TRACY HILLS SPECIFIC PLAN
RECIRCULATED
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
VOLUME III
OCTOBER 2015

APPENDIX C-2

GENERAL BIOLOGICAL RESOURCES ASSESSMENT AND ATTACHED FIELD RECONNAISSANCE SURVEYS, FOCUSED PROTOCOL SURVEYS, AND HABITAT ASSESSMENTS. PREPARED BY NOREAS, DATED SEPTEMBER 2015

TRACY HILLS PROJECT

September 2015

General Biological Resources Assessment

Owner
The Tracy Hills Project Owner, LLC
888 San Clemente
Suite 100
Newport Beach, CA 92660

Prepared By


16361 Scientific Way, Irvine, CA 92618
(949) 467-9100

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

The Tracy Hills Project Owner, LLC (Tracy Hills) is proposing to develop the Tracy Hills Project in Tracy, California (hereafter "Project", Figure 1). The Project includes a revised and updated Specific Plan that authorizes approximately 2,732 acres for development of residential units (i.e., a mix of low, medium and high density neighborhoods) and non-residential uses (e.g., office, commercial, light industrial, parks, schools and open spaces) within existing low quality livestock grazing and agricultural lands. This report summarizes the findings of baseline biological resources[1] surveys that have been prepared for the Project from 1989 though 2015. The intended use of this document is to provide historic and current data (based on extensive 2015 field work) that comprehensively discloses and evaluates land cover types and determines the potential for occurrence of common and special-status species[2], and their habitats[3] within study area limits.

For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint and a buffer. The study area has been further subdivided into three distinct locales: A, B, and C (Figure 2). Area A includes the California Aqueduct and lands north to the Delta Mendota Canal. Area B is mostly contained in the lands south of California Aqueduct and Union Pacific Rail Road; and north of Interstate 580 (I 580). Area C is bounded to the northwest by the Union Pacific Rail Road, to the southeast by Corral Hollow Road, and it abuts an approximately 3,500-acre open space conservation easement that was previously recorded by the Project; following the approval of a 1998 specific plan.

Although the study area is large in total size – it has very low species richness and diversity, and lacks high quality breeding and refuge habitats for special status species. This is likely a result of the significant ground disturbance (i.e., grading, disking, tilling and deep ripping) associated with crop cultivation and numerous other anthropogenic undertakings that have occurred within it over the past quarter of a century (e.g., rail road, freeways, paved roads, aqueducts, urban development and other infrastructure related appurtenances). The aforementioned disturbances within the study area have substantially decreased its value as a migration corridor, overland dispersal and as habitat for wildlife as well because the lands are severely movement constrained (i.e., topography, roads, canals, freeways, lack of appropriate cover or exposure to desiccation). The more factors that constrain common and special status species habitats, dispersal and movement corridors, the less likely individuals are to occur, or continue to occur within a specific locale. Generally, the study area has porous soils as well which quickly absorb rainfall, and any flows within it are predominately ephemeral - fast and short lived; ultimately reducing water availability for plants and wildlife within Project boundaries. Accordingly, the study area is lacking in numbers and variety of species – likely attributable to its inability to produce a high enough density of biomass to support a diversity of native flora and fauna.

More specifically, given the low quality habitat present (i.e., depauperate landscape, competition and territorialism among plants and wildlife present for limited resources), the 3,500-acre open space conservation easement that abuts the study area is perceived to be biologically superior to those lands that the Project proposes to develop (i.e., the open space conservation easement includes seasonal wetlands, functional migration corridors and suitable habitat for special status species). These

[1] "Biological resources" refers to the plants, wildlife, and habitats that occur, or have the potential to occur, within the study area.

[2] For the purposes of this analysis, "special-status species" refers to any species that has been afforded special protection by federal, state, or local resource agencies (e.g., U.S. Fish and Wildlife Service, California Department of Fish and Wildlife) or resource conservation organizations (e.g., California Native Plant Society). The term "special-status species" excludes those avian species solely identified under Section 10 of the Migratory Bird Treaty Act (MBTA) for federal protection. Nonetheless, MBTA Section 10 protected species are afforded avoidance and minimization measures per state and federal requirements.

[3] A "habitat" is defined as the place or type of locale where a plant or animal naturally or normally lives and grows.

conservation lands are not movement constrained with deference to wildlife and are insulated from anthropogenic disturbance as well. The conservation easement is topographically positioned in lands between the Diablo Range to the southwest and the San Joaquin Valley to the east. The open space conservation easement consists of rolling hills, drainage channels and flat-topped terraces. It also includes habitat for several special status species (i.e., rare plants, Swainson's hawks [*Buteo swainsoni*], burrowing owl [*Athene cunicularia*], San Joaquin kit fox [*Vulpes macrotis mutica*], red-legged frog [*Rana draytonii*], and California tiger salamander [*Ambystoma californiense*] among others) and the California Department of Fish and Wildlife's Natural Diversity Database has identified multiple records of special status species occurring within these lands (ICF 2011).

As stated, in-depth biological field work and analysis within Project limits have been conducted over approximately the past 25 years. Furthermore, another round of targeted surveys for special status plants, burrowing owl, California red-legged frog, California tiger salamander, San Joaquin kit fox, and Swainson's hawk were completed in 2015. Part of the goals of this Report and the 2015 focused survey efforts is to (i) independently review the previous studies prepared for the Project and (ii) to provide up-to-date and current data to detail the baseline biological conditions within the study area over the past two decades.

In NOREAS, Inc.'s (NOREAS) professional opinion, the Project has been subjected to an incredibly extensive amount of biological analyses – more than other development projects of which we are aware. The wide-ranging amount of previously conducted and recent field work and analysis of biological resources contained herein considers potential significant impacts to common and special status plant and animal species, and their habitats pursuant to pursuant to the requirements of the California Environmental Quality Act ("CEQA") (Public Resources Code sections 21000 et seq.) As such, the information contained in this report includes summarized technical data, maps, and similar relevant information sufficient to permit assessment of the significant environmental consequences of the proposed Project by reviewing agencies and members of the public. Placement of highly technical and specialized analysis and data in the body of this document has been avoided through the use of technical appendices and professional references (e.g., Appendices E, F, G, H, I and J).

To these ends, NOREAS compiled, reviewed, and analyzed existing and 2015 biological resource data relating to the study area to ascertain the presence or absence of special status flora and fauna. The literature reviews; comprehensive field investigations by credentialed and experienced professionals; consecutive years of concentrated canine scat detection census activities; and 2015 pedestrian survey results indicate that the species within the study area have not changed significantly from those documented in past studies over the last 25 years. No State or Federally-listed species have ever been detected within lands proposed for Project development.

The habitat within the study area predominately includes existing livestock grazing, agricultural and other activities which have greatly reduced the lands ability to support special status species. The data collected and analyzed herein also suggests that there is extremely low potential for special status species to recruit into the Project Site. Given that targeted surveys for State or Federally-listed species have been negative within the Project Site, the Project would not be expected to result in the loss of individuals, or adversely affect local or regional populations of them. Furthermore, the Project would not be expected to degrade the long-term preservation value or ecological processes within its vicinity, and impacts have been minimized to safeguard the needed habitat, wildlife linkages, and functional connectivity are maintained within the region with regard to special status species. Accordingly, the habitat loss associated with the Project would be considered an insignificant effect to special status

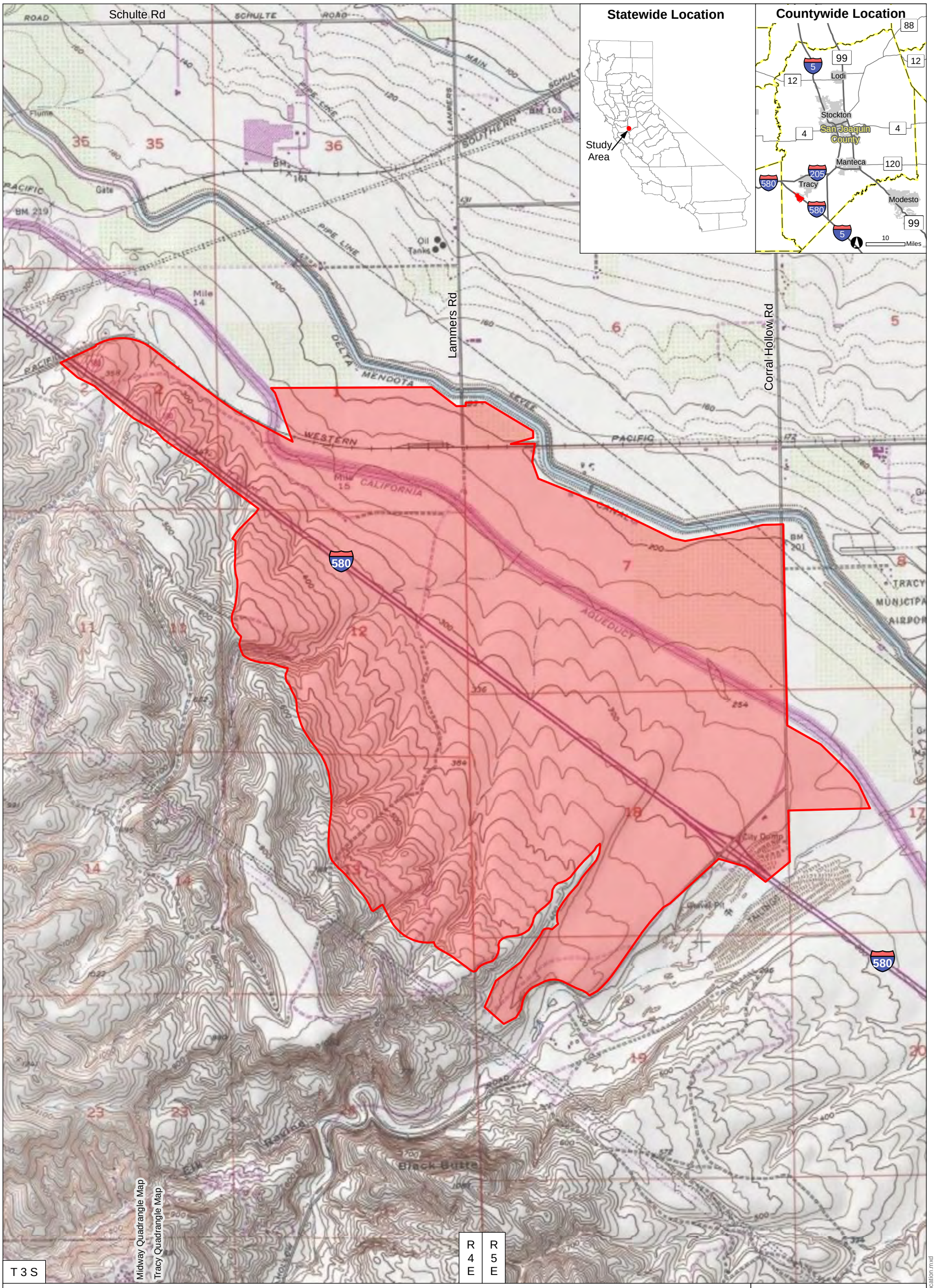
species as a result of the amount of similar, and higher value vegetation communities and land cover types within the region that are already held in conservation. Furthermore, the Project does not alter the ultimate land use in any way that would adversely affect the cohesiveness and quality of the surrounding conservation lands ability to sustain their stated ecological purposes. Thus, Project implementation would be expected to result in less-than-significant impacts to biological resources with the incorporation of the measures detailed within Section 6.0 of this report.

2.0 INTRODUCTION & PROJECT LOCATION

NOREAS was retained to review historic biological data and conduct an updated assessment of the general biological resources occurring within the entire potential development footprint of the Tracy Hills Project. The primary objective of this assessment was to determine the presence or to confirm the presumed absence of special status species and their habitats within Project boundaries. The secondary objective was to utilize the information on special-status species or their habitats occurrences and distributions to determine the potential effects - if any, of the proposed Project on these resources. The third and final objective was to offer measures - if needed, to offset adverse effects to common and special status flora and fauna. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint and a buffer (Figure 2). Accordingly, the study area includes all lands likely to be affected directly or indirectly by the Project, and is not merely those locales directly associated with proposed ground disturbances.

The study area has been divided into three distinct locales: A, B, and C (Figure 2). Area A is located on the northern portion of the Project Site, north of I-580 between the California Aqueduct and the Delta Mendota Canal, west of Corral Hollow Road. There is a small portion of Area A found east of Corral Hollow Road, southwest of the California Aqueduct. Area B is located in the central portion of the Project Site, north of I-580, south of the California Aqueduct, west of Corral Hollow Road and south of the Union Pacific Railroad. Area B will be developed as Phase 1a and 1b of the Project. Area C is located on the southern portion of the Project Site, south of I-580 and northwest of Corral Hollow Road. Area C extends into the undeveloped hillside to the west and abuts an approximately 3,500-acre open space area under a conservation easement.

The Project occurs the City of Tracy in San Jouquin County, CA, in Sections 6, 7, 8, 17, 18 and 19 of Township 3 South and Range 5 East (Mt. Diablo Base and Meridian [MDB&M) of the Midway U.S. Geological Survey (USGS 1986) 7.5-minute quadrangle map; and Sections 1, 2, 12 and 13 of Township 3 South, and Range 4 East (MDB&M) of the Tracy USGS 7.5 minute quadrangle map (USGS 1980).



The Study Area is located on the Midway and Tracy USGS 7.5-minute quadrangle maps; Mt. Diablo Base and Meridian,
Township 3 South, Range 4 East, Sections 1, 2, 12 and 13; and
Township 3 South, Range 5 East, Sections 6, 7, 8, 17, 18 and 19.

Center coordinates for the Study Area are: 37.680702, -121.476315.

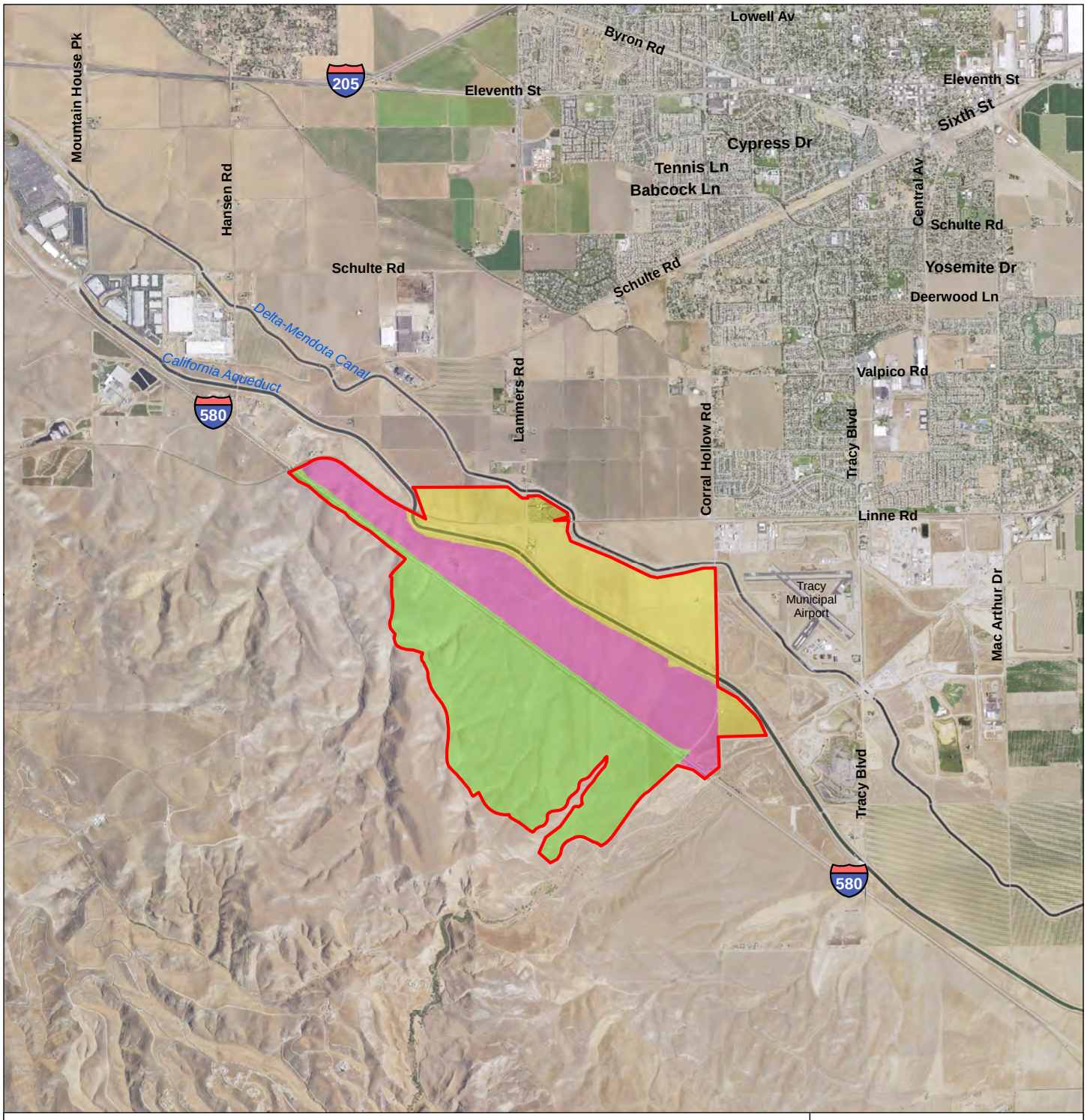
Data Sources:
- Bing accessed May 2015
- ESRI StreetMap North America 2010
- ESRI US Topo Maps accessed May 2015

Map Prepared: 5-19-15

Prepared by:
NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\BTR Fig1. Regional Location.mxd

Figure 1. Regional Location



Study Area (2,729 acres)

Areas

Area A (722 acres)

Area B (745 acres)

Area C (1,262 acres)

0 0.5 1 Mile

1 inch = 1 mile

Data Sources:
- San Joaquin County GIS accessed Aug 2015, data date: Jul 2014
- USDA-NRCS-AFPO NAIP accessed Aug 2015, image date: 2014

Map Prepared: 8-21-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\BTR\Fig2. Site Vicinity.mxd

Figure 2. Site Vicinity

3.0 METHODS

NOREAS utilized an iterative process accepted in the industry to determine the potential biological resources occurring within the study area and the region. First, NOREAS included a thorough review of existing data from both the previously-prepared documents as well as data base research. Second, NOREAS conducted extensive pedestrian based field surveys which are described in more detail below and within this reports appendices. Importantly, prior to conducting field surveys, technical specialists were consulted and available information from resource management plans and relevant documents were reviewed to determine the locations and types of biological resources that are known, or have the potential to exist within and adjacent to the Project. Resources were evaluated within several miles of the study area, including the 3,500 acre open space conservation area to west of Area C. Lastly, protocol level surveys were conducted in 2015 to confirm the absence or presence of special status species. Protocol level surveys conducted in 2015 are listed below.

The primary materials reviewed included technical details associated with the presence or absence of common and special status species (flora and fauna) within the study area conducted from 1989 through 2015, and are summarized in Table 1 below. As presented within Table 1, the amount of biological resources analysis that has been conducted on the Project over the past 25 years has been extensive.

Table 1: Literature Review

Document or Plan	Summary of Findings
Biological Assessment Properties East of California Aqueduct Carnegie Business Park San Joaquin County, CA (LSA 1989)	This assessment focuses almost exclusively on Area B and the documentation evaluated the presence and absence of special status plant and animal species, wetlands and watercourses. • San Joaquin kit fox is a focal species. • Existing baseline conditions with regard to vegetation communities, land cover types, flora and fauna are detailed based on pedestrian surveys. Conclusion of the Report: The study area is predominately characterized as being composed of grain crops, fallow alfalfa crops, other fallow fields, orchards, and grazing land. Engineered water conveyance channels pass through portions of the study area. Relatively few species of wildlife and plants were observed during field surveys. • No special status plants or wildlife were detected. • No San Joaquin kit fox or active dens/burrow complexes were detected during focused surveys. • Agricultural use (i.e., cultivation and plowing) in the study area are cited as being averse to sustaining a population of rare plants, burrowing and ground-dwelling animals.
Biological Study, Tracy Hills Community, San Joaquin County California (LSA 1991)	This study focuses on Areas A, B and C. The documentation evaluated the presence and absence of special status plant and animal species, wetlands and watercourses. • Existing baseline conditions with regard to vegetation communities, land cover types, flora and fauna are detailed based on pedestrian surveys. Conclusion of the Report: The study area is predominately characterized as being composed of grassland dominated by non-native grasses and cultivated lands. Relatively few species of wildlife and plants were observed during field surveys. The somewhat depauperate number of animals observed may have been influenced by the extensive amount of grazing. • No special status plants or wildlife were detected.
Evaluation of a Proposed Corridor for the San Joaquin Kit Fox in the Tracy Hills Development (Jones & Stokes Associates, Inc. 1993)	This evaluation includes a roughly 4 mile long corridor through the western portion of Area B and the documentation assessed presence and absence of linkage corridors for wildlife movement. • San Joaquin kit fox is a focal species. • Existing baseline conditions with regard to vegetation communities, land cover types, flora and fauna are detailed based on pedestrian surveys. Conclusion of the Report: This report includes a 1993 description of a proposed 3.75-mile long corridor through the western portion of the

Document or Plan	Summary of Findings
	Project and also evaluates other wildlife movement areas in the region. • The California aqueduct and stream and riparian resources allow wildlife movement to persist throughout the region without any significant barriers or blockades. • Corral Hollow Creek, its associated flood plain and alluvial fan habitat areas have higher species diversity and value for local and migratory wildlife than adjacent locales. • Evaluation concludes that avoiding adverse effects to the California Aqueduct and Corral Hollow Creek would be adequate to maintain local existing wildlife movement and dispersal corridors linkages.
Multi-Species Habitat Management Plan (LSA 1996)	This plan includes Areas A, B, C and the 3,500 acre conservation easement. The documentation assessed presence and absence of special status plant and animal species, and wildlife movement corridors. Conclusion of the Report: Specifies a biological mitigation program for land in Tracy Hills, CA which is intended to streamline certain activities and guarantee future development in exchange for the long term conservation of special status species habitat within the region. The 3,500-acre open space conservation easement area is superior biologically to those lands that the Project proposes to develop (i.e., includes seasonal wetlands, migration corridors and habitat for special status species).
Delineation of Waters of the United States – Grupe Property, Tracy, Hills, San Joaquin County California (LSA 1998)	This jurisdictional determination includes Areas A, B and C and the documentation assessed presence and absence of wetlands and watercourses. • The study area includes > 1-acre of Waters of the US. • No wetlands were identified (e.g., swales, seasonal wetlands and vegetated drainage channels).
Habitat Conservation Plan for Lakeside Tracy Development (LSA 1999b)	This plan includes Areas A, B and C and the documentation assesses presence and absence of special status plant and animal species, wildlife movement corridors, and evaluates wetlands and watercourses. • California tiger salamander, California red-legged frog, and San Joaquin kit fox are focal species. • Existing baseline conditions with regard to vegetation communities, land cover types, flora and fauna are detailed based on field studies conducted by LSA in 1988, 1989, 1990 and 1991. Conclusion of the Report: Specifies a biological mitigation program for the Lakeside Tracy Development Project which allows for future development in exchange for the long term conservation of special status species habitat within the region. • California tiger salamander and California red-legged frog surveys were performed in 1991. • San Joaquin kit fox surveys were conducted in 1988, 1989, 1990, and 1991.

Document or Plan	Summary of Findings
	• Importantly, no California tiger salamander, California red-legged frog or San Joaquin kit fox were detected during pedestrian based field surveys. Field census efforts targeted Corral Hollow Creek within the study area because those lands were determined to have higher species diversity and habitat value for local and migratory wildlife than adjacent locales.
Habitat Management Plan - Tracy Hills Project (Foothill Associates 2004)	This plan includes Areas A, B and C and the documentation assessed presence and absence of special status plant and animal species, wildlife movement corridors, and evaluates wetlands and watercourses. • California tiger salamander, Red legged frog and San Joaquin kit fox are focal species. • Specifies a habitat based biological management and monitoring program for San Joaquin kit fox, California red-legged frog, and California tiger salamander to offset potential affects from the proposed Tracy Hills Project.
Environmental Assessment for the Tracy Hills HCP (Tracy Hills LLC 2004)	This analysis includes Areas A, B and C and the documentation assessed presence and absence of special status plant and animal species, wildlife movement corridors, and evaluates wetlands and watercourses. • Special status plants (i.e., Large-flowered fiddleneck and Big Tarplant) and San Joaquin kit fox are focal species. • Existing baseline conditions with regard to vegetation communities, land cover types, flora and fauna are detailed based on pedestrian surveys. This environmental assessment was prepared in compliance with the National Environmental Policy Act and concludes that effects on special status plant and animal species from the proposed development are not significant. • No San Joaquin kit fox or special status plants were detected during field surveys.
Tracy Hills San Joaquin Kit Fox Analysis (Berryman Ecological LLC 2006)	This analysis includes Areas A, B and C and the documentation assessed presence and absence of San Joaquin kit fox within the study area. Conclusions of Report: Under the appropriate suite of environmental factors, the study area could support individual members of the northern satellite population of San Joaquin kit fox. The northern population of San Joaquin kit foxes has been identified as a low priority for habitat preservation, based upon the low kit fox densities and high risk of local extirpations in its northern range relative to land cost. Importantly, the report details no evidence to support the existence of natal kit fox dens or kit fox breeding in the study area in over the last two decades.
Tracy Triangle San Joaquin Kit Fox Surveys, Project #2689-01 (H.T. Harvey & Associates 2006)	This analysis includes Areas A, B and C and the documentation assessed presence and absence of special status wildlife. • San Joaquin kit fox is a focal species. • Existing baseline conditions with regard to vegetation

Document or Plan	Summary of Findings
	communities, land cover types, flora and fauna are detailed based on pedestrian surveys. Conclusion of Report: No active or inactive San Joaquin kit fox dens, or individuals were detected within the study area.
Biological Resources on the Tracy 580 Business Park Property (Berryman Ecological LLC 2010a)	This analysis includes Area B only and the documentation assessed presence and absence of special status plant and animal species, and wildlife movement corridors. • San Joaquin kit fox, Western Burrowing owl, California red-legged frog, California tiger salamander and Western spade foot toad are focal species. • Existing baseline conditions with regard to vegetation communities, land cover types, flora and fauna are detailed based on pedestrian surveys. Conclusion of the Report: No San Joaquin kit fox, Western Burrowing owl, California red-legged frog, California tiger salamander and Western spade foot toad were detected within the study area during field surveys. • The document determined that the study area is not likely to support the aforementioned species, and Interstate 580 is a significant barrier that impedes and curtains wildlife movement through the study area.
Burrowing Owl Surveys for Tracy 580 Business Park (Berryman Ecological LLC 2010b)	This analysis includes Area B only and the documentation assessed presence and absence of special status wildlife. • Burrowing Owl is the focal species. • Existing baseline conditions with regard to vegetation communities, land cover types, flora and fauna are detailed based on pedestrian surveys. Conclusion of the Report: No active burrows or individual Burrowing Owls were detected within the study area.
Preserve Management Plan for the Tracy 580 Business Park Preserve (ICF International 2011)	This plan addresses the 3,500-acre open space conservation easement and the documentation assesses presence and absence of special status plant and animal species, wetlands, watercourses, and wildlife movement corridors. The 3,500-acre open space conservation easement includes seasonal wetlands, a functional migration corridors and occupied habitat for special status species. The conservation easement includes functional habitats for burrowing owl, San Joaquin kit fox, California red-legged frog, and California tiger salamander, among others (ICF 2011). • Specifies goals and objectives of habitat management, and describes ongoing land management activities and pre-activity survey specifications - including but not limited to allowed, and prohibited land uses within the study area. Ongoing livestock grazing was determined to be compatible with the production and maintenance of grassland habitats for San Joaquin kit fox, Burrowing Owl, and others grassland-dependent covered species.

Document or Plan	Summary of Findings
	• Riparian habitat along Corral Hollow Creek was characterized as potentially suitable to support California red-legged frog, California tiger salamander, and Western spadefoot toad.
Tracy Hills Project- U.S. Army Corps of Engineers Jurisdiction Assessment (Olberding Environmental, Inc. 2013)	This jurisdictional determination includes Areas A, B, and C and the documentation assessed presence and absence of wetlands and watercourses. • Existing baseline conditions with regard to vegetation communities, land cover types, are detailed based on pedestrian surveys. The study area includes approx. 5-acres of state jurisdiction water, and no waters of the U.S. • Approximately 2.3-acres of wetlands were identified (e.g., swales, seasonal wetlands and vegetated drainage channels). • Roughly 2.7-acres of watercourse (i.e., channels and ephemeral drainage features.
Tracy Hills Specific Plan: Habitat Assessment & San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) Consistency Analysis (RBF Consulting 2014);	Documentation asserts that Areas A and B shall adhere to the terms of the SJMSCP and be subject to secure take authorizations for State-and/or Federally-listed species in consultation with the appropriate wildlife agencies. • Compliance obligates consistency with all incidental take measures as required in the SJMSCP - including but not limited to preconstruction surveys to determine presence for special status flora and fauna. Area C is not covered under the SJMSCP. As a consequence, and in the unlikely event that impacts to any State and Federally-listed species, or any species proposed for listing were to occur within Area C, the Project proponent would be required to apply independently for Federal Endangered Species Act (FESA) / California Endangered Species Act (CESA) coverage. • Compliance with FESA and CESA may include a Major Amendment to the SJMSCP, a project specific HCP in accordance with Section 10 of the FESA, Biological Opinion under Section 7 of the FESA, and/or compliance with Section 2081 of the CESA.
Scat Detection Dog Surveys for the Endangered San Joaquin Kit Fox (*Vulpes macrotis mutica*) at the Tracy Hills Project Site, San Joaquin County, California (Working Dogs for Conservation Foundation 2010, 2012, 2013 and 2014)	This study includes Areas A, B and C and the documentation assesses presence and absence of special status wildlife. • San Joaquin Kit Fox is the focal species. Conclusion of the Report: The results of the scat detection dog surveys do not support the presence of SJKF on the site. No active burrows, dens, scat or individual SJKF were detected within the study area during four years of concentrated field census activities from 2010, 2012, 2013 & 2014.
U.S Fish and Wildlife Service (USFWS) Critical Habitat Mapper and File Data (USFWS 2015a)	Assessed presence and absence of critical habitat for special status plant and animal species within the study area. • Those specific lands proposed for development are not

Document or Plan	Summary of Findings
	designated as critical habitat. Conclusion of the Data: A small portion of Area C is collocated with critical habitat for CRLF. The acreage of CRLF critical habitat within the study area is insignificant, as it represents <0.001 % of the USFWS designated critical habitat for this species. The study area includes no other USFWS designated critical habitat.
USFWS Sacramento Office Species List for San Joaquin County (USFWS 2015b)	Correspondence from USFWS detail special status species with a potential to occur within the study area.
California Natural Diversity Database (CDFW 2015)	Assessed presence and absence of special status plant and animal species within the study area based on historic data maintained by the California Department of Fish and Wildlife. • Conclusion of the Report: Lands proposed for development within Areas A, B and C do not support recent records of occurrences of State or Federal-listed species.
San Joaquin Kit Fox (*Vulpes macrotis mutica*) 5-Year Review, Summary and Evaluation (USFWS 2010)	San Joaquin Kit Fox species overview and an assessment of information compared to that known at the time of listing.
Aerial Photographs (Microsoft Corporation 2015)	Recent aerial photographs were assessed to compare the aerial signatures to the vegetation polygons and land cover types mapped by means of field surveys.
Stanley, R. 2015. California Department of Fish and Wildlife, Napa, California. Personal communications with NOREAS Inc.	2014 site visit with CDFW to assess the potential for occurrence of special status species within the study area. CDFW representatives concluded that the study area is large in total size, but has low species richness and diversity; and those lands proposed for development do not support high quality habitat for any State-listed species. CDFW also asserted that the adjacent 3,500-acre open space conservation easement area is biologically superior to those lands that the Project is proposing to develop as it includes seasonal wetlands, functional migration corridors and occupied habitats for special status species.

To support this analysis, additional, professional pedestrian-based protocol level field surveys were also performed in 2014 and 2015 to assess general and dominant vegetation community types, community sizes, habitat types, and species present within communities[4]. These field based surveys were conducted pursuant to professional industry standards and published guidelines. Community type descriptions were based on observed dominant vegetation composition, and derived from the criteria and definitions of widely accepted vegetation classification systems (Holland 1986; Sawyer et al. 2009). Plants were identified to the lowest taxonomic level sufficient to determine whether the species observed were non-native, native, or special-status. Plants of uncertain identity were subsequently

[4] Where 100% pedestrian coverage of the study area was not possible due to limited access (e.g., private property or physical barriers [vegetative cover, health and safety concerns, etc.]), field observations were made from the nearest appropriate vantage points via public right-of-ways with the aid of binoculars and spotting scopes.

identified from taxonomic keys (Baldwin et al. 2012). Scientific and common names of plants were recorded according to Baldwin et al. (2012).

The presence of a wildlife species was based on direct observation and/or wildlife sign (e.g., tracks, burrows, nests, scat, or vocalization). Field data compiled for wildlife species included scientific name, common name, and evidence of sign when no direct observations were made. Wildlife of uncertain identity was documented and subsequently identified from specialized field guides and related literature (Burt and Grossenheider 1980; Halfpenny 2000; Sibley 2000 and Stebbins 2003).

All plant communities were assessed to determine presence or absence of any special-status species that could be identified within the context of the survey. For species that could not be identified during the survey, the plant communities were evaluated for their potential to support targeted special status species of fauna and flora. This evaluation was based on comparisons of observed habitat characteristics with reported occupied habitats and species distributions. The following definitions were utilized:

Absent [A] – Species distribution is restricted by substantive habitat requirements which do not occur or are negligible within the study area; no further survey or study is necessary to determine likely presence or absence of this species.

Habitat Present [HP] – Species distribution is restricted by substantive habitat requirements which occur within the study area; further study may be necessary to determine likely presence or absence of species.

Present [P] – Species or species sign were observed within the study area or historically have been documented within study area limits.

Critical Habitat [CH] – The study area is located within a USFWS-designated critical habitat unit.

FOCUSED SURVEYS

To clarify baseline conditions within the study area the following additional targeted survey activities were performed in 2015:

Special Status Plants

In 2015 botanists performed special status plant surveys within the study area. Survey methods were derived from the published regional procedures established by the United States Fish and Wildlife Service (USFWS), Californian Department of Fish and Wildlife (CDFW), and California Native Plant Society (CNPS). The surveys coincide with the known flowering period of local plant species. Detailed methods, results, and evaluation assumptions are presented within Appendix E.

Burrowing owl

In 2015 biologists performed focused burrowing owl surveys within the study area. Survey methods were derived from generally accepted professional standards including the 1993 California Burrowing Owl Consortium Burrowing Owl Survey Protocol and Mitigation Guidelines and 2012 CDFW Staff Report on Burrowing Owl Mitigation. Detailed methods, results, and evaluation assumptions are presented within Appendix F.

California Red-legged Frog

In 2015 biologists performed an assessment for the California red-legged frog. Survey methods were derived from the 2005 USFWS California red-legged frog Survey Protocol (USFWS 2005). The assessment for CRLF was performed within 1 mile of the study area. The presence of bullfrogs (*Lithobates catesbeianus*) and other aquatic predators such a centrarchid fishes (i.e., bass, perch, and sunfish) was also documented. Detailed methods, results, and evaluation assumptions are presented within Appendix G.

California Tiger Salamander

In 2015 biologists performed an assessment for the California Tiger Salamander. Survey methods were derived from generally accepted professional standards including the 2003 Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander. Detailed methods, results, and evaluation assumptions are presented within Appendix H.

San Joaquin Kit Fox

In 2015 biologists performed focused surveys for the San Joaquin kit fox. Survey methods were derived from generally accepted professional standards including the 1999 USFWS San Joaquin Kit Fox survey protocol for the Northern Range. Census activities also include spotlighting, infrared triggered digital imaging stations and scent stations. Detailed methods, results, and evaluation assumptions are presented within Appendix I.

Swainson's Hawk

In 2015 biologists performed focused surveys for the Swainson's Hawk. Survey methods were derived from generally accepted professional standards including the 2003 Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee, 2003). Detailed methods, results, and evaluation assumptions are presented within Appendix J.

4.0 RESULTS

Weather conditions will be updated upon the completion of the 2015 field surveys. Representative photos of the study area from 2015 are provided in Appendix B and depicted on Figure 3. The study area occurs at the eastern foothills of the Diablo Mountain Range with elevations ranging from approximately 200 to 500 ft. above mean sea level. The Project climate is typical of the foothills of the eastern side of the San Francisco Bay Area and the northwestern San Joaquin Valley, with temperatures rarely dropping below freezing for any duration during the winter months, and summer temperatures frequently eclipsing 100^{o} F. This Mediterranean climate (i.e., cool, wet winters and hot dry summers) supports predominantly annual grassland plant communities with small ephemeral drainages that flow mostly in a northeastern direction. Although, the Project is large in size, the area that is to be developed has extremely low species richness and diversity; and those lands proposed for development do not support habitat for any State or Federal-listed species. In general, the study area's three main regions (e.g., Area A, Area B and Area C) can be classified as follows (Figure 2):

- Area A is completely developed with no native vegetation or suitable habitat for special status species;
- Area B includes developed lands (i.e., Union Pacific Railroad, California Aqueduct, commercial livestock and agricultural operations, etc.) and its vegetation is primarily annual grassland; and
- Area C is predominately open space, but it has been heavily impacted from historic commercial livestock activities, and includes annual grassland currently being grazed.

These results have not changed significantly over roughly 25 years of analysis.

Vegetation Communities and Land Cover Types

Six vegetation communities/land cover types were observed within the study area: agricultural, annual grassland, California aqueduct, orchard, non-native grassland, and developed (Figure 3). Cover types are described in detail below. All plant species observed during the 2015 surveys are listed in Appendix C.

Agricultural

The agricultural land cover type is actively utilized crop production and includes areas bound by the Union Pacific Railroad and the California Aqueduct to the south, the Delta-Mendota Canal to the north, and the Corral Hollow Road to the east. This type is used for annual and biannual row crops, and an orchard within the study area. Agricultural is the dominant vegetation community in Area A and does not occur in Areas B or C.

Annual Grassland

The annual grassland vegetation community is characterized by a dominance of nonnative grasses and forbs that are being annually grazed within the study area. Extensive cattle grazing have occurred for numerous years within this portion of the study area as well, which has restricted the colonization of native shrubs and trees. Dominant plant species found in this community include wild barley (*Hordeum ssp*.), soft chess (*Bromus hordeaceus*), ripgut (*Bromus diandrus*), and wild oats (*Avena ssp*.). This community also contains small areas of anthropogenic structures that are generally associated with active cattle ranches (i.e., fences, gates, water tanks, troughs, wells, cattle guards, corrals, dirt and gravel roads). Some structures also occur within the study area (e.g., cabin, out buildings, remnant

ornamental trees, power poles and lines). In addition the southeastern portion of this land cover type has been leveled. Therefore remnant berms are present as well; indicating signs of historically irrigated pasture lands. A few ornamental trees, mostly blue gum (*Eucalyptus globulosus*) also occur in this vegetation community. The annual grassland community occurs south of the California Aqueduct and is bisected by I-580 within the study area. This habitat comprises the majority of Areas B and C and does not occur in Area A.

Open Water

Open water occurring within the study area is characterized by deep water (>4 feet in depth) that is generally devoid of vegetation. This habitat occurs within the California Aqueduct and is of human construction. It is a maintained water conveyance system positioned within a concrete lined trapezoidal (in cross-section) channel that flows from the northwest to southeast along the northern boundary of Area B. Open water habitat occurs only in Area A along its southern boundary.

Orchard

The orchard land cover type within the study area includes active orchards with regular applications of herbicides to manage weed populations. These orchards include annual and biannual crops located in the southeastern portion of Area A.

Non-native grassland The non-native grassland community is characterized by nonnative – typically early successional plant species within the study area, which are tall and accumulate as thatch due to their non-grazed condition. This plant community generally occurs on the sides of elevated berms of the California Aqueduct and roads. Dominant plant species observed in this plant community include short-pod mustard (*Hirschfeldia incana*), gumweed (*Grindelia ssp*.) and telegraph weed (*Heterotheca grandiflora*).

Developed

Developed communities in the study area are characterized by significant anthropogenic structures (i.e., highways, paved surface streets, rail road appurtenances, and residences). This land cover type also includes remnant buildings and foundations not currently associated with a commercial grazing operation.

Wildlife

Few wildlife species were detected in the study area and the majority that was observed consisted of birds (Appendix D). Generally, wildlife species richness improved near the residences surrounded by agricultural fields due to increase food availability (e.g., bird feeders), water (i.e., irrigation and bird baths), and shelter (e.g., diverse assemblage of ornamental trees and shrubs).

Special-Status Plants

No State- or Federally-listed plant species have been detected during any of pedestrian based biological surveys which were performed within discrete portions of the study area from 1989 to 2015. No State- or Federally-listed plant species have been documented within several miles of the Project (Figure 4) and the study area includes no USFWS-critical habitat for plants (Figure 5).

The data collected suggests that there is extremely low potential for special-status plant species to recruit into the study area as well. The habitat within the study area includes existing livestock grazing and agricultural activities which have greatly reduced the habitat's ability to support special status species. The project limits lack vernal pools, alkali and clay soils, serpentine soils, and native vegetation. The absence of the aforementioned unique habitats suggests that special status plants are not likely present within the study area. Special-status plants known to occur within 10 miles of the Project and their potential for occurrence are detailed within Appendix A. Detailed methods, results, and evaluation assumptions are presented within Appendix E.

Special-Status Wildlife

No State or Federally-listed wildlife species have ever been detected within lands proposed for Project development.

One pair of Burrowing Owls – which included several juveniles, were detected foraging, dispersing and utilizing discrete burrow complexes during the 2015 surveys. However, given the low quality habitat present (i.e., limited prey base, absence of irrigated agricultural lands, and presence of predators), the likelihood of a significant population of Burrowing Owls being supported by the Project Site is negligible (Appendix F). This is a result of the depauperate landscape and the numerous resident Burrowing Owl predators (e.g., American Badger [Taxadea taxus], coyote [Canis latrans], Red-Tailed Hawk [Buteo jamaicensis], and other raptors) that were routinely detected within the Project Site in 2015. The study area is lacking in numbers and variety of species – likely attributable to its inability to produce a high enough density of biomass to support a robust population of owls. It should be noted that the fossorial mammals which are Burrowing Owl predators that were detected within the study area are capable of digging one or more burrows per day – which would be expected to modify the quantity, distribution and willingness of owls to inhabit burrow complexes within the Project Site over time. As a consequence of poor quality habitat, presence of resident Burrowing Owl predators and existing protections to species in the area, it has been determined that the Project is not likely to adversely affect Burrowing Owls.

