress	Area	8.589	Acre	1786	ln. ft.	Wetland	-121.848856	37.704708	
Delineate/RPWWN	SW2	California	PAB	depress	Area	0.102	Acre	128	ln. ft.	Wetland	-121.845697	37.701781	
Delineate/RPWWN	SW3	California	PAB	depress	Area	1.730	Acre	735	ln. ft.	Wetland	-121.843712	37.703732	
Delineate/RPWWN	SW4	California	PAB	depress	Area	0.010	Acre	53	ln. ft.	Wetland	-121.842369	37.701701	

Appendix F – Signed Statement from the Property Owner Allowing Access

I, **OBAID KHAN** of the City of Dublin, will allow Corps personnel to enter the Dublin Boulevard Extension BSA, between Croak Road in Dublin and North Canyons Parkway in Livermore, California to collect samples during normal business hours. The property is composed of several parcels, some of which are land-locked, and permission from the subject property owner(s) will be required in order to provide access. The City of Dublin will facilitate procuring this access allowing the Corps to enter the BSA.

Thank you,

OBAID KHAN

City of Dublin

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Appendix B. – USFWS Special-status Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: April 16, 2018
Consultation Code: 08ESMF00-2018-SLI-1844
Event Code: 08ESMF00-2018-E-05376
Project Name: Dublin Boulevard-North Canyons Parkway Extension Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2018-SLI-1844

Event Code: 08ESMF00-2018-E-05376

Project Name: Dublin Boulevard-North Canyons Parkway Extension Project

Project Type: TRANSPORTATION

Project Description: Proposed development of the Dublin Boulevard-North Canyons Parkway Extension from Fallon Road in the City of Dublin to North Canyons Parkway in the City of Livermore.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.70478950300006N121.84020254105323W

Counties: Alameda, CA

Endangered Species Act Species

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) *Masticophis lateralis euryxanthus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5524	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
San Bruno Elfin Butterfly *Callophrys mossii bayensis* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3394	Endangered
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850 Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Palmate-bracted Bird's Beak *Cordylanthus palmatus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1616	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
California Red-legged Frog *Rana draytonii* https://ecos.fws.gov/ecp/species/2891#crithab	Final

Appendix C. – Site Photographs

Photo 1. Perennial stream habitat within Cottonwood Creek. The banks of this stream section are lined with exposed soil and subject to heavy erosion.

Photo 2. Perennial stream habitat within the perennial stream (unnamed tributary) that parallels Croak Road and parcel A.

Photo 3. Concrete lined section of the perennial stream (unnamed tributary) that runs parallel to Croak Road and parcel A.

Photo 4. Culvert outlet emptying into the perennial stream (unnamed tributary) that runs parallel to Croak Road and parcel A.

Photo 5. This photo depicts the perennial stream (unnamed tributary) that parallels Croak Road and parcel A, spilling into the northern portion of a large wetland complex to the south of the proposed road alignment.

Photo 6. A typical ephemeral drainage in the BSA.

Photo 7. Rock fill material within the ephemeral stream in parcel F.

Photo 8. Dead narrowleaf cattails within the large seasonal wetland in parcel A.

Photo 9. Seasonal wetland complex in parcel A, early spring.

Photo 10. Congdon's tarplant and suitable habitat in the seasonal wetland complex for Congdon's tarplant on parcel A, summer.

Photo 11. Mixed riparian woodland habitat along Fallon/Croak Road and parcel A.

Photo 12. California grassland habitat in the BSA, early spring.

