APPENDIX C
ATTACHMENTS TO COMMENT LETTERS

The following attachment was submitted as a part of Commenter C3's letter (Linda C. Klein, Cox Castle Nicholson on behalf of Chamberlin Associates) to BART during the public review period and did not require a separate response.

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Biological Constraints Analysis and Wetland Assessment

AIRWAY BLVD, LIVERMORE
ALAMEDA COUNTY, CALIFORNIA

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LIST OF ACRONYMS AND ABBREVIATIONS

CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
ESA	Federal Endangered Species Act
Inventory	CNPS Inventory of Rare and Endangered Plants
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
NWPL	National Wetland Plant List
OHWM	Ordinary High Water Mark
Rank	California Rare Plant Rank
RWQCB	Regional Water Quality Control Board
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WBWG	Western Bat Working Group
WRA	WRA, Inc.

EXECUTIVE SUMMARY

The purpose of this report is to provide an analysis of natural community and special-status species that could potentially occur at the Airway Blvd Property (APN 905-0009-013-03), in Livermore, California (Study Area). This report identifies potential resources that could be considered regulatory constraints to a future development project.

On June 13, 2016, WRA, Inc. (WRA) conducted a biological resources assessment and routine-level jurisdictional delineation within the Study Area located west of Airway Blvd., south of North Canyons Parkway, and north of Interstate 580 in Livermore, California. WRA observed one monotypic biological community which is not considered sensitive under the California Environmental Quality Act (CEQA). No special-status plant or wildlife species have a moderate or high potential to occur within the Study Area. Native nesting birds protected by the Migratory Bird Treaty Act and California Fish and Game Codes have potential to nest seasonally within the Study Area. Recommendations are discussed to avoid impacts to nesting bird species.

1.0 INTRODUCTION

On June 13, 2016, WRA, Inc. performed an assessment of biological resources and a routine-level jurisdictional delineation at the approximately 11.29-acre undeveloped site near the intersection of North Canyons Parkway and Airway Blvd (APN 905-0009-013-03), in Livermore, California (Figure 1). The Study Area is bordered by Airway Blvd to the East, North Canyons Parkway to the north, Interstate 580 to the south, and by a casino to the west. The purpose of the assessment was to gather information necessary to review the potential biological resources that could be considered constraints to development. The Study Area was historically agricultural land and the surrounding parcels have been built out by mixed-use development including a casino, corporate office, medical offices, a charter school, hotels, a gas station and fast-food restaurant. The Study Area has been completely surrounded by development since approximately 2007 and Airway Blvd to the east supports a major egress point to Interstate 580. North Canyons Parkway connects to Doolan Road to the west and frontage road north of Interstate 580.

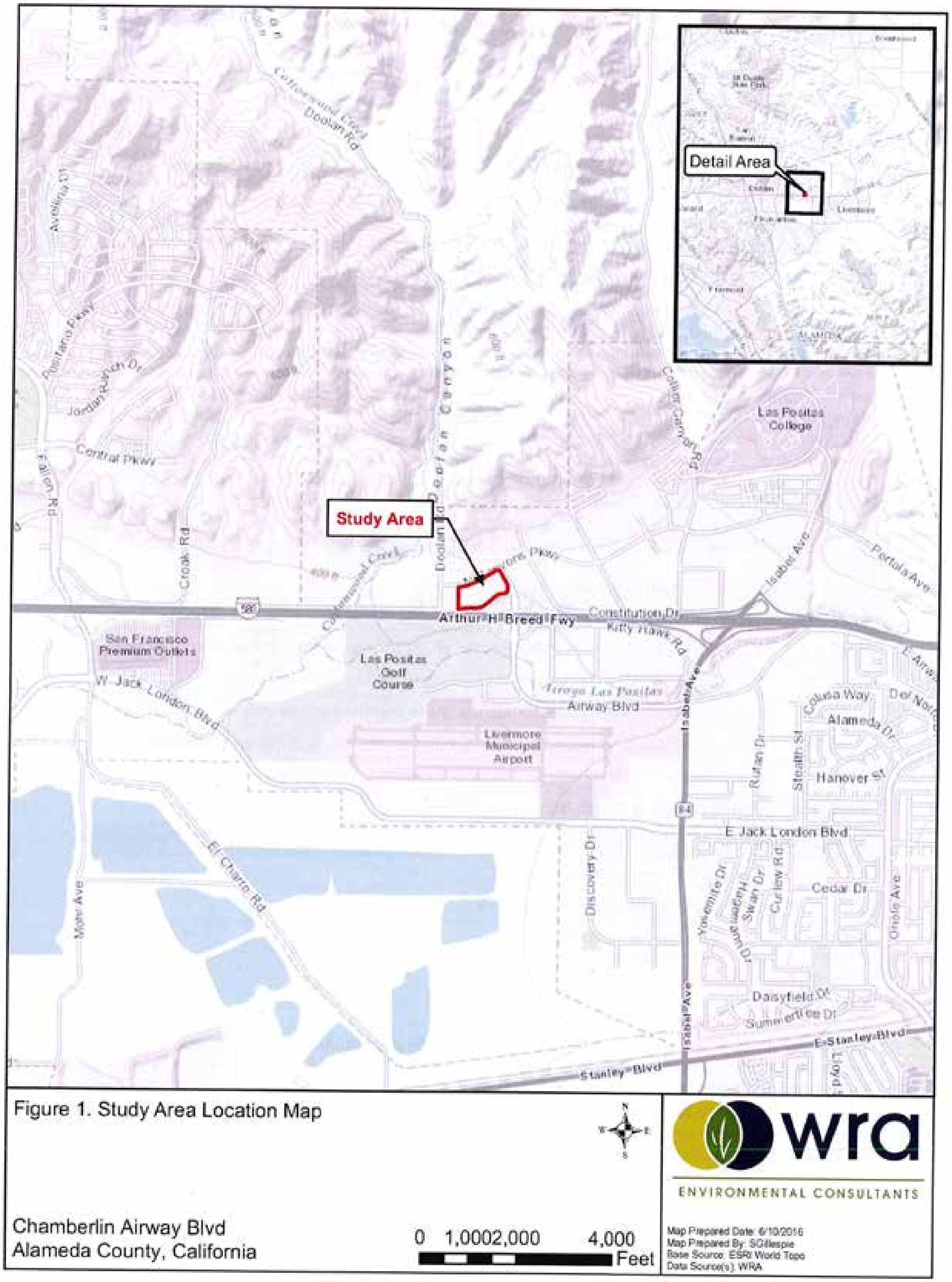
This report describes the results of the June 13, 2016 site visit, which assessed the Study Area for the (1) potential to support special-status species; and (2) presence of other sensitive biological resources protected by local, state, and federal laws and regulations. This report also contains an evaluation of potential impacts to special-status species and sensitive biological resources that may occur as a result of a possible future development project and potential mitigation measures to compensate for those impacts.

The jurisdictional delineation completed for the Study Area on June 13, 2016 determined whether any wetlands or non-wetland waters potentially subject to federal jurisdiction under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act are present within the Study Area and to what extent. In addition, the delineation identified the extent of wetlands and non-wetland waters potentially subject to state jurisdiction under Section 401 of the CWA and under the Porter-Cologne Act.

This biological resources assessment is not an official protocol-level survey for listed species that may be required for project approval by local, state, or federal agencies. This assessment is based on information available at the time of the study and on site conditions that were observed on the dates of the site visit.

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential project impacts.


Detail Area
Study Area
Las Positas College
Collier Canyon Rd
Doolan Rd
Cottonwood Creek
Doolan Canyon
Croak Rd
Fallon Rd
Central Pkwy
Jordan Ranch Dr
Positano Pkwy
Avelina Dr
Portola Ave
Isabel Ave
Arthur H Breed Fwy
Constitution Dr
Kitty Hawk Rd
San Francisco Premium Outlets
W Jack London Blvd
Las Positas Golf Course
Arroyo Las Positas
Airway Blvd
Livermore Municipal Airport
Rutan Dr
Stealth St
Hanover St
Alameda Dr
Del Norte
E Jack London Blvd
Discovery Dr
El Charro Rd
Mohr Ave
Yosemite Dr
Swan Dr
Curlew Rd
Cedar Dr
Oriole Ave
Daisyfield Dr
E Stanley Blvd
Stanley Blvd
Figure 1. Study Area Location Map
Chamberlin Airway Blvd
Alameda County, California
0 1,0002,000 4,000
Feet
wra
ENVIRONMENTAL CONSULTANTS
Map Prepared Date: 6/10/2016
Map Prepared By: SGillespie
Base Source: ESRI World Topo
Data Source(s): WRA

2.1 Special-Status Species

Special-status species include those plants and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These acts afford protection to both listed and proposed species. In addition, California Department of Fish and Wildlife (CDFW) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern, and CDFW special-status invertebrates are all considered special-status species. Although CDFW Species of Special Concern generally have no special legal status, they are given special consideration under the California Environmental Quality Act (CEQA). In addition to regulations for special-status species, most birds in the United States, including non-status species, are protected by the Migratory Bird Treaty Act of 1918. Under this legislation, destroying active nests, eggs, and young is illegal. Bat species designated as "High Priority" by the Western Bat Working Group (WBWG) qualify for legal protection under Section 15380(d) of the CEQA Guidelines. Species designated "High Priority" are defined as "imperiled or are at high risk of imperilment based on available information on distribution, status, ecology and known threats" (CDFG, 2006). Plant species on the California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (Inventory) with California Rare Plant Ranks (Rank) of 1 and 2 are also considered special-status plant species and must be considered under CEQA. A description of the CNPS Ranks is provided below in Table 1.

Table 1. Description of CNPS Ranks and Threat Codes

California Rare Plant Ranks (formerly known as CNPS Lists)	
Rank 1A	Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	Rare, threatened, or endangered in California and elsewhere
Rank 2A	Presumed extirpated in California, but more common elsewhere
Rank 2B	Rare, threatened, or endangered in California, but more common elsewhere
Rank 3	Plants about which more information is needed - A review list
Rank 4	Plants of limited distribution - A watch list
Threat Ranks	
0.1	Seriously threatened in California
0.2	Moderately threatened in California
0.3	Not very threatened in California

Critical Habitat

Critical habitat is a term defined in the ESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The ESA requires federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it

will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the ESA jeopardy standard. However, areas that are currently unoccupied by the species but which are needed for the species' recovery are protected by the prohibition against adverse modification of critical habitat.

2.2 Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, or riparian habitat. These habitats are protected under federal regulations such as the Clean Water Act; state regulations such as the Porter-Cologne Act, the CDFW Streambed Alteration Program, and CEQA; or local ordinances or policies such as city or county tree ordinances, Special Habitat Management Areas, and General Plan Elements.

Waters of the United States

The U.S. Army Corps of Engineers (Corps) regulates "Waters of the United States" under Section 404 of the Clean Water Act. Waters of the U.S. are defined in the Code of Federal Regulations (CFR) as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate water bodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated at a sufficient depth and for a sufficient duration to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water mark (OHWM). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into Waters of the U.S generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act.

Waters of the State

The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope and has special responsibility for wetlands, riparian areas, and headwaters. These water bodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404. Waters of the State are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact Waters of the State, are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to Waters of the State, the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under Sections 1600-1616 of California Fish and Game Code. Alterations to or work within or

adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term "stream", which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as "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 [including] 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." 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). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

Other Sensitive Biological Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CNDDB; CDFW 2015). Sensitive plant communities are also identified by CDFW (2010). CNDDB vegetation alliances are ranked 1 through 5 based on NatureServe's (2010) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW or USFWS must be considered and evaluated under CEQA (CCR Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in city or county general plans or ordinances.

2.3 City of Livermore Tree Ordinance

The City of Livermore maintains a tree ordinance for the purpose protecting and encouraging the growth of trees and shrubs within City owned property and transportation corridors. Trees and shrubs within City property are protected and require a permit to remove; however, there are no conditions for trees and shrubs on private property.

3.0 METHODS

On June 13, 2016 the Study Area was traversed on foot to determine (1) plant communities present within the Study Area, (2) if existing conditions provided suitable habitat for any special-status plant or wildlife species, and (3) if sensitive habitats are present. A routine-level jurisdictional wetland delineation was also completed during the June 13 site visit. All plant and wildlife species encountered were recorded and are summarized in Appendix A. Plant nomenclature follows Baldwin et al. (2012) and subsequent revisions by the Jepson Flora Project (2015), except where noted. Because of recent changes in classification for many of the taxa treated by Baldwin et al. (2012) and the Jepson Flora Project, relevant synonyms are provided in brackets. For cases in which regulatory agencies, CNPS, or other entities base rarity on older taxonomic treatments, precedence was given to the treatment used by those entities.

3.1 Biological Communities

Prior to the site visit, aerial imagery, past biological and historical studies, the National Wetlands Inventory (NWI, USFWS 2015a), and a Web Soil Survey (USDA 2016) of the Study Area and vicinity were examined to determine if any plant communities and/or aquatic features were present or had the potential to be present in the Study Area. Biological communities present in the Study Area were classified based on existing plant community descriptions described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and/or *Manual of California Vegetation, 2nd Edition* (Sawyer et al. 2009). However, in some cases it is necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Biological communities were classified as sensitive or non-sensitive as defined by CEQA and other applicable laws and regulations.

3.1.1 Non-sensitive Biological Communities

Non-sensitive biological communities are those communities that are not afforded special protection under CEQA, and other state, federal, and local laws, regulations and ordinances. These communities may, however, provide suitable habitat for some special-status plant or wildlife species and are identified or described in Section 4.1.1 below.

3.1.2 Sensitive Biological Communities

Sensitive biological communities are defined as those communities that are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Special methods used to identify sensitive biological communities are discussed below.

Wetlands and Waters

The Study Area was evaluated for the presence of wetlands subject to Corps and EPA jurisdiction under Section 404 of the CWA. This evaluation was based on presence or absence of indicators of the three wetland parameters described in the Corps Manual (Environmental Laboratory 1987) and the Arid West Supplement (Corps 2008).

The Code of Federal Regulations (33 CFR 328.3 (b)) defines wetlands as:

> *Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*

The three parameters used to delineate wetlands are the presence of (1) hydrophytic vegetation, (2) wetland hydrology, and (3) hydric soils. According to the Corps Manual, for areas not considered "problem areas" or "atypical situations":

> *....evidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.*

Data on vegetation, hydrology, and soils collected at sample points during the delineation site visit were reported on Arid West Supplement data forms for any area meeting the three-parameters of a wetland. When wetland conditions were met, a paired sample point was taken at an adjacent upland location to distinguish the changes that qualify the wetland boundary.

Vegetation

Plant species observed in the Study Area were identified using the Jepson Manual, Second Edition (Baldwin et al. 2012) and/or the Jepson eFlora (Jepson Flora Project 2016). Plants were assigned a wetland indicator status according to the National Wetland Plant List (NWPL; Lichvar et al. 2016).

Wetland indicator statuses listed in the NWPL are based on the expected frequency of occurrence in wetlands as described in Table 2.

Table 2. Wetland Indicator Statuses from the National Wetland Plant List

Wetland Indicator Status	Definition*	Hydrophytic?
Obligate (OBL)	Almost always a hydrophyte, rarely in uplands	Yes
Facultative Wetland (FACW)	Usually a hydrophyte but occasionally found in uplands	Yes
Facultative (FAC)	Commonly occurs as either a hydrophyte or non-hydrophyte	Yes
Facultative Upland (FACU)	Occasionally a hydrophyte but usually occurs in uplands	No
Upland/Not Listed (UPL/NL)	Rarely a hydrophyte, almost always in uplands	No

*See Lichvar et al. (2016).

The presence of hydrophytic vegetation was then determined based on indicator tests described in the Arid West Supplement. The Arid West Supplement requires that a three-step process be conducted to determine whether hydrophytic vegetation is present. The procedure first requires the delineator to apply the "50/20 rule" (Indicator 1; Dominance Test) described in the manual. To apply the "50/20 rule", dominant species are determined for each vegetation stratum present in a sampling plot of an appropriate size surrounding the sample point. Dominants are the most abundant species that individually or collectively account for more than 50 percent of the total vegetative cover in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total vegetative cover. If greater than 50 percent of the dominant species has an OBL, FACW, or FAC status, the sample point meets the hydrophytic vegetation criterion.

If the sample point fails Indicator 1 and both hydric soils and wetland hydrology are not present, then the sample point does not meet the hydrophytic vegetation criterion, unless the site is a problematic wetland situation. However, if the sample point fails Indicator 1 but hydric soils and wetland hydrology are both present, the delineator must apply Indicator 2.

Indicator 2 is known as the Prevalence Index. The Prevalence Index is a weighted average of the wetland indicator status for all plant species within the sampling plot. Each indicator status is given a numeric value (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5). Indicator 2

requires the delineator to estimate the percent cover of each species in every stratum of the community and sum the cover estimates for any species that is present in more than one stratum. The delineator must then organize all species into groups according to their wetland indicator status and calculate the Prevalence Index using the following formula, where A equals total percent cover:

$$PI = \frac{A_{OBL} + 2A_{FACW} + 3A_{FAC} + 4A_{FACU} + 5A_{UPL}}{A_{OBL} + A_{FACW} + A_{FAC} + A_{FACU} + A_{UPL}}$$

The Prevalence Index will yield a number between 1 and 5. If the Prevalence Index is equal to or less than 3, the sample point meets the hydrophytic vegetation criterion. However, if the community fails Indicator 2, the delineator must proceed to Indicator 3.

Indicator 3 is known as Morphological Adaptations. If more than 50 percent of the individuals of a FACU species have morphological adaptations for life in wetlands, that species is considered to be a hydrophyte and its indicator status should be reassigned to FAC. If such observations are made, the delineator must recalculate Indicators 1 and 2 using a FAC indicator status for this species. The sample point meets the hydrophytic vegetation criterion if either test is satisfied using the reassigned indicator status.

Soils

The Natural Resource Conservation Service (NRCS) defines a hydric soil as follows:

> *A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.*
>
> Federal Register July 13, 1994,
> U.S. Department of Agriculture, NRCS

Soils formed over long periods of time under wetland (anaerobic) conditions often possess characteristics that indicate they meet the definition of hydric soils. Hydric soils can have a hydrogen sulfide (i.e., rotten egg) odor; low chroma matrix color, generally designated 0, 1, or 2; presence of redoximorphic concentrations; a gleyed or depleted matrix; high organic matter content, and other features. Specific indicators that can be used to determine whether a soil is hydric for the purposes of wetland delineation are provided in the NRCS publication *Field Indicators of Hydric Soils in the U.S.* (USDA 2010). The Arid West Supplement provides a list of 23 of these hydric soil indicators which are applicable in the Arid West Region. Soil samples were collected and described according to the methodology provided in the Arid West Supplement. Soil chroma and values were determined by utilizing a standard Munsell soil color chart (Munsell Color 2012). Hydric soils were determined to be present if any of the soil samples met one or more of the hydric soil indicators described by the NRCS (2010).

Hydrology

The Corps jurisdictional wetland hydrology criterion is satisfied if an area is inundated or saturated for a period sufficient to create anoxic soil conditions during the growing season (a minimum of 14 consecutive days in the Arid West region). Evidence of wetland hydrology can include primary indicators, such as visible inundation or saturation, drift deposits, oxidized root channels, and salt crusts, or secondary indicators such as the FAC-neutral test, presence of a shallow aquitard, or crayfish burrows. The Arid West Supplement contains 16 primary hydrology indicators and 10 secondary hydrology indicators. Only one primary indicator is required to meet the wetland hydrology criterion; however, if secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology.

Other Sensitive Biological Communities

The Study Area was evaluated for the presence of other sensitive biological communities, including riparian areas and sensitive plant communities recognized by CDFW. Prior to the site visit, aerial photographs, local soil maps, the *List of Vegetation Alliances* (CDFG 2010), and *A Manual of California Vegetation* (Sawyer et al. 2009) were reviewed to assess the potential for sensitive biological communities to occur in the Study Area. All alliances within the Study Area with a ranking of 1 through 3 were considered sensitive biological communities and mapped.

3.2 Special-Status Species

3.2.1 Literature Review

Potential occurrence of special-status species in the Study Area was evaluated by first determining which special-status species occur in the vicinity of the Study Area through a literature and database search. Database searches for known occurrences of special-status species focused on the area within a 2-mile radius of the Study Area. The following sources were reviewed to determine which special-status plant and wildlife species have been documented to occur in the vicinity of the Study Area:

- California Natural Diversity Database (CNDDB) records (CDFW 2016)
- USFWS species lists (USFWS 2016)
- CNPS Inventory records (CNPS 2016)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)
- CDFG publication "Amphibians and Reptile Species of Special Concern in California" (Jennings 1994)
- A Field Guide to Western Reptiles and Amphibians (Stebbins 2003)

3.2.2 Site Assessment

A site visit was made to the Study Area to search for suitable habitats for special-status species. Habitat conditions observed at the site were used to evaluate the potential for presence of special-status species based on these searches and the professional expertise of the investigating biologists. The potential for each special-status species to occur in the Study Area was then evaluated according to the following criteria:

- No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- Present. Species is observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.

The site assessment is intended to identify the presence or absence of suitable habitat for each special-status species known to occur in the vicinity in order to determine its potential to occur in the Study Area. The site visit does not constitute a protocol-level survey and is not intended to determine the actual presence or absence of a species; however, if a special-status species is observed during the site visit, its presence will be recorded and discussed.

In cases where little information is known about species occurrences and habitat requirements, the species evaluation was based on best professional judgment of WRA biologists with experience working with the species and habitats. If necessary, recognized experts in individual species biology were contacted to obtain the most up to date information regarding species biology and ecology.

If a special-status species was observed during the site visit, its presence is recorded and discussed below in Section 4.2. For some species, a site assessment visit at the level conducted for this report may not be sufficient to determine presence or absence of a species to the specifications of regulatory agencies. In these cases, a species may be assumed to be present or further protocol-level special-status species surveys may be necessary. Special-status species for which further protocol-level surveys may be necessary are described below in Section 5.0.

3.3 City of Livermore Protected Trees

A site visit was made to identify the presence of trees that could potentially be protected by the City. The site visit does not constitute a formal tree survey, and no certified or registered arborist was present; however, if potentially protected trees were observed, they were noted, and their presence is discussed below.

4.0 RESULTS

The Study Area is located immediately north of Interstate 580, south of North Canyons Blvd and west of Airway Blvd. The Study Area was historically agricultural land. The surrounding parcels have been built out by mixed-use development including a casino, corporate office, medical offices, a charter school, hotels, a gas station and fast-food restaurant. The Study Area has been completely surrounded by development since approximately 2007 and Airway Blvd to the east supports a major egress point to Interstate 580. North Canyons Parkway connects to Doolan Road to the west and frontage road north of Interstate 580.

The Study Area has been significantly altered from its native state, and is disced twice annually for at least the past several years. The site appears to have received fill and topographic alterations associated with adjacent development including Interstate 580, the Interstate on-ramp, Airway Blvd and North Canyons Parkway. The Study Area has some ornamental trees planted along the perimeter of the site, particularly along Airway Blvd, but supports little native vegetation.

4.1 Topography and Soils

The topography of the Study Area is relatively flat with slopes of less than 2 to 10 percent. The general slope is from west to northeast, and elevations range from 5 to 15 feet. The Alameda Area Soil Survey (USDA 1961) indicates that the Study Area is underlain of one native soil mapping unit: Diablo clay, very deep, 3 to 15 percent slopes, which is composed of one soil series: Diablo Series described below.

Diablo Series: This soil series consists of very deep silty clay soils formed from alluvium derived from shale and siltstone located on backslope hills at elevations ranging from 25 to 3,000 feet. These soils are considered hydric, and are well drained with slow runoff (dry) to medium or rapid when moist and slow permeability. Native and naturalized vegetation includes annual grasses and forbs in uncultivated areas, and predominant land uses include grazing and dry farmed grains (USDA 1961).

A representative pedon of this series consists of an A-horizon of neutral to mildly alkaline (pH 7.0-7.5) very dark gray (5YR 3/1) when moist silty clay from approximately 0 to 15 inches depth. This is underlain by a B-horizon of moderately alkaline (pH 8.4) olive gray (5Y 5/2) when moist silty clay to very dark gray (5Y 3/1) when moist silty clay with slickensides from approximately 15 to 42 inches depth. This is underlain by a C-horizon of moderately alkaline (pH 8.2) olive gray (5Y 5/2 to 5Y 4/2) when moist silty clay loam from approximately 42 to 60 inches depth and deeper (USDA 1961). The presence of sticky clay throughout and the slickensides in the B-horizon, suggest that these soils have the potential to support inundation and/or extended saturation in depressions, swales, and low-lying areas which may contribute to the formation of wetlands. Likewise, special-status plants with an affinity or association with neutral to alkaline clays have the potential to occur on these soils.

4.2 Climate and Hydrology

The Project Area is located at the edge of the coastal fog belt of the Bay Area in the Livermore Valley. Average annual precipitation for Livermore (CA 4997), located approximately three and one-half miles east southeast, is 14.82 inches, with the majority falling as rain in the winter months (November through March). The mean daily low and high temperatures in degrees

Fahrenheit range from 36.9 in December to 89.1 in July (USDA 2016). Currently, the Study Area has experienced normal rainfall according to a WETS analysis, with the region thus far receiving 102.2 percent of annual average rainfall (15.14 inches in Water Year 2016). The months of November, December, January, March, and April were all above normal rainfall, while October, February, and May were below normal. The three month (March, April, and May) antecedent rainfall condition was normal.

The primary hydrologic sources for the Study Area are precipitation and localized surface runoff from immediately adjacent lands. Surface runoff migrates to a three-foot diameter culvert situated on the southern boundary, approximately central on the east-west axis. This culvert connects to a larger stormwater system that parallels I-580 and flows westward.

4.3 Biological Communities

The Study Area is composed of one biological community, non-native annual grassland. The edge of the Study Area contains landscaping and hardscaping (e.g., sidewalks) which provide little to no ecologic value.

4.3.1 Non-Sensitive Biological Communities

Non-native Annual Grassland. Non-native annual grasslands are known throughout California on all aspects and topographic positions underlain by a variety of substrates. Within the Study Area, this biological community is composed of one vegetation alliance, wild oat grassland (*Avena barbata* Semi-Natural Herbaceous Stand) (Sawyer et al. 2009). The grassland is dominated by wild oat (*Avena barbata*) with substantial cover of ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), Italian rye grass (*Festuca perennis*), and Mediterranean barley (*Hordeum marinum*). Non-native forbs include field bindweed (*Convolvulus arvensis*), Italian thistle (*Carduus pycnocephalus*), field mustard (*Hirschfeldia incana*), and curly dock (*Rumex crispus*). The grasslands are tilled/disked annually, and the site was tilled at the time of the site visit.

4.3.2 Sensitive Biological Communities

No sensitive biological communities were found within the Study Area. A broad swale runs through the center of the property, terminating at the three-foot diameter culvert. At the time of the site visit, the entire site had been disked and vegetation was lying flat. Several areas were sampled following the methods for delineating wetlands outlined in Section 3.1.2. Vegetation was dominated by Mediterranean barley (*Hordeum marinum*), a facultative (FAC) plant, with associates wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), and soft chess (*B. hordeaceus*). Soils were black (10YR 2/1) heavy clays that contained no redoximorphic features or depletions; therefore, the swale's substrate does not meet the criteria for hydric soils. Likewise, there were no indicators of saturation or inundation sufficient to meet the wetland hydrology criteria.

4.4 Special-Status Species

4.4.1 Plants

Based upon a review of the resources and databases given in Section 3.2.1, 14 special-status plant species have been documented in the vicinity of the Study Area. Figure 3 below depicts special-status species observed within a 5-mile radius of the Study Area. The Study Area is unlikely or has no potential to support 10 of these species for the following reasons:

- Hydrologic conditions (e.g. tidal, riverine) necessary to support the special-status plant species are not present in the Study Area;
- Edaphic (soil) conditions (e.g. volcanic, serpentine) necessary to support the special-status plant species are not present in the Study Area;
- Unique pH conditions (e.g. acidic conditions) necessary to support the special-status plant species are not present in the Study Area;
- Associated vegetation communities (e.g. forest, woodland, scrub, vernal pools) necessary to support the special-status plant species are not present in the Study Area;
- The Study Area is geographically isolated from the documented range of the special-status plant species; and/or
- The land use history (e.g., petro chemical and residential development) of the Study Area has resulted in habitat conversion and/or has a degree of disturbance to preclude the colonization and establishment of special-status species.

Four special-status plant species have a moderate to high potential to occur within the Study Area. All of these species germinate and bolt in late spring, and bloom in the summer into fall. Likewise, they are annuals that are tolerant of disturbance (e.g., tilling) and, because, they bloom in summer, can tolerate competitive pressure from non-native annual herbs (e.g., wild oats (*Avena barbata*). These species are detailed below:

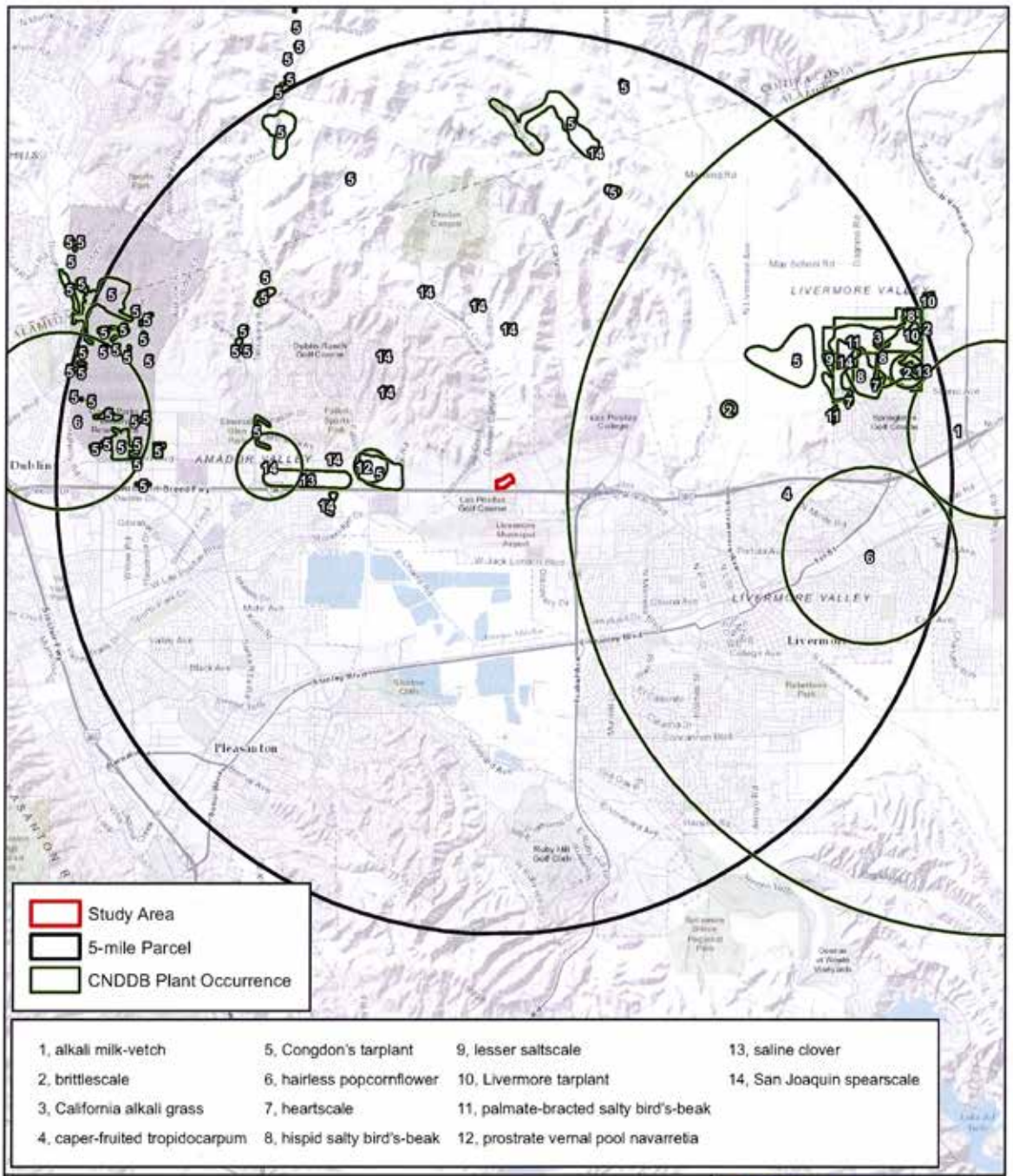
Brittlescale (*Atriplex depressa*). CNPS Rank 1B. Moderate Potential. Brittlescale is an annual forb in the goosefoot family (Chenopodiaceae) that blooms from April to October. It typically occurs on alkali clay substrate in scalds, meadows, and grassy areas in chenopod scrub, meadow, playa, valley and foothill grassland, and vernal pool habitat at elevations ranging from 3 to 1,040 feet (CDFW 2016, CNPS 2016). Observed associated species include common tarplant (*Centromadia pungens*), fivehook (*Bassia hyssopifolia*), pickleweed (*Salicornia virginica*), horned seablite (*Suaeda calceoliformis*), salt grass (*Distichlis spicata*), alkali heath (*Frankenia salina*), rabbit's-foot grass (*Polypogon monspeliensis*), and Mediterranean barley (*Hordeum marinum*) (CDFW 2016, personal observation 2014). Brittlescale has a moderate potential to occur within the Study Area due to moderate alkali conditions and this species relative tolerance to disturbance; however, it frequently occurs in strongly alkali conditions, with extended saturation. This species and others within this genus were not observed during the site visit, and is therefore assumed absent from the site.

Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*). CNPS Rank 1B. High Potential. Congdon's tarplant is an annual forb in the sunflower family (Asteraceae) that blooms from June to November. It typically occurs in alkaline grassy areas on the edge of brackish marsh in valley and foothill grassland habitat at elevations ranging from 1 to 750 feet (CDFW 2016, CNPS 2016). Observed associated species include common tarplant (*Centromadia pungens* ssp. *pungens*), alkali heath (*Frankenia salina*), salt grass (*Distichlis spicata*), Italian rye grass (*Festuca perennis*), Mediterranean barley (*Hordeum marinum*), foxtail barley (*Hordeum*

murinum), stinkwort (*Dittrichia graveolens*), yellow star thistle (*Centaurea solstitialis*), Italian thistle (*Carduus pycnocephalus*), bull thistle (*Cirsium vulgare*), and Bermuda grass (*Cynodon dactylon*) (CDFW 2016, personal observations 2008-2013). Congdon's tarplant has a high potential to occur within the Study Area due to moderate alkali conditions, the presence of associated species, this species relative tolerance to disturbance, and a seed source within close proximity within the direction of the prevailing winds. This species and others within this genus were not observed during the site visit as either seedlings or bolts, and is therefore assumed absent from the site.

Livermore tarplant (*Deinandra bacigalupii*). CNPS Rank 1B. Moderate Potential. Livermore tarplant is annual forb in the sunflower family (Asteraceae) that blooms from June through October. It typically occurs in alkaline herbaceous communities and scalds within meadow and seep habitat at elevations ranging from 485 to 600 feet (CNPS 2016, CDFW 2016, Baldwin et al. 2012). Observed associated species include ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), Mediterranean barley (*Hordeum marinum*), salt grass (*Distichlis spicata*), iodine bush (*Allenrolfea occidentalis*), common spikeweed (*Centromadia pungens*), brittlescale (*Atriplex depressa*), sand spurry (*Spergularia* spp.), alkali heath (*Frankenia salina*), yellow tarweed (*Holocarpha virgata*), and three-ray tarweed (*Deinandra lobbii*) (CDFW 2016). Livermore tarplant has a moderate potential to occur within the Study Area due to moderate alkali conditions and this species relative tolerance to disturbance; however, it frequently occurs in strongly alkali conditions, with extended saturation. This species and others within this genus were not observed during the site visit, and is therefore assumed absent from the site.

San Joaquin spearscale (*Extriplex joaquinana*). CNPS Rank 1B. High Potential. San Joaquin spearscale is an annual herb in the goosefoot family (Chenopodiaceae) that blooms from April to October. It typically occurs in seasonal alkali sink scrub and wetlands in chenopod scrub, alkali meadow, and valley and foothill grassland habitat at elevations ranging from 0 to 2,740 feet (CDFW 2016, CNPS 2016). Observed associated species include salt grass (*Distichlis spicata*), alkali heath (*Frankenia salina*), Mediterranean barley (*Hordeum marinum*), Italian rye grass (*Festuca perennis*), bird's-foot trefoil (*Lotus corniculatus*), docks (*Rumex crispus, R. pulcher*), tarplants (*Centromadia parryi, C. pungens*), pickleweed (*Salicornia pacifica*), and fat hen (*Atriplex prostrata*) (CDFW 2016, personal observations 2010-2012). San Joaquin spearscale has a high potential to occur within the Study Area due to moderate alkali conditions, the presence of associated species, this species relative tolerance to disturbance, and a seed source within close proximity within the direction of the prevailing winds. This species and others within this genus were not observed during the site visit as either seedlings or bolts, and is therefore assumed absent from the site.


Study Area
5-mile Parcel
CNDDB Plant Occurrence
1, alkali milk-vetch
2, brittlescale
3, California alkali grass
4, caper-fruited tropidocarpum
5, Congdon's tarplant
6, hairless popcornflower
7, heartscale
8, hispid salty bird's-beak
9, lesser saltscale
10, Livermore tarplant
11, palmate-bracted salty bird's-beak
12, prostrate vernal pool navarretia
13, saline clover
14, San Joaquin spearscale
Figure 2. Special Status Plant Species within 5-mile Radius of the Study Area
Airway Blvd.
Alameda County, California
0 0.5 1 2 Miles
wra
ENVIRONMENTAL CONSULTANTS
Map Prepared Date: 6/21/2016
Map Prepared By: SGillespie
Base Source: ESRI World Topo
Data Source(s): WRA
Path: L:\Acad 2000 Files\26000\26166\GIS\ArcMap\FigX_CNDDBPlant.mxd

4.4.2 Wildlife

Seventeen (17) special-status wildlife species have been documented to occur within 5-miles of the Study Area (Figure 4). No special-status wildlife species were observed in the Study Area during the June 13, 2016 site visit, and it was determined that no special status wildlife species have a moderate or high potential to occur. The ecological value of the Study Area has largely been degraded as the site is completely surrounded on all sides by mixed development. The Study Area is therefore isolated from surrounding suitable habitats. Furthermore the site is disced twice per year further reducing the ecological value. Some landscaped ornamental trees are present around the perimeter, but the vast majority of the site is bare soil overlain with annual grass thatch.

Special-status wildlife species that are generally associated with aquatic habitats and known to occur within 5-miles include California red-legged frog (*Rana draytonii*; CRLF), foothill yellow-legged frog (*Rana boylii*; FYLF), tricolored blackbird (*Agelaius tricolor*), and Pacific pond turtle (*Actinemys marmorata*; PPT). The Study Area contains no streams, ponds or emergent wetlands and the extent of development surrounding the Study Area would preclude CRLF and PPT from dispersing through the site. Furthermore no hydrologic connectivity is present to suitable FYLF habitats nearby. Tricolored blackbirds may occasionally be seen flying over the Study Area, though no nesting habitat or significant foraging resources are supported, therefore these species have no potential or are unlikely to occur within the Study Area.

Likewise, California linderiella (*Linderiella occidentalis*), longhorn fairy shrimp (*Branchinecta longiantenna*), and vernal pool fairy shrimp (*Branchinecta lynchi*) are vernal pool or seasonal wetland obligate species. Since no wetland habitats exist within the Study Area, these species have no potential to occur.

Alameda whipsnake (*Masticophis lateralis euryxanthus*), American badger (*Taxidea taxus*), and San Joaquin kit fox (*Vulpes macrotis mutica*) are each documented to occur within 5-miles of the Study Area. All three species are wide-ranging and require extensive swaths of connected habitat to persist. Because of the small patch-size of the Study Area, extent, frequency and duration of disturbance, and its isolated nature, these species are not expected to occur. Furthermore, no evidence or sign of badger or kit fox utilizing ground squirrel burrows was observed during the June 13 site assessment.

Ferruginous hawk (*Buteo regalis*), prairie falcon (*Falco mexicanus*), and Townsend's big-eared bat (*Corynorhinus townsendii*) are species capable of flight that may opportunistically forage in the vicinity of the Study Area. The Study Area is not within the nesting range of Ferruginous hawk, and nesting and roosting habitat is not present for prairie falcon or Townsend's big-eared bat. These species are therefore unlikely to occur and unlikely to be affected by any future development at the site.

The following is discussion of four special-status wildlife species that are known to occur in the vicinity, or directly adjacent to the Study Area that are unlikely to occur but are included in this section for completeness.

Burrowing owl (*Athene cunicularia*; BUOW). CDFW Species of Special Concern; USFWS Bird of Conservation Concern. Burrowing owl occurs as a year-round resident and winter visitor in much of California's lowlands, inhabiting open areas with sparse or non-existent tree or shrub canopies. Typical habitat is annual or perennial grassland, although human-modified areas such as agricultural lands and airports are also used (Poulin et al. 1993). This species is dependent on burrowing mammals to provide the burrows that are characteristically used for

shelter and nesting, and in northern California is typically found in close association with California ground squirrels (*Spermophilus beecheyi*). Manmade substrates such as pipes or debris piles may also be occupied in place of burrows. Prey consists of insects and small vertebrates. Breeding typically takes place from March to July.

The Study Area is disced twice annually for weed and fire control. On the June 13, 2016 visit, several ground squirrel burrows were observed along the perimeter of the Study Area. The squirrel burrows were inspected for sign of BUOW including white-wash, pellets, or feathers. No BUOW or indications of use were noted. Furthermore, the Study Area is relatively small is therefore unlikely to support abundance of prey required to sustain breeding BUOW. A CNDDB record of nesting burrowing owl was documented approximately 1-mile southwest of the Study Area in 2004. Adjacent contiguous natural and agricultural lands provide higher quality and quantity of habitat than is available within the Study Area. Therefore the species is unlikely to forage or nest within the Study Area.

California tiger salamander (*Ambystoma californiense*; CTS), Federal Threatened Species, State Threatened Species. California tiger salamander is restricted to grasslands and low-elevation foothill regions in California (generally under 1500 feet) where it uses seasonal aquatic habitats for breeding. The salamanders breed in natural ephemeral pools, or ponds that mimic ephemeral pools (stock ponds that go dry), and occupy substantial areas surrounding the breeding pool as adults. California tiger salamanders spend most of their time in the grasslands surrounding breeding pools. They survive hot, dry summers by living underground in burrows (such as those created by ground squirrels and other mammals and deep cracks or holes in the ground) where the soil atmosphere remains near the water saturation point. During wet periods, the salamanders may emerge from refugia and feed in the surrounding grasslands.

The Study Area does not contain any aquatic features that could support CTS breeding. Multiple occurrences of CTS have been documented in the vicinity including one occurrence where 2 adults were observed crossing roads adjacent to the Study Area in 1992. Since this occurrence, the location of that occurrence has been developed and significant development has occurred in the areas surrounding the Study Area on all sides. While it is possible that the Study Area once supported CTS upland habitat, the site has been completely isolated for nearly 10-years from adjacent habitats, and is disced twice per year for weed and fire control. A vestigial population of California ground squirrels occurs with burrows concentrated along the perimeter of the site, however the extent, frequency and duration of disturbance of the site coupled with its completely isolated nature preclude any potential for CTS to occur within the Study Area.

Golden eagle (*Aquila chrysaetos*), Federal Eagle Protection Act, CDFW Fully Protected Species, USFWS Bird of Conservation Concern. Golden eagles are large raptors that occur in open and semi-open areas from sea level to high elevation. Typical occupied habitats include grasslands, shrublands, deserts, woodlands, and coniferous forests. Breeding activity occurs broadly from January through August, and in California is usually initiated from January to March. The large stick nests of this species are reused across years and may be maintained throughout the year. Nests are most often placed on the ledges of steep cliffs, but nesting also occurs in trees and on tall manmade structures (e.g., utility towers) (Kochert et al. 2002). Golden eagles forage over wide areas, feeding primarily on medium-sized mammals (e.g., ground squirrels and rabbits), large birds, and carrion.

A golden eagle nest was recorded in the CNDDB in 1991-1992 approximately 4.4 miles to the northwest of the Study Area (CDFW 2016), however the nest was unsuccessful for unknown reasons. While golden eagles may occasionally fly over or opportunistically forage within the Study Area, no appropriate nesting habitat is available on or in the immediate vicinity of the site. Furthermore, the Study Area is bounded by highly developed areas and sees regular disturbance via discing for weed and fire control, making it unlikely to be visited by golden eagles. While it is possible that eagles may be occasionally observed in the immediate vicinity, much higher quality foraging habitat is present to the north in the vicinity and they have no nesting habitat at the site. Therefore, they are unlikely to occur within the Study Area.

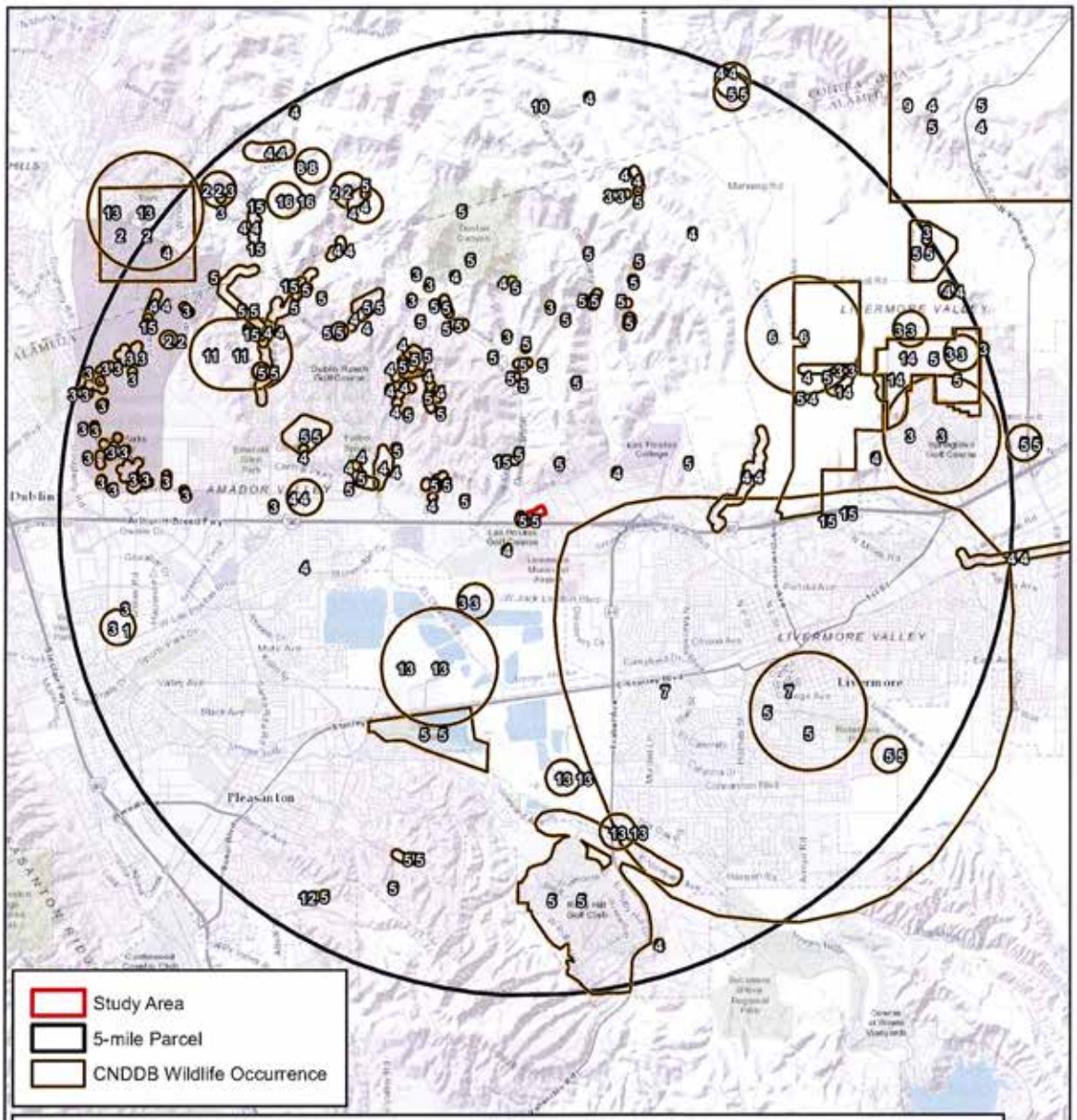
White-tailed kite (*Elanus leucurus*). CDFW Fully Protected Species. White-tailed kite is resident in open to semi-open habitats throughout the lower elevations of California, including grasslands, savannahs, woodlands, agricultural areas and wetlands. Vegetative structure and prey availability seem to be more important habitat elements than associations with specific plants or vegetative communities (Dunk 1995). Nests are constructed mostly of twigs and placed in trees, often at habitat edges. Nest trees are highly variable in size, structure, and immediate surroundings, ranging from shrubs to trees greater than 150 feet tall (Dunk 1995). This species preys upon a variety of small mammals, as well as other vertebrates and invertebrates.