The closest historic California red-legged Frog record in the surrounding area of the Project is from 2013; and it is roughly 0.2 miles from the Project's southwestern limits. It should also be noted that a discrete subset of land within the Project is collocated with designated critical habitat for California red-legged Frog (USFWS 2015). No California red-legged Frog aquatic breeding habitat that could support larval development of the species has ever been detected within the Project Site. Nonetheless, a series of ephemeral drainages running south to north - through the southwestern portion of the study area could function as dispersal habitat – albeit extremely low quality (i.e., presumed to be fast flowing ephemeral features that only convey water during, and immediately following storm events), under the appropriate suite of environmental factors. These features value as adult California red-legged Frog dispersal habitat is inconsequential because there are no known aquatic breeding habitats within the vicinity of these drainages; and they are movement constrained (i.e., topography, freeways, aqueducts, lack of appropriate cover to elude predators or exposure to desiccation, disked fields, and livestock grazing) within the study area. The more factors that constrain California red-legged Frog breeding habitats and movement corridors, the less likely individual frogs are to occur, or continue to occur within a specific locale. The Project completely avoids direct impacts to Corral Hollow Creek; and it's bordered to the west by an extremely steep slope that transitions into a vertical cliff. This leaves limited area along Corral Hollow Road accessible to potential migrating or dispersing individuals moving away from aquatic habitats within the creek. Given the lack of breeding habitat and movement constrained dispersal

habitat within the Project Site, the likelihood of California red-legged Frog successfully reproducing within it or even utilizing it for dispersal is negligible because much higher quality habitats are available within the region. Observations of California red-legged Frog are not uncommon south and west of the Project, and within the approximately 3,500-acre open-space conservation easement which abuts the study area. The habitat within the study area includes existing livestock grazing, agricultural, and other anthropogenic undertakings which have greatly reduced the lands ability to support breeding and dispersing California red-legged Frog. The data analyzed also suggests that there is extremely low potential for California red-legged Frog to recruit into the Project Site. Given that these findings are consistent with other assessments for California red-legged Frog within the Project Site, the Project would not be expected to result in the loss of individual California red-legged Frog, or adversely affect local or regional populations of them (Appendix G). Furthermore, the Project would not be expected to degrade the long-term preservation value or ecological processes within the Project vicinity, as impacts have been minimized to safeguard the needed habitat, wildlife linkages, and functional connectivity are maintained within the region with deference to California red-legged Frog. Accordingly, the habitat loss associated with the Project would be considered an insignificant effect to CRLF as a result of the amount of similar, and higher value vegetation communities and land cover types within the region that are already held in conservation.

The nearest historic California tiger salamander record in the surrounding area is from 1992; and it consists of 1 adult male along the edge of Corral Hollow Road - near the extreme southwestern limits of the Project Site. It should be noted that these lands are not proposed for development. No California tiger salamander aquatic breeding habitat that could support larval development of the species was detected within the Project Site. This is likely a result of the significant ground disturbance (i.e., grading, disking, and deep ripping) associated with crop cultivation and numerous other anthropogenic undertakings that have occurred within the study area (e.g., freeways, paved roads, aqueducts, urban development and other infrastructure related appurtenances). The aforementioned disturbances reduce the lands value as adult California tiger salamander refuge or dispersal habitat as well because it is isolated from known aquatic breeding habitats within the vicinity; and severely movement constrained (i.e., topography, freeways, paved roads, aqueducts, lack of appropriate cover or exposure to desiccation, disked fields). Additionally, soils within the Project Site are generally very well drained, which contributes to the short hydro periods of the few isolated, small, shallow, seasonal depressions that support ponding water for a few weeks out of the frost free growing season – as opposed to the 10 weeks required for successful California tiger salamander larval development. Even the ephemeral features within the Project Site are presumed to convey fast flowing water only during and immediately following storm events; but lack drop pools or other lands that could pond water for sufficient durations of time to support CTS larval development. The more factors that constrain California tiger salamander breeding habitats and movement corridors, the less likely individuals are to occur, or continue to occur within a specific locale. Given the lack of breeding habitat and movement constrained overland dispersal habitat within the Project Site, the likelihood of California tiger salamander successfully reproducing within it or even utilizing it for dispersal was determine to be negligible. Given the lack of breeding habitat and movement constrained dispersal habitat within the Project Site, the likelihood of California tiger salamander successfully reproducing within it or even utilizing it for dispersal is thought to be negligible because much higher quality habitats are available within the region (Appendix H). This data same also suggests that there is extremely low potential for California tiger salamander to recruit into the Project Site.

No San Joaquin Kit Fox breeding, non-natal or natal den complexes were detected within the study area either. Furthermore, no atypical, natal, or known San Joaquin Kit Fox dens have ever been located

during surveys of the Project Site. The study area is lacking in numbers and variety of species – likely attributable to its inability to produce a high enough density of biomass to support a substantial rodent population. More specifically, no San Joaquin Kit Fox camera stations or track stations have ever documented the species within the study area. However, during 2015 spotlighting surveys a single San Joaquin Kit Fox was observed. The animal was foraging within the fenced right-of-way of the California Aqueduct; not within the Project Site. This singular observation lasted approximately 20 seconds, as the fox ultimately moved along the California Aqueduct's gravel security road in a southern direction until it was out of site. No other San Joaquin Kit Fox has ever been detected within the study area. Given the low quality habitat present (i.e., limited rodent population, depauperate landscape, competition and territorialism among other mammals within the study area [i.e., coyote and American Badger]), the likelihood of San Joaquin Kit Fox successfully establishing a natal den our utilizing the Project Site as valuable foraging habitat is small (Appendix I). Although little can be concluded from a single observation of one animal, it is conceivable – albeit unlikely, that the California Aqueduct is functioning as a movement corridor for a small number of San Joaquin Kit Fox. Observations of the species are not uncommon south of Corral Hollow Road and within the approximately 3,500-acre open space conservation easement which abuts the study area.

One unpaired Swainson's Hawk was detected soaring and sitting on a remnant/abandoned nest within the study area in 2015. The abandoned nest was positioned in a Eucalyptus tree – situated within the road right-of-way of Interstate Highway 580, outside of the Project Site boundaries. This individual hawk was never observed actively nesting and no mate was detected during any of the 2015 survey events (Appendix J).. Given the low quality habitat present (i.e., limited prey base, depauperate landscape, competition, and territorialism among nesting raptors), the likelihood of Swainson's Hawk successfully nesting or utilizing the Project Site as valuable foraging habitat is negligible; much higher quality habitats are available within the region.

The loggerhead shrike and northern harrier - in additiona to the aforementioned American badger, were also detected during the 2015 surveys; but no nesting or breeding behavior was observed and none of these species are State or Federally-listed. Under the appropriate suite of environmental conditions, the study area also could possibly support Prairie Falcon (*Falco mexicanus*), San Joaquin whipsnake, and coast horned lizard as well. None of these species are State or Federally-listed either. Given the extent of anthropogenic disturbance and movement constrained (i.e., topography, freeways, aqueducts, lack of appropriate cover to elude predators or exposure to desiccation, disked fields, and livestock grazing) low quality habitat present, the likelihood of any of these species utilizing locales proposed for development within the study area as functional habitat is slight. This is because of the amount of similar, and higher-quality habitats available within the region (e.g., the 3,500 acre conservation area adjacent to the Project which is being held in conservation already). Special-status wildlife species known to occur within 10 miles of the Project and their potential for occurrence are detailed within Appendix A.

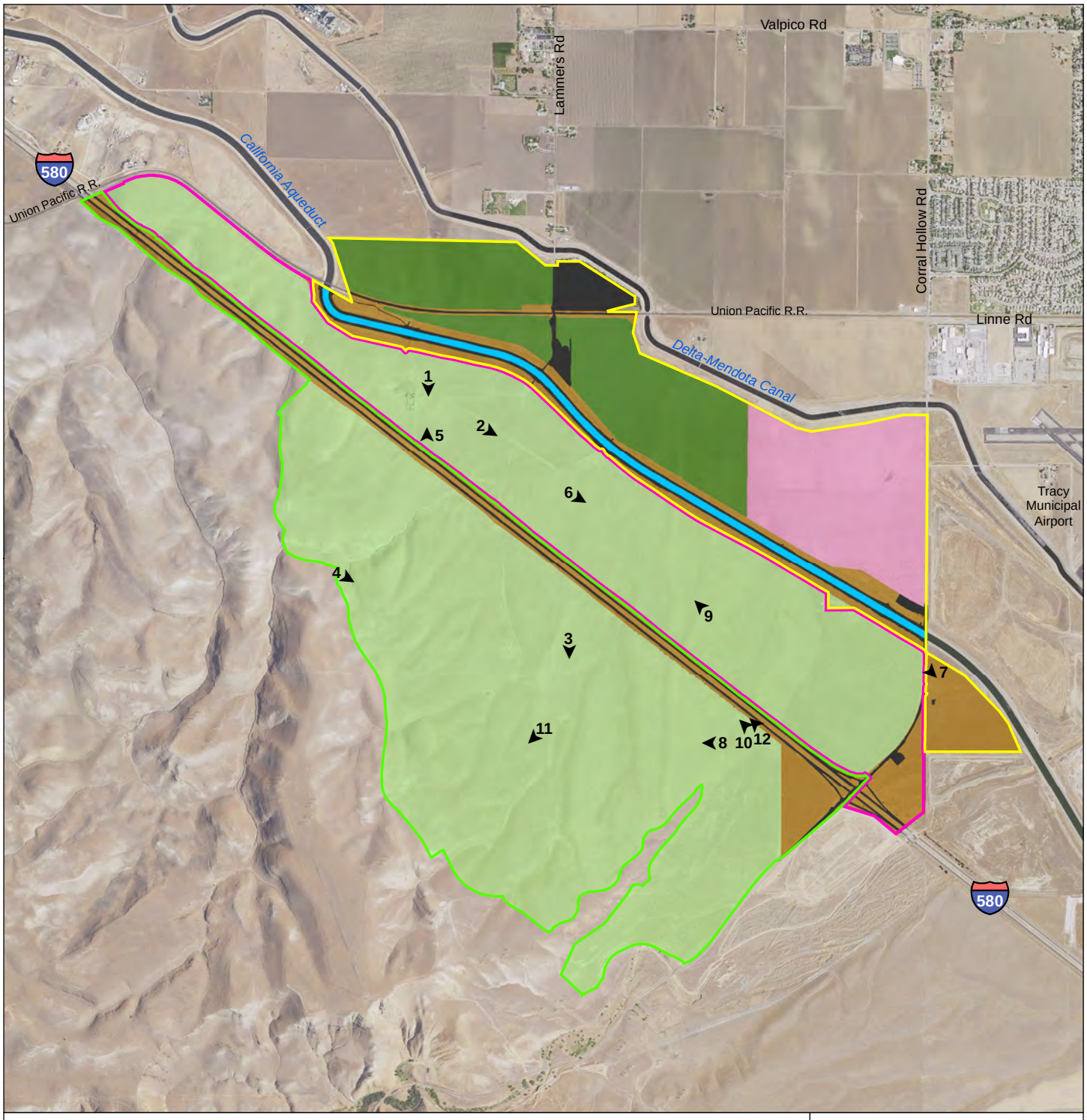
Wetlands and Waterways

The National Wetland Inventory includes records of aquatic resource areas within the study area (Figure 6). It should also be noted that the freshwater pond signature occurring in the southeastern portion of Area A does not currently exist. No riparian habitats were observed within the study area; however obvious indicators of well-defined water conveyance features (i.e., bed, bank and channel) that would be assumed to provide unique functions to wildlife were detected.

A formal jurisdictional delineation was performed within the study area (Olberding Environmental, Inc. 2013). The delineation concludes that all wetland and waterways occurring within Project boundaries are “isolated;" and therefore would not be regulated by the United States Army Corps of Engineers (USACE). Additionally, none of the wetland and waterway features are believed to have a "significant nexus" to a traditional navigable water. Nonetheless, these features would be regulated by the Regional Water Quality Control Board (RWQCB) and CDFW as "Waters of the State”. Nonetheless, the jurisdictional delineation of features under the USACE’s jurisdiction may be affected by the aforementioned agencies new 2015 rule with deference to Waters of the US. Until such time as a new normal circumstance has occurred – pursuuant to CEQA guidelines, a finding that a particular efffect is too speculative for evaluation, warrants that the discussion be terminated from affecting future development as unspecified and uncertain.

Wildlife Movement

This current study as well as prior studies have consistently determined that the Project’s proposed ground disturbance footprint does not support State or Federally-listed flora and fauna, and that Interstate 580 is a significant barrier which impedes and blocks wildlife movement throughout the region. In addition to Interstate 580, the rail road, paved roads, agricultural practices, grading, disking, deep ripping, urban development and other infrastructure related appurtenances substantially decreased the study areas value as a migration corridor, and overland dispersal habitat for wildlife because the lands are severely movement constrained (i.e., topography, lack of appropriate cover or exposure to desiccation). The more factors that constrain common and special status species habitats and movement corridors, the less likely individuals are to occur, or continue to occur within a specific locale. Nonetheless, the California Aqueduct, stream and riparian resources can allow wildlife movement to persist throughout the region; and Corral Hollow Creek (and its associated flood plain and alluvial fan habitat areas) have higher species diversity and value for local and migratory wildlife than adjacent locales. As a result, the Project does not create adverse effects to California Aqueduct and Corral Hollow Creek and helps to maintain local existing wildlife movement and dispersal areas. Additionally, 100 foot setbacks from the California Aqueduct and the complete avoidance of the Corral Hollow Creek area provide sufficient wildlife movement such that any affects from the development of the proposed Project would be less-than-significant. Thus, there is no reasonable presumption that the Project would substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors.



Photograph Location, Direction and Number

Areas

- Area A
- Area B
- Area C

Vegetation Communities/Land Cover Types

- Agricultural (277 acres)
- Annual Grassland (1,821 acres)
- Developed (103 acres)
- Non-Native Grasses (289 acres)
- Open Water (California Aqueduct) [38 acres]
- Orchard (201 acres)

0 0.25 0.5 Mile

1 inch = 0.5 mile

Data Sources:
- San Joaquin County GIS accessed Jul 2015, data date: Jul 2014
- USDA-NRCS-AFPO NAIP accessed Jul 2015, image date: 2014

Map Prepared: 7-31-15

Prepared by:

NOREAS Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\BTR Fig3. Vegetation.mxd

Figure 3. Vegetation Communities/Land Cover Types

Study Area

5-Mile Radius Around the Study Area

Freeway

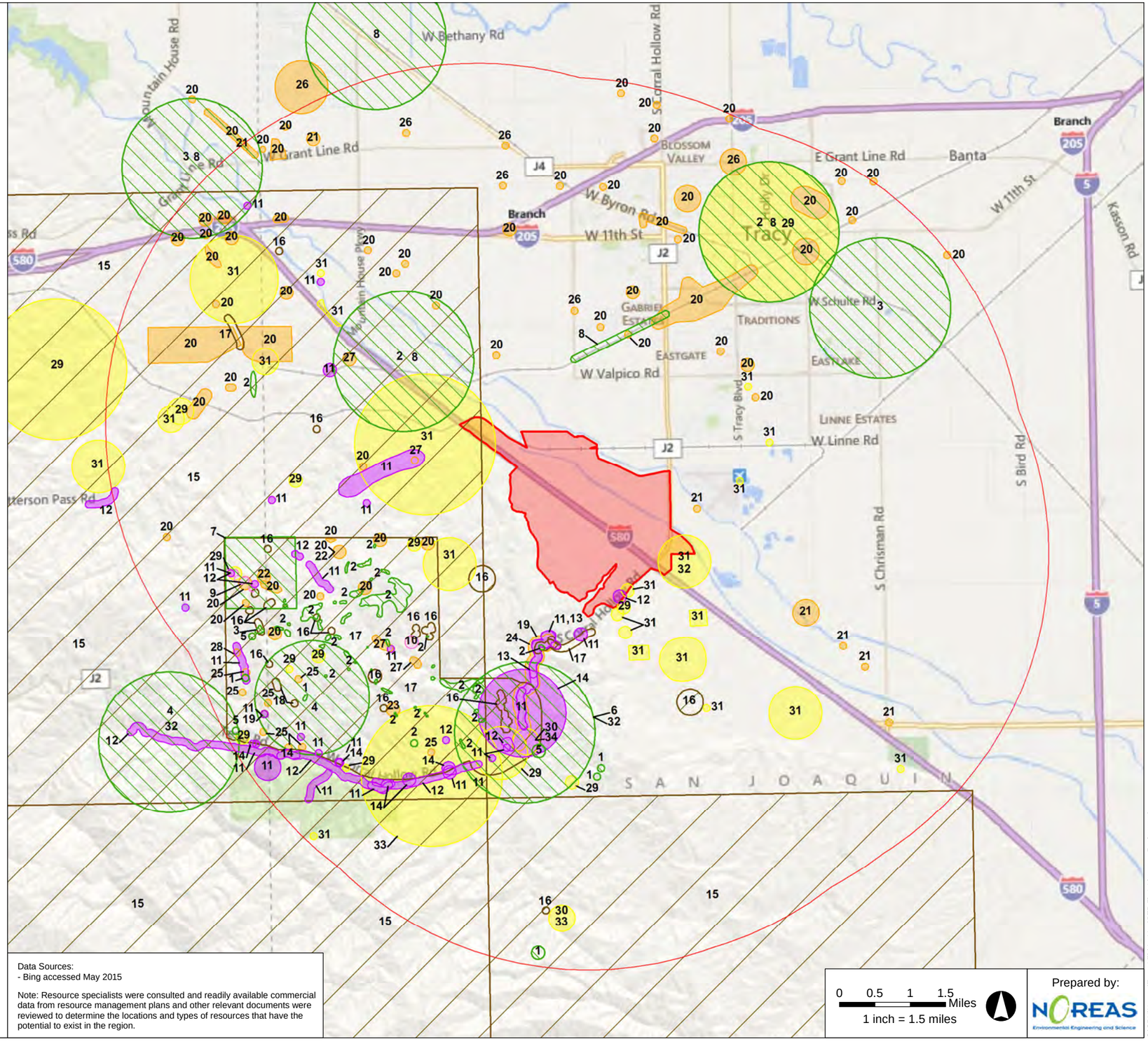
Major Road

Golf Course or Park

Water Body

Special-Status Species Occurrences

Map Code	Common Name (Scientific Name)
	Plants
1	Large-Flowered Fiddleneck (*Amsinckia grandiflora*)
2	Big Tarplant (*Blepharizonia plumosa*)
3	Round-Leaved Filaree (*California macrophylla*)
4	Lemmon's Jewel-Flower (*Caulanthus lemmonii*)
5	Diamond-Petaled California Poppy (*Eschscholzia rhombipetala*)
6	Showy Golden Madia (*Madia radiata*)
7	Shining Navarretia (*Navarretia nigelliformis* ssp. *radians*)
8	Caper-Fruited Tropidocarpum (*Tropidocarpum capparideum*)
	Invertebrates
9	California Linderiella (*Linderiella occidentalis*)
10	Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)
	Amphibians
11	California Red-Legged Frog (*Rana draytonii*)
12	California Tiger Salamander (*Ambystoma californiense*)
13	Foothill Yellow-Legged Frog (*Rana boylii*)
14	Western Spadefoot (*Spea hammondii*)
	Reptiles
15	Alameda Whipsnake (*Masticophis lateralis euryxanthus*)
16	Coast Horned Lizard (*Phrynosoma blainvillii*)
17	San Joaquin Whipsnake (*Masticophis flagellum ruddocki*)
18	Silvery Legless Lizard (*Anniella pulchra pulchra*)
19	Western Pond Turtle (*Emys marmorata*)
	Birds
20	Burrowing Owl (*Athene cunicularia*)
21	California Horned Lark (*Eremophila alpestris actia*)
22	Ferruginous Hawk (*Buteo regalis*)
23	Golden Eagle (*Aquila chrysaetos*)
24	Least Bell's Vireo (*Vireo bellii pusillus*)
25	Loggerhead Shrike (*Lanius ludovicianus*)
26	Swainson's Hawk (*Buteo swainsoni*)
27	Tricolored Blackbird (*Agelaius tricolor*)
28	White-Tailed Kite (*Elanus leucurus*)
	Mammals
29	American Badger (*Taxidea taxus*)
30	Pallid Bat (*Antrozous pallidus*)
31	San Joaquin Kit Fox (*Vulpes macrotis mutica*)
32	San Joaquin Pocket Mouse (*Perognathus inornatus*)
33	Townsend's Big-Eared Bat (*Corynorhinus townsendii*)
34	Western Mastiff Bat (*Eumops perotis californicus*)



Data Sources:
- Bing accessed May 2015

Note: Resource specialists were consulted and readily available commercial data from resource management plans and other relevant documents were reviewed to determine the locations and types of resources that have the potential to exist in the region.

0 0.5 1 1.5 Miles

1 inch = 1.5 miles

Prepared by: NOREAS Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\BTR Fig4. Literature Review.mxd

Figure 4. Literature Review

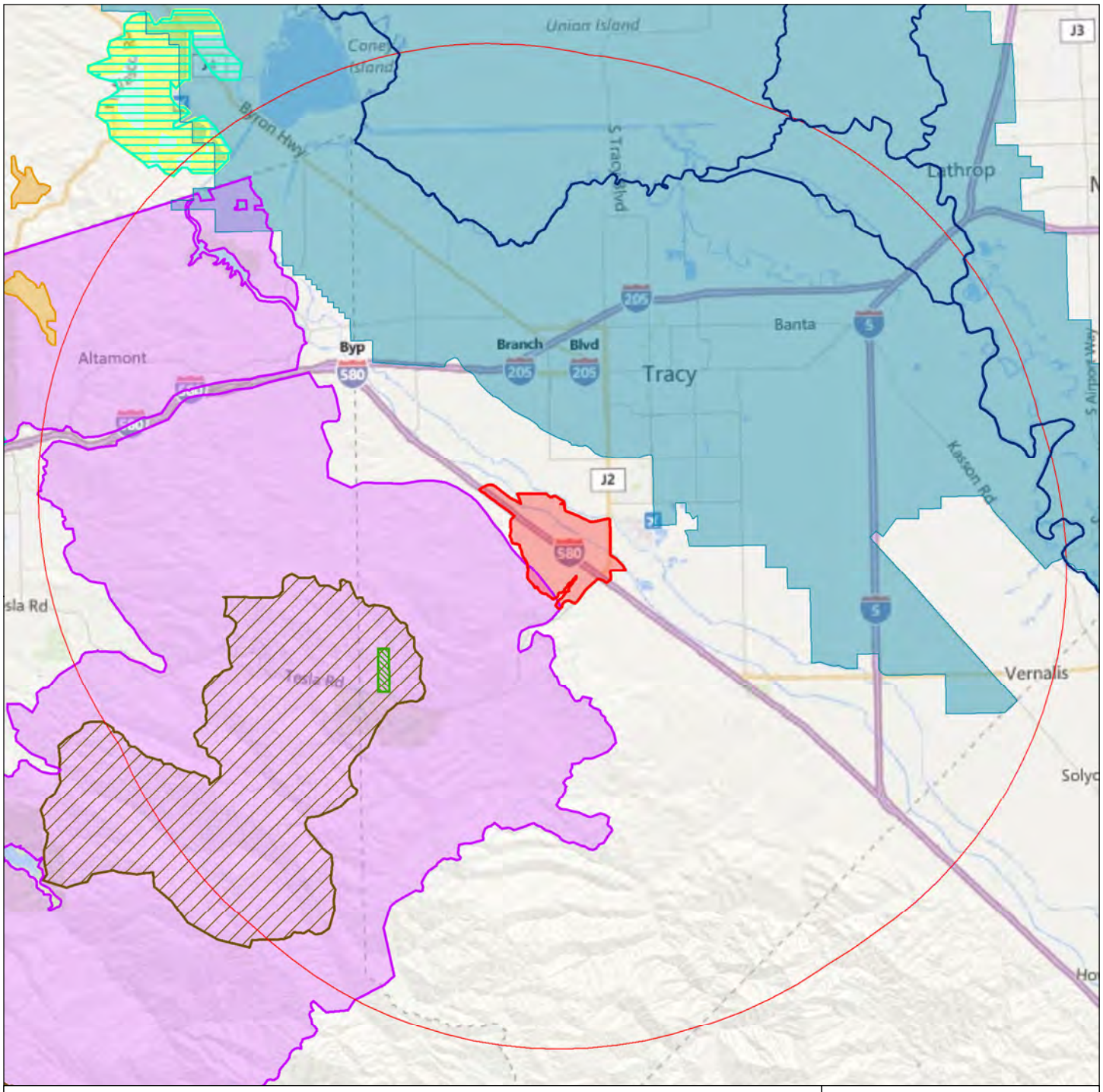
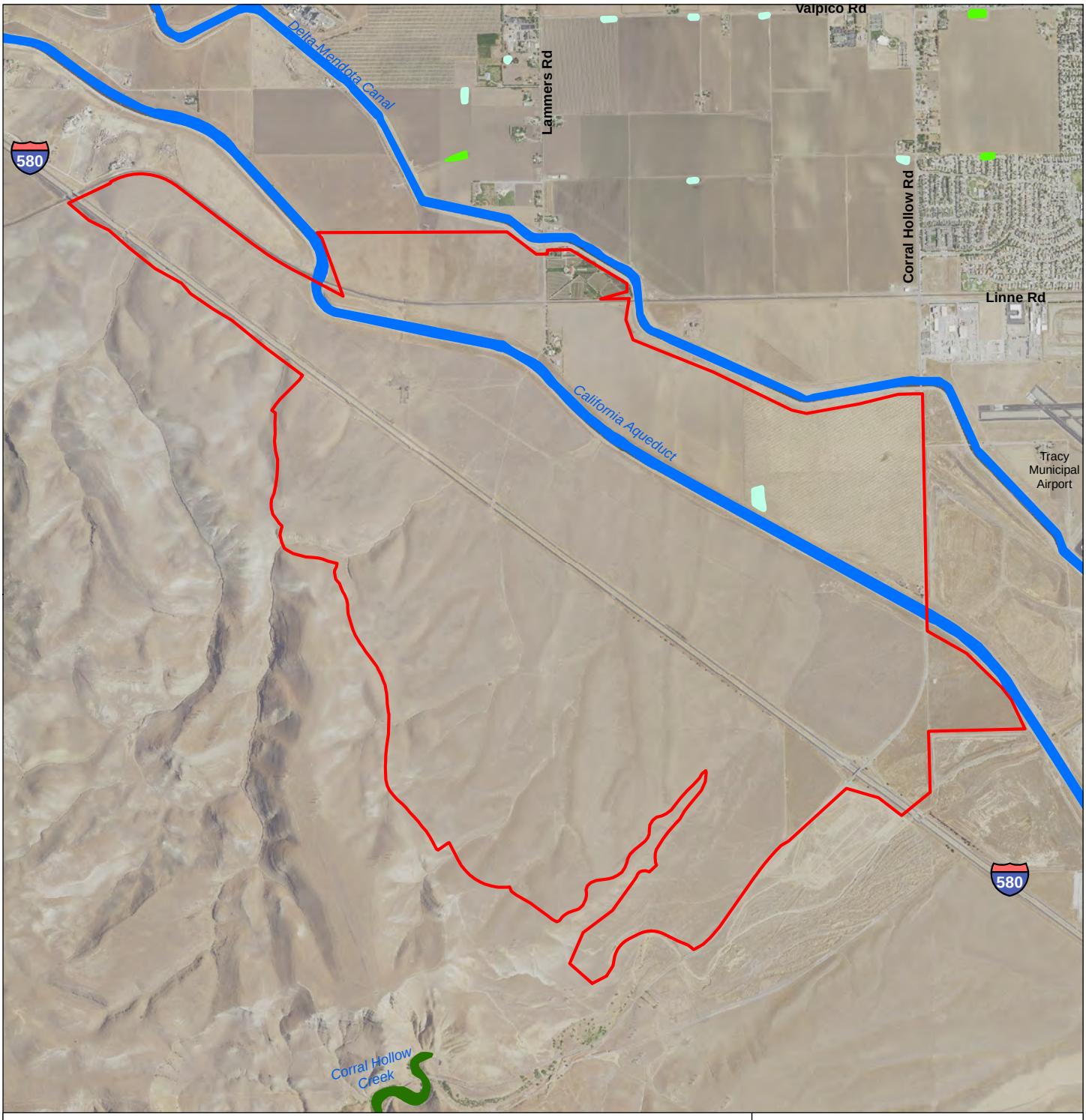


Figure 5. Critical Habitat



Study Area

National Wetland Inventory

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 0.25 0.5 Mile

1 inch = 0.5 mile

Data Sources:
- USDA-NRCS-AFPO NAIP accessed May 2015, image date: 2014
- US Fish and Wildlife Service National Wetland Inventory accessed May 2015, Data Date: Oct 2014

Map Prepared: 5-19-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\BTR Fig6. NWI.mxd

Figure 6. National Wetland Inventory

5.0 IMPACTS AND RECOMMENDATIONS

The study area predominately consists of non-native vegetation, grasslands, developed, and disturbed land cover types; it is therefore assumed that any species currently using these locales are acclimated to the disturbance regime present. Given the extent of anthropogenic influence and low quality habitat present, the likelihood of any special status species utilizing locales proposed for development within the study area as functional habitat is minor. This is a result of the amount of similar and higher-quality native habitats available within the region.

No State or Federally-listed, proposed, or candidate plant or animal species were detected within lands proposed for development during field surveys from 1989 to 2015. Furthermore, the Project is not expected to result in additional State or Federal protection, loss of viability, or to substantially modify regional habitat availability for any common or special status species. Nonetheless, one pair of Burrowing Owls, a loggerhead shrike, northern harrier, and American badger were detected during the 2015 surveys. Furthermore, under the appropriate suite of environmental conditions, the study area could support Prairie Falcon , San Joaquin whipsnake, and coast horned lizard.

The following thresholds of impact significance are based on California Environmental Quality Act (CEQA) Guidelines. As such, the Project would have a significant impact on biological resources if it would result in any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or the USFWS?

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or the USFWS?

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites?

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Our analysis suggests that the following potential effects to biological resources are less than significant, or did not have an effect, and therefore do not need to be further evaluated:

- The Project would not be expected to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

- The Project would not be expected to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- The Project would not be anticipated to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

- The Project will comply with all applicable codes, laws, ordinances, and regulations to minimize or avoid adverse effects to riparian habitat, wetlands, waters and other sensitive natural communities, and State and Federally-listed species, or any species proposed for listing to the greatest extent practical. Furthermore, any other projects – even if not planned at the present time, would also be required to comply with the same local, state, and federal codes, ordinances, laws, and other required regulations. Therefore, this Project's incremental contribution to cumulative effects on sensitive natural communities and common and special status species or their habitats is not expected to be substantial either.

6.0 PROPOSED MITIGATION MEASURES

As stated above, in 1998 a previous version of this Specific Plan was approved. As part of the approval of the 1998 Specific Plan, a Multi-species Habitat Management Plan was prepared in 1996 ("1996 Conservation Plan") by the then Project ownership. This 1996 Conservation Plan is one of the myriad documents that were reviewed in connection with the preparation of this report. Even though technical biological reports prepared up until 1996 did not identify the presence of any special status species on site (e.g., San Joaquin Kit Fox), a presumption was made that Project implementation would impact "San Joaquin Kit Fox Habitat." Therefore, the then project ownership, working with CDFW and USFWS determined that an approximate 3,500 acre area southwest of the development area would be subject to a conservation easement to mitigate the impacts of Project implementation. In the years following the approval of the 1998 Specific Plan, in 2012 a conservation easement was recorded against the approximate 3,500 acre area. The conservation easement is recorded in favor of the San Joaquin Council of Governments (SJCOG). The conservation easement ensures that the aforementioned lands will be preserved as native species habitat in perpetuity, and ensures that at least 728 acres will be subject to a management plan administered by SJCOG, through the San Joaquin County Multi- Species Habitat Conservation and Open Space Plan (SJMSCP).

Importantly, it bears explaining that the 3,500 acre conservation area is now a design feature of the Project. As set forth below, based on the extensive review of 25 years' worth of analysis, coupled with protocol level field surveys conducted in 2015, the Project's impacts to biological resources are expected to be less than significant. Therefore, it is assumed that the 3,500 acres that are subject to the conservation easement are technically not needed to mitigate actual Project impacts. Nevertheless, the 3,500 acres will still be subject to the conservation easement and will still serve as an important open space conservation area for wildlife traversing through the region.

Even though all studies to date within the Project's ground disturbance footprint (including focused protocol level surveys from 2015) have concluded that adverse effects to special status species and other biological resources are less than significant - because biological resources can move in overtime, additional mitigation measures are recommended. Moreover, it is important to note that Area B is likely to commence construction immediately upon Project approval, whereas some of the other lands proposed for development will be built out over the course of many years. The following measures are recommended as a means of further avoiding, minimizing, and reducing adverse effects to protected resources that have the potential to occur within the study area and on adjacent lands to a less-than-significant level over time.

- Construction operations will be overseen by an appropriately-credentialed biologist (biological monitor), and the Project will implement a worker environmental awareness training program to reduce the Project's potential adverse effects to special status species. This measure is specific to Areas A, B, and C of the Project.

- Prior to commencement of ground disturbing activities in any areas of potentially suitable habitat to support special status plant species, pre-activity clearance surveys shall be initiated by a qualified botanist. This measure is specific to Area A, B, and C.

    1. Surveys shall be floristic in nature and timed during appropriate blooming periods.

2. Surveys shall target those locales within the study area of direct and indirect effects. The results of these surveys shall be submitted to CDFW and USFWS for review.

3. In the event special-status plant species are detected within portions of the study area proposed for development, individual plant(s) or populations shall be avoided whenever possible by delineating and observing a no disturbance buffer of at least 50 feet from the outer edge of the plant population(s) or specific habitat type(s) required by special-status plant species.

4. If buffers cannot be maintained, then consultation with CDFW/USFWS is warranted to determine appropriate minimization measures for impacts to special-status plant species.

- Prior to commencement of ground disturbing activities in areas of potentially suitable habitat to support San Joaquin kit fox, pre-activity clearance surveys shall be initiated by a qualified biologist to reinforce positive or negative findings with substantial evidence. If San Joaquin Kit Fox are detected within portions of the study area proposed for development, then avoidance and minimization measures specific to San Joaquin kit fox will be incorporated into the Project as described in the USFWS "Standard Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbing Activities (1999)" and the USFWS "San Joaquin Kit Fox Habitat Evaluation Forms (2001)" to reduce impacts to this species to less-than-significant. This measure is specific Areas B and C.

    1. Project-related construction vehicles will observe a daytime speed limit of 20- miles per hour (mph), except on County roads and State and Federal highways.

    2. Night-time construction will be minimized to the greatest extent feasible. However if it does occur, then the speed limit will be reduced to 10-mph.

    3. Off-road traffic outside of designated Project areas undergoing construction will be prohibited.

    4. To prevent inadvertent entrapment of small mammals during construction, excavated, steep-walled holes or trenches more than 2-feet deep will be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks will be installed. Before such holes or trenches are filled, they will be thoroughly inspected for trapped wildlife. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW will be contacted.

5. Construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored within Project limits for one or more overnight periods will be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the USFWS and CDFW has been consulted. If necessary, and under the direct supervision of a biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.

6. Use of rodenticides and herbicides within Project limits will be restricted. Uses of such compounds will observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the USFWS and CDFW. If rodent control must be conducted, zinc phosphide or an equivalent material will be used because of a lower adverse health risk to kit fox.

- Prior to commencement of ground disturbing activities in areas of potentially suitable habitat to support American Badger, pre-activity clearance surveys shall be initiated by a qualified biologist to reinforce positive or negative findings with substantial evidence.

    1. If American badger is located within the Project Site, potential loss of individual animals must be mitigated through one of the following: (1) an on-site passive relocation program, through which badgers are excluded from occupied burrows by installation of a one-way door in burrow entrances, monitoring of the burrow for one week to confirm badger usage has been discontinued, and hand excavation and collapse of the burrow to prevent reoccupation; or (2) active trapping and relocation of badgers to suitable off-site habitat by a qualified biologist.

- Prior to commencement of ground disturbing activities in all areas of potentially suitable habitat to support Swainson's hawk, pre-activity clearance surveys shall be initiated by a qualified biologist to reinforce positive or negative findings with substantial evidence. If Swainson's hawk is detected within portions of the study area proposed for development, then avoidance and minimization measures specific to Swainson's hawk will be incorporated into the Project as described in the CDFW "Staff Report on Mitigation for Impacts to Swainson's Hawk (2012)" to reduce impacts to Swainson's hawk to less-than significant. This measure is applicable to Areas A, B and C of the Project.

    1. If a nest site is found, the Project will allow sufficient foraging and fledging area to maintain the nest.

2. The Project will not remove Swainson's hawk nest trees unless avoidance measures are determined to be infeasible. Removal of such trees should occur only during the timeframe of October 1 and the last day in February.

- Prior to commencement of ground disturbing activities in all areas of potentially suitable habitat to support California tiger salamander (CTS), pre-activity clearance surveys shall be initiated by a qualified biologist to reinforce positive or negative findings with substantial evidence. If CTS is detected within portions of the study area proposed for development, then avoidance and minimization measures specific to CTS will be incorporated into the Project as necessary to reduce impacts to CTS to less-than significant. This measure is specific to Areas A, B and C of the Project.

    1. Temporary construction disturbances to California tiger salamander habitat will be minimized to the extent practicable. All Project-related vehicle traffic will be restricted to established roads, and construction areas.

    2. A qualified biologist will be on site during all activities that may result in the take of California tiger salamanders. The biologist will be given the authority to stop any work that may result in the take of this listed species.

    3. The biologist will be responsible for ensuring that the exclusion fence installed around occupied CTS habitat inspected before the start of each day and remains intact until project construction is complete.

    4. Plastic monofilament netting (erosion control matting) or similar material will not be used for erosion control or other purposes around occupied CTS habitat because California tiger salamander may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydro seeding.

    5. The project proponent or its contractor will implement BMPs to prevent sediment from entering suitable California tiger salamander habitat through the use of silt fencing and sterile hay bales.

    6. A worker training program that includes the California tiger salamander will be conducted for construction personnel before groundbreaking at individual redevelopment project sites.

    7. A speed limit of 20 mph will be observed within construction areas, particularly on rainy nights when California tiger salamanders are most likely to be moving between their breeding ponds and upland habitat. To the extent possible, nighttime construction will be minimized. Off-road traffic outside designated construction areas will be prohibited.

8. To prevent entrapment of California tiger salamanders during construction, any trenches, holes, or other excavations into which California tiger salamander could fall and become trapped will be covered. The opening will be completely covered at the end of each workday.

- Prior to commencement of ground disturbing activities in areas of potentially suitable habitat to support Western spadefoot toad, pre-activity clearance surveys shall be initiated by a qualified biologist to reinforce positive or negative findings with substantial evidence.

    1. For work conducted within suitable habitat and during the western spadefoot toad migration and breeding season (November 1 to May 31), a qualified biologist will survey the active work areas (including access roads) in mornings following measurable precipitation events. Construction may commence once the biologist has confirmed that no spadefoot toads are in the work area.

    2. If western spadefoot toad is found within the construction footprint, it will be allowed to move out of harm's way of its own volition or a qualified biologist will relocate the organism to the nearest burrow that is outside of the construction impact area.

- Prior to commencement of ground disturbing activities in all areas of potentially suitable habitat to support California red-legged frog (CRLF), pre-activity clearance surveys shall be initiated by a qualified biologist to reinforce positive or negative findings with substantial evidence. This measure is specific to Areas B and C of the Project.

    1. Survey will occur during the wet season (generally October 15 to April 15), no more than 48 hours before new ground disturbance.

    2. A worker training program that includes the CRLF will be conducted for construction personnel before groundbreaking at individual redevelopment project sites.

    3. If a CRLF is found, the construction supervisor shall halt work immediately within a buffer area of 50 feet of any discovered CRLF. The construction supervisor will also contact the project biologist and will suspend all construction activities in the immediate construction zone (50-foot radius) until the animal leaves the site voluntarily.

    4. To prevent entrapment of CRLF during construction, any trenches, holes, or other excavations into which CRLF could fall and become trapped will be covered. The opening will be completely covered at the end of each workday.

- The Project shall adhere to the terms of the SJMSCP. Participation in the SJMSCP includes compliance with all incidental take measures as required in the SJMSCP, including but not limited to preconstruction surveys to determine presence for special status flora and fauna. This measure is specific to Areas A and B of the Project.

- The Project does not include direct impacts to the Corral Hollow Creek key linkage corridor and it corresponding flood plain, and alluvial sand movement areas. Furthermore, a 100-foot setback from the California Aqueduct is being proposed to enhance wildlife movement throughout the region. These measures ensure that potential wildlife movement corridors remain intact, and allow for an appropriate number and size of permeable wildlife passages through Project boundaries. This measure is specific to Areas A, B, and C of the Project.

- In order to comply with Section 10 of the Migratory Bird Treaty Act and relevant sections of the California Fish and Game Code, any vegetation clearing within the study area shall take place outside of the typical avian nesting season (e.g., February 1st until September 1st) to the maximum extent practical.

    1. If work needs to take place between February 1st and September 1st, a pre-construction survey for nesting birds within 500 feet of active construction should be completed prior to the onset of Project activities. If a lapse in Project activity occurs for 7 days or more during the bird nesting season then initial avian clearance surveys shall be repeated. A buffer zone from occupied nests should be maintained during physical ground disturbing activities. Once nesting has ended, the buffer may be removed. This measure is specific to Areas A, B, and C the Project.

- Burrowing owl survey shall be conducted prior to grading. Pre-construction surveys for burrowing owl shall begin no later than 14 - 30 days prior to construction and ending no earlier than 24 hours prior to the commencement of disturbance.

    1. The Project shall provide artificial replacement burrows within the conservation easement area, as permitted and in accordance with any applicable Preserve Management Plan, in the event that owls are detected, either as wintering or breeding within Project boundaries. Wintering individuals may be evicted with the use of exclusion devices followed by a period of seven days to ensure that animals have left their burrows. When it can be assured that owls are no longer using the burrows, the burrows can be hand excavated and collapsed under the supervision of the avian biologist. This measure is specific to Areas A, B, and C.

    2. Construction activities associated with project features that occur within portions of the project site containing occupied habitat for the burrowing owl and raptor nests shall be restricted to periods

outside the breeding season for this species. The breeding season for burrowing owl runs from February 15 through August 31.

- Prior to construction, the Project will stake, flag, fence or otherwise conspicuously delineate all environmentally sensitive areas that are to be protected in place and remain undisturbed during construction.

    1. Environmentally sensitive areas include wetlands, riparian habitat, aquatic habitat, raptor nesting locations, etc. The construction materials used to delineate environmentally sensitive areas would be removed no later than 30 days following physical completion of construction. This measure is specific to Areas A, B and C.

- The study area includes numerous small episodic drainage features. If adverse effects to them cannot be avoided, then the Project shall notify the appropriate regulatory agency (i.e., CDFW and RWQCB) prior to impacting them to comply with the requisite state permitting requirements. This measure is specific to Areas A, B and C of the Project.[5]

    1. The RWQCB administers CWA Section 401 via the Water Quality Certification (WQC) Program and Porter-Cologne. There are no CWA Section 401 jurisdiction features within the study area; and the Project is not anticipated to result in a discharge of pollutants to California's surface, coastal, or ground water resources. Nonetheless, the project will be required to file a Report of Waste Discharge with the RWQCB and complete a National Pollutant Discharge Elimination System (NPDES) permit application to demonstrate compliance with Porter-Cologne.

    2. Section 1600 of the California Fish and Game Code regulates substantial alteration of waters and their adjacent riparian lands within the State. For this Project, activities may require Lake and Streambed Alteration Notification.

    3. If impacts to special aquatic resource areas are ultimately unavoidable within the study area, then the applicant should develop an informal plan to offset or compensate for adverse effects to these resources to ensure rapid and favorable action during any warranted permitting processes. With regard to Waters of the State, the Project has voluntarily elected to offset locales associated with permanent losses at a mitigation to impact ratio of 3:1, and a ratio of 1:1 for temporary disturbances to regulated waters, riparian habitats or other sensitive natural communities in all areas where Project related activities would be expected to adversely affect watercourses, streams, drainages, and their tributaries. The offset associated with permanent losses would

[5] The information presented in this report concludes that impacts to regulated waters, riparian habitats or other sensitive natural communities would be considered less than significant provided that project implementation results in no net losses of these resources.

occur by purchasing conservation credits from an approved mitigation bank, in-lieu fee program, or equivalent resource agency-approved process.

The services performed and documented in this report have been conducted in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances.

7.0 REFERENCES

Baldwin, J., D. Goldman, D. Keil, R. Patterson, and T. Rosatti. 2012. The Jepson Manual: Higher Plants of California. Berkeley: University of California Press.

Berryman Ecological LLC. 2006. Tracy Hills San Joaquin Kit Fox Analysis (Berryman Ecological LLC 2006)

Berryman Ecological LLC. 2010a. Biological Resources on the Tracy 580 Business Park Property (Berryman Ecological LLC 2010a)

Berryman Ecological LLC. 2010b. Burrowing Owl Surveys for Tracy 580 Business Park (Berryman Ecological LLC 2010b);

Burt, W. H. and R. P. Grossenheider. 1980. A Field Guide to Mammals: North America; North of Mexico. New York, NY: Houghton Mifflin Company.

CDFW (California Department of Fish and Wildlife). 2015. RareFind. California Department of Fish and Game, Natural Diversity Database (CNDDB). Sacramento, CA: California Department of Fish and Game, Biogeographic Data Branch.

Foothill Associates. 2004. Habitat Management Plan - Tracy Hills Project (Foothill Associates 2004)

Halfpenny, J.C. 2000. Scats and Tracks of the Desert Southwest, A Field Guide to the Signs of 70 Wildlife Species. Helena, MT: Falcon Publishing, Inc.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California (California Department of Fish and Game, The Resources Agency, ed), p. 156. Sacramento, CA.

H.T. Harvey & Associates. 2006. Tracy Triangle San Joaquin Kit Fox Surveys, Project #2689-01 (H.T. Harvey & Associates 2006)

ICF International. 2011. Preserve Management Plan for the Tracy 580 Business Park Preserve (ICF International 2011)

Jones & Stokes Associates, Inc. 1993. Evaluation of a Proposed Corridor for the San Joaquin Kit Fox in the Tracy Hills Development (Jones & Stokes Associates, Inc. 1993)

LSA. 1989. Draft Biological Assessment Properties East of California Aqueduct Carnegie Business Park San Joaquin County, CA (LSA 1989)

LSA. 1991. Biological Study, Tracy Hills Community, San Joaquin County California (LSA 1991)

LSA. 1996. Multi-Species Habitat Management Plan (LSA 1996)

LSA. 1999b. Habitat Conservation Plan for Lakeside Tracy Development (LSA 1999b)

LSA. 1998. Delineation of Waters of the United States – Grupe Property, Tracy, Hills, San Joaquin County California (LSA 1998)

Microsoft Corporation. 2015. Bing Maps Aerial Imagery. Redmond, WA

Olberding Environmental, Inc. 2013. Tracy Hills Project- U.S. Army Corps of Engineers Jurisdiction Assessment (Olberding Environmental, Inc. 2013)

Penrod, K., P. Beier, E. Garding, and C. Cabañero. 2012. Linkage Network for the California Deserts. Produced for the Bureau of Land Management and The Wildlands Conservancy. Produced by Science and Collaboration for Connected Wildlands, Fair Oaks, CA www.scwildlands.org and Northern Arizona University, Flagstaff, Arizona http://oak.ucc.nau.edu/pb1/.

PMC. 1997. Tracy Hills Specific Plan Draft Environmental Impact Report (PMC 1997)

RBF Consulting 2014. Tracy Hills Specific Plan: Habitat Assessment & San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) Consistency Analysis (RBF Consulting 2014)

Sawyer, J., T. Keeler-Wolf, and J. Evens. 2009. A Manual of California Vegetation. Sacramento, CA: California Native Plant Society.

Sibley, D.A. 2000. National Audubon Society. The Sibley Guide to Birds. New York, NY: Alfred A. Knopf, Inc.

Stebbins, R.C. 2003. A Field Guide to Western Reptiles and Amphibians. New York, NY: Houghton Mifflin.

Tracy Hills LLC. 2004. Environmental Assessment for the Tracy Hills HCP (Tracy Hills LLC 2004)

USGS (United States Geological Service). 1980. 7.5-Minute Quadrangle Tracy California.

USGS (United States Geological Service). 1986. 7.5-Minute Quadrangle Midway California.

USFWS (United States Fish and Wildlife Service). 2010. San Joaquin Kit Fox (Vulpes macrotis mutica) 5-Year Review, Summary and Evaluation (USFWS 2010)

USFWS (United States Fish and Wildlife Service). 2015a. Critical Habitat Portal. USFWS

USFWS (United States Fish and Wildlife Service). 2015b. USFWS Sacramento Office Species List for San Joaquin County (USFWS 2015b)

PERSONAL COMMUNICATIONS

Stanley, R. 2015. California Department of Fish and Wildlife, Napa, California. Personal communications with NOREAS Inc.

APPENDIX A

2015 SPECIAL-STATUS SPECIES POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT SITE

Potential for occurrence	Common name (Scientific name)	Federal listing status	State listing status	Global rank [a]	State rank [b]	CNPS list [c]	Records within 10 miles
HP	California Tiger Salamander (*Ambystoma californiense*)	Threatened	Threatened	G2G3	S2S3		47
A	Alameda Whipsnake (*Masticophis lateralis euryxanthus*)	Threatened	Threatened	G4T2	S2		16
HP	American Badger (*Taxidea taxus*)	None	None	G5	S3		17
HP	San Joaquin Kit Fox (*Vulpes macrotis mutica*)	Endangered	Threatened	G4T2	S2		32
A	San Joaquin Pocket Mouse (*Perognathus inornatus*)	None	None	G2G3	S2S3		7
A	Big Tarplant (*Blepharizonia plumosa*)	None	None	G2	S2	1B.1	18
A	Caper-Fruited Tropidocarpum (*Tropidocarpum capparideum*)	None	None	G1	S1	1B.1	6
CH	California Red-Legged Frog (*Rana draytonii*)	Threatened	None	G2G3	S2S3		79
HP	San Joaquin Whipsnake (*Masticophis flagellum ruddocki*)	None	None	G5T2T3	S2?		3
A	Foothill Yellow-Legged Frog (*Rana boylii*)	None	None	G3	S2S3		3
A	Western Pond Turtle (*Emys marmorata*)	None	None	G3G4	S3		9
A	Least Bell's Vireo (*Vireo bellii pusillus*)	Endangered	Endangered	G5T2	S2		1
HP	Coast Horned Lizard (*Phrynosoma blainvillii*)	None	None	G3G4	S3S4		13
A	Tricolored Blackbird (*Agelaius tricolor*)	None	None	G2G3	S1S2		9
A	Showy Golden Madia (*Madia radiata*)	None	None	G2	S2	1B.1	2
P	Burrowing Owl (*Athene cunicularia*)	None	None	G4	S3		78
A	Western Spadefoot (*Spea hammondii*)	None	None	G3	S3		12
HP	Swainson's Hawk (*Buteo swainsoni*)	None	Threatened	G5	S3		84
A	Pallid Bat (*Antrozous pallidus*)	None	None	G5	S3		2
A	Western Mastiff Bat (*Eumops perotis californicus*)	None	None	G5T4	S3S4		1
A	Diamond-Petaled California Poppy (*Eschscholzia rhombipetala*)	None	None	G1	S1	1B.1	4
A	Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)	Threatened	None	G3T2	S2		1
A	Large-Flowered Fiddleneck (*Amsinckia grandiflora*)	Endangered	Endangered	G1	S1	1B.1	4
A	Townsend's Big-Eared Bat (*Corynorhinus townsendii*)	None	Candidate Threatened	G3G4	S2		2

APPENDIX A

2015 SPECIAL-STATUS SPECIES POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT SITE

Potential for occurrence	Common name (Scientific name)	Federal listing status	State listing status	Global rank [a]	State rank [b]	CNPS list [c]	Records within 10 miles
A	Ferruginous Hawk (*Buteo regalis*)	None	None	G4	S3S4		3
A	Round-Leaved Filaree (*California macrophylla*)	None	None	G2	S2	1B.1	8
A	Shining Navarretia (*Navarretia nigelliformis* ssp. *radians*)	None	None	G4T2	S2	1B.2	1
A	Golden Eagle (*Aquila chrysaetos*)	None	None	G5	S3		1
A	Lemmon's Jewel-Flower (*Caulanthus lemmonii*)	None	None	G3	S3	1B.2	3
P	Loggerhead Shrike (*Lanius ludovicianus*)	None	None	G4	S4		7
A	California Linderiella (*Linderiella occidentalis*)	None	None	G2G3	S2S3		2
A	Silvery Legless Lizard (*Anniella pulchra pulchra*)	None	None	G3G4T3T4Q	S3		2
A	White-Tailed Kite (*Elanus leucurus*)	None	None	G5	S3S4		2
A	Song Sparrow ("Modesto" Population) (*Melospiza melodia*)	None	None	G5	S3?		4
A	Mason's Lilaeopsis (*Lilaeopsis masonii*)	None	Rare	G2	S2	1B.1	7
A	Hospital Canyon Larkspur (*Delphinium californicum* ssp. *interius*)	None	None	G3T3	S3	1B.2	2
A	San Joaquin Spearscale (*Atriplex joaquinana*)	None	None	G2	S2	1B.2	5
A	Curved-Foot Hygrotus Diving Beetle (*Hygrotus curvipes*)	None	None	G1	S1		6
A	Chaparral Ragwort (*Senecio aphanactis*)	None	None	G3?	S2	2B.2	1
A	Longhorn Fairy Shrimp (*Branchinecta longiantenna*)	Endangered	None	G1	S1		2
HP	Prairie Falcon (*Falco mexicanus*)	None	None	G5	S4		3
A	Steelhead - Central Valley DPS (*Oncorhynchus mykiss irideus*)	Threatened	None	G5T2Q	S2		2
P	Northern Harrier (*Circus cyaneus*)	None	None	G5	S3		1
A	Woolly Rose-Mallow (*Hibiscus lasiocarpos* var. *occidentalis*)	None	None	G5T2	S2	1B.2	5
A	Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	Threatened	None	G3	S2S3		4
A	Riparian Brush Rabbit (*Sylvilagus bachmani riparius*)	Endangered	Endangered	G5T1	S1		8
A	Recurved Larkspur (*Delphinium recurvatum*)	None	None	G3	S3	1B.2	1
A	Sacramento Anthicid Beetle (*Anthicus sacramento*)	None	None	G1	S1		4
A	Brittlescale (*Atriplex depressa*)	None	None	G2	S2	1B.2	1

APPENDIX A

2015 SPECIAL-STATUS SPECIES POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT SITE

Potential for occurrence	Common name (Scientific name)	Federal listing status	State listing status	Global rank [a]	State rank [b]	CNPS list [c]	Records within 10 miles
A	Heartscale (*Atriplex cordulata* var. *cordulata*)	None	None	G3T2	S2	1B.2	1
A	Loma Prieta Hoita (*Hoita strobilina*)	None	None	G2	S2	1B.1	1
A	Lesser Saltscale (*Atriplex minuscula*)	None	None	G2	S2	1B.1	1
A	Congdon's Tarplant (*Centromadia parryi* ssp. *congdonii*)	None	None	G3T2	S2	1B.1	1
A	Santa Clara Red Ribbons (*Clarkia concinna* ssp. *automixa*)	None	None	G5T3	S3	4.3	1
A	Diablo Helianthella (*Helianthella castanea*)	None	None	G2	S2	1B.2	1
A	Riparian (=San Joaquin Valley) Woodrat (*Neotoma fuscipes riparia*)	Endangered	None	G5T1Q	S1		2
A	Eulachon (*Thaleichthys pacificus*)	Threatened	None	G5	S3		1
A	Slough Thistle (*Cirsium crassicaule*)	None	None	G2	S2	1B.1	2
A	Delta Button-Celery (*Eryngium racemosum*)	None	Endangered	G1Q	S1	1B.1	2
A	Sharsmith's Onion (*Allium sharsmithiae*)	None	None	G2	S2	1B.3	1
A	Chaparral Harebell (*Campanula exigua*)	None	None	G2	S2	1B.2	1
A	Midvalley Fairy Shrimp (*Branchinecta mesovallensis*)	None	None	G2	S2		2
A	Mt. Hamilton Fountain Thistle (*Cirsium fontinale* var. *campylon*)	None	None	G2T2	S2	1B.2	2
A	Talus Fritillary (*Fritillaria falcata*)	None	None	G2	S2	1B.2	1
A	Wright's Trichocoronis (*Trichocoronis wrightii* var. *wrightii*)	None	None	G4T3	S1	2B.1	1

[a] GLOBAL RANKING
The global rank (G-rank) is a reflection of the overall condition of an element throughout its global range.
SPECIES OR NATURAL COMMUNITY LEVEL
G1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres.
G2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres.
G3 = 21-100 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres.
G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.
S1 = Less than 6 EOs OR less than 1,000 individuals OR less than 2,000 acres
S1.1 = very threatened
S1.2 = threatened

APPENDIX A

2015 SPECIAL-STATUS SPECIES POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT SITE

Potential for occurrence	Common name (Scientific name)	Federal listing status	State listing status	Global rank [a]	State rank [b]	CNPS list [c]	Records within 10 miles

S1.3 = no current threats known
S2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres
S2.1 = very threatened
S2.2 = threatened
S2.3 = no current threats known
List 1A: Plants presumed extinct in California
List 1B.1: Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California
List 1B.2: Plants rare, threatened, or endangered in California and elsewhere, fairly threatened in California
List 1B.3: Plants rare, threatened, or endangered in California and elsewhere, not very threatened in California
List 2.1: Plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California
List 2.2: Plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California
N/A = Data not available

APPENDIX B

2015 PHOTOGRAPHIC LOG

	**Photograph 1. Area B, facing south.**
	**Photograph 2. Area B, facing east.**

APPENDIX B

2015 PHOTOGRAPHIC LOG

	**Photograph 3. Area C, facing south.**
	**Photograph 4. Area C, facing southwest.**

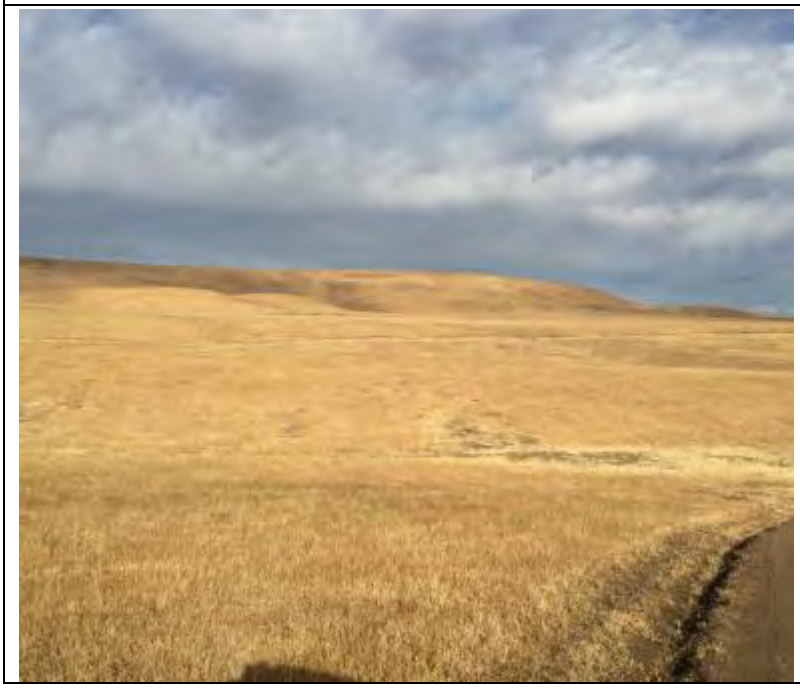
APPENDIX B

2015 PHOTOGRAPHIC LOG

	**Photograph 5. Area B, facing north.**
	**Photograph 6. Area B, facing east.**

APPENDIX B

2015 PHOTOGRAPHIC LOG

	**Photograph 7. Area C, facing southeast.**
	**Photograph 8. Area C, facing west.**

APPENDIX B

2015 PHOTOGRAPHIC LOG

	**Photograph 9. Area B, facing northwest.**
	**Photograph 10. Area C, facing northwest.**

APPENDIX B

2015 PHOTOGRAPHIC LOG

	**Photograph 11. Area C, facing southwest.**
	**Photograph 12. Area C, facing northwest.**

APPENDIX C

2015 PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

SCIENTIFIC NAME	COMMON NAME
Achyrachaena mollis	Blow wives
*Amaranthus blitoides**	Matweed
Amsinckia menziesii	Fiddleneck
*Asclepias fascicularis**	Narrow leaf milkweed
Avena fatua	Wild oat
*Brassica nigra**	Black mustard
*Bromus diandrus**	Ripgut
*Bromus hordeaceus**	Soft chess
*Carduus pycnocephalus**	Italian thistle
*Cerastium arvense**	Cerastium arvense
*Chenopodium sp.**	Pig weed
*Cirsium vulgare**	Spear Thistle
*Capsella bursa-pastoris**	Shepherd's-purse
*Convolvulus arvensis**	Bindweed
*Cynodon dactylon**	Bermuda grass
*Croton setigerus**	Dove weed
*Datura wrightii**	Jimson weed
*Eremocarpus setigerus**	Croton
*Erodium botrys**	Long-beaked stork's bill
*Erodium ssp.**	Filaree
Eucalyptus ssp.*	Eucalyptus
*Festuca perennis**	Italian rye grass
*Grindelia camporum**	Gumweed
Hemizonia fitchii	Fitch spikeweed
*Heterotheca grandiflora**	Telegraph weed
*Hirschfeldia incana**	Mustard
Holocarpha obconica	Tarplant
Hordeum marinum ssp. gussoneanum	Mediterranean barley
*Hordeum murinum ssp. Leporinum**	Farmer's Foxtail
*Hordeum ssp.**	Barley
*Hypochaeris radicata**	Catsear
Lactuca serrola	Wild lettuce
*Lepidium latifolium**	Pepper weed
*Lepidium nitidum**	Shiny pepper grass
*Malva parviflora**	Cheeseweed
*Malva neglecta**	Buttonweed
*Matricaria discoidea**	Pineapple weed
*Marrubium vulgare**	Horehound
*Medicago polymorpha**	Burweed
Myriophyllum sp.	Water milfoil
Phacelia sp.	Phacelia
*Poa annua**	Annual meadow grass
*Polygonum aviculare**	Knotweed
*Polypogon monspelensis**	Rabbitfoot grass
Populus fremontii	Cottonwood
Rumex crispus	Curly dock

APPENDIX C

2015 PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

SCIENTIFIC NAME	COMMON NAME
Salix gooddingii	Black willow
*Salsola tragus**	Tumbleweed
*Schinus molle**	Peruvian pepper
*Silybum marinum**	Milk thistle
*Sonchus oleraceus**	Sow thistle
Spergularia sp.	Sand spurry
*Stellaria media**	Chickweed
*Trichostema lanceolatum**	Vinegar weed
*Trifolium hybridum**	Alsike clover
Typha ssp.	Cattail
*Urtica urens**	Dwarf nettle
*Vicia sativa**	Vetch

"*" non-native plant species.

APPENDIX D

2015 WILDLIFE SPECIES OBSERVED WITHIN THE STUDY AREA

Scientific name	Common name
Amphibians	
Pseudacris regilla	Pacific chorus frog
Reptiles	
Crotalus viridis	Western rattlesnake
Uta stansburiana	Common Side-blotched Lizard
Birds	
Athene cunicularia	Burrowing Owl
Buteo jamaicensis	Red-Tailed Hawk
Buteo swainsoni	Swainson's Hawk
Carpodacus mexicanus	House Finch
Cathartes aura	Turkey Vulture
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Circus cyaneus	Northern Harrier
Eremophila alpestris	Horned Lark
Euphagus cyanocephalus	Brewer's Blackbird
Falco mexicanus	Prairie Falcon
Falco sparverius	American Kestrel
Hirundo rustica	Barn Swallow
Icterus bullockii	Bullock's Oriole
Lanius ludovicianus	Loggerhead Shrike
Mimus polyglottos	Northern Mockingbird
Myiarchus cinerascens	Ash-throated Flycatcher
Passer domesticus	House Sparrow
Passerculus sandwichensis	Savannah Sparrow
Salpinctes obsoletus	Rock Wren
Sayornis saya	Say's Phoebe
Streptopelia decaocto	Eurasian Collared Dove
Sturnus vulgaris	European Starling
Sturnella neglecta	Western Meadowlark
Tyrannus verticalis	Western Kingbird
Zenaida macroura	Mourning Dove
Zonotrichia leucophrys	White-crowned Sparrow
Mammals	
Canis latrans	Coyote
Otospermophilus beecheyi	California ground squirrel
Taxadea taxus	American Badger
Thomomys bottae	Botta's pocket gopher

APPENDIX E

2015 RARE PLANT SURVEY

TRACY HILLS PROJECT

September 2015

Rare Plant Survey Report

Owner
The Tracy Hills Project Owner, LLC
888 San Clemente
Suite 100
Newport Beach, CA 92660

Prepared By


16361 Scientific Way
Irvine, CA 92618
(949) 467-9100

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 EXECUTIVE SUMMARY

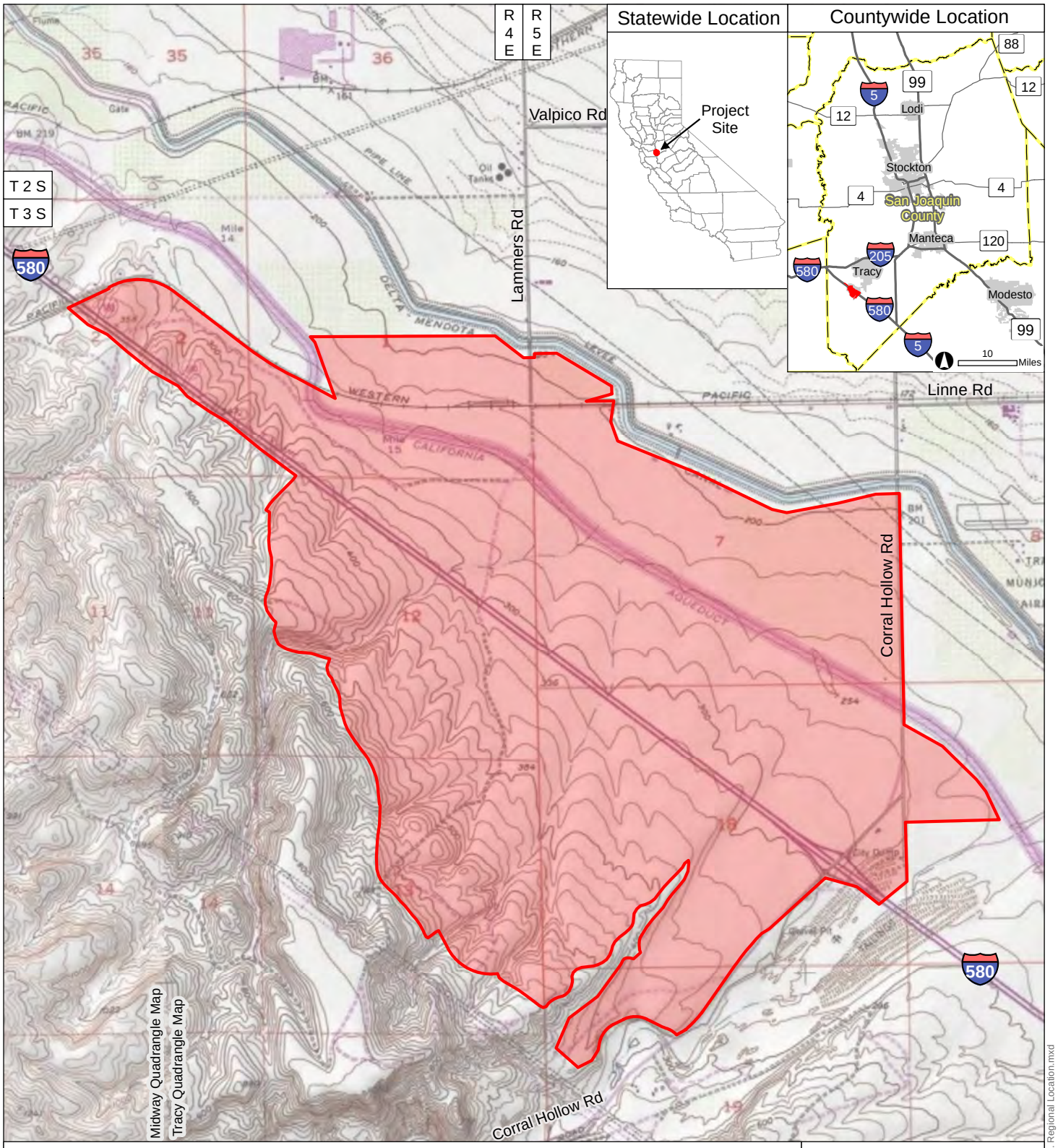
The Tracy Hills Project Owner LLC (Tracy Hills) is proposing to develop the Tracy Hills Project in Tracy, California (hereafter "Project", Figure 1). The Project includes a revised and updated Specific Plan[1] that authorizes approximately 2,732 acres for development of residential neighborhoods and non-residential uses (e.g., office, commercial, light industrial, parks, schools and open spaces) within existing low quality livestock grazing and agricultural lands. This report documents the findings of rare[2] plant surveys for the Project. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site) (Figure 2). Six land cover types were observed within the study area in 2015: agricultural, annual grassland, open water, orchard, non-native grasses, and developed habitats. It should also be noted that the study area is not collocated with any U.S. Fish and Wildlife Service (USFWS)-designated critical habitat for plants.

In-depth botanical field census and analysis activities have occurred within representative portions of the study area for more than 25 years to account for variations in local precipitation patterns; and to safeguard that field surveys were conducted during a year when winter/spring rainfall was adequate, to maximize the potential for detecting rare flora. The literature review and 2015 pedestrian survey results indicate that the flora detected within the study area have not changed significantly from those documented in past studies over roughly quarter of a century. Accordingly, roughly 80% of the 58 plant species detected within the study area during 2015 surveys were non-native plants. Although the Project footprint is large in total size, the study area has very low species richness and diversity; and those lands proposed for development do not support habitat for any State- or Federal-listed plant species. To that end, no state- or federally-listed plant species have been detected during any pedestrian-based biological surveys from 1989 through the current 2015 rare plant surveys. Additionally, no state- or federally-listed plant species have been documented within 1 mile of the Project.

Botanical surveys have been conducted to assess overall baseline conditions and evaluate the study area's ability to support special-status plant species. The habitat within the study area includes existing livestock grazing and agricultural undertakings which have greatly reduced the lands ability to support special status species. The surveys performed have been floristic in nature. No state- or federally-listed plant species have ever been detected during surveys within any portion of the study area. The data collected and analyzed herein also suggests that there is extremely low potential for rare plants to recruit into the Project Site. Given that targeted surveys for rare plants are negative within the study area, the Project would not be expected to result in the loss of individual special status plants or that it would adversely affect local or regional populations of them.

[1] RBF Consulting 2014. Tracy Hills Specific Plan: Habitat Assessment & San Joaquin County Multi-Species Habitat Conservation and Open Space Plan Consistency Analysis

[2] For the purposes of this analysis, "rare plants" are defined as any species that have been afforded special protection by federal, state, or local resource agencies (e.g., USFWS, California Department of Fish and Wildlife) or resource conservation organizations (e.g., California Native Plant Society).



Project Site

Urban Area (inset)

County Boundary (inset)

Interstate or State Highway (inset)

0 0.25 0.5 Mile

1 inch = 0.5 mile

Data Sources:
- Bing accessed Jul 2015
- ESRI StreetMap North America 2010
- ESRI US Topo Maps accessed Jul 2015

Map Prepared: 7-15-15

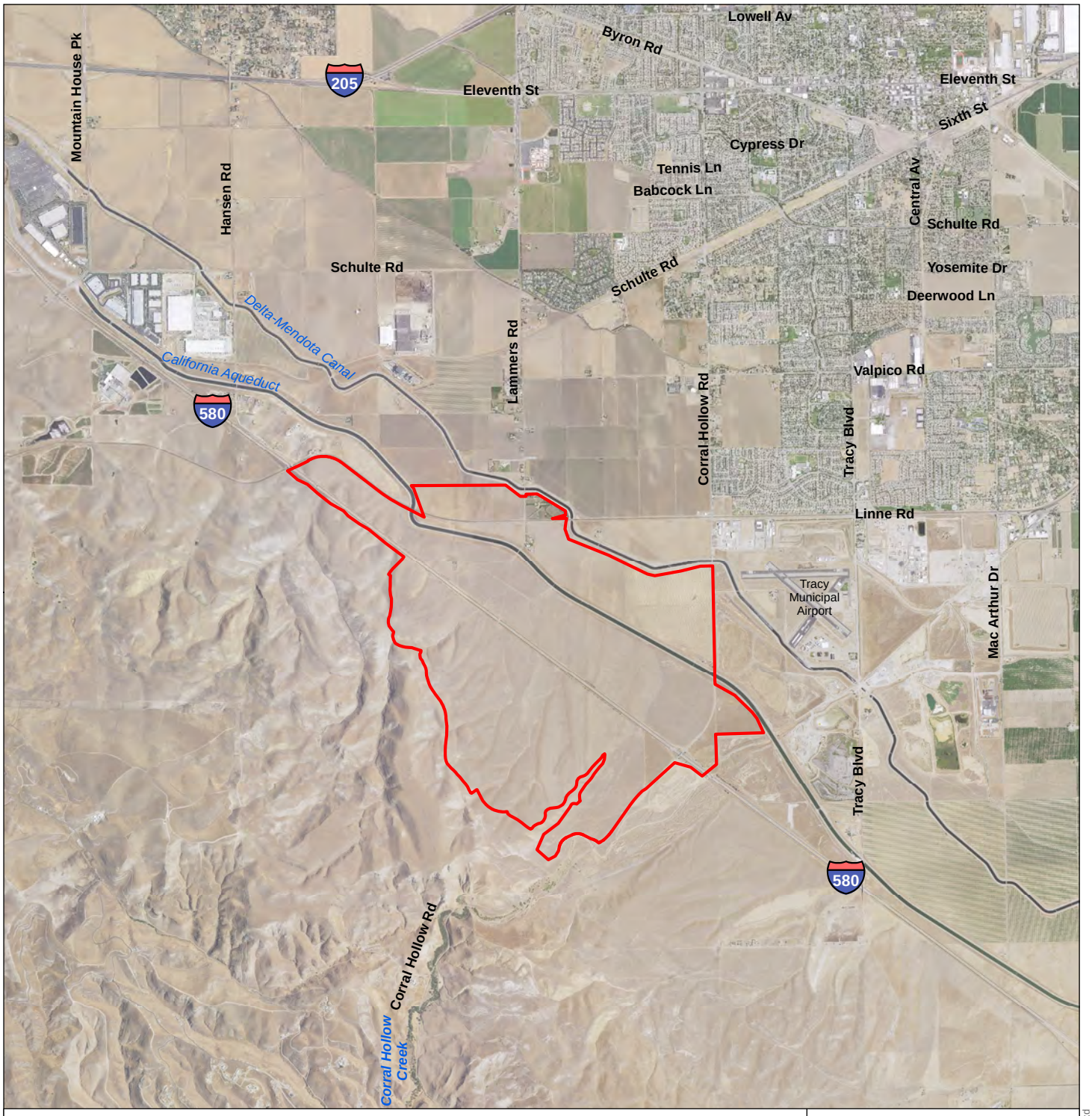
Prepared by:
NOREAS
Environmental Engineering and Science

The Project Site is located on the Midway and Tracy USGS 7.5-minute quadrangle maps; Mt. Diablo Base and Meridian,
Township 3 South, Range 4 East, Sections 1, 2, 12 and 13; and
Township 3 South, Range 5 East, Sections 6, 7, 8, 17, 18 and 19.

Center coordinates for the Project Site are: 37.680702, -121.476315.

C:\SRM\Noreas\Tracy Hills\ArcMap\Plants\Fig1. Regional Location.mxd

Figure 1. Regional Location



Project Site (2,729 acres)

0 0.5 1 Mile

1 inch = 1 mile

Data Source:
- USDA-NRCS-AFPO NAIP accessed Jul 2015, image date: 2014

Map Prepared: 7-15-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\Plants\Fig2. Site Vicinity.mxd

Figure 2. Site Vicinity

2.0 INTRODUCTION AND PROJECT LOCATION

NOREAS, Inc. was retained to review historic floristic census data and conduct rare plant surveys within the development footprint of the proposed Tracy Hills Project. The Project occurs in Sections 6, 7, 8, 17, 18 and 19 of Township 3 South and Range 5 East (Mt. Diablo Base and Meridian) of the Midway U.S. Geological Survey (USGS 1986) 7.5-minute quadrangle map; and Sections 1, 2, 12 and 13 of Township 3 South, and Range 4 East (Mt. Diablo Base and Meridian) of the Tracy U.S. Geological Survey 7.5 minute quadrangle map (USGS 1980).

The primary objective of the literature review and field surveys was to determine the presence – or to confirm the presumed absence of, rare plant species and their habitats within Project boundaries. For the purposes of this document, the "study area" includes the entirety of the Project's possible proposed ground disturbance footprint (Figure 2). Therefore, the study area includes all lands likely to be affected directly by the Project, and is limited to those locales associated with proposed ground disturbances.

3.0 METHODS

Prior to beginning pedestrian based field surveys in 2015, botanical specialists were consulted and available information from resource management plans and relevant documents were also reviewed to determine the locations and types of botanical resources that have the potential to exist within and adjacent to the study area. Resources were evaluated within several miles of the Project. As detailed below, botanical field census and analysis activities have occurred within representative portions of the study area for more than 25 years. The primary materials reviewed included, but were not limited to, the following:

- Biological Assessment Properties East of California Aqueduct Carnegie Business Park San Joaquin County, California (LSA 1989);
- Biological Study, Tracy Hills Community, San Joaquin County California (LSA 1991);
- Multi-Species Habitat Management Plan (LSA 1996);
- Habitat Conservation Plan for Lakeside Tracy Development (LSA 1999);
- Habitat Management Plan - Tracy Hills Project (Foothill Associates 2004);
- Environmental Assessment for the Tracy Hills Habitat Conservation Plan (Tracy Hills LLC 2004);
- Biological Resources on the Tracy 580 Business Park Property (Berryman Ecological LLC 2010);
- USFWS Critical Habitat Mapper and File Data (USFWS 2015a);
- USFWS Sacramento Field Office Species List for San Joaquin County (USFWS 2015b);
- California Natural Diversity Database maintained by the California Department of Fish and Wildlife (CDFW 2015);
- California Native Plant Society Electronic Inventory (CNPS 2015);
- General Biological Resources Assessment for the Tracy Hills Project (NOREAS 2015); and
- Aerial Photographs (Microsoft Corporation 2015).

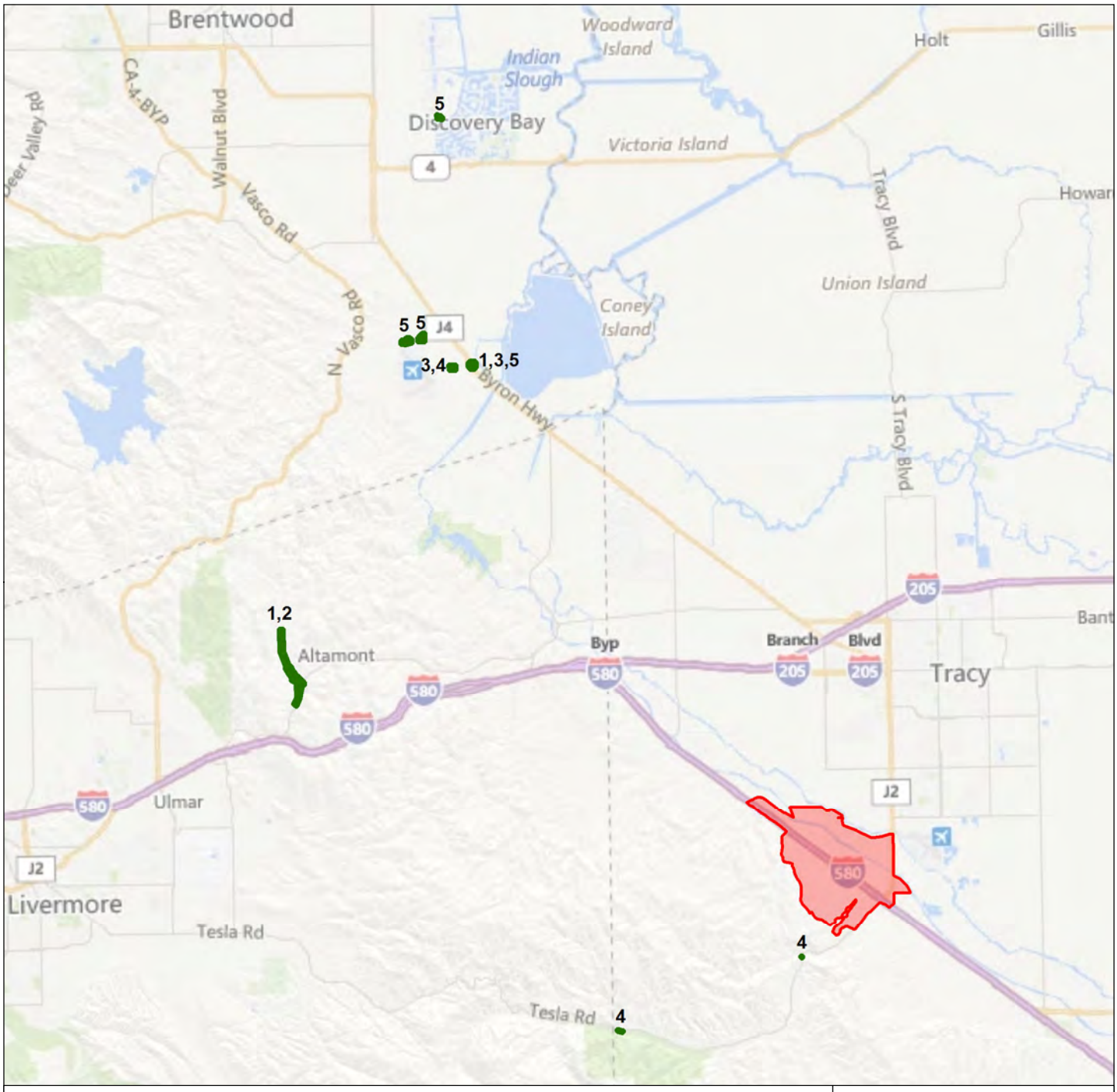
To support the analysis, pedestrian-based field surveys were performed to assess general and dominant vegetation community types, community sizes, habitat types, and plant species present within communities. Community type descriptions are based on observed dominant vegetation composition and derived from the criteria and definitions of widely accepted vegetation classification systems (Holland 1986; Sawyer et al. 2009). Plants were identified to the lowest taxonomic level sufficient to determine whether the species detected were non-native, native, or special-status. Plants of uncertain identity were subsequently identified from taxonomic keys (Baldwin et al. 2012). Scientific and common species names were recorded according to Baldwin et al. (2012).

Focused pedestrian based botanical surveys were conducted within the study area In March, April, May, June and July of 2015. Field survey methods were derived from the standardized guidelines issued by the USFWS (2000), California Department of Fish and Wildlife (CDFW 2009) and the California Native Plant Society (CNPS 2001). The field surveys were conducted to determine the presence/absence of

special-status plant species within the study area, and were conducted during the appropriate blooming period[3] for the majority of annual plant species within the region.

An evaluation of reference populations was also performed prior to initiating surveys in March, April and June 2015 to assess local variations in plant phenology; and to objectively validate survey timing (Figure 3). The field surveys within the study area were completed by walking parallel belt transects spaced approximately 30 feet apart. Where necessary, transect spacing was reduced or expanded to account for differences in terrain, vegetation density and visibility.

[3] Appropriate blooming periods were obtained from the California Native plant Society's Inventory of Rare and Endangered Vascular Plants of California, 1994.



Project Site

Reference Population

Map Code	Common Name (Scientific Name)
1	Lesser Saltscale (*Atriplex miniscula*)
2	Congdon's Tarplant (*Centromadia parryi* ssp. *congdonii*)
3	Recurved Larkspur (*Delphinium recurvatum*)
4	Diamond-Petaled California Poppy (*Eschscholzia rhombipetala*)
5	San Joaquin Spearscale (*Extriplex joaquinana*)

0 1 2 3 Miles

1 inch = 3 miles

Data Source:
- Bing accessed Aug 2015

Map Prepared: 8-4-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\Plants\Fig3. Reference Population Map.mxd

Figure 3. Reference Population Map

4.0 BOTANICAL SURVEY RESULTS

Weather conditions during the 2015 surveys included cloudy to clear skies, temperatures ranging from 48–102 degrees Fahrenheit, and winds fluctuating from 0 to 20 miles per hour. Botanical surveys were performed on the following dates in 2015: 18, 19, 24, 25, 26, 27, 30 and 31 March, 01, 02, 03, 04, 16, 17, 18, 20, 21, 22, 23, 24, 27, 28, 29, and 30 April, 07, 08, 09, 25, 26, 27, 28 May, 01, 02, 03, 04, 08, 09, 10, 11, 12, 22, 23, June, 07, 08, 09, 10, 11, 12, 20, 21, 22, 23 July.

4.1 Vegetation Communities and Land Cover Types

Six vegetation communities/land cover types were observed within the study area: agricultural, annual grassland, open water, orchard, non-native grasses, and developed (Figure 4). Cover types are described in detail below.

Agricultural

The agricultural land cover type is actively utilized crop production and includes areas bound by the Union Pacific Railroad and the California Aqueduct to the south, the Delta-Mendota Canal to the north, and the Corral Hollow Road to the east. This type is used for annual and biannual row crops, and an orchard within the study area.

Annual Grassland

The annual grassland vegetation community is characterized by a dominance of nonnative grasses and forbs that are being annually grazed within the study area. Extensive cattle grazing have occurred for numerous years within this portion of the study area as well; which has restricted the colonization of native shrubs and trees. Dominant plant species found in this community include wild barley (*Hordeum ssp*.), soft chess (*Bromus hordeaceus*), ripgut (*Bromus diandrus*), and wild oats (*Avena ssp*.). This community also contains small areas of anthropogenic structures that are generally associated with active cattle ranches (i.e., fences, gates, water tanks, troughs, wells, cattle guards, corrals, dirt and gravel roads). Some structures also occur within the study area (e.g., cabin, out buildings, remnant ornamental trees, power poles and lines).In addition the southeastern portion of this land cover type has been leveled. Therefore remnant berms are present as well; indicating signs of historically irrigated pasture lands. A few ornamental trees, mostly blue gum (*Eucalyptus globulosus*) also occur in this vegetation community. The annual grassland community occurs south of the California Aqueduct and is bisected by Interstate 580 within the study area.

Open Water

Open water occurring within the study area is characterized by deep water (>4 feet in depth) that is general devoid of vegetation. This habitat occurs within the California Aqueduct and is of human construction. It is a maintained water conveyance system positioned within a concrete lined trapezoidal (in cross-section) channel that flows from the northwest to southeast.

Orchard

The orchard land cover type within the study area includes active orchards with regular applications of herbicides to manage weed populations. These orchards include annual and biannual crops.

Non-Native Grasses

The non-native grasses vegetation community is characterized by nonnative – typically early successional plant species within the study area, which are tall and accumulate as thatch due to their

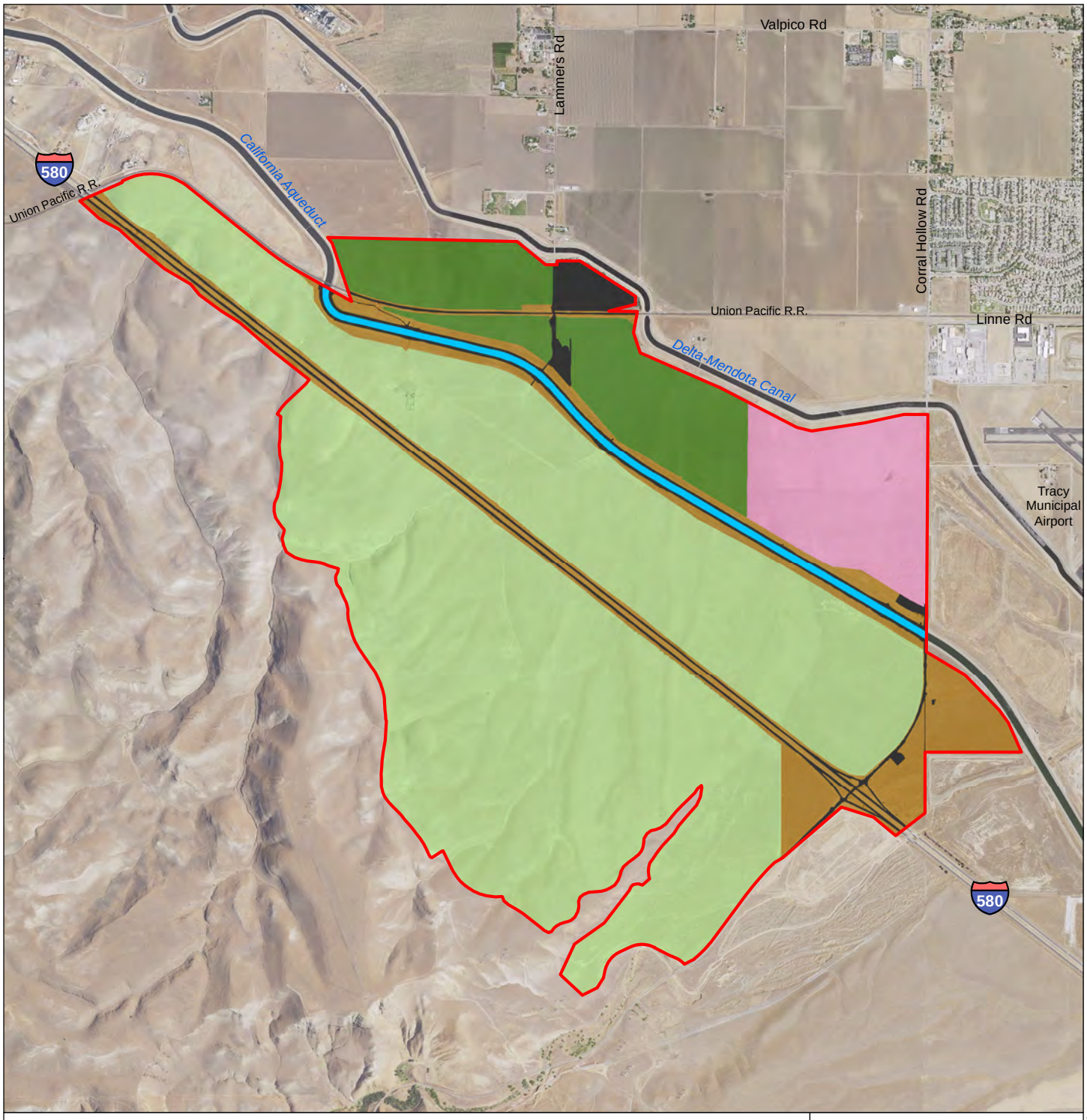
non-grazed condition. This plant community generally occurs on the sides of elevated berms of the California Aqueduct and roads. Dominant plant species observed in this plant community include short-pod mustard (*Hirschfeldia incana*), gumweed (*Grindelia ssp*.) and telegraph weed.

Developed

Developed communities in the study area are characterized by significant anthropogenic structures (i.e., highways, paved surface streets, rail road appurtenances, and residences). This land cover type also includes remnant buildings and foundations not currently associated with a commercial grazing operation.

4.2 Special-Status Plants

No state- or federally-listed plant species have been documented within 1 mile of the Project (Figure 5); and the study area includes no USFWS-critical habitat for plants (Figure 6). Furthermore, no rare plant species were detected during any of the historic, or during the 2015 pedestrian based botanical surveys which were performed within the study area (Figure 7). Representative photographs of the study area are provided in Appendix A. Plant species observed during the surveys are listed in Appendix B. It should also be noted that approximately 80% of the 58 plant species detected within the study area during 2015 surveys are non-native plants.



Project Site

Vegetation Communities/Land Cover Types

- Agricultural (277 acres)
- Annual Grassland (1,821 acres)
- Developed (103 acres)
- Non-Native Grasses (289 acres)
- Open Water (California Aqueduct) [38 acres]
- Orchard (201 acres)

0 0.25 0.5 Mile

1 inch = 0.5 mile

Data Sources:
- San Joaquin County GIS accessed Jul 2015, data date: Jul 2014
- USDA-NRCS-AFPO NAIP accessed Jul 2015, image date: 2014

Map Prepared: 7-31-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\Plants\Fig4. Vegetation.mxd

Figure 4. Vegetation Communities/Land Cover Types

Project Site

10-Mile Radius Around the Project Site

Freeway

Major Road

Golf Course or Park

Water Body

Special-Status Plant Occurrences

Map Code	Common Name (Scientific Name)
1	Sharsmith's Onion (*Allium sharsmithiae*)
2	Large-Flowered Fiddleneck (*Amsinckia grandiflora*)
3	Heartscale (*Atriplex cordulata* var. *cordulata*)
4	Brittlescale (*Atriplex depressa*)
5	Lesser Saltscale (*Atriplex minuscula*)
6	Big Tarplant (*Blepharizonia plumosa*)
7	Round-Leaved Filaree (*California macrophylla*)
8	Chaparral Harebell (*Campanula exigua*)
9	Lemmon's Jewel-Flower (*Caulanthus lemmonii*)
10	Congdon's Tarplant (*Centromadia parryi* ssp. *congdonii*)
11	Slough Thistle (*Cirsium crassicaule*)
12	Mt. Hamilton Fountain Thistle (*Cirsium fontinale* var. *campylon*)
13	Santa Clara Red Ribbons (*Clarkia concinna* ssp. *automixa*)
14	Hospital Canyon Larkspur (*Delphinium californicum* ssp. *interius*)
15	Recurved Larkspur (*Delphinium recurvatum*)
16	Delta Button-Celery (*Eryngium racemosum*)
17	Diamond-Petaled California Poppy (*Eschscholzia rhombipetala*)
18	San Joaquin Spearscale (*Extriplex joaquinana*)
19	Talus Fritillary (*Fritillaria falcata*)
20	Diablo Helianthella (*Helianthella castanea*)
21	Woolly Rose-Mallow (*Hibiscus lasiocarpos* var. *occidentalis*)
22	Loma Prieta Hoita (*Hoita strobilina*)
23	Mason's Lilaeopsis (*Lilaeopsis masonii*)
24	Showy Golden Madia (*Madia radiata*)
25	Shining Navarretia (*Navarretia nigelliformis* ssp. *radians*)
26	Chaparral Ragwort (*Senecio aphanactis*)
27	Wright's Trichocoronis (*Trichocoronis wrightii* var. *wrightii*)
28	Caper-Fruited Tropidocarpum (*Tropidocarpum capparideum*)

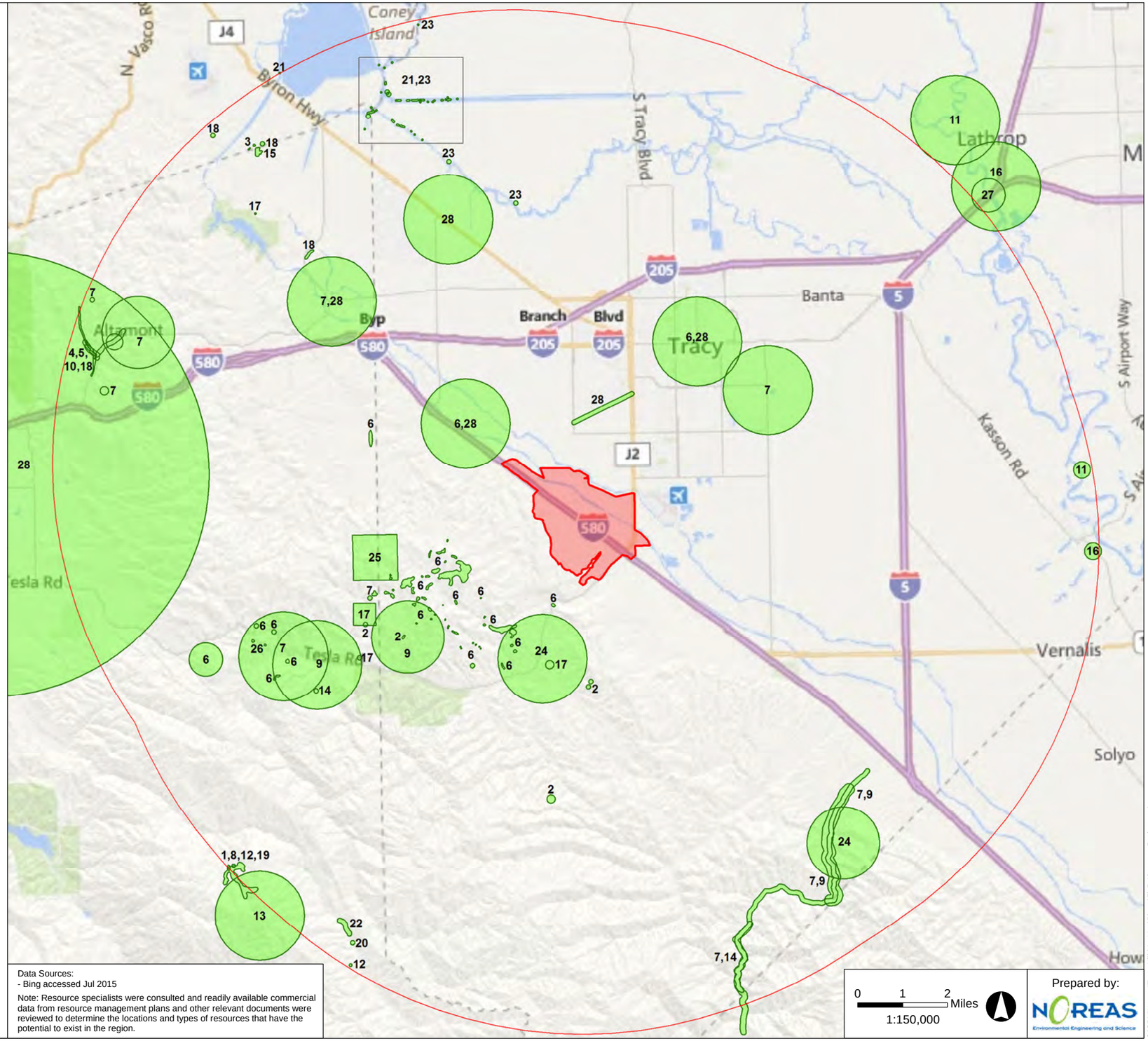
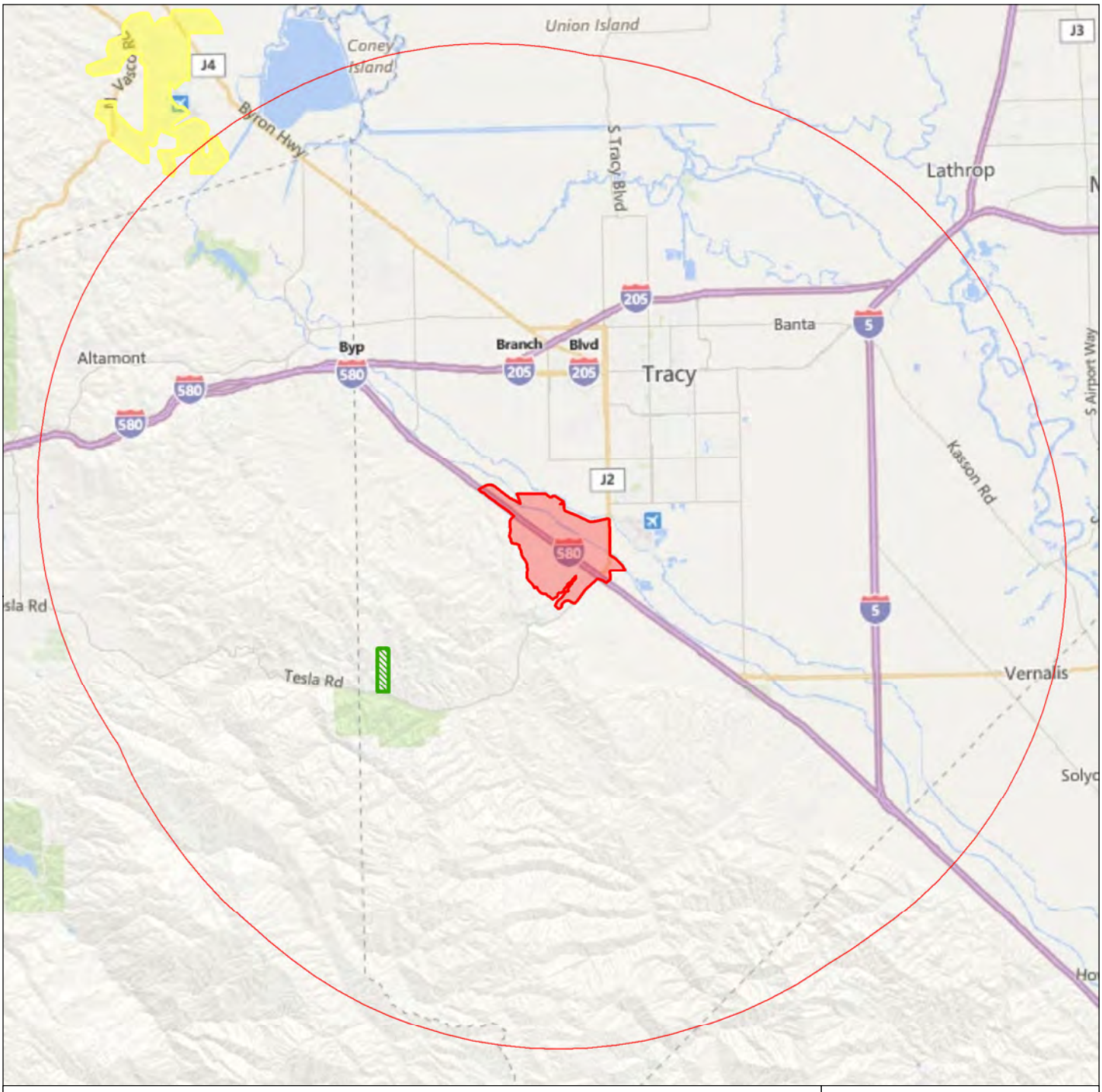


Figure 5. Literature Review



Project Site

10-Mile Radius Around the Project Site

Freeway

Highway

Water Body

Critical Habitat

Large-Flowered Fiddleneck (*Amsinckia grandiflora*)

Contra Costa Goldfields (*Lasthenia conjugens*)

0 1 2 3 Miles

1:210,000

Data Sources:
- Bing accessed Jul 2015
- US Fish and Wildlife Service critical habitat accessed Jul 2015, data date: Jun 2015

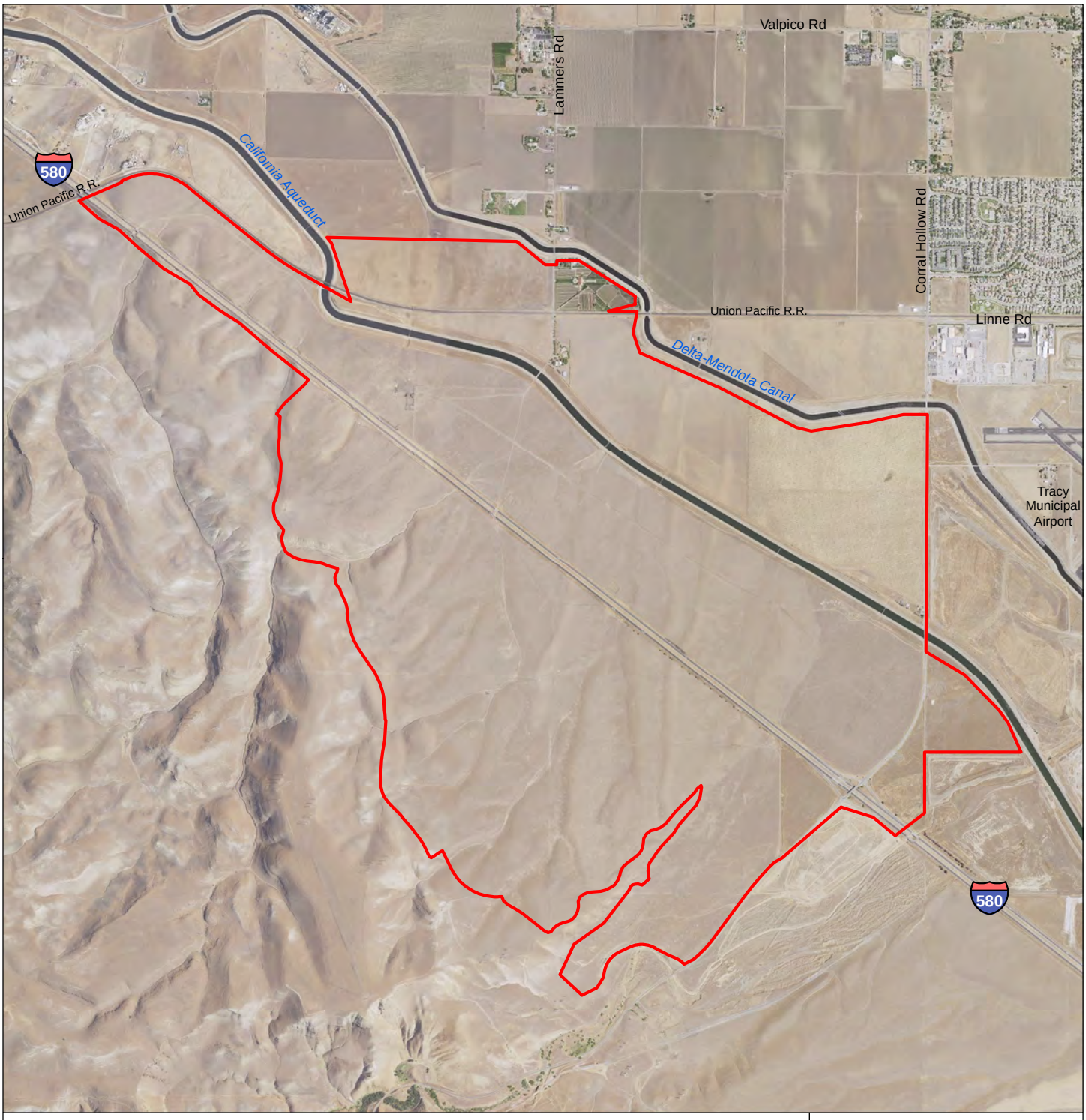
Map Prepared: 7-17-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\Plants\Fig6. Critical Habitat.mxd

Figure 6. Critical Habitat



Project Site

Note: No rare plants were observed within the Project Site.

0 0.25 0.5 Mile

1 inch = 0.5 mile

Data Sources:
- San Joaquin County GIS accessed Jul 2015, data date: Jul 2014
- USDA-NRCS-AFPO NAIP accessed Jul 2015, image date: 2014

Map Prepared: 7-17-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\Plants\Fig7. Results.mxd

Figure 7. Results

5.0 IMPACTS AND RECOMMENDATIONS

The study area is not collocated with any USFWS-designated critical habitat for plants. No state- or federally-listed plant species have ever been detected during any pedestrian-based biological surveys from 1989 through the current 2015 rare plant surveys. Additionally, no state- or federally-listed plant species have been documented within 1 mile of the Project. Furthermore, botanical field census and analysis activities have occurred within portions of the study area for more than 25 years to safeguard that field surveys were conducted during a year when winter/spring rainfall was adequate, to maximize the potential for detecting rare flora. The literature review and 2015 pedestrian survey results indicate that the flora detected within the study area have not changed considerably from those documented in past studies. Roughly 80% of the 58 distinct species detected within the study area during 2015 are non-native plants. Although the Project footprint is large in total size, the study area has very low species richness and diversity; and those lands proposed for development do not support habitat for any State or Federal-listed plant species.

The habitat within the study area includes existing livestock grazing and agricultural undertakings which have greatly reduced the lands ability to support special status plants. The surveys performed in 2015 and over the past quarter century have been floristic in nature. The data collected and analyzed implies that there is extremely low potential for rare plants to recruit into the Project Site as well. Given that targeted surveys for rare plants are negative within the study area, the Project would not be expected to result in the loss of individual special status plants or that it would adversely affect local or regional populations of them.

6.0 REFERENCES

Baldwin, J., D. Goldman, D. Keil, R. Patterson, and T. Rosatti. 2012. The Jepson Manual: Higher Plants of California. Berkeley: University of California Press.

Berryman Ecological LLC. 2010. Biological Resources on the Tracy 580 Business Park Property.

California Department of Fish and Game CDFG (CDFG). 2009. Protocols for surveying and evaluating impacts to special status native plant populations and natural communities. Available at:http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdfCalifornia Department of Fish and Wildlife (CDFW). 2015. RareFind. California Department of Fish and Game, Natural Diversity Database (CNDDB). Sacramento, CA: California Department of Fish and Game, Biogeographic Data Branch.

California Native Plant Society (CNPS). 2001. Botanical Survey Guidelines of the California Native Plant Society.

_____. 2015. CNPS Electronic Inventory of Rare and Endangered Plants: CNPS.

Foothill Associates. 2004. Habitat Management Plan - Tracy Hills Project.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California (California Department of Fish and Game, The Resources Agency, ed), p. 156. Sacramento, CA.

LSA Associates, Inc. (LSA). 1989. Biological Assessment Properties East of California Aqueduct Carnegie Business Park San Joaquin County, California.

_____. 1991. Biological Study, Tracy Hills Community, San Joaquin County California.

_____. 1996. Multi-Species Habitat Management Plan.

_____. 1999. Habitat Conservation Plan for Lakeside Tracy Development.

Microsoft Corporation. 2015. Bing Maps Aerial Imagery. Redmond, WA

NOREAS, Inc. (NOREAS). 2015. General Biological Resources Assessment for the Tracy Hills Project.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation. Second Edition. California Native Plant Society, Sacramento, California.

Tracy Hills LLC. 2004. Environmental Assessment for the Tracy Hills Habitat Conservation Plan.

U.S. Geological Survey (USGS). 1980. 7.5-Minute Quadrangle Tracy, California.

_____. 1986. 7.5-Minute Quadrangle Midway, California.

United States Fish and Wildlife Service (USFWS). 2000. Guidelines for Conducting and Reporting Botanical Inventories Federally Listed, Proposed, and Candidate Plants (U.S. Department of the Interior): USFWS.

_____. 2015a. Critical Habitat Portal.

_____.. 2015b. Sacramento Fish and Wildlife Office. Endangered and Threatened Species List.

APPENDIX A

PHOTOGRAPH LOG

APPENDIX A

PHOTOGRAPH LOG

	Photograph: 1. Lesser Saltscale (*Atriplex miniscula*) observed at reference site.
	Photograph: 2. San Joaquin Spearscale (*Extriplex joaquinana*) observed at reference site.

APPENDIX A

PHOTOGRAPH LOG

	Photograph: 3. Congdon's Tarplant (*Centromadia parryi ssp. congdonii*) observed at reference site.
	Photograph: 4. Facing South West from the northern portion of the study area.

APPENDIX A

PHOTOGRAPH LOG

	Photograph: 5. Facing South East from the northern portion of the study area.
	Photograph: 6. Facing North from the central portion of the study area.

APPENDIX B

2015 PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

APPENDIX B

2015 PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

SCIENTIFIC NAME	COMMON NAME
Achyrachaena mollis	Blow wives
*Amaranthus blitoides**	Matweed
Amsinckia menziesii	Fiddleneck
*Asclepias fascicularis**	Narrow leaf milkweed
Avena fatua	Wild oat
*Brassica nigra**	Black mustard
*Bromus diandrus**	Ripgut
*Bromus hordeaceus**	Soft chess
*Carduus pycnocephalus**	Italian thistle
*Cerastium arvense**	Cerastium arvense
*Chenopodium sp.**	Pig weed
*Cirsium vulgare**	Spear Thistle
*Capsella bursa-pastoris**	Shepherd's-purse
*Convolvulus arvensis**	Bindweed
*Cynodon dactylon**	Bermuda grass
*Croton setigerus**	Dove weed
*Datura wrightii**	Jimson weed
*Eremocarpus setigerus**	Croton
*Erodium botrys**	Long-beaked stork's bill
*Erodium ssp.**	Filaree
Eucalyptus ssp.*	Eucalyptus
*Festuca perennis**	Italian rye grass
*Grindelia camporum**	Gumweed
Hemizonia fitchii	Fitch spikeweed
*Heterotheca grandiflora**	Telegraph weed
*Hirschfeldia incana**	Mustard
Holocarpha obconica	Tarplant
Hordeum marinum ssp. gussoneanum	Mediterranean barley
*Hordeum murinum ssp. Leporinum**	Farmer's Foxtail
*Hordeum ssp.**	Barley
*Hypochaeris radicata**	Catsear
Lactuca serrola	Wild lettuce
*Lepidium latifolium**	Pepper weed
*Lepidium nitidum**	Shiny pepper grass
*Malva parviflora**	Cheeseweed
*Malva neglecta**	Buttonweed
*Matricaria discoidea**	Pineapple weed
*Marrubium vulgare**	Horehound
*Medicago polymorpha**	Burweed
Myriophyllum sp.	Water milfoil
Phacelia sp.	Phacelia
*Poa annua**	Annual meadow grass
*Polygonum aviculare**	Knotweed
*Polypogon monspelensis**	Rabbitfoot grass
Populus fremontii	Cottonwood
Rumex crispus	Curly dock
Salix gooddingii	Black willow

APPENDIX B

2015 PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

SCIENTIFIC NAME	COMMON NAME
*Salsola tragus**	Tumbleweed
*Schinus molle**	Peruvian pepper
*Silybum marinum**	Milk thistle
*Sonchus oleraceus**	Sow thistle
Spergularia sp.	Sand spurry
*Stellaria media**	Chickweed
*Trichostema lanceolatum**	Vinegar weed
*Trifolium hybridum**	Alsike clover
Typha ssp.	Cattail
*Urtica urens**	Dwarf nettle
*Vicia sativa**	Vetch

An "*" non-native plant species.

APPENDIX F

2015 BURROWING OWL SURVEY

TRACY HILLS PROJECT

September 2015

Burrowing Owl Survey Report

Owner
The Tracy Hills Project Owner, LLC
888 San Clemente
Suite 100
Newport Beach, CA 92660

Prepared By


16361 Scientific Way
Irvine, CA 92618
(949) 467-9100

TABLE OF CONTENTS

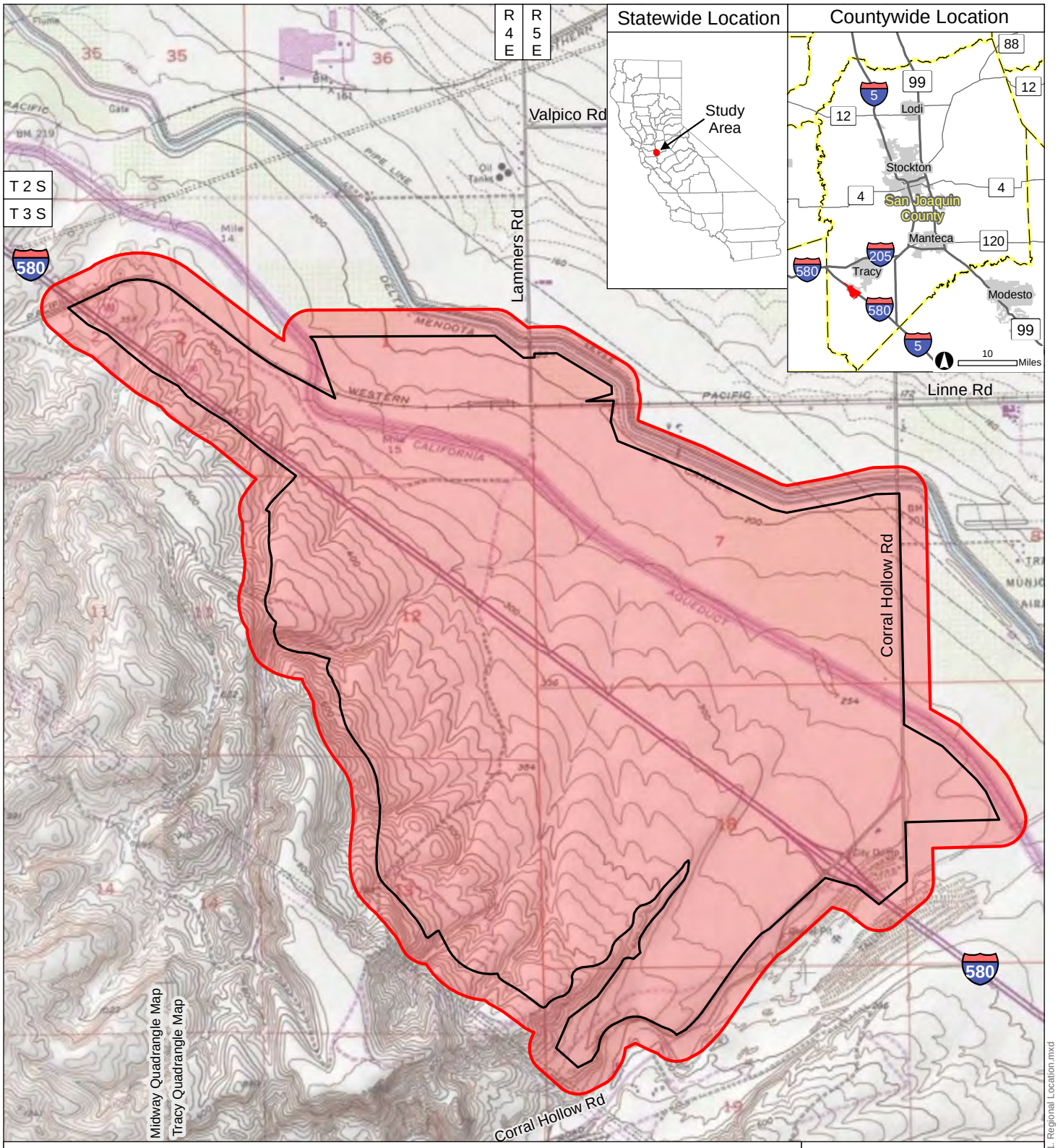
1.0 EXECUTIVE SUMMARY

The Tracy Hills Project Owner LLC (Tracy Hills) is proposing to develop the Tracy Hills Project in Tracy, California (hereafter "Project", Figure 1). The Project includes a revised and updated Specific Plan[1] that authorizes approximately 2,732 acres for development of residential neighborhoods and non-residential uses (e.g., office, commercial, light industrial, parks, schools and open spaces) within existing low quality livestock grazing and agricultural lands. This report provides the methods, assumptions and results of focused surveys for Burrowing Owl (*Athene cunicularia*) conducted within Project limits. Within this document, the study area includes the Project's proposed ground disturbance footprint (Project Site) and a 500-foot buffer. The study area therefore includes all lands to be affected directly or indirectly by the Project, and is not merely the immediate lands involved in the action itself (Figure 2). Six land cover types were observed within the study area in 2015 (NOREAS 2015): agricultural, annual grassland, open water, orchard, non-native grasses, and developed habitats.

Pedestrian-based field surveys for Burrowing Owl within discrete portions of the study area have been conducted from 2010 through the summer of 2015 to ascertain the presence or absence of the species. The results indicate that the biological resources detected within the study area have not changed significantly over the last half decade with deference to Burrowing Owls. Although the study area is large in total size – it has very low species richness and diversity, and is comparatively low quality habitat for Burrowing Owl; as much higher-quality habitats are available within the region. This is a result of the depauperate landscape and the numerous resident Burrowing Owl predators that were routinely detected within the Project Site in 2015 (e.g., American Badger, coyote, Red-Tailed Hawk, and other raptors).

The study area is lacking in numbers and variety of species – likely attributable to its inability to produce a high enough density of biomass to support a substantial population of owls. One pair of Burrowing Owls – which include several juvenile birds, were detected foraging, dispersing and utilizing discrete burrow complexes during the 2015 surveys. It should also be noted that the fossorial mammals which are Burrowing Owl predators that were detected within the study area are capable of digging one or more burrows per day – which would be expected to modify the quantity, distribution and willingness of owls to inhabit burrow complexes within the Project Site over time. Given the low quality habitat present (i.e., limited prey base, absence of irrigated agricultural lands, presence of owl predators), the likelihood of a healthy population of Burrowing Owls being supported by the Project Site is negligible.

[1] RBF Consulting 2014. Tracy Hills Specific Plan: Habitat Assessment & San Joaquin County Multi-Species Habitat Conservation and Open Space Plan Consistency Analysis.



Study Area

Project Site

County Boundary (inset)

Urban Area (inset)

Interstate or State Highway (inset)

0 0.25 0.5 Mile

1 inch = 0.5 mile

Data Sources:
- Bing accessed Jul 2015
- ESRI StreetMap North America 2010
- ESRI US Topo Maps accessed Jul 2015

Map Prepared: 7-15-15

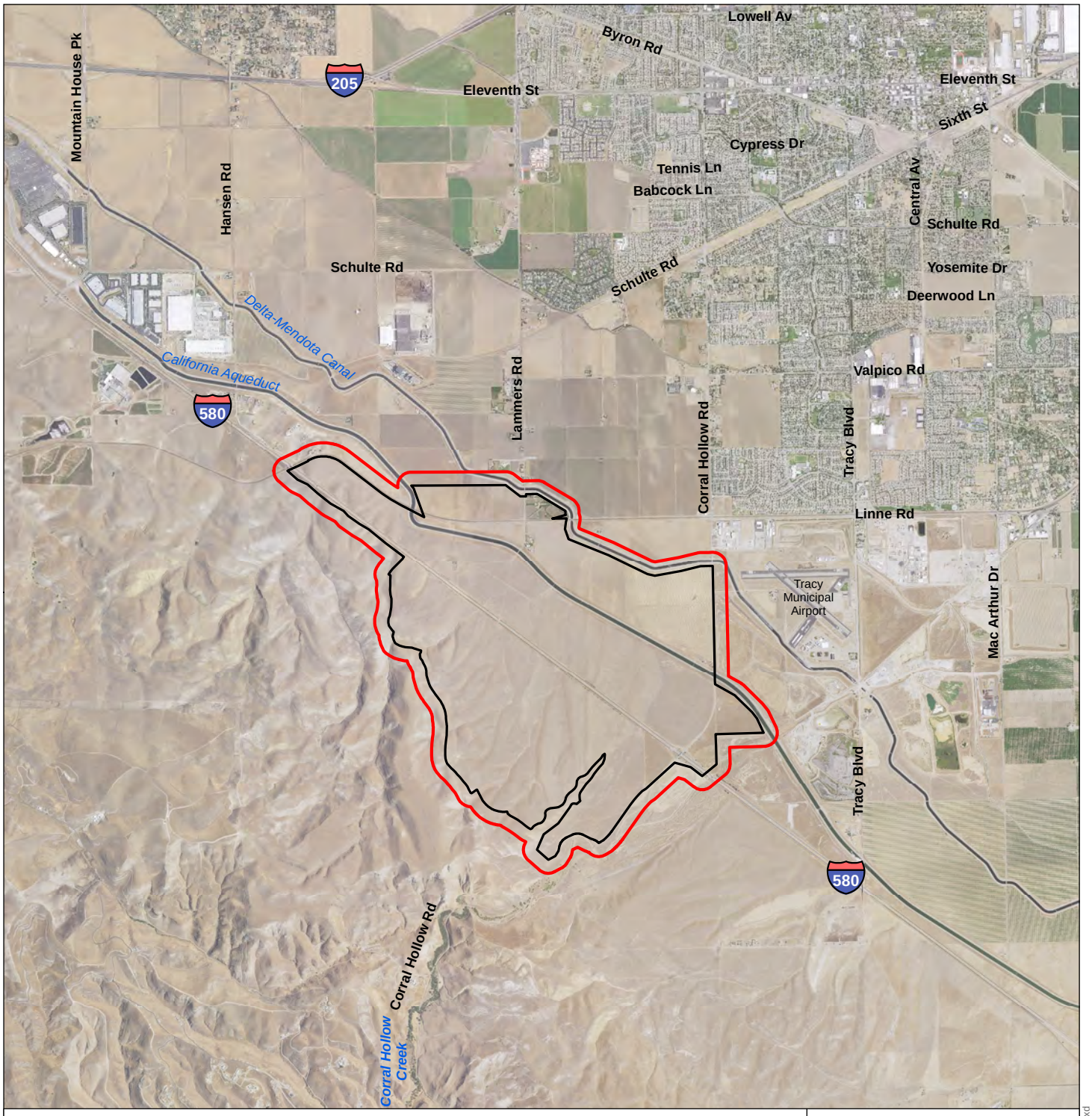
Prepared by:
NOREAS
Environmental Engineering and Science

The Study Area is located on the Midway and Tracy USGS 7.5-minute quadrangle maps; Mt. Diablo Base and Meridian,
Township 3 South, Range 4 East, Sections 1, 2, 11, 12, 13 and 24; and
Township 3 South, Range 5 East, Sections 6, 7, 8, 17, 18 and 19.

Center coordinates for the Study Area are: 37.680702, -121.476315.

C:\SRM\Noreas\Tracy Hills\ArcMap\BUOW\Fig1. Regional Location.mxd

Figure 1. Regional Location



Study Area (3,430 which includes a 500-foot buffer and the Project Site)

Project Site (2,729 acres)

0 0.5 1 Mile

1 inch = 1 mile

Data Source:
- USDA-NRCS-AFPO NAIP accessed Jul 2015, image date: 2014

Map Prepared: 7-30-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\BUOW\Fig2. Site Vicinity.mxd

Figure 2. Site Vicinity

2.0 INTRODUCTION AND PROJECT LOCATION

NOREAS Inc. was retained to review historic Burrowing Owl census data and conduct a focused 2015 Burrowing Owl survey for the proposed Project. The Project occurs in Sections 6, 7, 8, 17, 18 and 19 of Township 3 South and Range 5 East (Mt. Diablo Base and Meridian) of the Midway U.S. Geological Survey (USGS 1986) 7.5-Minute Quadrangle Map; and Sections 1, 2, 11, 12, 13 and 24 of Township 3 South, and Range 4 East (Mt. Diablo Base and Meridian) of the Tracy USGS 7.5-Minute Quadrangle Map (USGS 1980).

The primary objective of the literature review and 2015 field surveys was to determine the presence – or to confirm the presumed absence of, Burrowing Owl within study area. For the purposes of this document, the "study area" includes the Project's proposed ground disturbance footprint (Project Site) and a 500-foot buffer. The study area therefore includes all lands to be affected directly or indirectly by the Project, and are not merely the immediate lands involved in the action itself (Figure 2).

3.0 BURROWING OWL BACKGROUND

The Burrowing Owl has been designated by the California Department of Fish and Wildlife as a species of special concern. "State Species of Special Concern" status applies to animals not listed for protection under the federal Endangered Species Act or the California Endangered Species Act. The designation denotes that a species is declining at a rate that could result in State listing or that a species has historically occurred in low numbers and known threats to their persistence currently exist. The designation is intended to result in "special consideration" for these animals during the environmental review and discretionary permitting processes. In addition, the designation is intended to focus research and management attention on poorly-known, potentially at-risk species by stimulating the collection of additional information on their biology, distribution, and status.

Burrowing Owls prefer open, dry annual or perennial grasslands, agricultural and rangelands, deserts, and scrublands characterized by low-growing vegetation. Burrowing Owls also prefer areas inhabited by small mammals as they predominately depend on mammal burrows (particularly ground squirrels) for subterranean nesting. Owls can be found at elevations ranging from 200 feet below sea level to 9,000 feet. above (CDFG 1995). Burrowing Owls commonly perch on fence posts or on mounds outside their burrows. Northern populations of Burrowing Owls are usually migratory, while more southern populations may move short distances or not at all (Haug et al. 1993, Botelho 1996). Little is known about the winter ranges of migratory populations, although migratory Burrowing Owls are believed to mix with resident populations in California during the winter months (Coulombe 1971, Haug et al. 1993).

Burrowing Owls tend to be resident where food sources are stable and available year-round (Rosenberg et al. 1998). Typically, they disperse or migrate south in areas when food becomes seasonally scarce. Burrowing Owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a substantial portion of their diet (Rosenberg et al. 1998). Small mammals, especially mice, rats, gophers, and ground squirrels, are also important food items. Other prey animals include reptiles and amphibians, scorpions, young cottontail rabbits, bats, and birds such as sparrows and Horned Larks. Consumption of insects increases during the breeding season. Burrowing Owls hover while hunting; after catching their prey they return to perches on fence posts or the ground. Burrowing Owls are primarily active at dusk and dawn, but if necessary will hunt at any time of day (CBOC 1993, CDFG 1995, Rosenberg et al. 1998).

The breeding season for Burrowing Owls is March to late August; the season tends to last later in the northern part of the range (CBOC 1993, CDFG 1995, Klute et al. 2003). Clutch size (number of birds hatched at the same time) ranges from 1 to 12 and averages about 7 (Ehrlich 1988). The incubation period is 28–30 days (Ehrlich 1988). The female performs all the incubation and brooding (sitting on eggs to hatch them by the warmth of the body) and is believed to remain continually in the burrow while the male does all the hunting (Rosenberg et al. 1998). The young fledge (take their first flight out of the nest) at 44 days but remain near the burrow and join the adults in foraging flights at dusk (Ehrlich 1988). The maximum life span recorded for a banded bird in the wild is approximately 8.5 years (Rosenberg et al. 1998).

In resident populations, nest site fidelity is common, with many adults nesting each year in their previous year's burrow; young from the previous year often establish nest sites near (<900 feet) their natal sites (Trulio 1997, Rosenberg et al. 1998). Burrowing Owls in migratory populations also often nest in the same burrow, particularly if the previous year's breeding was successful (Belthoff and King 1997). Other birds in the same population may move to burrows near their previous year's burrow. The species

is threatened primarily by loss, degradation, and fragmentation of habitat, although they do readily inhabit anthropogenic landscapes such as agricultural fields, golf courses, and airport grasslands (Korfanta et al. 2005).

4.0 METHODS

Prior to beginning pedestrian based field surveys in 2015, the following raptor specialists were consulted: Lenny Malo MS, Eric Dugan PhD, Ken Hashagen BS, Wayne Woodroof MS, Richard White MS, Brian Latta BS, and John Sterling BS. Available information from resource management plans and relevant documents were also reviewed to determine the locations and types of avian resources that have the potential to exist within and adjacent to the study area. Resources were evaluated within several miles of the Project. As detailed below, Burrowing Owl field census and analysis activities have occurred within representative portions of the study area for more than 5 years. Accordingly, the primary materials reviewed included, but were not limited to, the following:

- Biological Resources on the Tracy 580 Business Park Property (Berryman Ecological LLC 2010a);
- Burrowing Owl Surveys for Tracy 580 Business Park Property (Berryman Ecological LLC 2010b);
- Preserve Management Plan for the Tracy 580 Business Park Preserve (ICF International 2011);
- U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper and File Data (USFWS 2015a);
- USFWS Sacramento Field Office Species List for San Joaquin County (USFWS 2015b);
- California Natural Diversity Database maintained by the California Department of Fish and Wildlife (CDFW 2015);
- General Biological Resources Assessment for the Tracy Hills Project (NOREAS 2015); and
- Aerial Photographs (Microsoft Corporation 2015).

Survey methods were derived from generally accepted professional standards including the 1993 California Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines (CBOC 1993), 1995 and 2012 California Department of Fish and Game Staff Reports on Burrowing Owl Mitigation (CDFG 1995 and 2012). A methodical pedestrian-survey for owls, burrows and their characteristic sign was conducted by walking through areas of suitable habitat within the study (i.e., including evaluations of man-made structures, debris piles, small fossorial mammal burrows, etc.). Survey transects were spaced at approximately 50-foot intervals to allow for complete visual coverage of the study area. Where necessary, transect spacing was reduced or expanded to account for differences in terrain, vegetation density, and visibility.

The presence of a species was based on direct observations of individual(s), sign, and/or vocalization. Avian scientific nomenclature and common names follows Sibley (2000). Field surveys were conducted when weather conditions were conducive to observing birds. Surveys were not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Where access was limited, observations were made from the nearest appropriate vantage points with the use of binoculars and spotting scopes.

5.0 SURVEY RESULTS

Weather conditions during the 2015 surveys included cloudy to clear skies, temperatures ranging from 64–98 degrees Fahrenheit, and winds fluctuating from 0 to 20 miles per hour. Burrowing Owl surveys dates and personnel are detailed in Table 1 below.

Table 1. Burrowing Owl Survey Dates

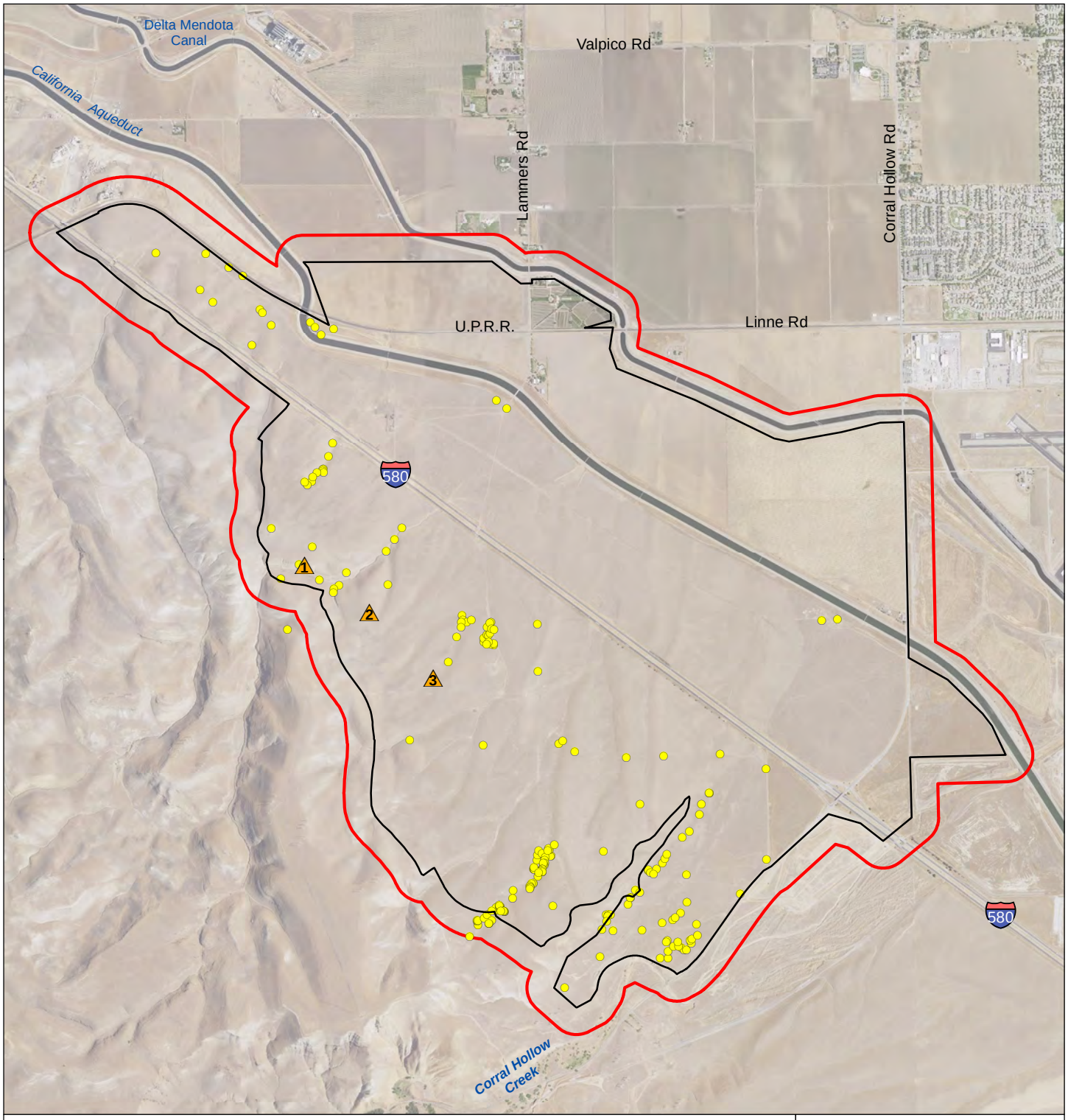
Event #	2015 Survey Dates	Personnel
1	16, 17, 21, 22 January Habitat Assessment	Brent Helm PhD, Lincoln Hulse BS, and Mark Noyes MS
2	14, 15, 16, 17, 18, 19, 24, 25, and 26 March Breeding Season Surveys	Richard White MS, Brent Helm PhD, Brian Latta BS, John Sterling BS, and Mark Noyes MS
3	23, 24, 25, 26, 27 April 5, 6, 7, 8, 9, 10, 11 and 12 May Breeding Season Surveys	Richard White MS, Brent Helm PhD, Brian Latta BS, John Sterling BS, and Theresa Hyde MS
4	5, 6, 7, 8, 9, 10, 11, 12, and 13 JuneBreeding Season Surveys	Richard White MS, Brent Helm PhD, Brian Latta BS, and Theresa Hyde MS
5	5, 6, 7, 8, 9, 10, 11 and 12 July Breeding Season Surveys	Richard White MS, Brent Helm PhD, Brian Latta BS, and Theresa Hyde MS

A habitat assessment of the study area was performed in January 2015 followed by breeding season surveys for Burrowing Owls. Where access to the entire study area was not possible due to private property or physical barriers (i.e., vegetative cover, health and safety concerns, etc.) field observations were made from the nearest appropriate vantage points via public right-of-ways with the aid of binoculars and spotting scopes. The study area predominately consists of non-native vegetation, grasslands, developed and disturbed land cover types. It is therefore assumed that any species currently using these locales are acclimated to the disturbance regime present (i.e., existing livestock grazing activities). Although the study area is large in total size – it has very low species richness and diversity, and is comparatively low quality habitat for Burrowing Owl; as much higher-quality habitats are available within the region.

This is a result of the depauperate landscape and the numerous resident Burrowing Owl predators (e.g., American Badger [*Taxadea taxus*], coyote [*Canis latrans*], Red-Tailed Hawk [*Buteo jamaicensis*], and other raptors) that were routinely detected within the Project Site. The study area is lacking in numbers and variety of species – likely attributable to its inability to produce a high enough density of biomass to support a robust population of owls. One pair of Burrowing Owls – which include several juvenile birds, were detected foraging, dispersing and utilizing discrete burrow complexes during the 2015 surveys (Figure 3). However, given the low quality habitat present (i.e., limited prey base, absence of irrigated agricultural lands, and presence of predators), the likelihood of a significant population of Burrowing Owls being supported by the Project Site is negligible. It should also be noted that the fossorial mammals which are Burrowing Owl predators that were detected within the study area are capable of digging one or more burrows per day – which would be expected to modify the quantity, distribution and willingness of owls to inhabit burrow complexes within the Project Site over time.

As a consequence of poor quality habitat, presence of resident Burrowing Owl predators and existing protections to species in the area, it has been determined that the Project is not likely to adversely affect Burrowing Owls. With the implementation of the measures detailed within Section 6.0 of this report, there is no presumption that the Project would result in the take[2] of Burrowing Owl, loss of high quality functional owl habitat, nor that it would adversely affect local or regional populations of them. Appendix A includes representative photographs of the study area, and Appendix B includes a list of all avian species detected in 2015.

[2] "Take" is defined within California Fish and Game Code Section 86 as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.



Study Area

Project Site

Active Burrow Complex

Inactive Burrow Complex

0 0.25 0.5 Mile

1 inch = 0.5 mile

Data Sources:
- San Joaquin County GIS accessed Sep 2015, data date: Jan 2015
- USDA-NRCS-AFPO NAIP accessed Sep 2015, image date: Jun 2014

Map Prepared: 9-9-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\BUOWFig3. Survey Results.mxd

Figure 3. Survey Results

6.0 RECOMMENDATIONS

The following measures are recommended as a means of avoiding and minimizing adverse impacts to nesting passerines and raptors that have the potential to occur within the study area:

- In order to comply with Section 10 of the Migratory Bird Treaty Act and relevant sections of the California Fish and Game Code, any vegetation clearing within the study area shall take place outside of the typical avian nesting season (e.g., February 1st until September 1st) – to the maximum extent practical.
- If work needs to take place between February 1st and September 1st, a pre-construction survey for nesting birds should be completed prior to the onset of Project activities. If a lapse in Project activity occurs for 7 days or more during the bird nesting season than initial avian clearance surveys shall be repeated. A buffer zone from occupied nests should be maintained during physical ground disturbing activities. Once nesting has ended, the buffer may be removed.
- Burrowing owl survey shall be conducted prior to grading. Pre-construction surveys for burrowing owl shall begin no later than 14 - 30 days prior to construction and ending no earlier than 24 hours prior to the commencement of disturbance.
- The Project shall provide artificial replacement burrows within the conservation easement area, as permitted and in accordance with any applicable Preserve Management Plan, in the event that owls are detected, either as wintering or breeding within Project boundaries. Wintering individuals may be evicted with the use of exclusion devices followed by a period of seven days to ensure that animals have left their burrows. When it can be assured that owls are no longer using the burrows, the burrows can be hand excavated and collapsed under the supervision of the avian biologist.
- Construction activities associated with project features that occur within portions of the project site containing occupied habitat for the burrowing owl and raptor nests shall be restricted to periods outside the breeding season for this species. The breeding season for burring owl runs from February 15 through August 31.

7.0 REFERENCES

Berryman Ecological LLC. 2010a. Biological Resources on the Tracy 580 Business Park Property.

_____. 2010b. Burrowing Owl Surveys for Tracy 580 Business Park Property.

Belthoff, J. R., and R. A. King. 1997. Between-year movements and nest burrow use by burrowing owls in southwestern Idaho. Technical Report No. 97-3. Idaho Bureau of Land Management.

Botelho, E. S. 1996. Behavioral ecology and parental care of breeding western burrowing owls (Speotyto cunicularia hupugaea) in southern New Mexico, USA. Dissertation, New Mexico State University, Las Cruces.California Burrowing Owl Consortium (CBOC). 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. San Francisco CA.

Coulombe, H. N. 1971. Behavior and population ecology of the burrowing owl, *Speotyto cunicularia*, in the Imperial Valley of California. Condor 73:162–176.

California Department of Fish and Game (CDFG). 1995. Staff Report on Burrowing Owl Mitigation. Sacramento CA.

_____. 2012. Staff Report on Burrowing Owl Mitigation. Sacramento CACalifornia Department of Fish and Wildlife (CDFW). 2015. RareFind. California Department of Fish and Game, Natural Diversity Database (CNDDB). Sacramento, CA: California Department of Fish and Game, Biogeographic Data Branch.

Ehrlich, P. R. 1988. The Birders Handbook: Natural History of North American Birds. Simon and Schuster Inc. New York.

Haug, E. A., B. A. Millsap, and M. S. Martell. 1993. The burrowing owl (*Speotyto cunicularia*). In A. Poole and F. Gill (eds.), The Birds of North America, No. 61. Philadelphia, PA: The Academy of Natural Sciences and Washington, DC: The American Ornithologists' Union.

Klute, D. S., L. W. Ayers, M. T. Green, W. H. Howe, S. L. Jones, J. A. Shaffer, S. R. Sheffield, and T. S. Zimmerman. 2003. Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States. U.S. Department of Interior, Fish and Wildlife Service, Biological Technical Publication FWS/BTP-R6001-2003, Washington, D.C.

ICF International. 2011. Preserve Management Plan for the Tracy 580 Business Park Preserve.

Korfanta, N.M., D.B. McDonald, and T.C. Glenn. 2005. Burrowing owl (*Athene cunicularia*) population genetics: A comparison of North American forms and migratory habits. *Auk* 122(2): 464-478.

Microsoft Corporation. 2015. Bing Maps Aerial Imagery. Redmond, WA.

NOREAS, Inc. (NOREAS). 2015. General Biological Resources Assessment for the Tracy Hills Project.

Rosenberg, D. K., J. Gervaia, H. Ober, and D. DeSante. 1998. An adaptive management plan for the burrowing owl population at Naval Air Station Lemoore, Lemoore, California.

Sibley, D.A. 2000. The Sibley Guide to Birds. Random House Press, New York, New York. 201 pp.

Trulio, L. 1997. Burrowing owl demography and habitat use at two urban sites in Santa Clara County, California. Journal of Raptor Research 9:84–89.

United States Geological Service (USGS). 1980. 7.5-Minute Quadrangle Tracy, California.

_____. 1986. 7.5-Minute Quadrangle Midway, California.

United States Fish and Wildlife Service (USFWS). 2015a. Critical Habitat Portal.

_____. 2015b. Sacramento Fish and Wildlife Office. Endangered and Threatened Species List for San Joaquin County.

APPENDIX A

PHOTOGRAPH LOG

APPENDIX A

PHOTOGRAPH LOG

	Photograph: 1. Burrowing owl burrow.
	Photograph: 2. Burrowing owl feather.

APPENDIX A

PHOTOGRAPH LOG

	Photograph: 3. Burrowing owl burrow.
	Photograph: 4. Facing north.

APPENDIX B

AVIAN COMPENDIUM

APPENDIX B

AVIAN COMPENDIUM

Scientific name	Common name
Birds	
Athene cunicularia	Burrowing Owl
Buteo jamaicensis	Red-Tailed Hawk
Carpodacus mexicanus	House Finch
Cathartes aura	Turkey Vulture
Corvus brachyrhynchos	American crow
Corvus corax	Common Raven
Circus cyaneus	Northern harrier
Eremophila alpestris	Horned Lark
Euphagus cyanocephalus	Brewer's blackbird
Falco sparverius	American Kestrel
Lanius ludovicianus	Loggerhead shrike
Mimus polyglottos	Northern mockingbird
Passer domesticus	House sparrow
Passerculus sandwichensis	Savannah sparrow
Salpinctes obsoletus	Rock wren
Sayornis saya	Say's phoebe
Sturnus vulgaris	European starling
Sturnella neglecta	Western Meadowlark
Zenaida macroura	Mourning Dove
Zonotrichia leucophrys	White-crowned sparrow

APPENDIX G

2015 CALIFORNIA RED-LEGGED FROG ASSESSMENT

TRACY HILLS PROJECT

September 2015

California Red-legged Frog Assessment

Owner
The Tracy Hills Project Owner, LLC
888 San Clemente
Suite 100
Newport Beach, CA 92660

Prepared By


16361 Scientific Way
Irvine, CA 92618
(949) 467-9100

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

The Tracy Hills Project Owner LLC (Tracy Hills) is proposing to develop the Tracy Hills Project in Tracy, California (hereafter "Project", Figure 1). The Project includes a revised and updated Specific Plan[1] that authorizes approximately 2,732 acres for development of residential neighborhoods and non-residential uses (e.g., office, commercial, light industrial, parks, schools, and open spaces) within existing low quality livestock grazing and agricultural lands. This report provides the methods, assumptions, and results of a U.S. Fish and Wildlife Service (USFWS) protocol-level California Red-legged Frog (*Rana draytonii* [CRLF]) habitat assessment for the Project. Within this document, the study area includes the Project's proposed ground disturbance footprint (Project Site) and a 1-mile buffer. The study area therefore includes all lands to be affected directly or indirectly by the Project and not just the immediate lands involved in the action itself (Figure 2). Six land cover types were observed within the study area in 2015 (NOREAS 2015): agricultural, annual grassland, open water (i.e., California Aqueduct and Delta Mendota Canal), orchard, non-native grasses, and developed habitats.

As required by the *Revised Guidance on Assessments and Field Surveys for the California Red-legged Frog* (USFWS 2005), the data collected and analyzed herein addresses the following three elements relevant to the potential occurrence of CRLF within the Project Site. These parameters include:

1. The Project's position within the current and historic range of the CRLF;

2. Known records of CRLF within the study area; and

3. The existing habitats that occur in the Project Site and within 1-mile of its boundaries.

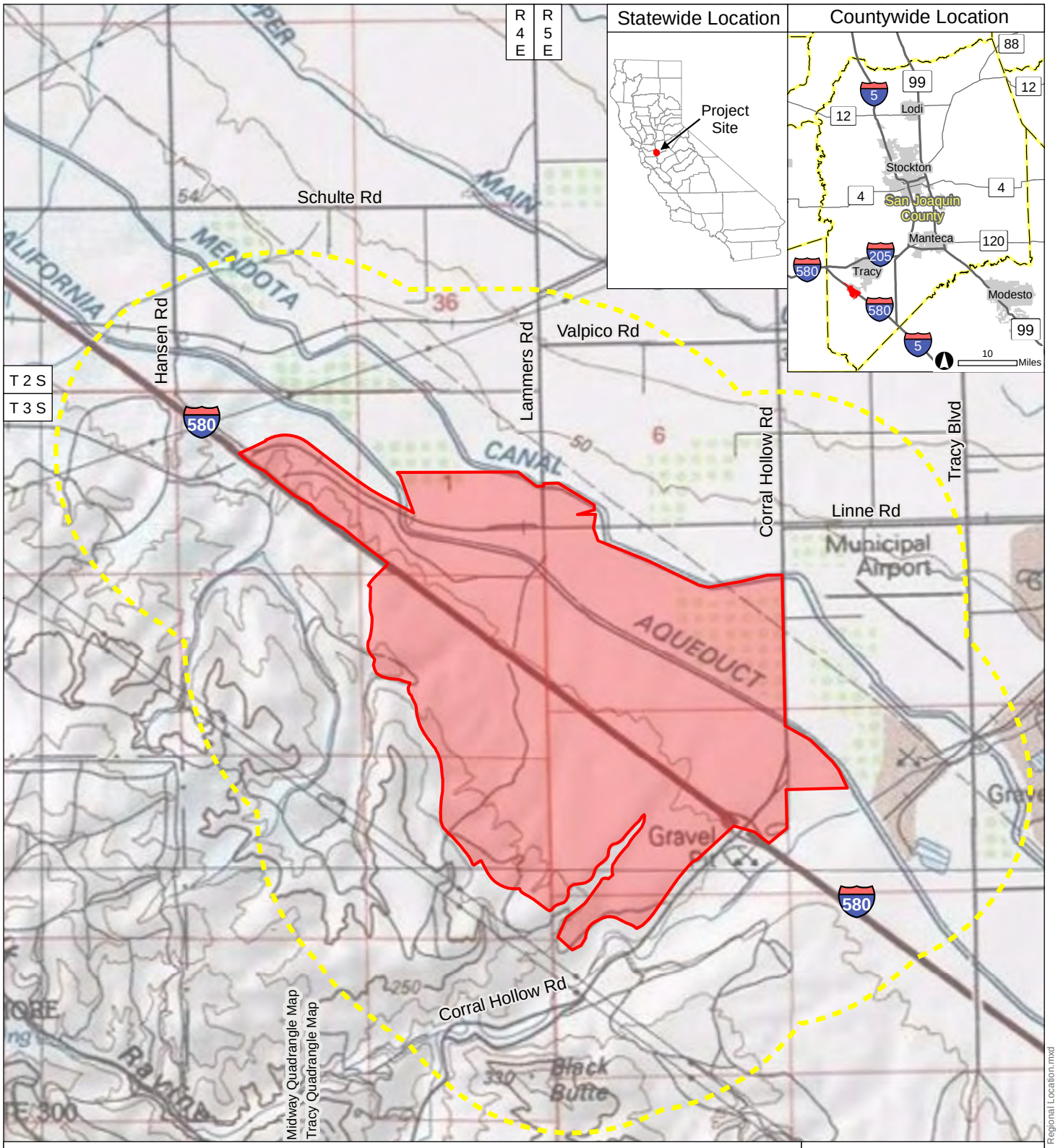
Targeted CRLF field evaluations and analysis have occurred within representative portions of the study area for approximately 16 years. This has been done to account for variations in local weather patterns and to safeguard that field investigations were adequate to maximize the potential for detecting CRLF. The literature reviews, comprehensive field investigations by credentialed biologists, and 2015 assessment results indicate that the herpetofauna within the study area has not changed significantly from those documented in past studies (LSA 1999, Foothill Associates 2004, Berryman Ecological LLC 2010, and ICF International 2011). Given the size of the Project Site, there are relatively few aquatic habitats within it.

To that end, no CRLF aquatic breeding habitat that could support larval development of the species has ever been detected within the Project Site. Nonetheless, a series of ephemeral drainages running south to north - through the southwestern portion off the study area could function as dispersal habitat – albeit extremely low quality (i.e., presumed to be fast–flowing, ephemeral features that only convey water during, and immediately following, storm events), under the appropriate suite of environmental factors. These features value as adult CRLF dispersal habitat is inconsequential because there are no known aquatic breeding habitats within the vicinity of these drainages and they are severely movement constrained (i.e., topography, freeways, aqueducts, lack of appropriate cover to elude predators or exposure to desiccation, disked fields, and livestock grazing) within the study area.

The more factors that constrain CRLF breeding habitats and movement corridors, the less likely individual frogs are to occur or continue to occur within a specific locale. The nearest historic CRLF

[1] RBF Consulting 2014. Tracy Hills Specific Plan: Habitat Assessment & San Joaquin County Multi-Species Habitat Conservation and Open Space Plan Consistency Analysis.

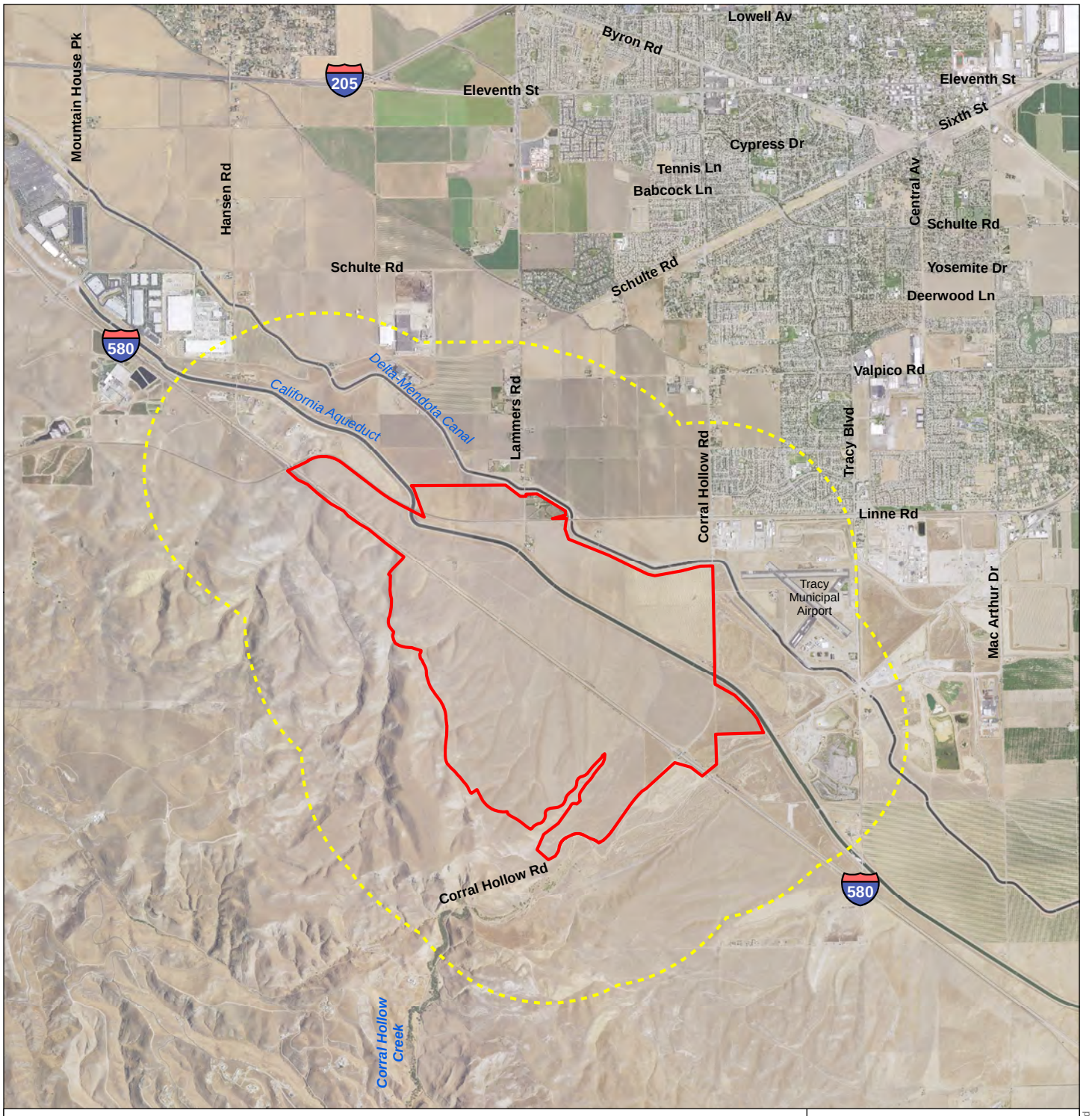
record in the surrounding area of the Project is from 2013; it is roughly 0.2 miles from the Project's southwestern limits. It should also be noted that a discrete subset of land within the Project is collocated with designated critical habitat for CRLF (USFWS 2015). The aforementioned CRLF record is within the study area, but outside the Project's proposed ground disturbance limits. Given the lack of breeding habitat and movement constrained dispersal habitat within the Project Site, the likelihood of CRLF successfully reproducing within it or even utilizing it for dispersal is negligible because much higher quality habitats are available within the region. Observations of CRLF are not uncommon south and west of the Project and within the approximately 3,500-acre open space conservation easement which abuts the study area. The habitat within the study area includes existing livestock grazing agricultural and other anthropogenic undertakings which have greatly reduced the lands ability to support breeding and dispersing CRLF. The data analyzed also suggests that there is extremely low potential for CRLF to recruit into the Project Site.



The Project Site is located on the Midway and Tracy USGS 7.5-minute quadrangle maps; Mt. Diablo Base and Meridian,
Township 3 South, Range 4 East, Sections 1, 2, 12 and 13; and
Township 3 South, Range 5 East, Sections 6, 7, 8, 17, 18 and 19.

Center coordinates for the Project Site are: 37.680702, -121.476315.

Figure 1. Regional Location



Project Site (2,729 acres)

1-mile Radius Around the Project Site (11,150 acres)

0 0.5 1 Mile

1 inch = 1 mile

Data Source:
- USDA-NRCS-AFPO NAIP accessed Aug 2015, image date: 2014

Map Prepared: 8-4-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\CRL\Fig2. Site Vicinity.mxd

Figure 2. Site Vicinity

2.0 INTRODUCTION AND PROJECT LOCATION

NOREAS Inc. was retained to review historic California red-legged frog (*Rana draytonii* [CRLF]) census data and perform a U.S. Fish and Wildlife Service (USFWS) protocol-level assessment for the Project. The Project occurs in Sections 6, 7, 8, 17, 18, and 19 of Township 3 South and Range 5 East (Mt. Diablo Base and Meridian) of the Midway U.S. Geological Survey (USGS 1986) 7.5-Minute Quadrangle Map; and Sections 1, 2, 11, 12, 13, and 24 of Township 3 South, and Range 4 East (Mt. Diablo Base and Meridian) of the Tracy USGS 7.5-Minute Quadrangle Map (USGS 1980).

The primary objective of the literature review and 2015 field assessment was to determine the presence or to confirm the presumed absence of, CRLF within the study area. For the purposes of this document, the "study area" includes the Project's proposed ground disturbance footprint (Project Site) and a 1-mile buffer (Figure 2).

3.0 CALIFORNIA RED-LEGGED FROG BACKGROUND

On 24 June 1996, the U.S. Fish and Wildlife Service (USFWS) determined the CRLF to be a threatened species, based primarily on range-wide population declines and extirpation from approximately 70% of the historic range in California (USFWS 2002). The CRLF is also listed as a Species of Special Concern by the California Department of Fish and Wildlife (Jennings and Hayes 1994).

The CRLF is a large, brown to reddish-brown frog with prominent dorsolateral folds, moderate-sized dark brown to black dorsal spots, and red-orange coloration on the belly and undersurfaces of the thighs, legs, and feet (Stebbins 2003). CRLF occupy still or slow-moving water features associated with dense riparian vegetation, where permanent streams or ponds provide essential breeding habitat. CRLF requires permanent or nearly permanent ponded-water habitat (including stock ponds or pools within streams) with emergent and submergent vegetation (Storer 1925, Stebbins 1972), but CRLF may disperse far from water following breeding periods (Stebbins 1985, Zeiner et al. 1988). Adult CRLFs are highly aquatic when active, but they are less dependent upon permanent water bodies than other frog species (Brode and Bury 1984). During dry periods, adults may aestivate in rodent holes or cracks in the soil. CRLF occur most frequently in intermittent waters that lack bullfrogs and introduced fish species (Hayes and Jennings 1988). The egg clusters are deposited around aquatic vegetation and require approximately 3-5 months to complete metamorphosis (Storer 1925). CRLF breed from November to April, with males arriving at breeding sites up to a month before females. Females locate the calling males at breeding sites, where they mate and deposit 2,000–6,000 eggs on emergent vegetation. Embryos hatch in approximately 2 weeks. Sexual maturity is reached in 2-3 years, with females attaining a larger adult body size than males. CRLF are known to utilize both aquatic and terrestrial habitats, shifting habitat use between spring and fall seasons, respectively.

The CRLF occurs along Pacific slope drainages from Shasta County, CA, inland to the vicinity of Marin County, CA, southward along the coastal slopes to the vicinity of the Santo Domingo River drainage in northern Baja, Mexico (Linsdale 1932). Historically, CRLF occurred in numerous desert slope drainages in southern California and northern Baja, Mexico; however these populations are thought to be extirpated.

4.0 METHODS

Prior to beginning field surveys, resource specialists were consulted and available information from resource management plans and relevant documents were reviewed to determine the locations and types of herpetofauna that have the potential to exist within and adjacent to the study area; resources were evaluated within several miles of the Project. The primary materials reviewed included, but were not limited to, the following:

- Habitat Conservation Plan for Lakeside Tracy Development (LSA 1999)
- Habitat Management Plan - Tracy Hills Project (Foothill Associates 2004);
- Biological Resources on the Tracy 580 Business Park Property (Berryman Ecological LLC 2010)
- USFWS, Revised Guidance on Site Assessments and Field Surveys for the CRLF (USFWS 2005);
- USFWS, Recovery Plan for the California Red-legged Frog (USFWS 2002);
- Preserve Management Plan for the Tracy 580 Business Park Preserve (ICF International 2011);
- A Guide To The Amphibians And Reptiles Of California (California Herps 2013);
- U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper and File Data (USFWS 2015a);
- USFWS Sacramento Field Office Species List for San Joaquin County (USFWS 2015b);
- California Natural Diversity Database maintained by the California Department of Fish and Wildlife (CDFW 2015);
- General Biological Resources Assessment for the Tracy Hills Project (NOREAS 2015); and
- Aerial Photographs (Microsoft Corporation 2015).

Survey methods were derived from generally accepted professional standards for performing visual encounter herpetofauna surveys (Aguirre-Bravo et al. 2006) and followed the *Revised Guidance on Assessments and Field Surveys for the California Red-legged Frog* (USFWS 2005). An assessment for CRLF was performed within 1 mile of the Project Site to characterize the habitats and land cover types to the maximum extent practical with regard upland and aquatic features.

Upland and aquatic types within the study area were mapped and characterized as either not suitable, breeding[2], or dispersal[3] habitat by vegetation communities, land use, and any potential barriers to CRLF and herpetofaunal movements. In order to determine if an aquatic feature within the Project and/or study area could provide suitable CRLF habitat (i.e., breeding and dispersal), sufficient hydrologic periods needed to be observable through time-lapse images over multiple years. Perennial or semi-perennial water features that retained water through most of the year and had associated riparian

[2] CRLF egg clusters are deposited around aquatic vegetation and require approximately 3-5 months to complete metamorphosis (Storer 1925). Therefore - for the purposes of this analysis, breeding habitat for CRLF is defined as any water body that on average ponds or slowly conveys water greater than 1 foot deep for a minimum of 3 consecutive months, and supports a minimum of 10% surface area of aquatic vegetation (emergent plants).

[3] CRLF dispersal habitats are typically lotic (flowing) bodies of water (i.e., creeks and drainages) that contain a sufficient volume of water and a suitable velocity to enable the movement of adult CRLF individuals into new areas. In this instance, ephemeral drainages and intermittent water conveyance features needed to contain sufficient amounts of emergent and/or riparian vegetation to serve as a visual proxy of an adequate hydrologic period and water velocity to serve as potential habitat.

vegetation cover were considered suitable to support CRLF larval development (breeding habitat). Upland habitats were further analyzed for potential movement constraints as described below.

- High constraints to movement are barriers in which the CRLF cannot pass over, though, or under (e.g., sound walls) or that CRLF would most likely perish while trying pass over them (e.g., freeways). The high constraints to CRLF movement include urban residential and commercial development, swift-flowing aqueducts, and freeways.

- Moderate constraints to CRLF movement are those that would greatly increase the likelihood of mortality from exposure to predators or exposure to desiccation by increasing the length of movement or dispersal time. Moderate constraints on site consist of disked fields with no vegetation cover, hay fields, rural development, railroad berms and tracks, and rural paved roads.

- Low constraints are those that slightly increase the likelihood of mortality such as agricultural fields planted with row crops and orchards.

- No constraints are those that do not have permanent or significant barriers to movement, such as routinely grazed annual grasslands.

The presence of a species was based on direct observations of individual(s), sign, and/or vocalization. The assessment was not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Where access was limited, observations were made from the nearest appropriate vantage points by means of public rights-of-way with the use of binoculars and spotting scopes. The following NOREAS biologists either performed the field work and/or contributed to data analysis: Brent Helm PhD, Mark Noyes MS, Eric Dugan PhD, Richard White MS, Jeff Alvarez BS, Lenny Malo MS, Lincoln Hulse BS, Erin Serra BS, and Ken Hashagen BS.

5.0 RESULTS

Weather conditions during the 2015 surveys included cloudy to clear skies, temperatures ranging from 48–74 degrees Fahrenheit, and winds fluctuating from 0 to 15 miles per hour. CRLF assessments were performed on the following dates: 17 and 18 December 2014, 25 and 26 March, 16 April, 14, 15, and 16 May, 5, 6, 7, and 8 June, 2015.

The Project Site predominately consists of upland non-native vegetation, grasslands, and developed and disturbed land cover types (Figure 3). Targeted CRLF field evaluations and analysis have occurred within representative portions of the study area since 1999. This has been done to account for variations in local weather patterns, and to safeguard that field investigations were adequate to maximize the potential for detecting CRLF. The literature reviews, comprehensive field investigations by credentialed biologists, and 2015 assessment results indicate that the herpetofauna within the study area has not changed significantly from those documented in past studies. Given the size of the Project Site, there are relatively few aquatic habitats within it.

No CRLF aquatic breeding habitat that could support larval development of the species has ever been detected within the Project Site. Nonetheless, a series of ephemeral drainages running south to north - through the southwestern portion of the study area could function as dispersal habitat – albeit extremely low quality (i.e., presumed to be fast flowing ephemeral features that only convey water during, and immediately following storm events), under the appropriate suite of environmental factors. These features value as adult CRLF dispersal habitat is inconsequential because there are no known aquatic breeding habitats within the vicinity of these drainages; and they are movement constrained (i.e., topography, freeways, aqueducts, lack of appropriate cover to elude predators or exposure to desiccation, disked and tilled fields, and livestock grazing) within the study area.

The more factors that constrain CRLF breeding habitats and movement corridors, the less likely individual frogs are to occur, or continue to occur within a specific locale. The nearest historic CRLF record in the surrounding area of the Project is from 2013; and it is roughly 0.2 miles outside of the Project Site - within Corral Hollow Creek. The Project completely avoids direct impacts to Corral Hollow Creek. It should also be noted that a discrete subset of land within the Project is collocated with designated critical habitat for CRLF (USFWS 2015). With deference to Corral Hollow Creek, it is bordered to the west by an extremely steep slope that transitions into a vertical cliff. This leaves limited area along Corral Hollow Road accessible to potential migrating or dispersing individuals moving away from aquatic habitats within the creek.

Given the lack of breeding habitat and movement constrained dispersal habitat within the Project Site, the likelihood of CRLF successfully reproducing within it or even utilizing it for dispersal is negligible because much higher quality habitats are available within the region. Observations of CRLF are not uncommon south and west of the Project, and within the approximately 3,500-acre open-space conservation easement which abuts the study area. The habitat within the study area includes existing livestock grazing, agricultural tilling, and other anthropogenic undertakings which have greatly reduced the lands ability to support breeding and dispersing CRLF. The data analyzed also suggests that there is extremely low potential for CRLF to recruit into the Project Site. Appendix A includes a Photograph Log, and Appendix B consists of the Project's California Red-legged Frog Assessment Data Sheets.

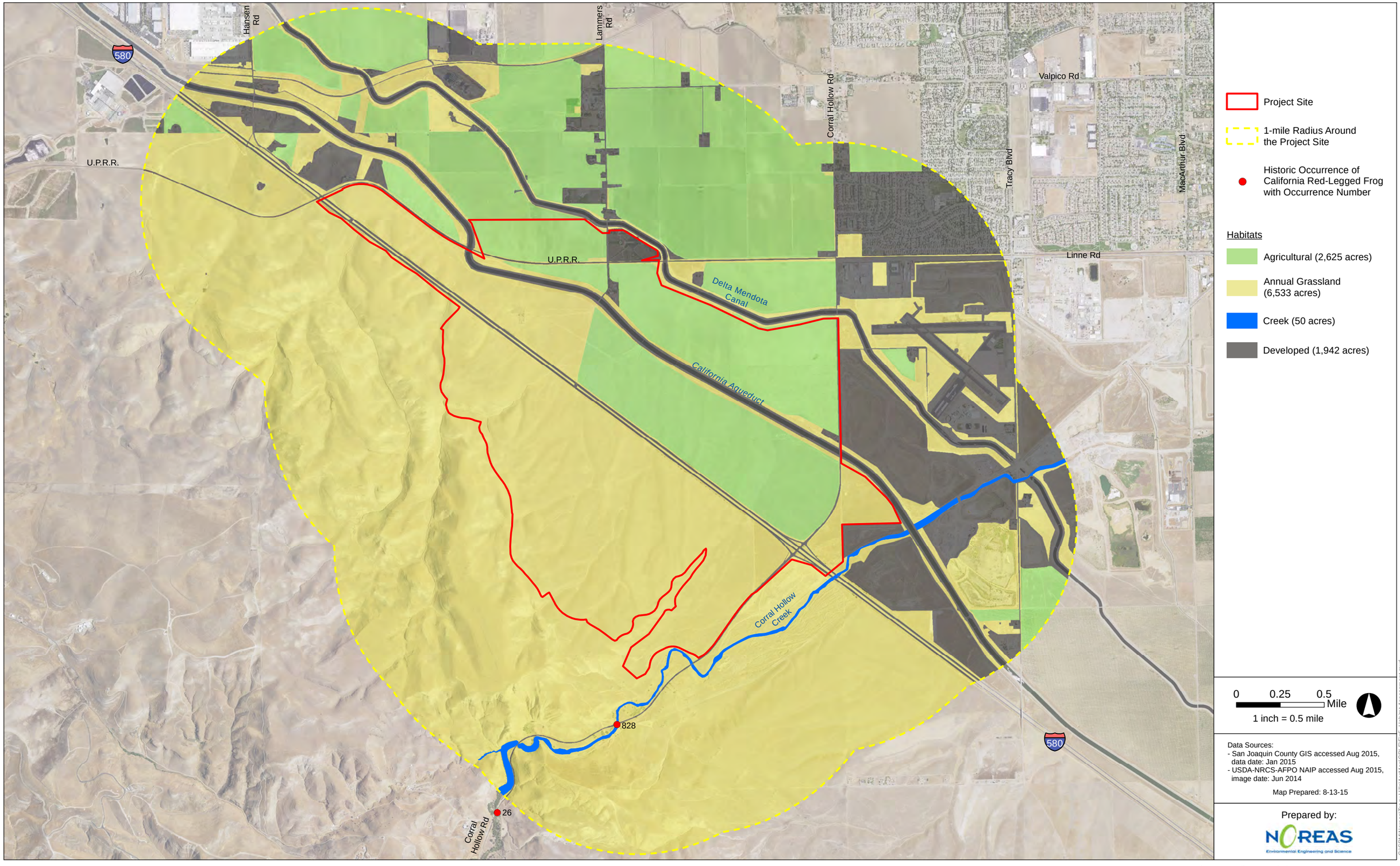
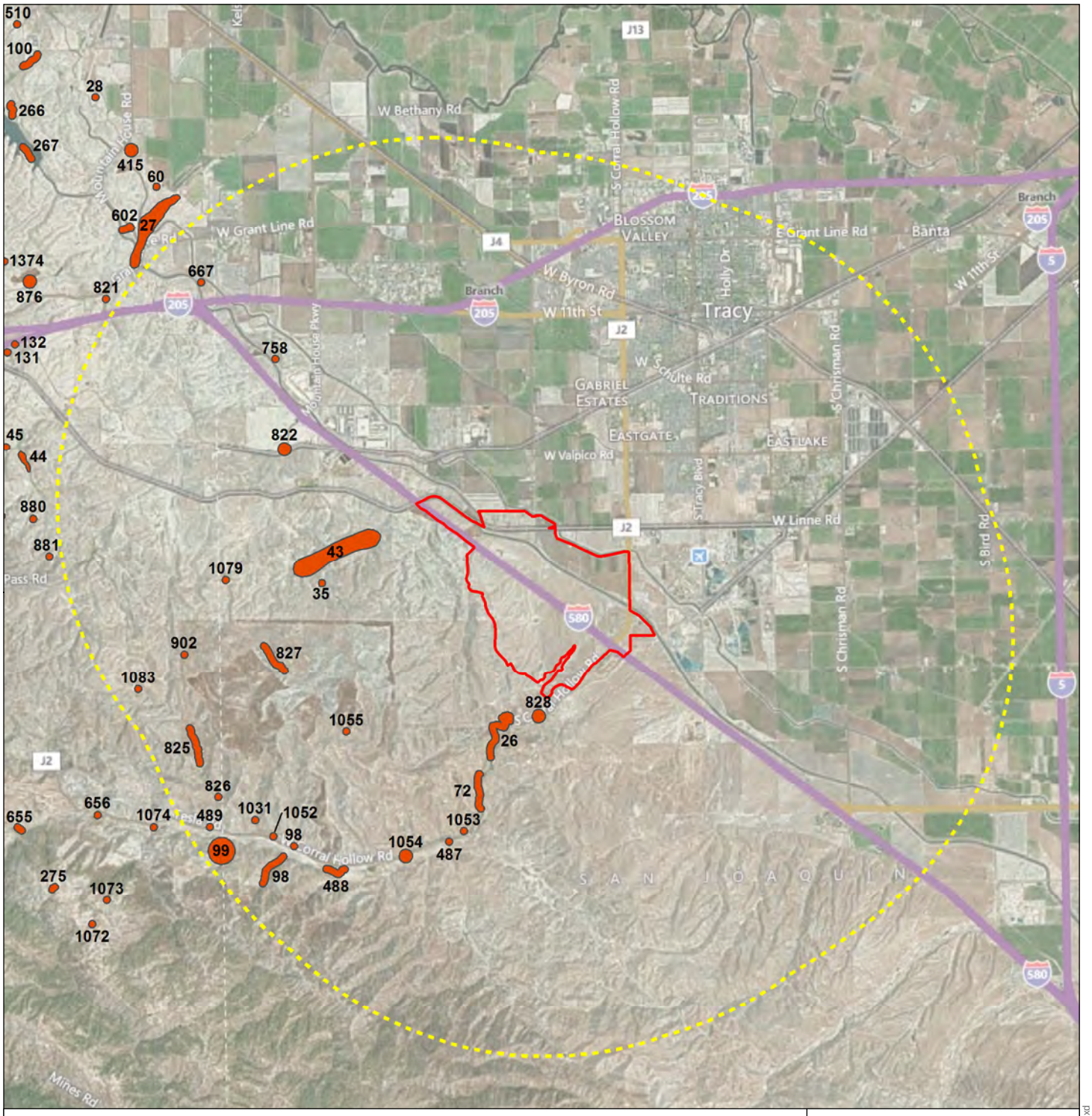


Figure 3. Habitat Assessment



Project Site

5-mile Radius Around the Project Site

California Red-Legged Frog Occurrence (with Occurrence Number)

0 1 2 Miles

1 inch = 2 miles

Data Sources:
- Bing accessed Aug 2015, imagery date range: May - Nov 2010
- California Department of Fish and Wildlife, California Natural Diversity Database (CNDDB), Jul 2015 data release

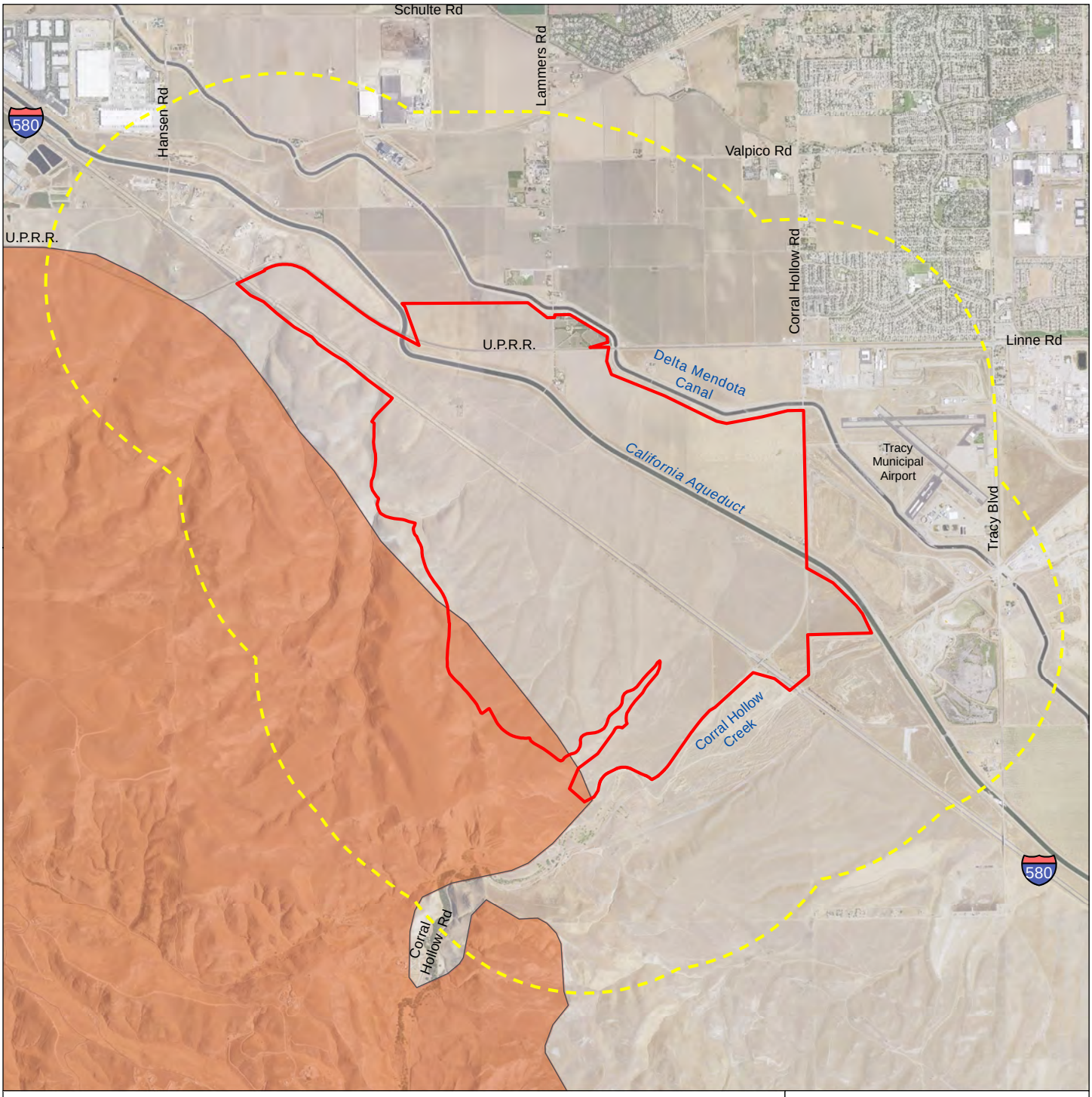
Map Prepared: 8-4-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\CRLF\Fig3. Occurrences.mxd

Figure 4. CRLF Occurrences within 5 Miles of the Project Site



Project Site

1-mile Radius Around the Project Site

Critical Habitat for California Red-Legged Frog

0 2,000 4,000 Feet

1 inch = 4,000 feet

Data Sources:
- San Joaquin County GIS accessed Aug 2015, data date: Jan 2015
- USDA-NRCS-AFPO NAIP accessed Aug 2015, image date: Jun 2014
- US Fish and Wildlife Service critical habitat accessed Aug 2015, data date: Aug 2015

Map Prepared: 8-13-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\CRLF\Fig4. Critical Habitat.mxd

Figure 5. Critical Habitat

6.0 CONCLUSIONS

The habitat within the study area include existing livestock grazing, agricultural tilling and other anthropogenic undertakings which have greatly reduced the lands ability to support breeding and dispersing CRLF. No CRLF aquatic breeding habitat has ever been detected within the Project Site; and the low quality CRLF dispersal habitat present is severely constrained (i.e., freeways, urban residential/commercial development, swift-flowing aqueducts, lack of appropriate cover to elude predators or exposure to desiccation, disked fields, and livestock grazing).

Given that these findings are consistent with other assessments for CRLF within the Project Site, the Project would not be expected to result in the loss of individual CRLF, or adversely affect local or regional populations of them. Furthermore, the Project would not be expected to degrade the long-term preservation value or ecological processes within the Project vicinity, as impacts have been minimized to safeguard the needed habitat, wildlife linkages, and functional connectivity are maintained within the region with deference to CRLF. Accordingly, the habitat loss associated with the Project would be considered an insignificant effect to CRLF as a result of the amount of similar, and higher value vegetation communities and land cover types within the region that are already held in conservation. With the implementation of the measures detailed within Section 7.0 of this report, there is no presumption that the Project would result in the take[4] of CRLF or the loss of valuable breeding habitat.

[4] "Take" is defined within California Fish and Game Code Section 86 as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

7.0 RECOMMENDATIONS

The following measures are recommended as a means of avoiding and minimizing adverse impacts to CRLF that have the potential to occur within the study area:

- Prior to commencement of ground disturbing activities in all areas of potentially suitable habitat to support CRLF, pre-activity clearance surveys shall be initialed by a qualified biologist to reinforce positive or negative findings with substantial evidence.

- Survey will occur during the wet season (generally October 15 to April 15), no more than 48 hours before any new ground disturbance.

- A worker training program that includes the CRLF will be conducted for construction personnel before groundbreaking at individual redevelopment project sites.

- If a CRLF is found, the construction supervisor shall halt work immediately within an appropriate buffer area of any discovered CRLF. The construction supervisor will also contact the project biologist and will suspend all construction activities in the immediate construction zone until the animal leaves the site voluntarily.

- To prevent entrapment of CRLF during construction, any trenches, holes, or other excavations into which CRLF could fall and become trapped will be covered. The opening will be completely covered at the end of each workday.

8.0 REFERENCES

Aguirre-Bravo, C., P. J. Pellicane, D. P. Burns, and S. Draggan (Eds.). 2006. Monitoring Science and Technology Symposium: Unifying knowledge for sustainability in the Western hemisphere. United States Forest Service.

Berryman Ecological LLC. 2010. Biological Resources on the Tracy 580 Business Park Property.

Brode, J. M. and R. B. Bury. 1984. The importance of riparian systems to amphibians and reptiles. In R.L. Warner and K.M. Hendrix (eds.), California riparian systems: ecology, conservation, and productive management. University of California Press, Berkeley, CA.

California Department of Fish and Wildlife (CDFW). 2015. California Natural Diversity Database maintained by the California Department of Fish and Wildlife.

California Herps. 2013. A Guide To The Amphibians And Reptiles Of California.

Foothill Associates. 2004. Habitat Management Plan - Tracy Hills Project.

ICF International. 2011. Preserve Management Plan for the Tracy 580 Business Park Preserve.

Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. Final report to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California, under contract (8023).

LSA Associates, Inc. (LSA). 1999. Habitat Conservation Plan for Lakeside Tracy Development.

Linsdale, J.M. 1932. Amphibians and reptiles from Lower California. University of California Publications in Zoology 38:345-386.

Microsoft Corporation. 2015. Bing Maps Aerial Imagery. Redmond, WA.

NOREAS, Inc. (NOREAS). 2015. General Biological Resources Assessment for the Tracy Hills Project.

RBF Consulting 2014. Tracy Hills Specific Plan: Habitat Assessment & San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) Consistency Analysis.

Stebbins, R. C. 1972. California amphibians and reptiles. University of California Press. Berkeley, CA.

Stebbins, R. C. 1985. A field guide to western reptiles and amphibians. 2nd edition. Houghton Mifflin Company. Boston, MA.

Storer, T. I. 1925. A synopsis of amphibia of California. University of California Publications in Zoology 27:1-342.

United States Geological Service (USGS). 1980. 7.5-Minute Quadrangle Tracy, California.

_____. 1986. 7.5-Minute Quadrangle Midway, California.

United States Fish and Wildlife Service (USFWS). 2002. Recovery Plan for the California Red-legged Frog.

_____. 2005. Revised Guidance on Site Assessments and Field Surveys for the CRLF.

_____. 2015a. Critical Habitat Portal.

_____. 2015b. Sacramento Fish and Wildlife Office. Endangered and Threatened Species List for San Joaquin County.

Zeiner, D. C., W. F. Laudenslayer, Jr., and K. E. Mayer (compiling eds.). 1988. California's wildlife. Volume 1 – amphibians and reptiles. (California Statewide Habitat Relationships System.) California Department of Fish and Game. Sacramento, CA.

APPENDIX A

PHOTOGRAPH LOG

	Photograph 1 California Aqueduct is an anthropogenic feature that functions as a high movement constraint for CRLF based on the steep sided walls and swift flowing water (facing west).
	Photograph 2 Despite a long hydro period sufficient for CRLF larval development, this feature is not considered suitable for CRLF due to a lack of emergent and/or riparian vegetation within/around the feature (facing north).

	Photograph 3 Agricultural tilling removes potential underground burrows and creates uneven terrain that is difficult for adult CRLF to traverse. Because of this disturbance type, the area cannot provide upland habitat to CRLF (facing east).
	Photograph 4 Due to a lack of vegetation and shallow depths, this feature does not provide breeding habitat to CRLF (facing southwest).

Photograph 5

Illustration of the large cliff/steep-sloped area southeast of the Project near Corral Hollow Creek. Due to the steep sides of this topographic feature, dispersing CRLF would not be able to reach the Project Site (facing north).

APPENDIX H

2015 CALIFORNIA TIGER SALAMANDER ASSESSMENT

TRACY HILLS PROJECT

September 2015

California Tiger Salamander Assessment

Owner
The Tracy Hills Project Owner, LLC
888 San Clemente
Suite 100
Newport Beach, CA 92660

Prepared By


16361 Scientific Way
Irvine, CA 92618
(949) 467-9100

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

The Tracy Hills Project Owner LLC (Tracy Hills) is proposing to develop the Tracy Hills Project in Tracy, California (hereafter "Project", Figure 1). The Project includes a revised and updated Specific Plan[1] that authorizes approximately 2,732 acres for development of residential neighborhoods and non-residential uses (e.g., office, commercial, light industrial, parks, schools and open spaces) within existing low quality livestock grazing and agricultural lands. This report provides the methods, assumptions and results of a U.S. Fish and Wildlife Service (USFWS) protocol-level California Tiger Salamander *(Ambystoma californiense* [CTS]) habitat assessment for the Project. Within this document, the study area includes the Project's proposed ground disturbance footprint (Project Site) and a 1.24-mile buffer. The study area therefore includes all lands to be affected directly or indirectly by the Project, and is not merely the immediate lands involved in the action itself (Figure 2). Six land cover types were observed within the study area in 2015 (NOREAS 2015): agricultural, annual grassland, open water (i.e., California Aqueduct and Delta Mendota Canal), orchard, non-native grasses, and developed habitats.

As required by the *Interim Guidance on Conducting Site Assessments and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (CDFG October 2003)* the data collected and analyzed herein addresses the following 3 elements relevant to the potential occurrence of CTS within the Project Site. These parameters include:

1. The Project's position within the current and historic range of the CTS;

2. Known localities of CTS within the study area; and

3. Existing habitats within the Project Site and within 1.24 miles its boundaries.

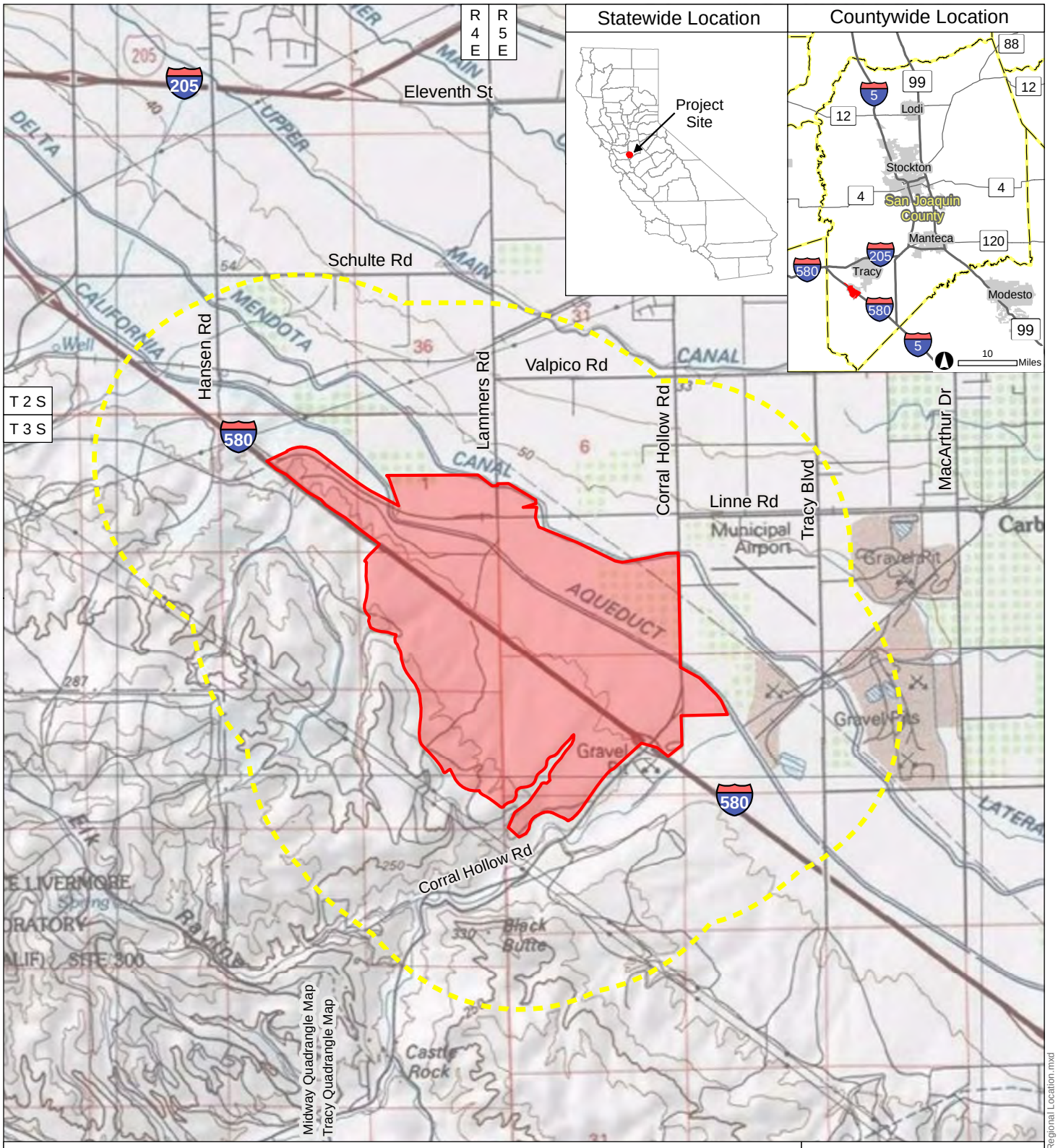
Targeted CTS field evaluations and analysis have occurred within representative portions of the study area for roughly 15 years. This has been done to account for variations in local weather patterns, and to safeguard that field investigations were adequate to maximize the potential for detecting CTS. The literature reviews; comprehensive field investigations by credentialed biologists; and 2015 assessment results indicate that the herpetofauna within the study area has not changed significantly from those documented in past studies (LSA 1999, Foothill Associates 2004, Berryman Ecological LLC 2010, and ICF International 2011). No CTS aquatic breeding habitat that could support larval development of the species has ever been detected within the Project Site.

This is likely a result of the significant ground disturbance (i.e., grading, disking, and deep ripping) associated with crop cultivation and numerous other anthropogenic undertakings that have occurred within the study area (e.g., freeways, paved roads, aqueducts, urban development and other infrastructure related appurtenances). Additionally, soils within the Project Site are generally very well drained, which contributes to the short hydro periods of the few isolated, small, shallow, seasonal depressions that support ponding water for a few weeks out of the frost free growing season – as opposed to the 10 weeks required for successful CTS larval development. Ephemeral features within the Project site are presumed to convey fast flowing water during and immediately following storm events; but they lack drop pools or other lands that could pond water for sufficient durations of time to support CTS larval development. Even concrete-lined stock ponds within the Project Site have high-walls around them that would preclude CTS from utilizing it as breeding habitat. Nonetheless, there are lands within

[1] RBF Consulting 2014. Tracy Hills Specific Plan: Habitat Assessment & San Joaquin County Multi-Species Habitat Conservation and Open Space Plan Consistency Analysis.

the southwestern portion of the Project Site that could be used by adult CTS as potential refuge or as low quality overland dispersal habitats. But these areas value as adult CTS refuge or dispersal habitat is inconsequential because they are isolated from known aquatic breeding habitats within the vicinity; and are severely movement constrained (i.e., topography, freeways, paved roads, aqueducts, lack of appropriate cover or exposure to desiccation, disked fields) within the study area.

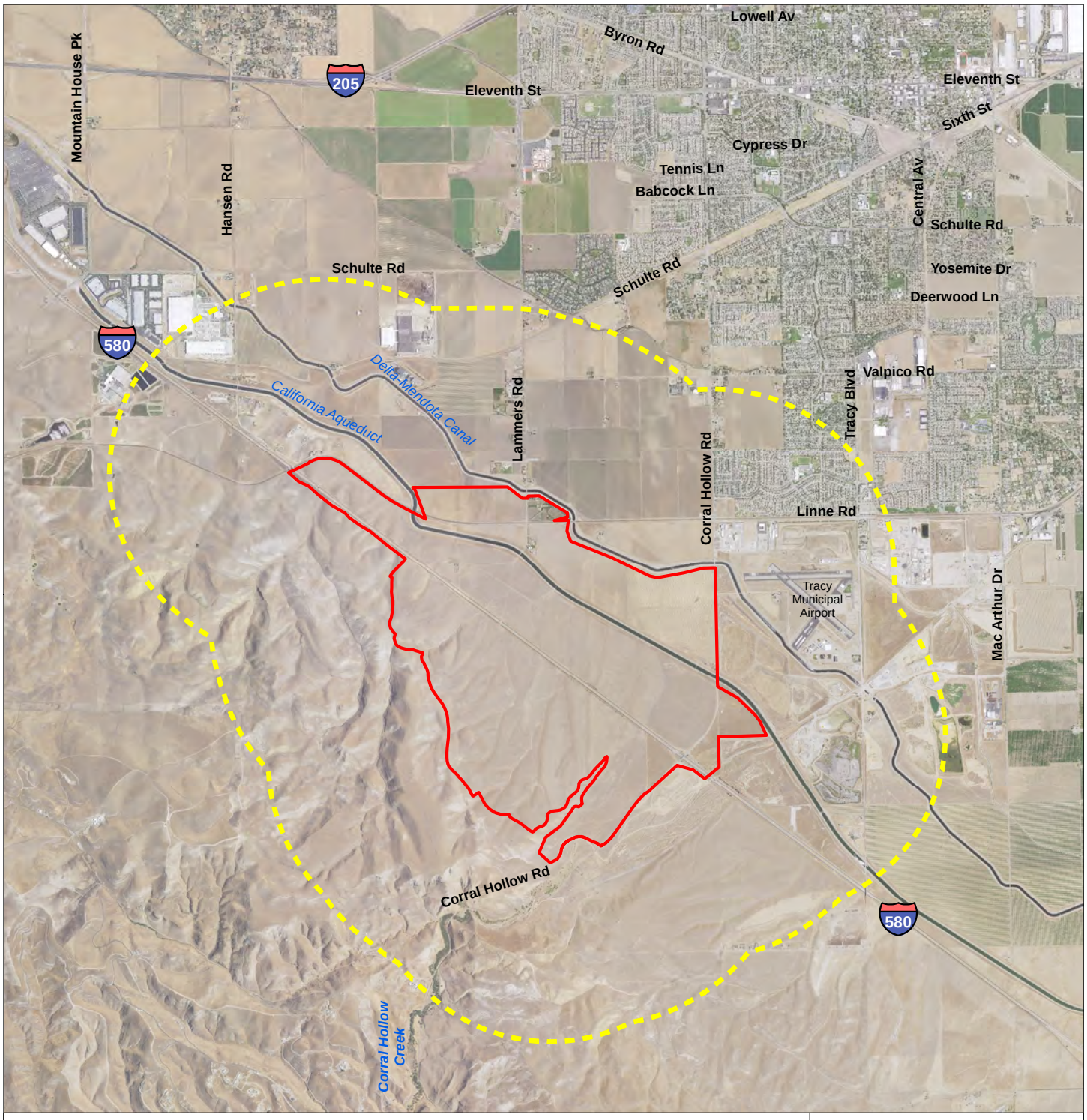
The more factors that constrain CTS breeding habitats and movement corridors, the less likely individuals are to occur, or continue to occur within a specific locale. The nearest historic CTS record in the surrounding area is from 1992; and it consists of 1 adult male along the edge of Corral Hollow Road - near the extreme southwestern limits of the Project Site. It should also be noted that these lands are not proposed for development to minimize adverse effects to special status species and their habitats. Given the lack of breeding habitat and movement constrained overland dispersal habitat within the Project Site, the likelihood of CTS successfully reproducing within it or even utilizing it for dispersal is negligible because much higher quality habitats are available within the region. Observations of CTS are not uncommon south of the Project, and within the approximately 3,500-acre open space conservation easement which abuts the study area. The data analyzed also suggests that there is extremely low potential for CTS to recruit into the Project Site.



The Project Site is located on the Midway and Tracy USGS 7.5-minute quadrangle maps; Mt. Diablo Base and Meridian,
Township 3 South, Range 4 East, Sections 1, 2, 12 and 13; and
Township 3 South, Range 5 East, Sections 6, 7, 8, 17, 18 and 19.

Center coordinates for the Project Site are: 37.680702, -121.476315.

Figure 1. Regional Location



Project Site (2,729 acres)

2-kilometer Radius Around the Project Site (13,736 acres)

0 0.5 1 Mile

1 inch = 1 mile

Data Source:
- USDA-NRCS-AFPO NAIP accessed Aug 2015, image date: 2014

Map Prepared: 8-11-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\CTS\Fig2. Site Vicinity.mxd

Figure 2. Site Vicinity

2.0 INTRODUCTION AND PROJECT LOCATION

NOREAS Inc. was retained to review historic California Tiger Salamander *(Ambystoma californiense* [CTS]) census data and perform a U.S. Fish and Wildlife Service (USFWS) protocol-level assessment for the Project. The Project occurs in Sections 6, 7, 8, 17, 18 and 19 of Township 3 South and Range 5 East (Mt. Diablo Base and Meridian) of the Midway U.S. Geological Survey (USGS 1986) 7.5-Minute Quadrangle Map; and Sections 1, 2, 11, 12, 13 and 24 of Township 3 South, and Range 4 East (Mt. Diablo Base and Meridian) of the Tracy USGS 7.5-Minute Quadrangle Map (USGS 1980).

The primary objective of the literature review and 2015 field assessment was to determine the presence or to confirm the presumed absence of, CTS within the study area. For the purposes of this document, the "study area" includes the Project's proposed ground disturbance footprint (Project Site) and a 1.2 mile (2 kilometer) buffer (Figure 2).

3.0 CALIFORNIA TIGER SALAMANDER BACKGROUND

CTS is an endemic species to the lowlands of central California and is listed as threatened under the federal and State Endangered Species Acts. The primary cause of CTS population decline is loss of habitat from development (USFWS 2004). CTS require both terrestrial and aquatic habitats in order to complete its life cycle. Adult salamanders will breed within seasonal ponds and wetlands. During the dry season CTS will move into the surrounding uplands, living underground in fossorial mammalian burrows (Loredo and Van Vuren 1996, Loredo at al. 1996). The CTS larvae develop within aquatic breeding habitat and then move into the adjacent upland habitat as metamorphosed juveniles. Characteristic upland habitat consists of annual grasslands, which are typically grazed by livestock. Upland habitat must also contain mammal burrows or shrink-swell cracks that provide refugia, which is used for the majority of their lifecycle (USFWS 2004).

The breeding period for CTS is generally December through February. Females lay eggs in the water of seasonal to semi-perennial wetlands attached to vegetation, twigs, debris, or in some cases, rocks (Stebbins and McGinnis 2012). The eggs of CTS hatch in approximately 10 to 14 days. Although the larvae of CTS can overwinter in appropriate habitats, the larval stage typically lasts between 3 and 6 months, and is largely dependent on the inundation period of the wetland. CTS movements have been recorded at distances of up to 1.24 miles between upland habitat and breeding ponds (USFWS 2004). However, overland movements are significantly often constrained by urban development and freeways (CDFG 2003).

4.0 METHODS

Prior to beginning field surveys, resource specialists were consulted and available information from resource management plans and relevant documents were reviewed to determine the locations and types of herpetofauna that have the potential to exist within and adjacent to the study area; resources were evaluated within several miles of the Project. The primary materials reviewed included, but were not limited to, the following:

- Habitat Conservation Plan for Lakeside Tracy Development (LSA 1999)
- Habitat Management Plan - Tracy Hills Project (Foothill Associates 2004);
- Biological Resources on the Tracy 580 Business Park Property (Berryman Ecological LLC 2010)
- Preserve Management Plan for the Tracy 580 Business Park Preserve (ICF International 2011);
- A Guide To The Amphibians And Reptiles Of California (California Herps 2013);
- Interim Guidance on Conducting Site Assessments and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (CDFG October 2003);
- U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper and File Data (USFWS 2015a);
- USFWS Sacramento Field Office Species List for San Joaquin County (USFWS 2015b);
- California Natural Diversity Database maintained by the California Department of Fish and Wildlife (CDFW 2015);
- General Biological Resources Assessment for the Tracy Hills Project (NOREAS 2015); and
- Aerial Photographs (Microsoft Corporation 2015).

Survey methods were derived from generally accepted professional standards for performing visual encounter herpetofauna surveys (Aguirre-Bravo et al. 2006) and followed the *Interim Guidance on Conducting Site Assessments and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (CDFG October 2003).* An assessment for CTS was performed within 1.24 mile of the Project Site to characterize the habitats and land cover types to the maximum extent practical with regard upland and aquatic features.

Upland and aquatic types within the study area were mapped and characterized as either not suitable, breeding[2], or dispersal habitat by vegetation communities, land use, and any potential barriers to CTS movements. In order to determine if an aquatic feature within the Project and/or study area could provide suitable CTS habitat (i.e., breeding and dispersal), sufficient hydrologic periods needed to be observable through time-lapse images over multiple years. Perennial or semi-perennial water features that retained water through most of the year and had associated riparian vegetation cover were considered suitable to support CTS larval development (breeding habitat). Upland habitats were further analyzed for potential movement constraints as described below.

[2] Non-CTS breeding habitats are aquatic habitats that during average precipitation years, do not have sufficient hydrology for CTS larvae to complete metamorphosis. Therefore, for the purposes of this report, CTS breeding aquatic habitat is defined as any body of water deeper than 12 inches that ponds, on average, for longer than 10 weeks.

- High constraints to movement are barriers in which CTS cannot pass over, though, or under (e.g., sound walls) or that CTS would most likely perish while trying pass over them (e.g., freeways). The high constraints to CTS movement include urban residential and commercial development, swift-flowing aqueducts, and freeways.

- Moderate constraints to CTS movement are those that would greatly increase the likelihood of mortality from exposure to predators or exposure to desiccation by increasing the length of movement or dispersal time. Moderate constraints consist of disked fields with no vegetation cover, hay fields, rural development, railroad berms and tracks, and rural paved roads.

- Low constraints are those that slightly increase the likelihood of mortality such as agricultural fields planted with row crops and orchards. No constraints are those that do not have permanent or significant barriers to movement such as routinely grazed annual grasslands. Livestock grazing in annual grassland habitat reduces vegetation heights, encourages fossorial mammal occupation, and can facilitate CTS overland dispersal (Barry and Shaffer 1994).

The presence of a species was based on direct observations of individual(s), sign, and/or vocalization. The assessment was not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Where access was limited, observations were made from the nearest appropriate vantage points by means of public rights-of-way with the use of binoculars and spotting scopes. The following NOREAS biologists either performed the field work and/or contributed to data analysis: Brent Helm PhD, Mark Noyes MS, Eric Dugan PhD, Richard White MS, Jeff Alvarez BS, Lenny Malo MS, Lincoln Hulse BS, Erin Serra BS, and Ken Hashagen BS.

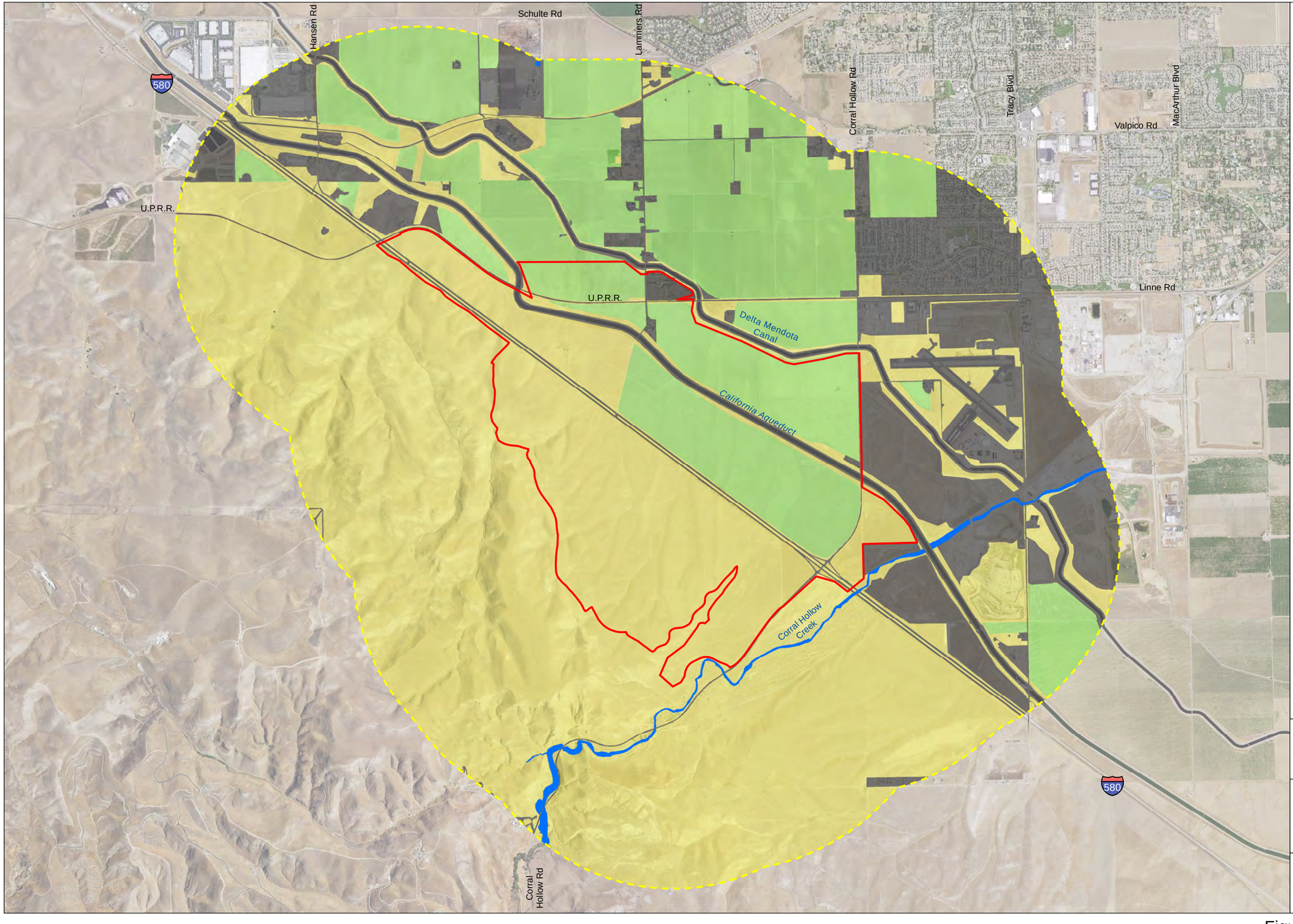
5.0 RESULTS

Weather conditions during the 2015 surveys included cloudy to clear skies, temperatures ranging from 50–75 degrees Fahrenheit, and winds fluctuating from 0 to 15 miles per hour. CTS assessments were performed on the following dates: 17 and 18 December 2014, 25 and 26 March, 16 and 17 April, 16 May, 7 and 8 June, 2015.

The Project Site predominately consists of upland non-native vegetation, grasslands, and developed and disturbed land cover types (Figure 3). Targeted CTS field evaluations and analysis have occurred within representative portions of the study area since 1999. This has been done to account for variations in local weather patterns, and to safeguard that field investigations were adequate to maximize the potential for detecting CTS. The literature reviews; comprehensive field investigations; and 2015 assessment results indicate that the herpetofauna within the study area has not changed significantly from those documented in past studies. Given the size of the Project Site, there are relatively few aquatic habitats within it (Figure 4).

No CTS aquatic breeding habitat that could support larval development of the species has ever been detected within the Project Site. This is likely a result of the substantial ground disturbance (i.e., grading, disking, and deep ripping) associated with crop cultivation and numerous other anthropogenic undertakings that have occurred within the study area (e.g., freeways, paved roads, aqueducts and other infrastructure related appurtenances). Additionally, soils within the Project Site are generally very well drained, which contributes to the short hydro periods of the few isolated, small, shallow, seasonal depressions that support ponding water for a few weeks out of the frost free growing season – as opposed to the 10 weeks required for successful CTS larval development. This is evidenced by a lack of hydrologic indicators (e.g., rack lines, biotic crusts, and salt deposits) and a general lack of hydrophytic vegetation within the Project Site with the exceptions; hydrophytes indicative of short hydroperiods (e.g., including Italian ryegrass [*Festuca perennis*] and Mediterranean barley [*Hordeum marinum ssp. gussoneanum*]) were detected. Ephemeral features within the Project site are presumed to convey fast flowing water during and immediately following storm events; but they lack of drop pools or other lands that could pond water for sufficient durations of time to support CTS larval development. Even concrete-lined stock ponds within the Project Site that are supplemented by pumped-well water have high-walls (>2 feet tall) around them, that would preclude CTS from utilizing it as breeding habitat.

The nearest historic CTS record in the surrounding area is from 1992; and it consists of 1 adult male along the edge of Corral Hollow Road - near the extreme southwestern limits of the Project Site. It should also be noted that these lands are not proposed for development to minimize adverse effects to special status species and their habitats. Nonetheless, there are lands within the southwestern portion of the Project Site that could be used by CTS as potential refuge or as low quality overland dispersal habitats for adults. These areas value as adult CTS refuge or dispersal habitat is inconsequential because they are isolated from known aquatic breeding habitats within the vicinity; and are severely movement constrained (i.e., topography, freeways, paved roads, aqueducts, lack of appropriate cover or exposure to desiccation, disked fields) within the study area. With deference to Corral Hollow Creek, it's bordered to the west by an extremely steep slope that transitions into a vertical cliff. This leaves limited area along Corral Hollow Road accessible to potential migrating or dispersing individuals moving away from aquatic habitats within the creek. The Project Site does not include designated critical habitat for CTS either (USFWS 2015, Figure 5). Appendix A includes a Photograph Log.



Project Site

2-kilometer Radius Around the Project Site

Habitats

- Agricultural (3,196 acres)
- Annual Grassland (7,824 acres)
- Creek/Pond (62 acres)
- Developed (2,654 acres)

0 1,000 2,000 3,000 Feet

1 inch = 3,000 feet

Data Sources:
- San Joaquin County GIS accessed Aug 2015, data date: Jan 2015
- USDA-NRCS-AFPO NAIP accessed Aug 2015, image date: Jun 2014

Map Prepared: 8-17-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\CTSP.gdb: Habitat Assessment.mxd

Figure 3. Habitat Assessment

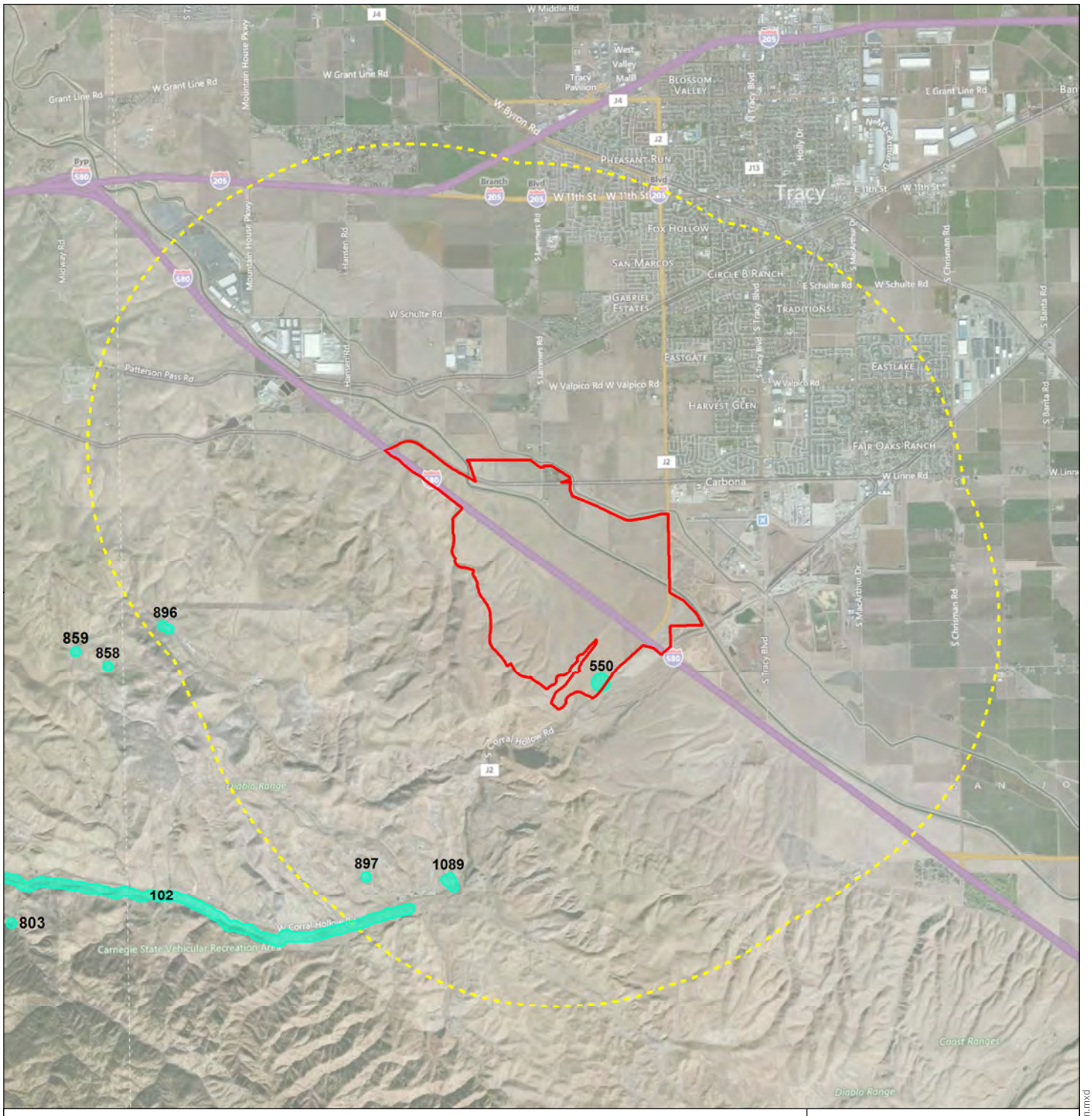


Figure 4. CTS Occurrences within 5 Kilometers of the Project Site

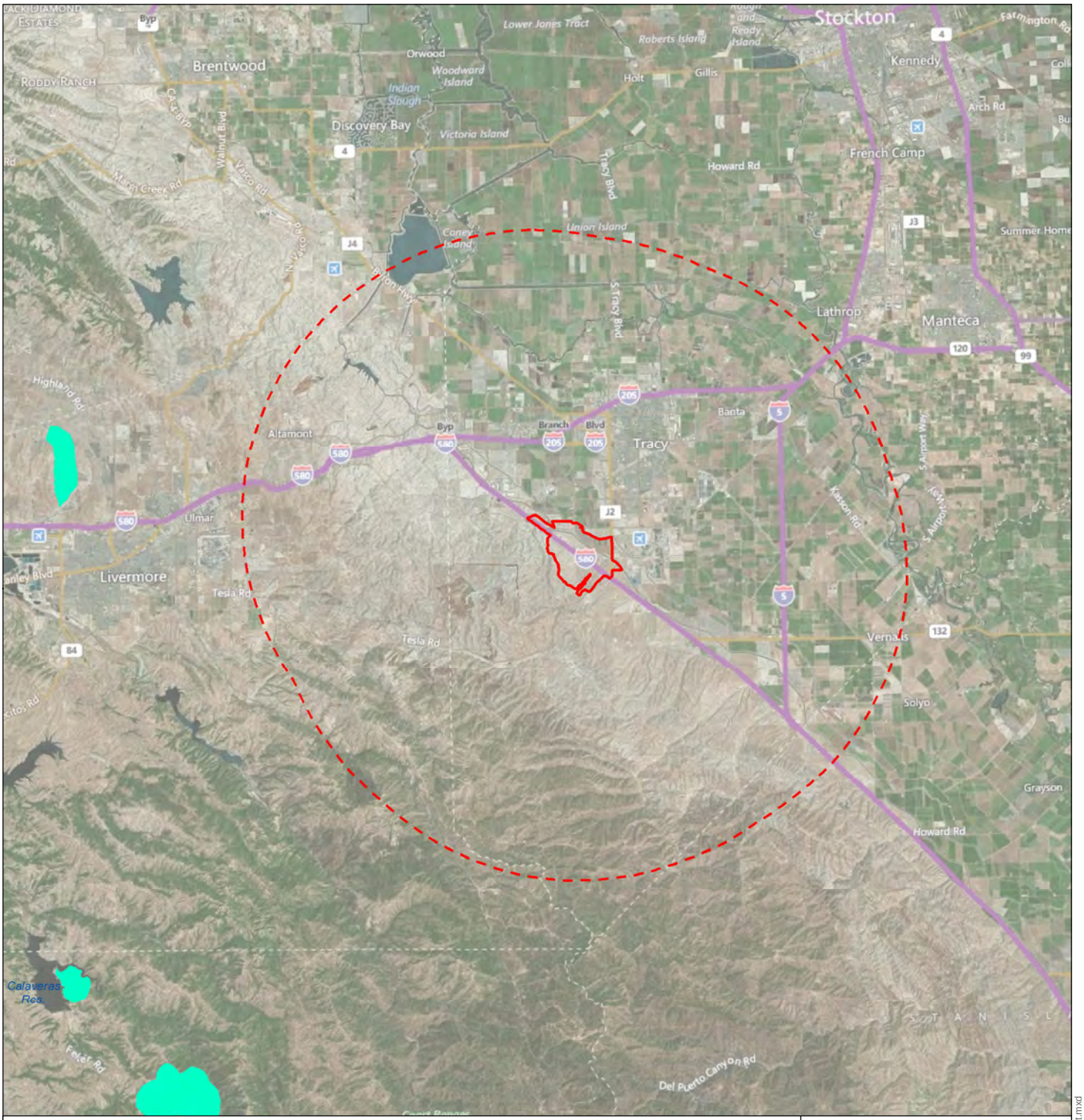


Figure 5. Critical Habitat

6.0 CONCLUSIONS

The Project Site has been exposed to substantial ground disturbance (i.e., grading, disking, tilling and deep ripping) associated with agricultural activities, crop cultivation and numerous other anthropogenic undertakings that have occurred within the study area (e.g., freeways, paved roads, aqueducts and other infrastructure related appurtenances) that have greatly reduced the lands ability to support breeding and dispersing CTS. No CTS aquatic breeding habitat has ever been detected within the Project Site; and only low quality severely constrained CTS dispersal habitat is present. The more factors that constrain CTS breeding habitats and movement corridors, the less likely individuals are to occur, or continue to occur within a specific locale. Given the lack of breeding habitat and movement constrained overland dispersal habitat within the Project Site, the likelihood of CTS successfully reproducing within it or even utilizing it for dispersal is negligible because much higher quality habitats are available within the region. Observations of CTS are not uncommon south of the Project, and within the approximately 3,500-acre open space conservation easement which abuts the study area.

Given that these findings are consistent with other assessments for CTS within the study area, the Project would not be expected to result in the loss of individual CTS, or adversely affect local or regional populations of them. Furthermore, the Project would not be expected to degrade the long-term preservation value or ecological processes within the Project vicinity, as impacts have been minimized to safeguard the needed habitat, wildlife linkages, and functional connectivity are maintained within the region with deference to CTS. Accordingly, the habitat loss associated with the Project would be considered an insignificant effect to CTS as a result of the amount of similar, and higher value vegetation communities and land cover types within the region that are already held in conservation. With the implementation of the measures detailed within Section 7.0 of this report, there is no presumption that the Project would result in the take[3] of CTS, or the loss of valuable breeding habitat.

[3] "Take" is defined within California Fish and Game Code Section 86 as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

7.0 RECOMMENDATIONS

The following measures are recommended as a means of avoiding and minimizing adverse impacts to CTS that have the potential to occur within the study area:

- Prior to commencement of ground disturbing activities in all areas of potentially suitable habitat to support CTS, pre-activity clearance surveys shall be initialed by a qualified biologist to reinforce positive or negative findings with substantial evidence. If CTS is detected within portions of the study area proposed for development, then avoidance and minimization measures specific to CTS will be incorporated into the Project as necessary to reduce impacts to CTS to less-than significant.

- Temporary construction disturbances to California tiger salamander habitat will be minimized to the extent practicable. All Project-related vehicle traffic will be restricted to established roads, and construction areas.

- A qualified biologist will be on site during all activities that may result in the take of CTS. The biologist will be given the authority to stop any work that may result in the take of this listed species.

- The biologist will be responsible for ensuring that the exclusion fence installed around occupied CTS habitat inspected before the start of each day and remains intact until project construction is complete.

- Plastic monofilament netting (erosion control matting) or similar material will not be used for erosion control or other purposes around occupied CTS habitat because they may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding.

- The project proponent or its contractor will implement BMPs to prevent sediment from entering suitable California tiger salamander habitat through the use of silt fencing and sterile hay bales.

- A worker training program that includes the California tiger salamander will be conducted for construction personnel before groundbreaking at individual redevelopment project sites.

- A speed limit of 20 miles per hour (mph) will be observed within construction areas, particularly on rainy nights when California tiger salamanders are most likely to be moving between their breeding ponds and upland habitat. To the extent possible, nighttime construction will be minimized. Off-road traffic outside designated construction areas will be prohibited.

- To prevent entrapment of California tiger salamanders during construction, any trenches, holes, or other excavations into which California tiger salamander could fall and become trapped will be covered. The opening will be completely covered at the end of each workday.

8.0 REFERENCES

Berryman Ecological LLC. 2010. Biological Resources on the Tracy 580 Business Park Property.

California Department of Fish and Game (CDFG). 2003. Interim Guidance on Conducting Site Assessments and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander.

California Department of Fish and Wildlife (CDFW). 2015. California Natural Diversity Database maintained by the California Department of Fish and Wildlife.

California Herps. 2013. A Guide To The Amphibians And Reptiles Of California.

Foothill Associates. 2004. Habitat Management Plan - Tracy Hills Project.

ICF International. 2011. Preserve Management Plan for the Tracy 580 Business Park Preserve.

Loredo, I., and D. Van Vuren. 1996. Reproductive ecology of a population of the California tiger salamander.

LSA Associates, Inc. (LSA). 1999. Habitat Conservation Plan for Lakeside Tracy Development.

Microsoft Corporation. 2015. Bing Maps Aerial Imagery. Redmond, WA.

NOREAS, Inc. (NOREAS). 2015. General Biological Resources Assessment for the Tracy Hills Project.

Stebbins and McGinnis 2012. A field guide to western reptiles and amphibians. Revised Edition. Houghton Mifflin Company. Boston, MA.

United States Geological Service (USGS). 1980. 7.5-Minute Quadrangle Tracy, California.

_____. 1986. 7.5-Minute Quadrangle Midway, California.

U.S Fish and Wildlife Service. 2004 August 4. 50 CFR 17. Endangered and threatened wildlife and plants; determination of threatened status for the California tiger salamander; and special rule exemption for existing routine ranching activities. Federal Register 69:47212-47248.

_____. 2015a. Critical Habitat Portal.

_____. 2015b. Sacramento Fish and Wildlife Office. Endangered and Threatened Species List for San Joaquin County.

APPENDIX A

PHOTOGRAPH LOG

	Photograph: 1. California Aqueduct is a anthropogenic feature that functions as a high movement constraint for CTS based on the steep sided walls and swift flowing water (facing west).
	Photograph: 2. Due to a lack of vegetation and shallow depths, this feature does not provide breeding habitat to CTS (facing southwest).

	Photograph: 3. Agricultural tilling removes potential underground burrows and creates uneven terrain that is difficult for adult CTS to traverse (facing east).
	Photograph: 4. Illustration of the large cliff/steep-sloped area southeast of the Project near Corral Hollow Creek. Due to the steep sides of this topographic feature, dispersing CTS would not be able to reach the Project Site (facing north).

APPENDIX I

2015 SAN JOAQUIN KIT FOX SURVEY

TRACY HILLS PROJECT

September 2015

San Joaquin Kit Fox Survey Report

Owner
The Tracy Hills Project Owner, LLC
888 San Clemente
Suite 100
Newport Beach, CA 92660

Prepared By


16361 Scientific Way
Irvine, CA 92618
(949) 467-9100

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

The Tracy Hills Project Owner LLC (Tracy Hills) is proposing to develop the Tracy Hills Project in Tracy, California (hereafter "Project", Figure 1). The Project includes a revised and updated Specific Plan[1] that authorizes approximately 2,732 acres for development of residential neighborhoods and non-residential uses (e.g., office, commercial, light industrial, parks, schools and open spaces) within existing low quality livestock grazing and agricultural lands. This report documents the findings of protocol level San Joaquin Kit Fox (*Vulpes macrotis mutica*) surveys for the Project. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site) (Figure 2). Six land cover types were observed within the study area in 2015: agricultural, annual grassland, open water, orchard, non-native grasses, and developed habitats.

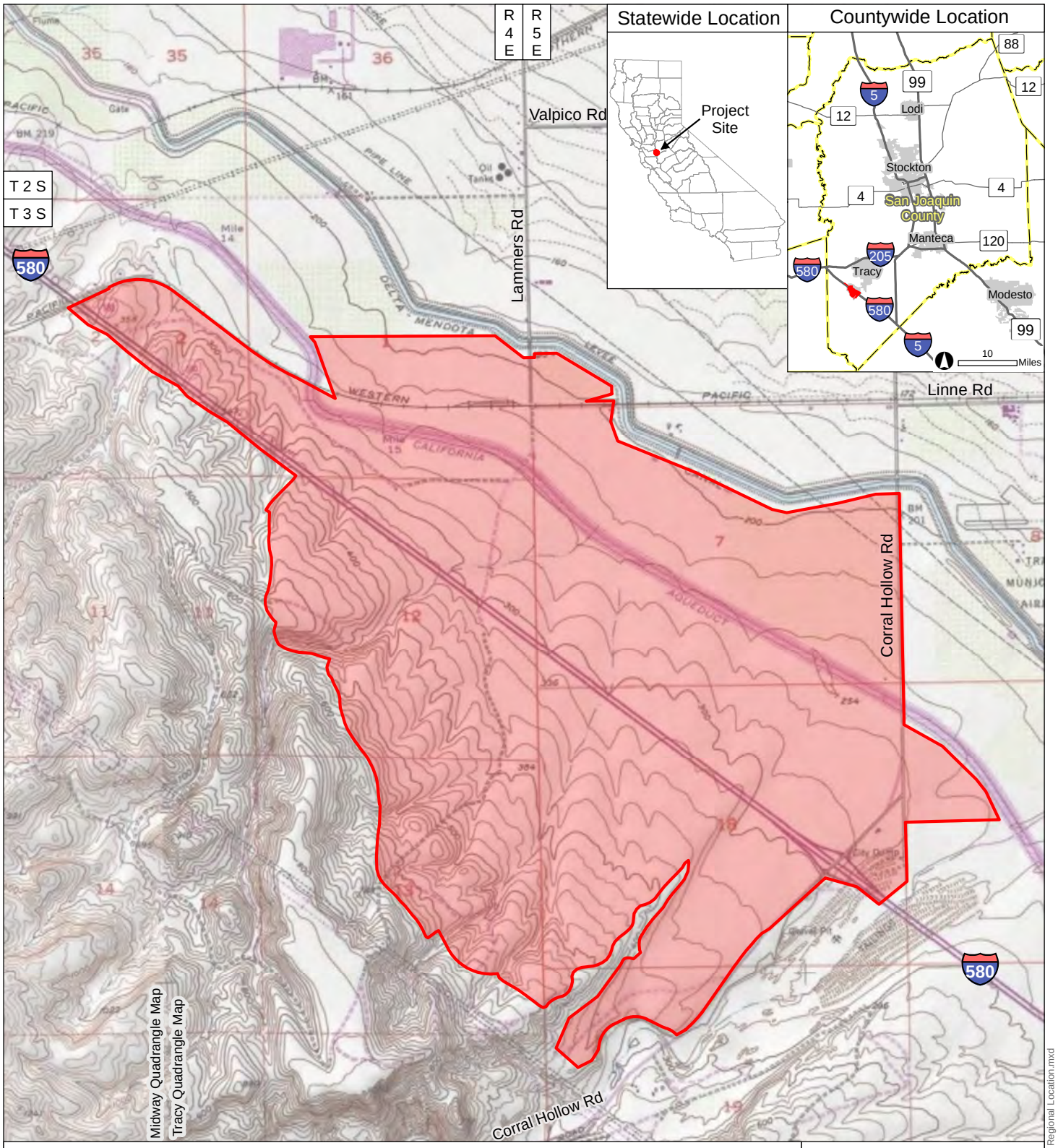
Targeted field surveys and analysis have occurred within representative portions of the study area for more than 25 years. This has been done to account for variations in local weather patterns, and to safeguard that field surveys were adequate to maximize the potential for detecting San Joaquin Kit Fox. The literature reviews; comprehensive field investigations by credentialed and experienced mammalogists; 4 consecutive years of concentrated canine San Joaquin Kit Fox scat detection census activities; and 2015 pedestrian survey results indicate that the small mammal population within the study area has not changed significantly from those documented in past studies over a quarter of a century. The study area is in the northern portion of the range of San Joaquin Kit Fox. As the range extends northward, reported observations of kit fox become fewer and fewer.

No San Joaquin Kit Fox breeding, non-natal or natal den complexes have ever been detected within the study area. No atypical, natal, or known San Joaquin Kit Fox dens have ever been located during surveys of the Project Site either. Although the study area is large in total size – it has very low species richness and diversity, and lacks high quality habitats for San Joaquin Kit Fox. The study area is lacking in numbers and variety of species – likely attributable to its inability to produce a high enough density of biomass to support a substantial rodent population. More specifically, no San Joaquin Kit Fox camera stations or track stations have ever documented the species within the study area.

Nonetheless, during 2015 spotlighting surveys a single San Joaquin Kit Fox was observed. The animal was foraging within the fenced right-of-way of the California Aqueduct; not within the Project Site. This observation lasted approximately 20 seconds, as the fox ultimately moved along the California Aqueduct's gravel security road in a southern direction until it was out of site. No other San Joaquin Kit Fox has ever been detected within the study area. Given the low quality habitat present (i.e., limited rodent population, depauperate landscape, competition and territorialism among other mammals within the study area [i.e., coyote]), the likelihood of San Joaquin Kit Fox successfully establishing a natal den our utilizing the Project Site as valuable foraging habitat is negligible. Although little can be concluded from a single observation of one animal, it is conceivable – albeit unlikely, that the California Aqueduct is functioning as a movement corridor for a small number of San Joaquin Kit Fox. Observations of the species are not uncommon south of Corral Hollow Road and within the approximately 3,500-acre open space conservation easement which abuts the study area.

[1] RBF Consulting 2014. Tracy Hills Specific Plan: Habitat Assessment & San Joaquin County Multi-Species Habitat Conservation and Open Space Plan Consistency Analysis

The habitat within the study area includes existing livestock grazing and agricultural undertakings which have greatly reduced the lands ability to support San Joaquin Kit Fox. The data collected and analyzed herein also suggests that there is extremely low potential for San Joaquin Kit Fox to recruit into the Project Site. Given that targeted surveys for San Joaquin Kit Fox have been negative within the Project Site for roughly a quarter century, the Project would not be expected to result in the loss of individual San Joaquin Kit Fox, or adversely affect local or regional populations of them. Furthermore, the Project would not be expected to degrade the long-term preservation value or ecological processes within the Project vicinity, and impacts have been minimized to safeguard the needed habitat, wildlife linkages, and functional connectivity are maintained within the region with deference to San Joaquin Kit Fox. Accordingly, the habitat loss associated with the Project would be considered an insignificant effect to San Joaquin Kit Fox as a result of the amount of similar, and higher value vegetation communities and land cover types within the region that are already held in conservation. Furthermore, the Project does not alter the ultimate land use in any way that would adversely affect the cohesiveness and quality of the surrounding lands ability to sustain their stated ecological and conservation purposes.



Project Site

Urban Area (inset)

County Boundary (inset)

Interstate or State Highway (inset)

0 0.25 0.5 Mile

1 inch = 0.5 mile

Data Sources:
- Bing accessed Aug 2015
- ESRI StreetMap North America 2010
- ESRI US Topo Maps accessed Aug 2015

Map Prepared: 8-11-15

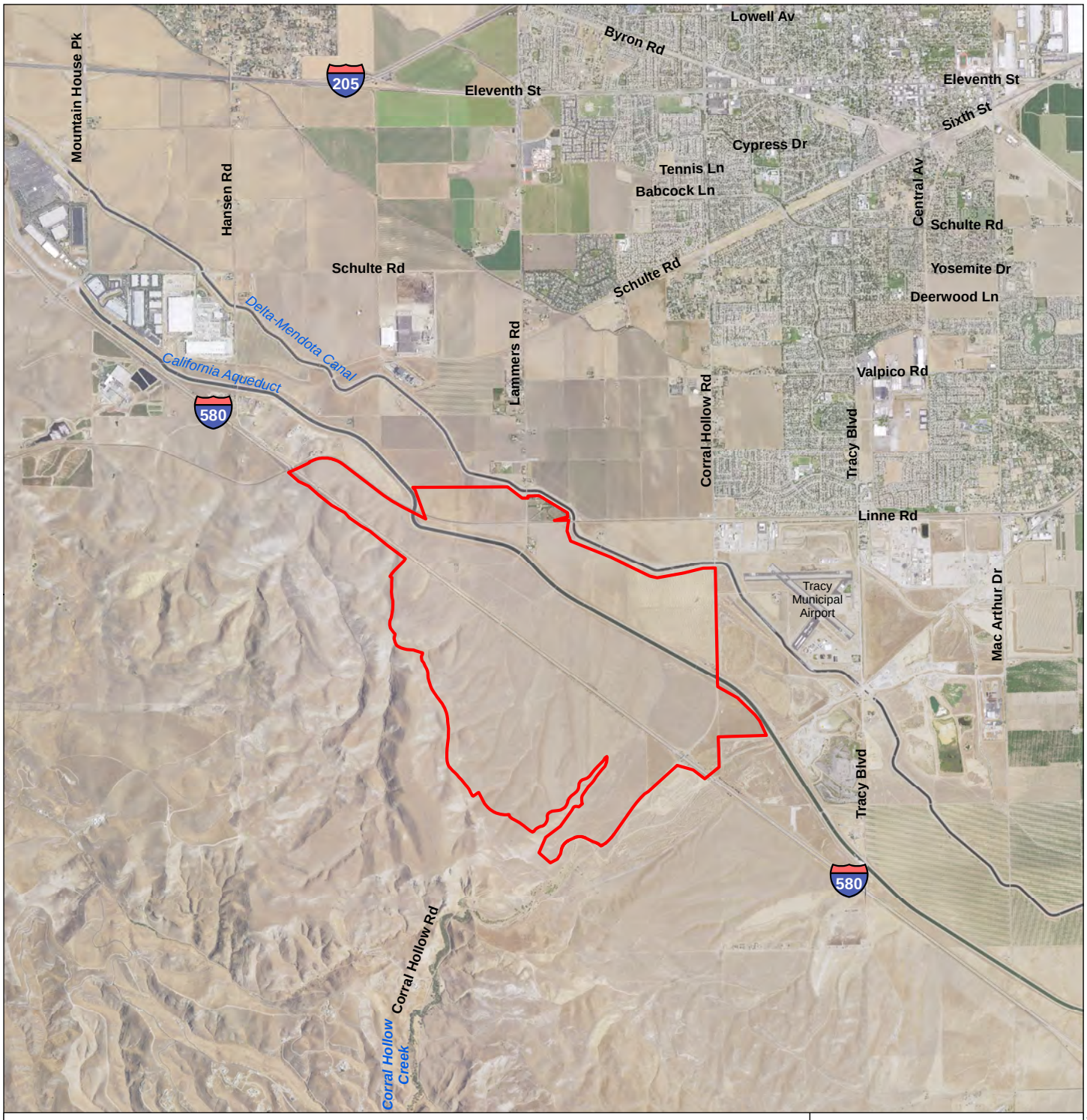
Prepared by:
NOREAS
Environmental Engineering and Science

The Project Site is located on the Midway and Tracy USGS 7.5-minute quadrangle maps; Mt. Diablo Base and Meridian,
Township 3 South, Range 4 East, Sections 1, 2, 12 and 13; and
Township 3 South, Range 5 East, Sections 6, 7, 8, 17, 18 and 19.

Center coordinates for the Project Site are: 37.680702, -121.476315.

C:\SRM\Noreas\Tracy Hills\ArcMap\SJKFFig1. Regional Location.mxd

Figure 1. Regional Location



Project Site (2,729 acres)

0 0.5 1 Mile

1 inch = 1 mile

Data Source:
- USDA-NRCS-AFPO NAIP accessed Aug 2015, image date: 2014

Map Prepared: 8-11-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\SJKFVFig2. Site Vicinity.mxd

Figure 2. Site Vicinity

2.0 INTRODUCTION AND PROJECT LOCATION

NOREAS, Inc. was retained to review historic small mammal census data and conduct protocol level San Joaquin Kit Fox surveys for the Project. The Project occurs in Sections 6, 7, 8, 17, 18 and 19 of Township 3 South and Range 5 East (Mt. Diablo Base and Meridian) of the Midway U.S. Geological Survey (USGS 1986) 7.5-minute quadrangle map; and Sections 1, 2, 12 and 13 of Township 3 South, and Range 4 East (Mt. Diablo Base and Meridian) of the Tracy U.S. Geological Survey 7.5 minute quadrangle map (USGS 1980).

The primary objective of the literature review and field surveys was to determine the presence – or to confirm the presumed absence of, San Joaquin Kit Fox and their den complexes within Project boundaries. For the purposes of this document, the "study area" includes the entirety of the Project's possible proposed ground disturbance footprint (Figure 2). Therefore, the study area includes all lands likely to be affected directly by the Project, and is limited to those locales associated with proposed ground disturbances – with few exceptions (e.g., locales within the road right-of-way of the 580 Interstate Highway and the fenced right-of-way and access roads of the California Aqueduct).

3.0 BACKGROUND INFORMATION ON SAN JOAQUIN KIT FOX

The San Joaquin Kit Fox is one of the eight recognized subspecies of kit fox. It resembles a small lanky dog in appearance, is cat-size, and has disproportionately large ears. Total length is about 32 inches, including a 12-inch black-tipped tail. Coloration ranges from light buff to grayish along the back and tail; gray, rust, or yellowish along the sides with white along the belly.

Kit fox dens are typically excavated in loose soil and individual animals may utilize from multiple separate dens. The number of den entrances vary, and they may extend into several individual tunnels and chambers reaching depths of 10 feet. Man-made structures such as culverts and pipes may also be used as dens. The den entrance is characteristically higher than wide, and is sufficiently small to prevent access by large carnivores such as coyotes and dogs. The den entrance holes are generally about 6 to 10 inches in height and less than 8 inches in width, but may be as small as 4 inches in width.

Burrows of other animals particularly California Ground Squirrel, may also be enlarged and utilized as den sites. Although occupied dens commonly show freshly excavated soil, scats, and prey remains, such obvious sign may be inconspicuous or absent. Kit fox forage and live in an area of 1 to 2 square miles. San Joaquin Kit Fox typically hunt for rodents, rabbits, and other prey by night. Typical prey include California Ground Squirrel, Audubon's Cottontail, Black-tailed Hare, kangaroo rats, pocket mice, other small mammals, insects, and ground-nesting birds. Mating occurs in December to January. Pups are born in February to March, and begin to disperse at around five months of age. Survival rates of pups are low, about 75 percent of them die before the age of eight months.

The kit fox is distributed over a large portion of central California, extending roughly from southeastern Contra Costa County south along the eastern edge of the Interior Coast Range to the southern San Joaquin Valley - including major portions of western Kern County and Tulare County. Kit fox are also distributed through adjacent valleys, foothills, and plains, including portions of San Luis Obispo County, Monterey County, and the Santa Clara Valley on the western side of the Interior Coast Range. Mortality to kit fox has been documented from attacks by coyotes, road kills, shooting, drowning, entombment, pneumonia, and starvation. Additionally, widespread use of rodenticides may result in mortality, since kit fox are extremely vulnerable to secondary poisoning through consumption of poisoned ground squirrels or other scavenged rodents.

4.0 METHODS

Prior to beginning pedestrian based field surveys in 2015, mammalogists were consulted and available information from resource management plans and relevant documents were reviewed to determine the locations and types of wildlife that have the potential to exist within and adjacent to the study area. Resources were evaluated within several miles of the Project. As detailed below, field census and analysis activities have occurred within representative portions of the study area for more than 25 years. The primary materials reviewed included, but were not limited to, the following:

- Biological Assessment Properties East of California Aqueduct Carnegie Business Park San Joaquin County, California (LSA 1989);
- Evaluation of a Proposed Corridor for the San Joaquin Kit Fox in the Tracy Hills Development (Jones & Stokes Associates, Inc. 1993);
- Habitat Conservation Plan for Lakeside Tracy Development (LSA 1999);
- Habitat Management Plan – Tracy Hills Project (Foothill Associates 2004);
- Environmental Assessment for the Tracy Hills Habitat Conservation Plan (Tracy Hills LLC 2004);
- Tracy Hills San Joaquin Kit Fox Analysis (Berryman Ecological LLC 2006);
- Tracy Triangle San Joaquin Kit Fox Surveys, Project #2689-01 (H.T. Harvey & Associates 2006);
- Biological Resources on the Tracy 580 Business Park Property (Berryman Ecological LLC 2010);
- Preserve Management Plan for the Tracy 580 Business Park Preserve (ICF International 2011);
- Scat Detection Dog Surveys for the Endangered San Joaquin Kit Fox (*Vulpes macrotis mutica*) at the Tracy Hills Project Site, San Joaquin County, California (Working Dogs for Conservation Foundation 2011, 2012, 2013 and 2014);
- United States Fish and Wildlife Service (USFWS) Critical Habitat Mapper and File Data (USFWS 2015a);
- USFWS Sacramento Field Office Species List for San Joaquin County (USFWS 2015b);
- California Natural Diversity Database maintained by the California Department of Fish and Wildlife (CDFW 2015);
- General Biological Resources Assessment for the Tracy Hills Project (NOREAS 2015); and
- Aerial Photographs (Microsoft Corporation 2015).

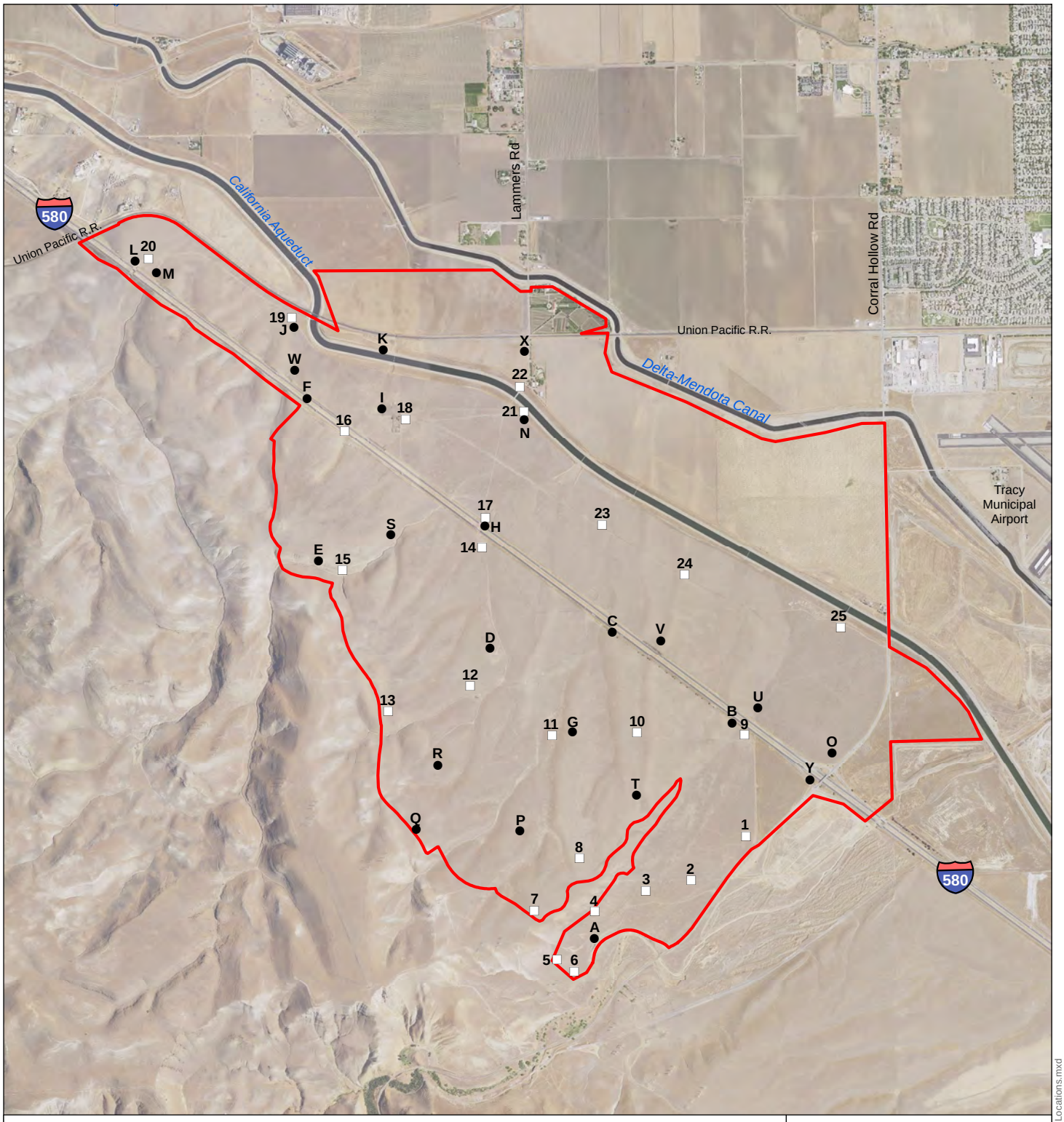
To support the analysis, pedestrian-based field surveys were performed. San Joaquin Kit Fox survey methods were derived from the most current versions of resource agency's recommended survey guidelines for the species[2]; and those special terms and conditions outlined within Jeff A. Alvarez's Federal 10(a)1(A) Recovery Permit and State Scientific Collecting Permit. As such, the study area was slowly and methodically inspected for drainages, wildlife trails, water sources, potential wildlife corridors, waterway crossings, and other micro-habitats that could encourage *Canidae* visitation. The

[2] California Department of Fish and Game 1990 Survey Methodologies for San Joaquin Kit Fox, and the U.S. Fish and Wildlife Service 1999 San Joaquin Kit Fox Survey Protocol For The Northern Range Prepared By The Sacramento Fish And Wildlife Office

aforementioned locales and a series of objectively selected sites, were then chosen for installation of either 1 of 25 digital infrared imaging stations (camera stations), or 1 of 25 wildlife track stations. Digital imaging and track stations were placed separately in areas that included gates, bends in fences (i.e., corners), concentrations of rodent burrow complexes, and were combined with natural and artificial corridors where mammals would be presumed to forage, rest, disperse, breed or otherwise visit (Figure 3). Track and digital imaging stations were baited with canned cat food and refreshed on a daily basis.

Track stations consisted of a 1-square yard area covered in bentonite clay powder, and were visited by biologists on a daily basis. Sign detected was read, recorded and cleared daily. This form of track station is preferable to metal plates, because they don't heat up to more than 150 degrees Fahrenheit during the day. Digital imaging stations included a stake-mounted motion detection infrared camera, and were also visited frequently to refresh bait, download data, check and change batteries. Track and digital imaging stations were maintained for 11 consecutive days in May of 2015, and an additional 6 days following spotlighting surveys.

Spotlighting activities occurred along passable roads within the study area for 10 consecutive nights in May of 2015 as well. Spotlighting was performed beside paved and unpaved roads that were open and accessible within 2-miles of the Project Site to the greatest extent practical (i.e., private property, high-speed roadways and freeways curtailed the amount of lands that could be spotlighted outside of the study area). Due to the limited area outside of the Project Site that could be spotlighted, some portions of the proposed Project were spotlighted twice each night. In order to decrease the potential disturbance to foraging wildlife from the survey effort, the roads that were spotlighted a second time in the same night were alternated with other roads on successive days; such that two passes over a single road in one night did not occur on two consecutive evenings. Spotlighting was conducted by senior-level biologists who have observed San Joaquin Kit Fox - while spotlighting, in the Carrizo Plain within the last 18 months. Surveyors used separate 750,000 candlelight illumination which was directed out either side of a moving vehicle. When animals were encountered, both biologists made independent identifications of the individual, using 8x40 power binoculars or a spotting scope, data was recorded and mapped. Burrow and den complex census activities were performed on foot. Burrows were detected, recorded and mapped. Location of high densities rodent colonies were a focal point for image and tract stations.



Project Site

Station Locations

A Camera

1 Track Station

0 0.25 0.5 Mile

1 inch = 0.5 mile

Data Sources:
- San Joaquin County GIS accessed Aug 2015, data date: Jul 2014
- USDA-NRCS-AFPO NAIP accessed Aug 2015, image date: 2014

Map Prepared: 8-11-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\SJKFig3. Station Locations.mxd

Figure 3. Station Locations

5.0 SURVEY RESULTS

Weather conditions during the 2015 May surveys included cloudy to clear skies, temperatures ranging from 52–94 degrees Fahrenheit, and winds fluctuating from 0 to 20 miles per hour. Surveys were performed on the following dates in 2015: 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 May and 01, 02 and 03 June.

Four hundred and twenty five digital imaging station nights and 425 track station nights of census were performed within the study area in 2015. Track stations detected 12 distinct wildlife species, which included only a single member of the *Canidae* family (i.e., coyote [*Canis latrans*]) (Appendix A). All track stations contained sign during almost every daily visit – with the vast majority of tracks being left by coyote and various rodents. Digital imaging stations produced identifiable photographs of 4 unique species, with a single canid species ass well (i.e., coyote) (Appendix B). Nineteen of the 25 camera stations produced 0 photographs, despite being fully charged, operational and functional.

The study area is in the northern portion of the range of San Joaquin Kit Fox. As the range extends northward, reported observations of kit fox become fewer and fewer. No San Joaquin Kit Fox breeding, non-natal or natal (pups are present) den complexes have ever been detected within the study area. No atypical, natal, or known San Joaquin Kit Fox dens have ever been located during surveys of the Project Site either. Although the study area is large in total size – it has very low species richness and diversity, and lacks high quality habitats for San Joaquin Kit Fox. The study area is lacking in numbers and variety of species – likely attributable to its inability to produce a high enough density of biomass to support a substantial rodent population. More specifically, no San Joaquin Kit Fox camera stations or track stations have ever documented the species within the study area.

Spotlighting surveys produced 10 observations of coyote. Additionally, 4 unknown canids were observed along the California Aqueduct. It is presumed that these 4 individuals were the non-native Red Fox (*Vulpes vulpes*), but observations were extremely brief and not confirmed by both surveyors - which resulted in a classification of "unknown canid." A single San Joaquin Kit Fox was observed by two distinct biologists in May of 2015 with binoculars during spotlighting surveys[3] (Figure 4). The animal was foraging within the fenced right-of-way of the California Aqueduct; not within the Project Site. This observation lasted approximately 20 seconds, as the fox ultimately moved along the California Aqueduct's gravel security road in a southern direction until it was out of site. No other San Joaquin Kit Fox has ever been detected within the study area.

Given the low quality habitat present (i.e., limited rodent population, depauperate landscape, competition and territorialism among other mammals within the study area [i.e., coyote]), the likelihood of San Joaquin Kit Fox successfully establishing a natal den or utilizing the Project Site as valuable foraging habitat is negligible. Although little can be concluded from a single observation of one animal, it is conceivable – albeit unlikely, that the California Aqueduct is functioning as a movement corridor for a small number of San Joaquin Kit Fox. Observations of the species are not uncommon south of Corral Hollow Road and within the approximately 3,500-acre open space conservation easement which abuts the study area. Appendix C includes representative photographs of the study area. A California Natural Diversity Database Form associated with the San Joaquin Kit Fox is provided within Appendix D.

[3] Howard O. Clark, JR in 2007 authored "*Analysis of San Joaquin Kit Fox Element Data with The California Diversity Database: A Case For Data Reliability*" which is a publication that evaluated a subset of existing spotlighting census efforts detailed within the Diversity Database and determined that spotlighting may be less reliable compared to other forms of surveys because it relies on observations made under poor lighting conditions.

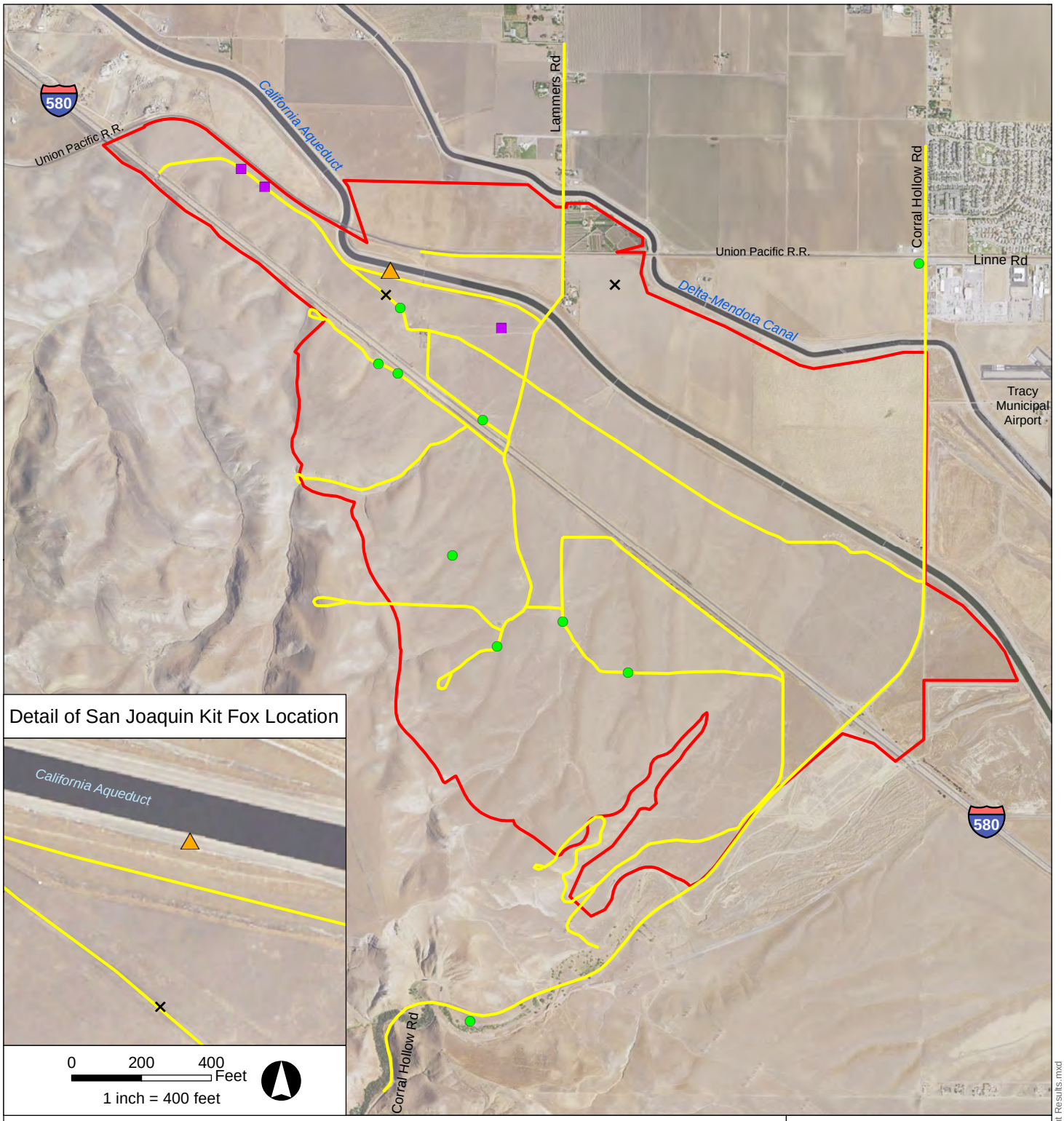


Figure 4. Spotlight Results

6.0 IMPACTS AND RECOMMENDATIONS

The habitat within the study area includes existing livestock grazing and agricultural undertakings which have greatly reduced the lands ability to support San Joaquin Kit Fox. The data collected and analyzed herein also suggests that there is extremely low potential for San Joaquin Kit Fox to recruit into the Project Site. Given that targeted surveys for San Joaquin Kit Fox have been negative within the Project Site for roughly a quarter century, the Project would not be expected to result in the loss of individual San Joaquin Kit Fox, or adversely affect local or regional populations of them.

Furthermore, the Project would not be expected to degrade the long-term preservation value or ecological processes within the Project vicinity, and impacts have been minimized to safeguard the needed habitat, wildlife linkages, and functional connectivity that are maintained within the region with deference to San Joaquin Kit Fox. Accordingly, the habitat loss associated with the Project would be considered an insignificant effect to San Joaquin Kit Fox as a result of the amount of similar, and higher value vegetation communities and land cover types within the region that are already held in conservation. Furthermore, the Project does not alter the ultimate land use in any way that would adversely affect the cohesiveness and quality of the surrounding lands ability to sustain their stated ecological and conservation purposes. No atypical, natal, or known dens were located during surveys of the study area. It should be noted however that several burrows appeared to be constructed by an American Badger (*Taxadea taxus*), which was also detected through track stations within the study area. Badgers are known to dig one or more burrows in a day, which will change the quantity, quality, distribution and willingness of San Joaquin Kit Fox to utilize locales within the study area over time.

To that end, the following measures are recommended as a means of further avoiding, minimizing, and reducing adverse effects to San Joaquin Kit Fox within the study area and on adjacent lands to a less-than-significant level.

- Construction operations will be overseen by an appropriately-credentialed biologist (biological monitor), and the Project will implement a worker environmental awareness training program to reduce the Project's potential adverse effects to special status species.
- Prior to commencement of ground disturbing activities in areas of potentially suitable habitat to support San Joaquin Kit Fox, pre-activity clearance surveys shall be initialed by a qualified biologist to reinforce positive or negative findings with substantial evidence. If San Joaquin Kit Fox are detected within portions of the study area proposed for development, then avoidance and minimization measures specific to San Joaquin kit fox will be incorporated into the Project as described in the USFWS "Standard Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbing Activities (1999)" and the USFWS "San Joaquin Kit Fox Habitat Evaluation Forms (2001)" to reduce impacts to this species to less-than-significant. This measure is specific Area B and C.
- Project-related construction vehicles will observe a daytime speed limit of 20-miles per hour, except on County roads and State and Federal highways.
- Night-time construction will be minimized to the greatest extent feasible. However if it does occur, then the speed limit will be reduced to 10-miles per hour.
- Off-road traffic outside of designated Project areas undergoing construction will be prohibited.
- To prevent inadvertent entrapment of small mammals during construction, excavated, steep-walled holes or trenches more than 2-feet deep will be covered at the close of each

working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks will be installed. Before such holes or trenches are filled, they will be thoroughly inspected for trapped wildlife. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW will be contacted.

- Construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored within Project limits for one or more overnight periods will be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the USFWS and CDFW has been consulted. If necessary, and under the direct supervision of a biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.
- Use of rodenticides and herbicides within Project limits will be restricted. Uses of such compounds will observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the USFWS and CDFW. If rodent control must be conducted, zinc phosphide or an equivalent material will be used because of a lower adverse health risk to kit fox.

7.0 REFERENCES

Berryman Ecological LLC. 2006. Tracy Hills San Joaquin Kit Fox Analysis.

_____. 2010. Biological Resources on the Tracy 580 Business Park Property.

California Department of Fish and Wildlife (CDFW). 2015. RareFind. California Department of Fish and Game, Natural Diversity Database (CNDDB). Sacramento, CA: California Department of Fish and Game, Biogeographic Data Branch.

Foothill Associates. 2004. Habitat Management Plan – Tracy Hills Project.

Howard O. Clark, JR. 2007. Analysis of San Joaquin Kit Fox Element Data with The California Diversity Database: A Case For Data Reliability.

H.T. Harvey & Associates. 2006. Tracy Triangle San Joaquin Kit Fox Surveys, Project #2689-01.

ICF International. 2011. Preserve Management Plan for the Tracy 580 Business Park Preserve.

Jones & Stokes Associates, Inc. 1993. Evaluation of a Proposed Corridor for the San Joaquin Kit Fox in the Tracy Hills Development.

LSA Associates, Inc. (LSA). 1989. Biological Assessment Properties East of California Aqueduct Carnegie Business Park San Joaquin County, California.

_____. 1999. Habitat Conservation Plan for Lakeside Tracy Development.

Microsoft Corporation. 2015. Bing Maps Aerial Imagery. Redmond, WA.

NOREAS, Inc. (NOREAS). 2015. General Biological Resources Assessment for the Tracy Hills Project.

Tracy Hills LLC. 2004. Environmental Assessment for the Tracy Hills Habitat Conservation Plan.

U.S. Geological Survey (USGS). 1980. 7.5-Minute Quadrangle Tracy, California.

_____. 1986. 7.5-Minute Quadrangle Midway, California.

United States Fish and Wildlife Service (USFWS). 2015a. Critical Habitat Portal.

_____. 2015b. Sacramento Fish and Wildlife Office. Endangered and Threatened Species List.

_____. 1999. Standard Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbing Activities.

_____. 2001. San Joaquin Kit Fox Habitat Evaluation Forms.

Working Dogs for Conservation Foundation. 2011. Scat Detection Dog Surveys for the Endangered San Joaquin Kit Fox (*Vulpes macrotis mutica*) at the Tracy Hills Project Site, San Joaquin County, California.

_____. 2012. Scat Detection Dog Surveys for the Endangered San Joaquin Kit Fox (*Vulpes macrotis mutica*) at the Tracy Hills Project Site, San Joaquin County, California.

_____. 2013. Scat Detection Dog Surveys for the Endangered San Joaquin Kit Fox (*Vulpes macrotis mutica*) at the Tracy Hills Project Site, San Joaquin County, California.

_____. 2014. Scat Detection Dog Surveys for the Endangered San Joaquin Kit Fox (*Vulpes macrotis mutica*) at the Tracy Hills Project Site, San Joaquin County, California.

APPENDIX A

2015 TRACK STATION DATA

APPENDIX A

2015 TRACK STATION DATA

Track Station	Coyote (*Canis latrans*)	San Joaquin Kit Fox (*Vulpes macrotis mutica*)	Feral Cat	Striped Skunk (*Mephitis mephitis*)	American Badger (*Taxidea taxus*)	Black-Tailed Hare (*Lepus californicus*)	Desert Cottontail (*Sylvilagus audubonii*)	Heerman's Kangaroo Rat (*Dipodomys heermanni*)	California Ground Squirrel (*Otospermophilus beecheyi*)	Other Rodent	American Crow (*Corvus brachyrhynchos*)	Unknown	Cattle
1	X		X		X					X			
2	X												
3								X		X	X		
4	X			X		X							
5	X												
6	X			X	X	X	X						
7	X												
8											X		
9										X	X		
10										X	X		
11	X												
12											X		
13	X												
14	X												
15	X											X	
16			X		X				X	X	X		
17	X					X	X			X	X	X	
18								X		X	X		X
19						X	X			X			
20						X		X					
21	X									X			
22										X			
23	X					X						X	
24	X									X			
25	X					X							

APPENDIX B

2015 DIGITAL IMAGING STATION DATA

APPENDIX B

2015 DIGITAL IMAGING STATION DATA

Image Station	No Data	Coyote (*Canis latrans*)	Red Fox (Vulpes vulpes)	San Joaquin Kit Fox (*Vulpes macrotis mutica*)	Striped Skunk (*Mephitis mephitis*)	American Badger (*Taxidea taxus*)	Black-Tailed Hare (*Lepus californicus*)	Desert Cottontail (*Sylvilagus audubonii*)	Heerman's Kangaroo Rat (*Dipodomys heermanni*)	California Ground Squirrel (*Otospermophilus beecheyi*)	American Crow (*Corvus brachyrhynchos*)	Cattle
A	X											
B	X											
C											X	
D	X											
E	X											
F		X										
G		X								X		
H	X											
I												X
J	X											
K		X										
L	X											
M												X
N												X
O	X											
P	X											
Q	X											
R	X											
S	X											
T	X											
U	X											
V	X											
W	X											
X	X											
Y	X											

APPENDIX C

PHOTOGRAPH LOG

APPENDIX C

PHOTOGRAPH LOG

	Photograph: 1. Camera station.
	Photograph: 2. Track Station

APPENDIX C

PHOTOGRAPH LOG

	Photograph: 3. Coyote and cottontail tracks.
	Photograph: 4. Coyote tracks.

APPENDIX D

CALIFORNIA NATURAL DIVERSITY DATABASE FORM

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): 05/26/2015

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Vulpes macrotis mutica*

Common Name: San Joaquin kit fox

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: NOREAS Inc.
Address: 16361 Scientific Way
Irvine, California 92618
E-mail Address: lincoln.hulse@noreasinc.com
Phone: 949-467-9116

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

1 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [X] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: San Joaquin Landowner / Mgr: Unknown

Quad Name: Tracy Elevation: 260

T 3 S R 4 E Sec 1 , SW 1/4 of ___ 1/4, Meridian: H ( ) M (●) S ( ) Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Garmin

DATUM: **NAD27** ( ) **NAD83** (●) **WGS84** ( ) Horizontal Accuracy: 3 meters meters/feet

Coordinate System: UTM Zone 10 (●) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) ( )

Coordinates: Northing 4173077, Easting 633323

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

During 2015 spotlighting surveys a single San Joaquin Kit Fox was observed. The animal was foraging within the fenced right-of-way of the California Aqueduct. This observation lasted approximately 20 seconds, as the fox ultimately moved along the California Aqueduct's gravel security road in a southern direction until it was out of site.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent ( ) Good ( ) Fair (●) Poor

Immediate AND surrounding land use: California Aqueduct right-of-way.

Visible disturbances: _____

Threats: _____

Comments:

Determination: *(check one or more, and fill in blanks)*

[X] Keyed (cite reference): Jameson and Peeters 2004
[ ] Compared with specimen housed at: _____
[ ] Compared with photo / drawing in: _____
[X] By another person (name): Jeff Alvarez
[X] Other: Mathew Kline

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[ ]
Habitat	[ ]	[ ]	[X]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? (●) yes ( ) no

APPENDIX J

2015 SWAINSON'S HAWK SURVEY

TRACY HILLS PROJECT

September 2015

Swainson's Hawk Survey Report

Owner
The Tracy Hills Project Owner, LLC
888 San Clemente
Suite 100
Newport Beach, CA 92660

Prepared By


16361 Scientific Way
Irvine, CA 92618
(949) 467-9100

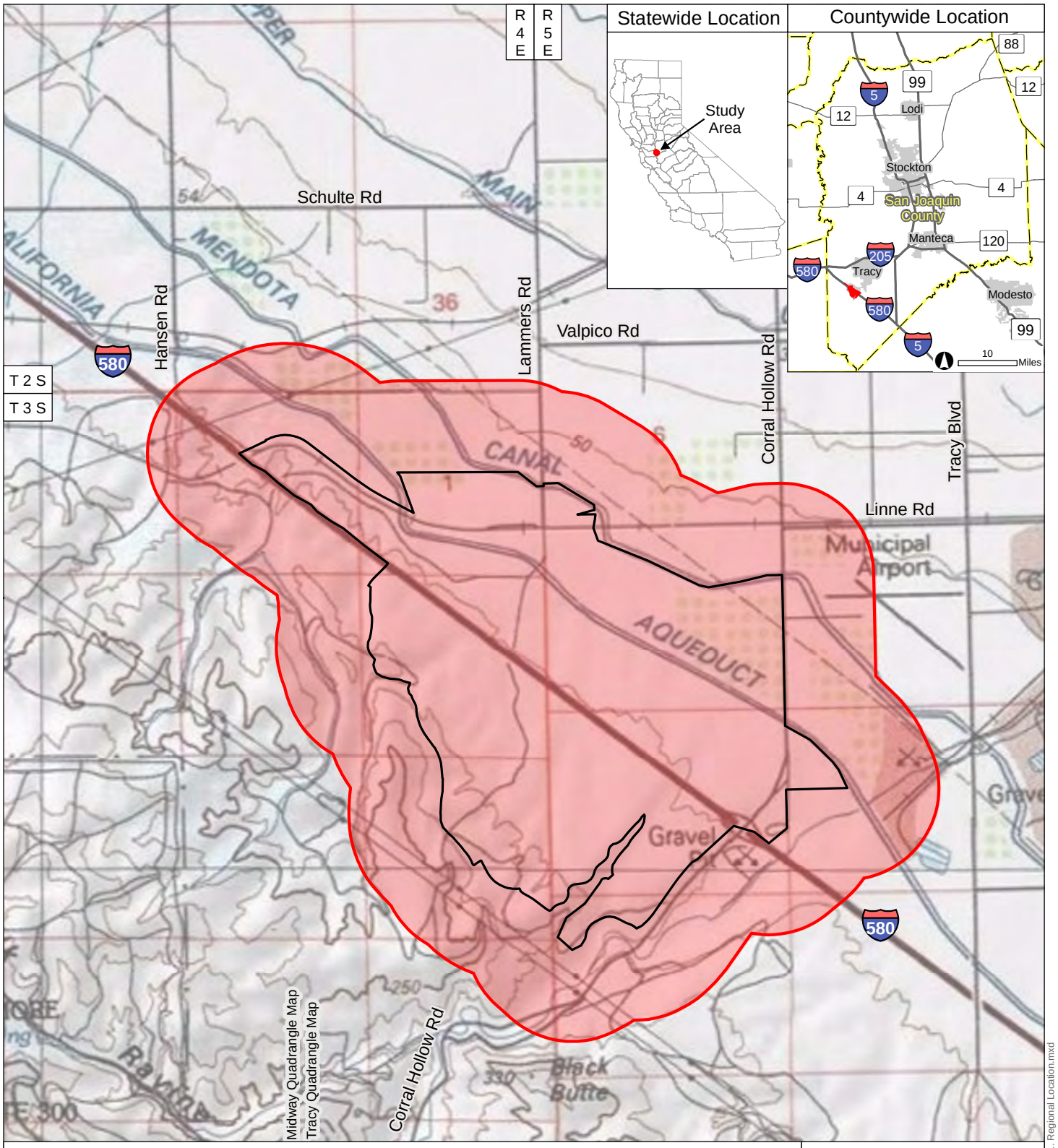
TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

The Tracy Hills Project Owner LLC (Tracy Hills) is proposing to develop the Tracy Hills Project in Tracy, California (hereafter "Project", Figure 1). The Project includes a revised and updated Specific Plan[1] that authorizes approximately 2,732 acres for development of residential neighborhoods and non-residential uses (e.g., office, commercial, light industrial, parks, schools, and open spaces) within existing low quality livestock grazing and agricultural lands. This report provides the methods, assumptions, and results of protocol surveys for Swainson's Hawk (*Buteo swainsoni*). Within this document, the study area includes the Project's proposed ground disturbance footprint (Project Site), and a ½-mile buffer. The study area therefore includes all lands to be affected directly or indirectly by the Project, and is not merely the immediate lands involved in the action itself (Figure 2). Six land cover types were observed within the study area in 2015 (NOREAS 2015): agricultural, annual grassland, open water, orchard, non-native grasses, and developed habitats.

Pedestrian-based field surveys for raptors have been conducted from 2010 through the summer of 2015 within discrete portions of the study area to ascertain the presence or absence of special-status species. The results indicate that the biological resources detected within the study area have not changed significantly over the last half decade. The nearest Swainson's Hawk nest location in the vicinity of the Project is from 2012; and the nest is roughly 1.9 miles from the study area (Figure 3). Although the study area is large in total size, it has very low species richness and diversity, and lacks high quality nesting and foraging habitats for Swainson's Hawk. The study area is lacking in numbers and variety of species – likely attributable to its inability to produce a high enough density of biomass to support a substantial prey population for raptors. More specifically, one unpaired Swainson's Hawk was detected soaring and sitting on a remnant/abandoned nest within the study area in 2015. The abandoned nest was positioned in a Eucalyptus tree, situated within the road right-of-way of Interstate Highway 580, outside of Project Site boundaries (Figure 4). This individual hawk was never observed actively nesting and no mate was detected during any of the 2015 survey events. Given the low quality habitat present (i.e., limited prey base, depauperate landscape, competition, and territorialism among other nesting raptors), the likelihood of Swainson's Hawk successfully nesting or utilizing the Project Site as valuable foraging habitat is negligible as much higher quality habitats are available within the region.

[1] RBF Consulting 2014. Tracy Hills Specific Plan: Habitat Assessment & San Joaquin County Multi-Species Habitat Conservation and Open Space Plan Consistency Analysis.



Study Area

Project Site

County Boundary (inset)

Urban Area (inset)

Interstate or State Highway (inset)

0 2,000 4,000 Feet

1 inch = 4,000 feet

Data Sources:
- Bing accessed Jul 2015
- ESRI StreetMap North America 2010
- ESRI US Topo Maps accessed Jul 2015

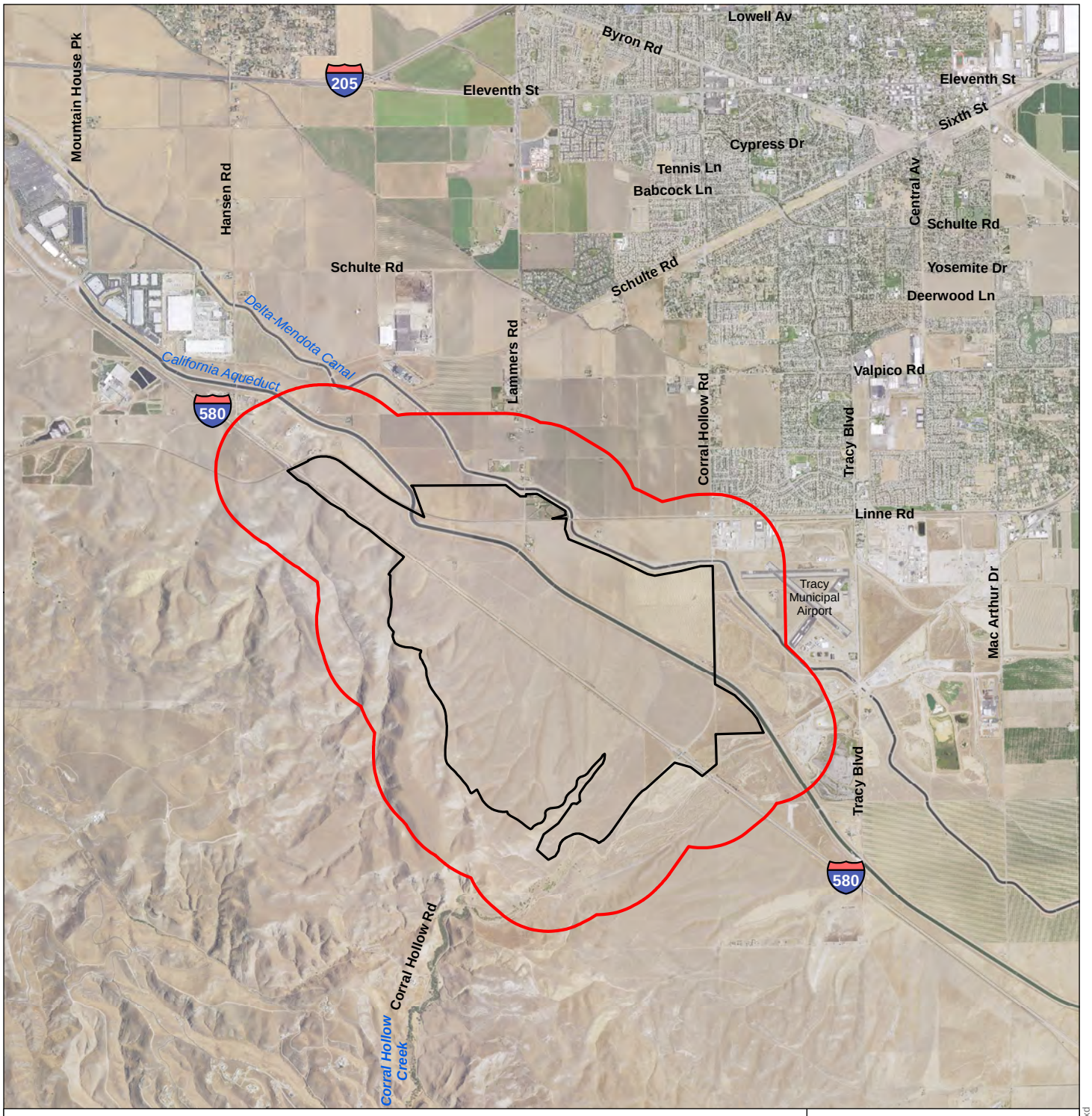
Map Prepared: 7-15-15

Prepared by:
NOREAS
Environmental Engineering and Science

The Study Area is located on the Midway and Tracy USGS 7.5-minute quadrangle maps; Mt. Diablo Base and Meridian,
Township 2 South, Range 4 East, Sections 35 and 36;
Township 3 South, Range 4 East, Sections 1-3, 11-14 and 24; and
Township 3 South, Range 5 East, Sections 5-8, and 17-20.
Center coordinates for the Study Area are: 37.680702, -121.476315.

C:\SRM\Noreas\Tracy Hills\ArcMap\SWHA\Fig1. Regional Location.mxd

Figure 1. Regional Location



Study Area (6,525 acres which includes a 0.5-mile buffer and the Project Site)

Project Site (2,729 acres)

0 0.5 1 Mile

1 inch = 1 mile

Data Source:
- USDA-NRCS-AFPO NAIP accessed Jul 2015, image date: 2014

Map Prepared: 7-30-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\SWHA\Fig2. Site Vicinity.mxd

Figure 2. Site Vicinity

2.0 INTRODUCTION AND PROJECT LOCATION

NOREAS Inc. was retained to review historic raptor census data and conduct a protocol level Swainson's Hawk survey for the proposed Project in 2015. The Project occurs in Sections 5, 6, 7, 8, 17, 18, 19, and 20 of Township 3 South and Range 5 East (Mt. Diablo Base and Meridian) of the Midway U.S. Geological Survey (USGS 1986) 7.5-Minute Quadrangle Map; and Sections 1, 2, 3, 11, 12, 13,14 and 24 of Township 3 South, and Range 4 East and Sections 35 and 36 Township 2 South, and Range 4 East (Mt. Diablo Base and Meridian) of the Tracy USGS 7.5-Minute Quadrangle Map (USGS 1980).

The primary objective of the literature review and the 2015 field surveys was to determine the presence – or to confirm the presumed absence of - Swainson's Hawk within the study area. For the purposes of this document, the "study area" includes the Project's proposed ground disturbance footprint (Project Site) and a ½-mile buffer. The study area therefore includes all lands to be affected directly or indirectly by the Project, and is not merely the immediate lands involved in the proposed project itself (Figure 2).

3.0 SWAINSON'S HAWK BACKGROUND

The Swainson's Hawk breeds in open habitats in western North America from Alaska south to Mexico. In California, it is found mainly in the Central Valley, Klamath Basin, Northeastern Plateau, and Mojave Desert. It winters primarily in southern South America, and Mexico, but a few winter in California, the southwestern U.S., and Florida. It is absent from most of its former range in California, where its population has declined by more than 90 percent (CDFG 1994). In California, Swainson's Hawk usually arrives in March and leave in September or October.

This species forages in grassland or areas of sparse trees or shrubs, and often forages in agricultural areas in the Central Valley. It nests in scattered trees within these habitats, particularly those along waterways. During the breeding season, it feeds primarily on small mammals and reptiles. During other seasons, large insects (e.g., dragonflies) are the bulk of its diet. The following vegetation types are considered small mammal and insect foraging habitat for Swainson's Hawk: alfalfa; fallow fields; beet, tomato, and other crops, dry-land and irrigated pasture, rice land (when not flooded), and cereal grain crops (including corn after harvest) (CDFG 1994).

Irrigated agricultural lands (e.g., alfalfa and hay) are widely recognized as an essential element of viable Swainson's Hawk foraging habitat, and hawks are highly dependent upon it to support their prey populations. Irrigated agricultural lands support the abundant small mammal (i.e., pocket gophers and voles) and the invertebrate prey base that Swainson's Hawks need to subsist. Alfalfa production – and other similar low-growing row or field crops contribute substantial amounts of nitrogen to the soil; high nitrogen content promotes invertebrate growth and increases their protein content. Alfalfa production also supports high densities of voles and pocket gophers. Swainson's Hawks subsequently exploit the prey base typical of irrigated agricultural lands with limited effort; the regular harvesting and irrigating makes prey items available for capture with decreased energy expenditure.

4.0 METHODS

Prior to beginning pedestrian-based field surveys in 2015, raptor specialists were consulted and available information from resource management plans and relevant documents were reviewed to determine the locations and types of avian resources that have the potential to exist within and adjacent to the study area. Resources were evaluated within several miles of the Project. As detailed below, raptor field census and analysis activities have occurred within representative portions of the study area for more than 5 years. Accordingly, the primary materials reviewed included, but were not limited to, the following:

- Biological Resources on the Tracy 580 Business Park Property (Berryman Ecological LLC 2010a);
- Preserve Management Plan for the Tracy 580 Business Park Preserve (ICF International 2011);
- U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper and File Data (USFWS 2015a);
- USFWS Sacramento Field Office Species List for San Joaquin County (USFWS 2015b);
- California Natural Diversity Database maintained by the California Department of Fish and Wildlife (CDFW 2015);
- General Biological Resources Assessment for the Tracy Hills Project (NOREAS 2015);
- Aerial Photographs (Microsoft Corporation 2015);
- Home Range and Habitat Use of Breeding Swainson's Hawks in California. Journal of Raptor Research 29:193–197 (Babcock 1995);
- Effect of Vegetative Cover on Foraging Site Selection by Swainson's Hawk. Condor 84:153–159 (Bechard 1982);
- Biology, movements, and habitat relationships of the Swainson's Hawk in California (Estep 1989); and
- Foraging by Swainson's Hawks on the landscape (Swolgaard et al. 2008).

Survey methods were derived from generally accepted professional standards including the 2000 Recommended Timing and Method for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000). Surveys were conducted in a manner that maximized the potential to observe adult Swainson's Hawks, as well as their nests and chicks. Field surveys were conducted when weather conditions were conducive to observing birds. Surveys were not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Census activities were conducted within a ½ mile of the Project Site. All avian species detected were noted. When a raptor was detected, either binoculars or a spotting scope was employed to identify the species. Behavior was also noted. The presence of a species was based on direct observations of individual(s), sign, and/or vocalization. Avian scientific nomenclature and common names follows Sibley (2000). Where access was limited, observations were made from the nearest appropriate vantage points within public rights-of-way. The following NOREAS biologists either performed the field work and/or contributed to data analysis: John Sterling BS, Brian Latta BS, Richard White MS, Lenny Malo MS, Lincoln Hulse BS, Erin Serra BS, Ken Hashagen BS, Eric Dugan PhD, Brent Helm PhD, and Wayne Woodroof MS.

5.0 SURVEY RESULTS

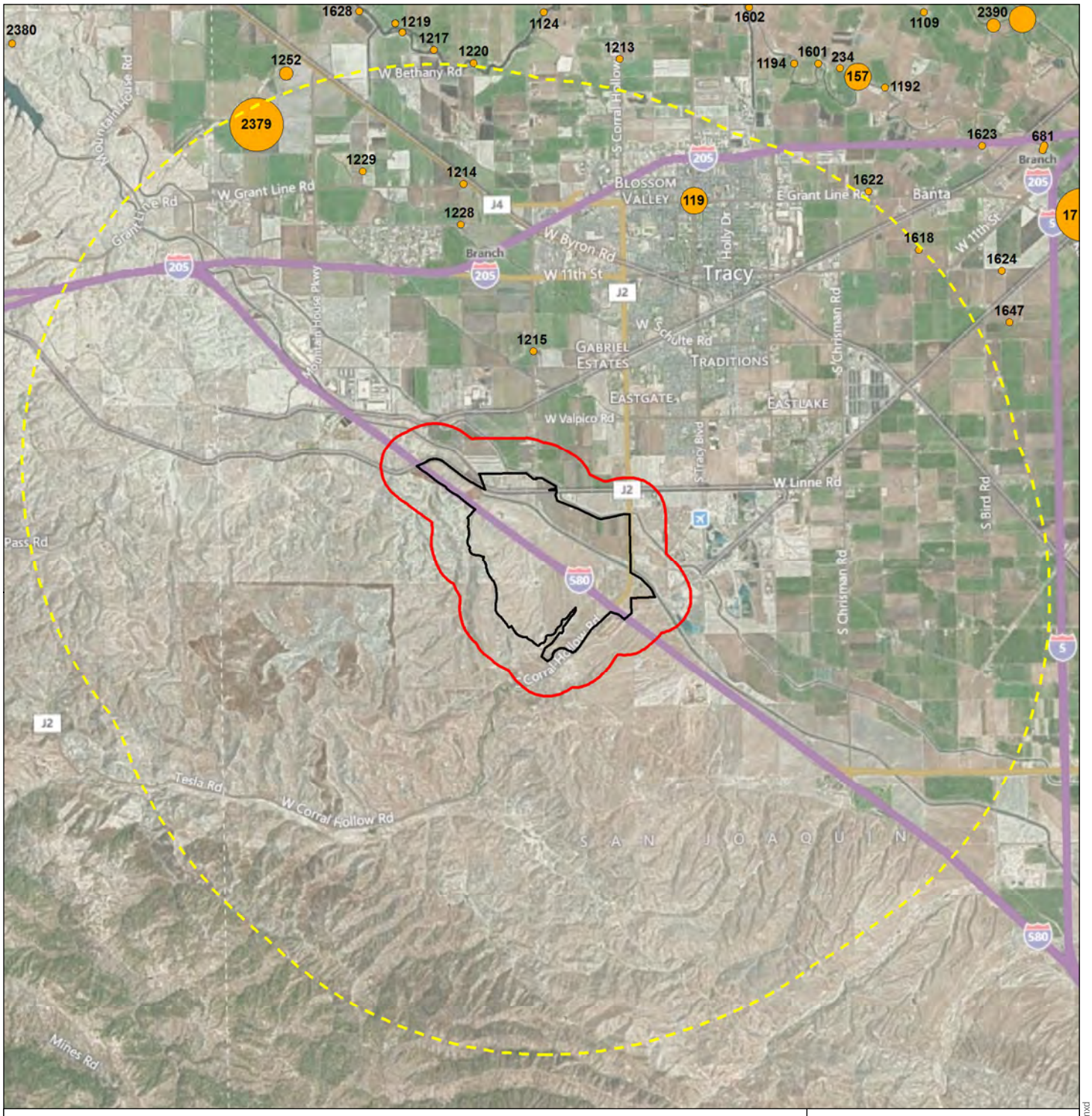
Weather conditions during the 2015 surveys included cloudy to clear skies, temperatures ranging from 65–90 degrees Fahrenheit, and winds fluctuating from 0 to 15 miles per hour. Swainson's Hawk surveys were performed on the following dates: 14, 15, 16, 17, 18, 19, 24, 25, and 26 March, 17, 18, 23, 24, 25, 26, 27, and 30 April, 5, 6, 7, 8, 9, 10, 11, 12, and 15 May, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 23, and 30 June, 5, 6, 7, 8, 9, 10, 11, and 12 July 2015.

The study area predominately consists of non-native vegetation, grasslands, developed and disturbed land cover types. It is assumed that any species currently using these locales are acclimated to the disturbance regime present (i.e., existing livestock and grazing activities). The nearest Swainson's Hawk nest record location in the vicinity of the Project is from 2012 and is roughly 1.9 miles from the study area (Figure 3). Although the study area is large in total size, it has very low species richness and diversity and lacks high quality nesting and foraging habitats for Swainson's Hawk. The study area is lacking in numbers and variety of species – likely attributable to its inability to produce a sufficient density of biomass to support a substantial prey population for raptors. Great-Horned Owls (*Bubo virginianus*) and other species of raptors were detected nesting within the study area. Due to competition and territorialism, Swainson's Hawk will typically not nest immediately adjacent to another raptor.

To that end, one unpaired Swainson's Hawk was detected soaring and sitting on a remnant/abandoned nest within the study area in 2015 (Figure 4). The abandoned nest was positioned in a Eucalyptus tree – situated within the road right-of-way of Interstate Highway 580, outside of the Project Site boundaries. This individual hawk was never observed actively nesting and no mate was detected during any of the 2015 survey events. Given the low quality habitat present (i.e., limited prey base, depauperate landscape, competition, and territorialism among nesting raptors), the likelihood of Swainson's Hawk successfully nesting or utilizing the Project Site as valuable foraging habitat is negligible; much higher quality habitats are available within the region.

As a consequence of poor-quality habitat and existing protections to Swainson's Hawk in the area, it has been determined that the Project is not likely to adversely affect the species. With the implementation of the measures detailed within Section 6.0 of this report, there is no presumption that the Project would result in the take[2] of Swainson's Hawk, loss of valuable functional habitat within the area, nor that it would adversely affect local or regional populations of them. Appendix A includes representative photographs of the study area, and Appendix B includes a list of avian species detected in 2015. A California Natural Diversity Database Form associated with the Swainson's Hawk abandoned nest is provided within Appendix C.

[2] "Take" is defined within California Fish and Game Code Section 86 as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.



Study Area

Project Site

5-Mile Radius Around the Study Area

Swainson's Hawk Nest with Occurrence Number

0 1 2 Miles

1 inch = 2 miles

Data Sources:
- Bing accessed Aug 2015
- California Department of Fish and Wildlife, California Natural Diversity Database, Jul 2015 data release
- USDA-NRCS-AFPO NAIP accessed Aug 2015, image date: 2014

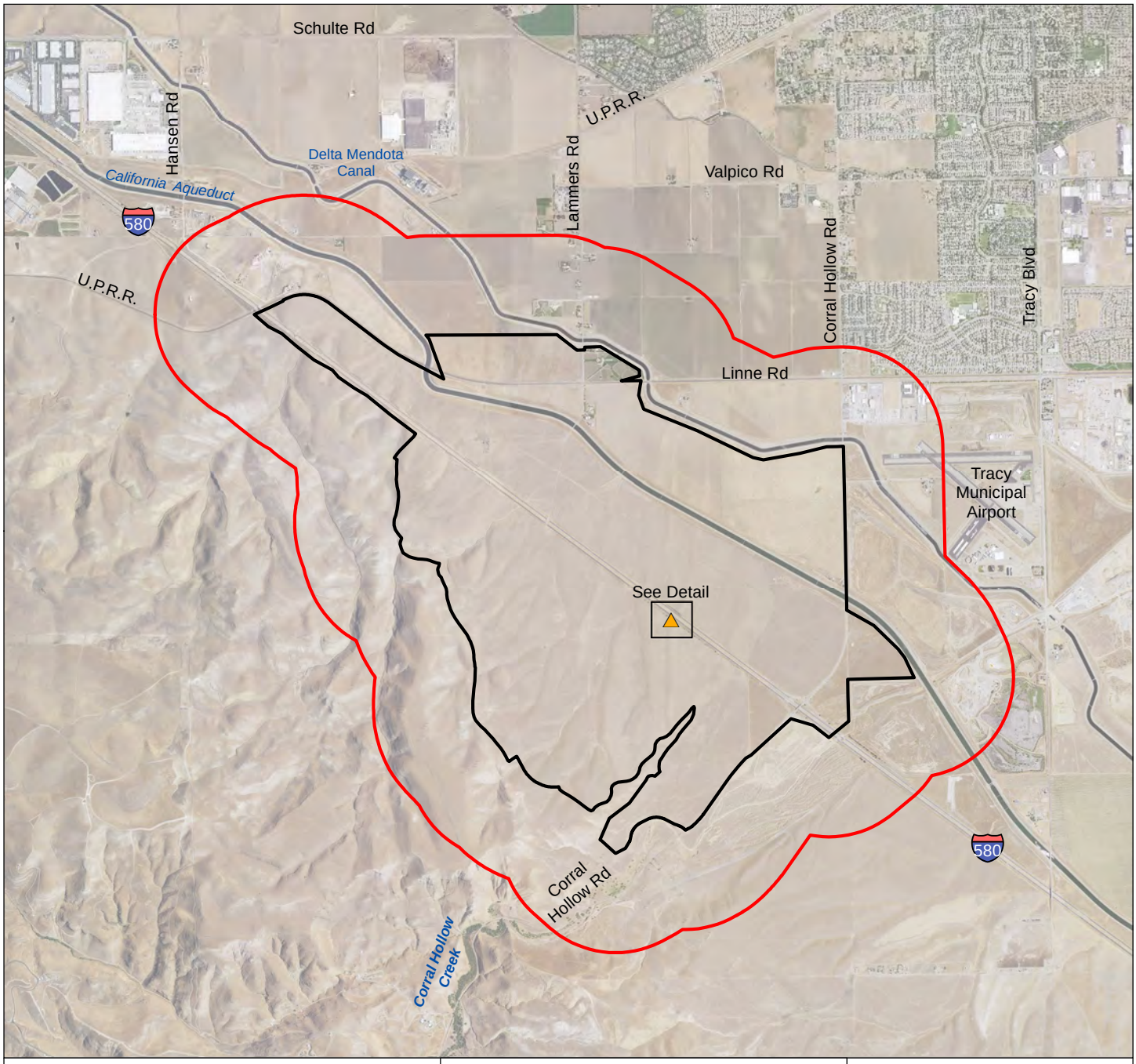
Map Prepared: 8-12-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\SWHA\Fig3. Occurrences.mxd

Figure 3. Occurrences within 5 Miles of the Study Area



Study Area

Project Site

Abandoned Swainson's Hawk Nest

Detail

0 200 Feet

1 inch = 400 feet

0 2,000 4,000 Feet

1 inch = 4,000 feet

Data Sources:
- San Joaquin County GIS accessed Aug 2015, data date: Jan 2015
- USDA-NRCS-AFPO NAIP accessed Aug 2015, image date: Jun 2014

Map Prepared: 8-12-15

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Tracy Hills\ArcMap\SWHA\Fig4. Survey Results.mxd

Figure 4. Survey Results

6.0 RECOMMENDATIONS

The following measures are recommended as a means of avoiding and minimizing adverse impacts to nesting raptors that have the potential to occur within the study area:

- Prior to commencement of ground disturbing activities in areas of potentially suitable habitat to support Swainson's Hawk, pre-activity clearance surveys shall be initiated by a qualified biologist to reinforce positive or negative findings with substantial evidence. If Swainson's Hawk is detected within portions of the Project Site proposed for development, then avoidance and minimization measures specific to Swainson's Hawk will be incorporated into the Project as described in the 2012 California Department of Fish and Wildlife (CDFW) Staff Report on Mitigation for Impacts to Swainson's Hawk to reduce impacts to Swainson's Hawk to less-than significant.

- If an active nest site is found within the Project Site, the Project will allow sufficient foraging and fledging area to maintain the nest.

- The Project will not remove historic or known Swainson's Hawk nest trees unless avoidance measures are determined to be infeasible. Removal of such trees should occur only during the timeframe of October 1 and the last day in February.

7.0 REFERENCES

Babcock. 1995. Home Range and Habitat Use of Breeding Swainson's Hawks in California. Journal of Raptor Research 29:193–197

Bechard. 1982. Effect of Vegetative Cover on Foraging Site Selection by Swainson's Hawk. Condor 84:153–159

Berryman Ecological LLC. 2010a. Biological Resources on the Tracy 580 Business Park Property.

California Department of Fish and Game. 1994. State Fish and Game Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California.

California Department of Fish and Wildlife. 2015. California Natural Diversity Database maintained by the California Department of Fish and Wildlife (CDFW 2015);

Estep. 1989. Biology, movements, and habitat relationships of the Swainson's Hawk in California

ICF International. 2011. Preserve Management Plan for the Tracy 580 Business Park Preserve.

Microsoft Corporation. 2015. Bing Maps Aerial Imagery. Redmond, WA.

NOREAS, Inc. (NOREAS). 2015. General Biological Resources Assessment for the Tracy Hills Project.

Sibley, D.A. 2000. The Sibley Guide to Birds. Random House Press, New York, New York. 201 pp.

Swainson's Hawk Technical Advisory Committee (SHTAC). 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys for the California Central Valley.

Swolgaard, Reeves, and Bell. 2008. Foraging by Swainson's Hawks on the landscape

United States Geological Service (USGS). 1980. 7.5-Minute Quadrangle Tracy, California.

_____. 1986. 7.5-Minute Quadrangle Midway, California.

United States Fish and Wildlife Service (USFWS). 2015a. Critical Habitat Portal.

_____. 2015b. Sacramento Fish and Wildlife Office. Endangered and Threatened Species List for San Joaquin County.

APPENDIX A

PHOTOGRAPH LOG

APPENDIX A

PHOTOGRAPH LOG

	Photograph: 1. Location of abandoned Swainson's Hawk nest in a Eucalyptus tree – situated within the road right-of-way of Interstate Highway 580, outside of Project Site boundaries.
	Photograph: 2. Swainson's hawk was observed perched on left tree and abandoned nest was identified within the tree on the right.

APPENDIX B

AVIAN COMPENDIUM

APPENDIX B

Scientific name	Common name
Avian Compendium	
Athene cunicularia	Burrowing Owl
Buteo jamaicensis	Red-Tailed Hawk
Buteo swainsoni	Swainson's Hawk
Carpodacus mexicanus	House Finch
Cathartes aura	Turkey Vulture
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Circus cyaneus	Northern Harrier
Eremophila alpestris	Horned Lark
Euphagus cyanocephalus	Brewer's Blackbird
Falco mexicanus	Prairie Falcon
Falco sparverius	American Kestrel
Hirundo rustica	Barn Swallow
Icterus bullockii	Bullock's Oriole
Lanius ludovicianus	Loggerhead Shrike
Mimus polyglottos	Northern Mockingbird
Myiarchus cinerascens	Ash-throated Flycatcher
Passer domesticus	House Sparrow
Passerculus sandwichensis	Savannah Sparrow
Salpinctes obsoletus	Rock Wren
Sayornis saya	Say's Phoebe
Streptopelia decaocto	Eurasian Collared Dove
Sturnus vulgaris	European Starling
Sturnella neglecta	Western Meadowlark
Tyrannus verticalis	Western Kingbird
Zenaida macroura	Mourning Dove
Zonotrichia leucophrys	White-crowned Sparrow

APPENDIX C

CALIFORNIA NATURAL DIVERSITY DATABASE FORM

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): 04/23/2015

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Buteo swainsoni*

Common Name: Swainson's Hawk

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: NOREAS Inc.
Address: 16361 Scientific Way
Irvine, California 92618
E-mail Address: lincoln.hulse@noreasinc.com
Phone: 949-467-9116

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

1 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [X] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: San Joaquin Landowner / Mgr: Unknown

Quad Name: Tracy Elevation: 320

T 3N R 5E Sec 18, NW 1/4 of ___ 1/4, Meridian: H ( ) M (●) S ( ) Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Garmin

DATUM: **NAD27** ( ) **NAD83** (●) **WGS84** ( ) Horizontal Accuracy: 3 meters meters/feet

Coordinate System: UTM Zone 10 (●) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) ( )

Coordinates: Northing 635026, Easting 4171280

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

One unpaired Swainson's Hawk was detected soaring and sitting on a remnant/abandoned nest within a Eucalyptus tree, situated within the road right-of-way of Interstate Highway 580. This individual hawk was never observed actively nesting and no mate was detected during any of the 2015 survey events.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent ( ) Good ( ) Fair (●) Poor

Immediate AND surrounding land use: Eucalyptus tree, situated within the road right-of-way of Interstate Highway 580.

Visible disturbances: _____

Threats: _____

Comments:

Determination: *(check one or more, and fill in blanks)*

- [ ] Keyed (cite reference): _____
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo / drawing in: _____
- [X] By another person (name): John Sterling
- [X] Other: Richard White

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[ ]
Habitat	[ ]	[ ]	[X]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? (●) yes ( ) no