Appendix D. – Plants Identified on or Adjacent to the BSA

Family	Scientific Name	Common name
Anacardiaceae	*Toxicodendron diversilobum*	Poison oak
Apiaceae	*Berula erecta*	Cut leaved water parsnip
	Conium maculatum	Poison hemlock
	Foeniculum vulgare	Fennel
	Sanicula bipinnatifida	Purple sanicle
Asclepiadaceae	*Asclepias fascicularis*	Mexican whorled milkweed
Asteraceae	*Achyrachaena mollis*	Blow wives
	Anthemis cotula	Dog fennel
	Baccharis pilularis	Coyote brush
	Carduus pycnocephalus	Italian thistle
	Centaurea solstitialis	Yellow star thistle
	Centromadia parryi ssp. *congdonii)*	Congdon's tarplant
	Cirsium vulgare	Bull thistle
	Grindelia camporum	Common gumplant
	Helminthotheca echioides	Bristly oxtongue
	Hypochaeris glabra	Smooth cat's ear
	Logfia gallica	Narrowleaf cottonrose
	Matricaria discoidea	Pineapple weed
	Picris echioides	Bristly ox tongue
	Psilocarphus brevissmus var. *brevissimua*	Short woollyheads
	Silybum marinum	Blessed milkthistle
	Sonchus arvensis ssp. *arvensis*	Field sowthistle
	Sonchus sp.	Sow thistle
	Xanthium spinossum	Spiny cockleburr
Boraginaceae	*Amsinckia menziesii*	Menzies' fiddleneck
	Amsinckia sp.	fiddleneck
	Plagiobothrys (leptocladus)	Alkali popcorn flower
	Plagiobothrys sp.	Popcorn flower
Brassicaceae	*Brassica nigra*	Black mustard
	Brassica sp.	Mustard
	Capsella bursa-pastoris	Shepherd's purse
	Cardamine oligosperma	Bitter cress
	Hirschfeldia incana	Mediterranean hoary mustard

Family	Scientific Name	Common name
	Lepidium dictyotum	Alkali pepperweed
	Lepidium nitidum	Shining peppergrass
	Raphanus sativus	Wild raddish
Campanulaceae	*Downigia bicornuta* var. *bicornuta*	Doublehorn calicoflower
Caryophyllaceae	*Stellaria (media)*[1]	Chickweed
Convolvulaceae	*Convolvulus arvensis*	Field bindweed
Cyperaceae	*Bolboschoenus maritimus*	Alkali bulrush
	Carex sp.	sedge
	Cyperus eragrostis	Tall cyperus
	Eleocharis macrostachya	Common spikerush
	Schoenoplectus acutus	Hardstem bulrush
Fabaceae	*Lupinus bicolor*	Annual lupine
	Medicago polymorpha	Bur medic
	Melilotus indicus	Annual yellow sweetclover
	Quercus agrifolia	Coast live oak
	Quercus lobata	Valley oak
	Triticum aestivum	Common wheat
	Trifolium hirtum	Rose clover
	Trifolium sp.	Clover
	Vicia sativa	Spring vetch
	Vicia sp.	Vetch
	Vicia villosa ssp. *villosa*	Winter vetch
Geraniaceae	*Erodium botrys*	Big heron bill
	Erodium cicutarium	red stemmed filaree
	Erodium moschatum	Musky stork's bill
	Geranium dissectum	Cutleaf geranium
	Geranium molle	Crane's bill geranium
Iridaceae	*Sisyrinchium bellum*	Western blue eyed grass
Juncaceae	*Juncus bufonius*	Toad rush
	Juncus mexicanus	Mexican rush
	Juncus xiphioides	Iris leaved rush
Malvaceae	*Malva nicaeensis*	Bull mallow
	Malvella leprosa	Alkali mallow
Myrsinaceae	*Lysimachia arvensis*	Scarlet pimpernel
Myrtaceae	*Eucalyptus* sp.	Eucalyptus