White-tailed kite fledglings were observed and recorded in the CNDDB in 2009 approximately 4.75 miles northwest of the Study Area. The wide-range and relative commonality of this species along urban-rural interfaces suggest white-tailed kite could opportunistically forage within the Study Area. However, the Study Area is isolated from nearby foraging and nesting habitat via roads with heavy traffic. In addition, the twice-annual discing of the site means disturbance of the area is likely too high to encourage nearby nesting. White-tailed kite is unlikely to nest or occur within the Study Area.

Nearly all habitats have the potential to seasonally support nesting birds that are protected by the MBTA and CFGC. Trees along the perimeter of the Study Area and the unmowed fringe of the Study Area supporting annual grasses and forbs are examples of these habitats. Direct removal of a nest or disturbance in the vicinity of an active nest that could result in nest abandonment would be considered take under the MBTA and CFGC.

4.5 City of Livermore Protected Trees

Given that all trees within the Study Area occur on private property and are not considered public areas, no trees within the Study Area are protected under the tree ordinance for the City of Livermore. However, if any trees adjacent to the Study Area that line Airway Blvd or North Canyon Parkway will be removed or pruned as part of site improvements within the Study Area, permits will likely be necessary through the City of Livermore.


Study Area
5-mile Parcel
CNDDB Wildlife Occurrence
1, Alameda whipsnake*
2, American badger
3, burrowing owl
4, California red-legged frog
5, California tiger salamander
6, ferruginous hawk
7, foothill yellow-legged frog
8, golden eagle
9, longhorn fairy shrimp*
10, prairie falcon*
11, San Joaquin kit fox
12, Townsend's big-eared bat
13, tricolored blackbird
14, vernal pool fairy shrimp
15, western pond turtle
16, white-tailed kite
*Species occurrence locations are sensitive and not released
Figure 3. Special Status Wildlife Species within 5-mile Radius of the Study Area
Airway Blvd.
Alameda County, California
0 0.5 1 2 Miles
wra
ENVIRONMENTAL CONSULTANTS
Map Prepared Date: 6/21/2016
Map Prepared By: SGillespie
Base Source: ESRI World Topo
Data Source(s): WRA
Path: L:\Acad 2000 Files\26000\26166\GIS\ArcMap\FigX_CNDDBWildlife.mxd

5.0 SUMMARY AND RECOMMENDATIONS

No sensitive biological communities were identified within the Study Area. No special-status plant species and no special-status wildlife species have either moderate or high potential to occur within the Study Area. There is a potential for birds protected by the MBTA and CFGC to seasonally nest within the Study Area. Based on these findings, the following sections summarize those findings and present recommendations for future studies and/or measures to avoid or reduce impacts to these species and sensitive habitats.

5.1 Biological Communities

The Study Area is comprised of ruderal grassland, landscaped, and developed areas, which are not sensitive biological communities. No additional studies are warranted for biological communities.

5.2 Special-Status Plant Species

Of the 25 special-status plant species known to occur in the vicinity of the Study Area, none were determined to have high or moderate potential to occur in the Study Area. Most of the special-status species occur in coastal areas or intact and native grasslands, forests, and woodlands that are not present within the Study Area. The grassland in the Study Area is highly disturbed and overwhelmingly dominated by non-native species, making it unlikely that special-status grassland species would occur within it. Protocol-level rare plant surveys are not recommended.

5.3 Special-Status Wildlife Species

Of the 17 special-status wildlife species documented to occur within a 5-mile radius of the Study Area, no special-status wildlife species have either moderate or high potential to occur within the Study Area. There is a potential for birds protected by the MBTA and CFGC to seasonally nest within the Study Area. Future development has the potential to result in direct or indirect impacts including nest abandonment, which would be considered take under the MBTA and CFGC. WRA recommends the following measures be implemented to avoid take of special-status birds and nesting birds protected by the MBTA.

Nesting Season: February 1 through August 31

If ground disturbance or removal of vegetation occurs between February 1 and August 31, pre-construction surveys should be performed by a qualified biologist no more than 14 days prior to commencement of such activities to determine the presence and location of nesting bird species. If active nests are present, establishment of temporary protective nesting season buffers will avoid direct mortality of these birds, nests, or young. The appropriate buffer distance is dependent on the species, surrounding vegetation, and topography and should be determined by a qualified biologist as appropriate to prevent nest abandonment and direct mortality during construction.

Non-nesting Season: September 1 through January 31

Ground disturbance and removal of vegetation within the Study Area does not require pre-construction surveys if performed between September 1 and January 31.

5.4 City of Livermore Protected Trees

If Project work will affect trees lining Airway Blvd. or North Canyons Parkway, consult with the City Public Works Division to determine if these trees are under City jurisdiction. In the event that the trees are protected tree under guidelines outlined in Livermore Municipal Code 12.20.160, are under City jurisdiction, and are to be removed, a permit with the City will be required. Likewise, activities with the potential to harm or kill said trees (e.g., laying down of equipment) should be avoided in the trees' rooting zone (approximately the same area occupied below ground as that of the tree's crown). An ISA- or NAA-certified arborist should be consulted if the trees are to be scheduled for removal and/or activities with the potential to impact their health are planned for the immediate vicinity of the trees.

As per Livermore Municipal Code 12.20, potential mitigation actions for removing protected trees include replacing the trees with those of comparable number and size and planting them on or off the site at the expense of the permit applicant.

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APPENDIX A

LIST OF OBSERVED PLANT AND WILDLIFE SPECIES

Appendix A. Plant and wildlife species observed in the Study Area on June 13, 2016.

Scientific Name	Common Name
Plants	
Carduus pycnocephalus	Italian thistle
Centaurea solstitialis	yellow star thistle
Cynara cardunculus	artichoke thistle
Dittrichia graveolens	stinkwort
Helminthotheca echioides	bristly ox-tongue
Lactuca serriola	prickly lettuce
Brassica nigra	black mustard
Hirschfeldia incana	field mustard
Convolvulus arvensis	field bindweed
Medicago polymorpha	bur clover
Melilotus indicus	yellow sweetclover
Vicia sativa	spring vetch
Erodium brachycarpum	foothill filaree
Eucalyptus sp.	eucalyptus
Avena barbata	slender oat
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess
Festuca perennis	Italian rye grass
Hordeum marinum	Mediterranean barley
Hordeum murinum	mouse barley
Phalaris paradoxa	hood canarygrass
Polygonum aviculare	dooryard knotweed
Rumex crispus	curly dock

Scientific Name	Common Name
Wildlife	
Corvus brachyrhynchos	American crow
Euphagus cyanocephalus	Brewer's blackbird
Petrochelidon pyrrhonota	cliff swallow
Columba livia	rock pigeon
Sturnus vulgaris	European starling
Cathartes aura	turkey vulture (fly-over)
Aeronautes saxatalis	white-throated swift (fly-over)
Spinus tristis	American goldfinch (fly-over)

APPENDIX B

SITE PHOTOGRAPHS

Top: View of disced vegetation facing northeast to North Canyon Parkway.

Bottom: View of disced vegetation along I-580 WB on-ramp.

Photographs taken: June 13, 2016

wra
ENVIRONMENTAL CONSULTANTS

Top: View of site facing northeast from 580 WB slip road.

Bottom: View of site facing northwest from Airway Blvd.

Photographs taken: June 13, 2016

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