Family	Scientific Name	Common name
Oleaceae	*Olea europa*	Common olive
Onagraceae	*Epilobium ciliatum*	Fringed willowherb
Orobanchaceae	*Bellardia trixago*	Mediterranean lineseed
	Castilleja exserta ssp. *exserta*	Exserted indian paintbrush
Pappavaraceae	*Eschscholzia californica*	California poppy
Plantaginaceae	*Plantago lanceolata*	Narrowleaf plantain
	Veronica persica	Bird's eye speedwell,
Poaceae	*Avena barbata*	Slender oat
	Avena fatua	Wild oat
	Avena sp.	Oat
	Bromus diandrus	Ripgut brome
	Bromus hordeaceus	Soft brome
	Festuca perennis	Italian rye grass
	Hordeum brachyatherum ssp. *brachyantherum*	Meadow barley
	Hordeum depressum	Alkali barley
	Hordeum marinum ssp. *gussoneanum*	Mediterranean barley
	Hordeum murinum	Meadow barley
	Poa annua	Annual Blue Grass
	Pleuropogon californicus var. *californicus*	annual semaphoregrass
	Unknown grass 1	Grass
	Unknown grass 2	Grass
Polygonaceae	*Polygonum* sp.	Polygonum
	Rumex conglomeratus	Clustered dock
	Rumex crispus	Curly dock
	Rumex sp.	Willowdock
Portulacaceae	*Claytonia* sp.	Miner's lettuce
Ranunculaceae	*Ranunculus repens*	Creeping buttercup
	Ranunculus sceleratus var. *sceleratus*	Cursed buttercup
Salicaceae	*Salix laevigata*	Polished willow
Scrophulariaceae	*Triphysaria eriantha* ssp. *eriantha*	Butter 'n' eggs
	Veronica americana	Water speedwell
	Veronica anagallis-aquatica	Water speedwell
Themidaceae	*Triteleia laxa*	Ithuriel's spear
Typhaceae	*Typha angustifolia*	Narrowleaf cattail

Appendix E. – Applicable EACCS Avoidance and Minimization Measures

EACCS Measure GEN-01. Employees and contractors performing construction activities will receive environmental sensitivity training. Training will include review of environmental laws and AMMs that must be followed by all personnel to reduce or avoid effects on covered species during construction activities.

EACCS Measure GEN-02. Environmental tailboard trainings will take place on an as-needed basis in the field. The environmental tailboard trainings will include a brief review of the biology of the covered species and guidelines that must be followed by all personnel to reduce or avoid negative effects on these species during construction activities. Directors, Managers, Superintendents, and the crew foremen and forewomen will be responsible for ensuring that crewmembers comply with the guidelines.

EACCS Measure GEN-03. Contracts with contractors, construction management firms, and subcontractors will obligate all contractors to comply with these AMMs.

EACCS Measure GEN-04. The following will not be allowed at or near work sites for covered activities: trash dumping, firearms, open fires (such as barbecues) not required by the activity, hunting, and pets (except for safety in remote locations).

EACCS Measure GEN-05. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.

EACCS Measure GEN-06. Off-road vehicle travel will be minimized.

EACCS Measure GEN-07. Vehicles will not exceed a speed limit of 15 mi per hour on unpaved roads within natural land-cover types, or during off-road travel.

EACCS Measure GEN-08. Vehicles or equipment will not be refueled within 100 ft of a wetland, stream, or other waterway unless a bermed and lined refueling area is constructed.

EACCS Measure GEN-09. Vehicles shall be washed only at approved areas. No washing of vehicles shall occur at job sites.

EACCS Measure GEN-10. To discourage the introduction and establishment of invasive plant species, seed mixtures/straw used within natural vegetation will be either rice straw or weed-free straw.

EACCS Measure GEN-11. Pipes, culverts, and similar materials greater than 4 inches in diameter will be stored so as to prevent covered wildlife species from using these as temporary refuges, and these materials will be inspected each morning for the presence of animals prior to being moved.

EACCS Measure GEN-12. Erosion control measures will be implemented to reduce sedimentation in wetland habitat occupied by covered animal and plant species when activities are the source of potential erosion problems. Plastic monofilament netting (erosion control matting) or similar material containing netting shall not be used at the Project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

EACCS Measure GEN-13. Stockpiling of material will occur such that direct effects on covered species are avoided. Stockpiling of material in riparian areas will occur outside of the top of bank, and preferably outside of the outer riparian dripline and will not exceed 30 days.

EACCS Measure GEN-14. Grading will be restricted to the minimum area necessary.

EACCS Measure GEN-15. Prior to ground disturbing activities in sensitive habitats, Project construction boundaries and access areas will be flagged and temporarily fenced during construction to reduce the potential for vehicles and equipment to stray into adjacent habitats.

EACCS Measure GEN-16. Significant earth-moving activities will not be conducted in riparian areas within 24 hours of predicted storms or after major storms (defined as 1 inch of rain or more).

EACCS Measure GEN-17. Trenches will be backfilled as soon as possible. Open trenches will be searched each day prior to construction to ensure no covered species are trapped. Earthen escape ramps will be installed at intervals prescribed by a qualified biologist.

In addition to the general and specific measures in the EACCS that apply to the Project site, the PBO for the EACCS stipulates additional specific avoidance and minimization measures (the text of which is paraphrased below) for projects covered under the PBO. The Project will employ the following PBO general measures, as well as the PBO's species-specific measures mentioned for individual species in the text of this NES.

PBO General Minimization Measure 1. At least 15 days prior to any ground disturbing activities, the applicant will submit to the USFWS for review and approval the qualifications of the proposed biological monitor(s). A qualified biological monitor means

any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the listed species.

PBO General Minimization Measure 2. A USFWS-approved biological monitor will remain on-site during all construction activities in or adjacent to habitat for listed species. The USFWS-approved biological monitor(s) will be given the authority to stop any work that may result in the take of listed species. If the USFWS-approved biological monitor(s) exercises this authority, the USFWS will be notified by telephone and electronic mail within one working day. The USFWS-approved biological monitor will be the contact for any employee or contractor who might inadvertently kill or injure a listed species or anyone who finds a dead, injured, or entrapped individual. The USFWS-approved biological monitor will possess a working wireless/mobile phone whose number will be provided to the USFWS.

PBO General Minimization Measure 3. Prior to construction, a construction employee education program will be conducted in reference to potential listed species on site. At minimum, the program will consist of a brief presentation by persons knowledgeable in endangered species biology and legislative protection (USFWS-approved biologist) to explain concerns to contractors, their employees, and agency personnel involved in the project. The program will include: a description of the species and their habitat needs; any reports of occurrences in the Project area; an explanation of the status of each listed species and their protection under the Act; and a list of measures being taken to reduce effects on the species during construction and implementation. Fact sheets conveying this information and an educational brochure containing color photographs of all listed species in the work area(s) will be prepared for distribution to the above-mentioned people and anyone else who may enter the project area. A list of employees who attend the training sessions will be maintained by the applicant to be made available for review by the USFWS upon request. Contractor training will be incorporated into construction contracts and will be a component of weekly project meetings.

PBO General Minimization Measure 4. Pre-construction surveys for listed species will be performed immediately prior to groundbreaking activities. Surveys will be conducted by USFWS-approved biologists. If at any point, construction activities cease for more than five consecutive days, additional pre-construction surveys will be conducted prior to the resumption of these actions.

PBO General Minimization Measure 5. To prevent the accidental entrapment of listed species during construction, all excavated holes or trenches deeper than 6 inches will be covered at the end of each work day with plywood or similar materials. Foundation trenches or larger excavations that cannot easily be covered will be ramped at the end of

the work day to allow trapped animals an escape method. Prior to the filling of such holes, these areas will be thoroughly inspected for listed species by USFWS-approved biologists. In the event of a trapped animal is observed, construction will cease until the individual has been relocated to an appropriate location.

PBO General Minimization Measure 6. Translocation will be approved on a project specific basis. The applicant will prepare a listed species translocation plan for the Project to be reviewed and approved by the USFWS prior to Project implementation. The plan will include trapping and translocation methods, translocation site, and post translocation monitoring.

PBO General Minimization Measure 7. Only USFWS-approved biologists will conduct surveys and move listed species.

PBO General Minimization Measure 8. All trash and debris within the work area will be placed in containers with secure lids before the end of each workday in order to reduce the likelihood of predators being attracted to the site by discarded food wrappers and other rubbish that may be left on-site. Containers will be emptied as necessary to prevent trash overflow onto the site and all rubbish will be disposed of at an appropriate off-site location.

PBO General Minimization Measure 9. All vegetation which obscures the observation of wildlife movement within the affected areas containing or immediately adjacent to aquatic habitats will be completely removed by hand just prior to the initiation of grading to remove cover that might be used by listed species. The USFWS-approved biologist will survey these areas immediately prior to vegetation removal to find, capture, and relocate any observed listed species, as approved by the USFWS.

PBO General Minimization Measure 10. All construction activities must cease one half hour before sunset and should not begin prior to one half hour after sunrise. There will be no nighttime construction.

PBO General Minimization Measure 11. Grading and construction will be limited to the dry season, typically May-October.

PBO General Minimization Measure 12. BMPs will be used to minimize erosion and effects on water quality and effects on aquatic habitat. If necessary, a Stormwater Pollution Prevention Plan (SWPPP) will be prepared.

PBO General Minimization Measure 13. The applicant will ensure a readily available copy of this PBO is maintained by the construction foreman/manager on the Project site whenever earthmoving and/or construction is taking place. The name and telephone

number of the construction foreman/manager will be provided to the USFWS prior to groundbreaking.

PBO General Minimization Measure 14. The construction area shall be delineated with high visibility temporary fencing at least 4 ft in height, flagging, or other barrier to prevent encroachment of construction personnel and equipment outside of the construction area. Such fencing shall be inspected and maintained daily until completion of the Project. The fencing will be removed only when all construction equipment is removed from the site.

PBO General Minimization Measure 15. Silt fencing or wildlife exclusion fencing will be used to prevent listed species from entering the project area. Exclusion fencing will be at least 3 ft high and the lower 6 inches of the fence will be buried in the ground to prevent animals from crawling under. The remaining 2.5 ft will be left above ground to serve as a barrier for animals moving on the ground surface. The fence will be pulled taut at each support to prevent folds or snags. Fencing shall be installed and maintained in good condition during all construction activities. Such fencing shall be inspected and maintained daily until completion of the Project. The fencing will be removed only when all construction equipment is removed from the site.

PBO General Minimization Measure 16. A USFWS-approved biologist shall ensure that the spread or introduction of invasive exotic plant species shall be avoided to the maximum extent possible. When practicable, invasive exotic plants in the Project areas shall be removed.

PBO General Minimization Measure 17. Project sites shall be revegetated with an appropriate assemblage of native riparian wetland and upland vegetation suitable for the area. A species list and restoration and monitoring plan shall be included with the Project proposal for review and approval by the USFWS and the USACE. Such a plan must include, but not be limited to, location of the restoration, species to be used, restoration techniques, time of year the work will be done, identifiable success criteria for completion, and remedial actions if the success criteria are not achieved.

PBO General Minimization Measure 18. If a work site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than 5 millimeters. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow to resume with the least disturbance to the substrate.

PBO General Minimization Measure 19. A USFWS-approved biologist shall permanently remove, from within the project area, any individuals of exotic species, such

as bullfrogs [*Lithobates catesbeianus*], crayfish [*Pacifastacus leniusculus* and *Procambarus clarkii*], and centrarchid fishes, to the maximum extent possible. The applicant shall have the responsibility to ensure that their activities are in compliance with the California Fish and Game Code.

Appendix F. – Dublin Blvd NMFS Species List

From: NMFSWCRCA Specieslist - NOAA Service Account [mailto:nmfswcrca.specieslist+canned.response@noaa.gov]
Sent: Friday, August 24, 2018 9:38 AM
To: Steve Rottenborn <srottenborn@harveyecology.com>
Subject: Re: Caltrans - Dublin Blvd-North Canyons Parkway Extension Project

Receipt of this message confirms that NMFS has received your email to nmfswcrca.specieslist@noaa.gov. If you are a federal agency (or representative) and have followed the steps outlined on the California Species List Tools web page (http://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html), you have generated an official Endangered Species Act species list.

Messages sent to this email address are not responded to directly. For project specific questions, please contact your local NMFS office.

Northern California/Klamath (Arcata) 707-822-7201

North-Central Coast (Santa Rosa) 707-387-0737

Southern California (Long Beach) 562-980-4000

California Central Valley (Sacramento) 916-930-3600

Quad Name **Livermore**
Quad Number **37121-F7**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH - X
Chinook Salmon EFH - X
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -