

Natural Resources Assessment

Eastlake Sanitary Landfill Expansion Project
Clearlake, California



Prepared for:

SCS Engineers



August 2019
419004.020



Reference: 419004.020

August 23, 2019

Mr. Mark Erickson
SCS Engineers
3843 Brickway Blvd., Suite 208
Santa Rosa, CA 95403

**Subject: Natural Resources Assessment, Eastlake Sanitary Landfill Expansion Project,
Clearlake, California**

Dear Mr. Erickson:

SHN has prepared this Natural Resources Assessment for the Eastlake Sanitary Landfill Expansion Project. This report addresses special-status biological resources including sensitive natural communities and wetlands and other jurisdictional waters present or potentially occurring within the study area, evaluates project-related impacts, and recommends appropriate avoidance and minimization measures.

Fieldwork was conducted in April and June 2017, February 2018, and April and June 2019 within the bloom period for special-status species potentially occurring onsite. Sensitive natural communities and jurisdictional waters were observed within and adjacent to the study area and are mapped in Figure 3. No special-status plant or animal species were observed within the study area.

The project will not have a significant effect on the natural resources within the area if the avoidance measures and recommendations contained within this Natural Resources Assessment are implemented.

Please call me at 707-822-5785 if you have any comments or concerns.

Sincerely,

SHN

Joseph Saler
Biologist/Botanist

JLS:ceg

Enclosure: Natural Resources Assessment

Natural Resources Assessment

Eastlake Sanitary Landfill Expansion Project Clearlake, California

Prepared for:
SCS Engineers

Prepared by:



1062 G St., Suite I
Arcata, CA 95521-5800
707-822-5785

August 2019

QA/QC: SEC____

Table of Contents

	Page
List of Illustrations.....	ii
Abbreviations and Acronyms.....	iii
1.0 Introduction	1
1.1 Project Location	1
1.2 Site Description	1
2.0 Methodology.....	2
2.1 Literature Review.....	2
2.2 Field Observations and Studies.....	3
2.3 Bat Surveys.....	4
2.4 Wetland and Other Waters Delineation	4
2.4.1 Vegetation Methodology.....	4
2.4.2 Soils Methodology	5
2.4.3 Hydrology Methodology	5
2.4.4 Ordinary High Water Mark Delineation Methodology	5
3.0 Environmental Setting	6
3.1 Hydrology.....	6
3.2 Soils	7
3.3 Vegetation.....	7
3.4 Wildlife Habitats	7
3.5 Wildlife Movement Corridors	8
3.6 Offsite Conditions	8
4.0 Regulatory Setting.....	8
4.1 Federal Laws	9
4.1.1 Clean Water Act Sections 404 and 401.....	9
4.1.2 Fish and Wildlife Coordination Act	9
4.1.3 Federal Endangered Species Act.....	10
4.1.4 Migratory Bird Treaty Act	10
4.2 State Laws	11
4.2.1 Porter-Cologne Water Quality Control Act.....	11
4.2.2 California Endangered Species Act	11
4.2.3 California Environmental Quality Act	11
4.2.4 California Fish and Game Code Section 1600	12
4.2.5 California Fish and Game Code Sections 3503 and 3513	13
4.2.6 Fully Protected Species and Species of Special Concern	13
4.2.7 Native Plant Protection Act of 1973	14
4.2.8 Natural Community Conservation Planning Act	14
4.2.9 SB 1334: Oak Woodlands Conservation Act	14
4.3 Local Laws	14
4.3.1 County of Lake: Regulations for Waterway or WW Combining District	14
5.0 Special-status Biological Resources	15
5.1 Special-status Plant Species.....	16
5.2 Special-status Animal Species.....	21

Table of Contents, Continued

	Page
5.2.1 Amphibians and Reptiles	21
5.2.3 Fishes	22
5.2.2 Birds	22
5.2.4 Insects	22
5.2.5 Mammals	22
5.3 Special-status Natural Communities and Habitats	24
5.3.1 Natural Communities.....	24
5.3.2 Wetlands.....	26
5.3.3 OHWM and Streams	27
6.0 Conclusions	28
6.1 Special Plant Status Species.....	28
6.2 Special Wildlife Status Species.....	28
6.3 Sensitive Natural Communities.....	28
6.4 Nesting Birds	29
6.5 Impacts on Wildlife Movement	29
6.6 Wetlands and Riparian Habitats	29
7.0 Recommendations	30
8.0 References	31

Appendices

1. Site Photographs
2. Species Lists
3. 2019 Bat Survey Report
4. National Wetlands Inventory
5. Soils Map
6. CNPS Vegetation Rapid Assessment and Releve' Forms
7. Wetland Determination Data Forms and OHWM Delineation Cover Sheets

List of Illustrations

Figures	Follows Page
1. Project Location	1
2. Study Area with Potential Areas of Disturbance	1
3. Natural Communities, Wetland & OHWM Investigation, and Survey Results	2
4. Potential Areas of Disturbance with Natural Communities & Stream Setback.....	24
5. Proposed Mitigation Area.....	30

Abbreviations and Acronyms

°F	degrees Fahrenheit	MBTA	Migratory Bird Treaty Act
ft	feet	MMRP	Mitigation Monitoring and Reporting Plan
m	meter	NOAA	National Oceanic & Atmospheric Administration
APN	Assessor's Parcel Number	NCCP	Natural Community Conservation Planning Act
BLM	Bureau of Land Management	NEPA	National Environmental Policy Act
BMP	best management practice	NMFS	National Marine Fisheries Service
BIOS	Biogeographical Information and Observation System	NPPA	Native Plant Protection Act
C	candidate species status	NL	not listed
CCH	Consortium of California Herbaria	NRA	Natural Resources Assessment
CCR	California Code of Regulations	NRCS	Natural Resources Conservation Service
CDFW	California Department of Fish and Wildlife	NWI	National Wetland Inventory
CEQA	California Environmental Quality Act	OHV	off-highway vehicle
CESA	California Endangered Species Act	OHWM	Ordinary High Water Mark
CFGC	California Fish and Game Code	PT	proposed threatened species status
CFR	Code of Federal Regulations	RWQCB	Regional Water Quality Control Boards
CNDDDB	California Natural Diversity Database	S	state
CNPS	California Native Plant Society	SAA	Streambed Alteration Agreement
CRPR	California Rare Plant Rank	SSC	species of special concern
CT	candidate threatened species status	SWRCB	State Water Resources Control Board
CWA	Clean Water Act	T	threatened species status
D	delisted species status	TP	Test Pit
DPS	distinct population segment/species status	USACE	United States Army Corps of Engineers
E	endangered species status	USC	United States Code
EPA	United States Environmental Protection Agency	USFS	United States Forest Service
ESU	evolutionarily significant unit/species status	USFWS	United States Fish and Wildlife Service
FESA	Federal Endangered Species Act	USGS	United States Geological Survey
FP	fully protected species status	VegCAMP	Vegetation Classification and Mapping Program
G	global	WL	watch list species status
G1/S1	critically imperiled species heritage rank	WoS	waters of the State
G2/S2	imperiled species heritage rank	WoUS	waters of the United States
G3/S3	vulnerable species heritage rank		
G4/S4	apparently secure species heritage rank		
G5/S5	secure species heritage rank		
IPaC	Information for Planning and Conservation		
LFG	landfill gas		

1.0 Introduction

SHN has conducted site investigations, literature reviews, and an assessment to determine biological resources present in relation to the proposed Eastlake Sanitary Landfill Expansion Project (see Figure 1 for project location) which includes expanded waste management units north and south of the existing waste management units, and a proposed stormwater detention basin south of the existing landfill. This Natural Resources Assessment (NRA) has been prepared to evaluate the potential for special-status biological resources within the study area, including natural communities and wetlands (see Figure 2 for the study area and proposed areas of disturbance and expansion).

The Eastlake Sanitary Landfill Expansion Project (project) would laterally expand the Eastlake Sanitary Landfill to the north and east on properties owned by Lake County and South Lake Refuse, and to the south onto properties owned by the County. The lateral expansion areas would occupy an approximate 21.8-acre footprint area, and the area of potential disturbance associated with the project would cover 36.2 acres (see Figure 2). The proposed expansion would extend the lifespan of the landfill site by 22 years or more at anticipated disposal rates. The existing leachate pond, landfill gas (LFG) flare, scales, scale house, and maintenance buildings would remain in place. Construction of an all-weather access road and stormwater detention basin would be required. Implementation of the Eastlake Sanitary Landfill expansion would result in the complete removal of natural resources within the 36.2-acre project expansion footprint. This Natural Resources Assessment addresses natural resources within the vicinity of and potentially impacted by the project.

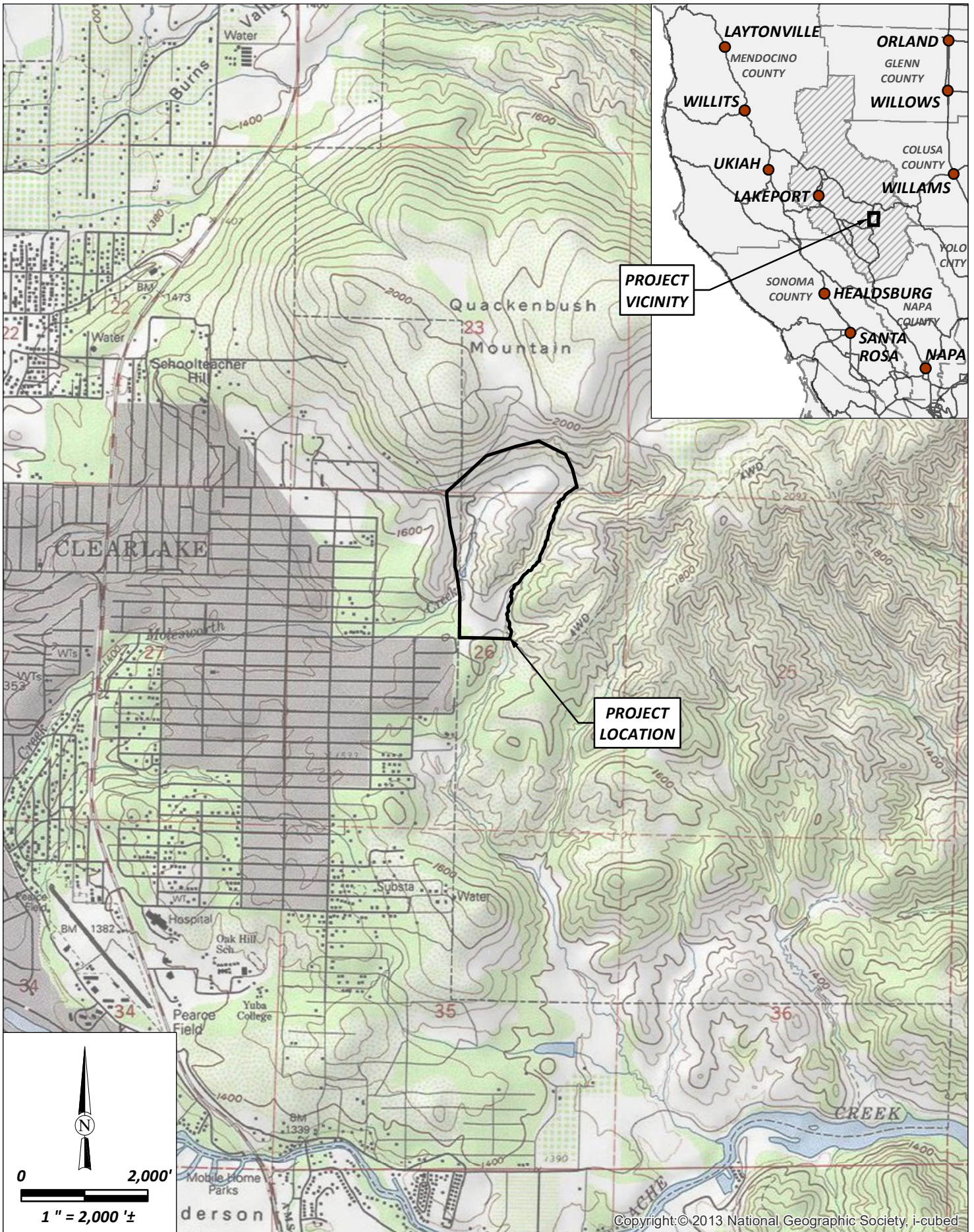
1.1 Project Location

The project is located within Lake County, immediately east of the City of Clearlake, and all proposed expansion activities will occur within unincorporated Lake County. The project is approximately 1.73 miles east of Clearlake at the nearest point, and 1 mile east of Highway 53 at its nearest point within Sections 23 and 26 of Township 13 North, Range 7 West, Mount Diablo Meridian. The study area includes area within eleven separate parcels (Assessor's parcel numbers [APNs] 010-053-110, -120, -130, -140, 010-008-030, -350, -390, -410, 041-224-400, 041-234-270, and 041-244-180). Parcel 010-008-350 is owned by the Bureau of Land management (BLM) and will not be included within the expansion; however, existing use within the northwest corner of that parcel will continue. The total study area is approximately 91 acres, of which 38.1 acres are occupied by the existing landfill and were not surveyed. The study area has a center point latitude and longitude of 38.951666° and -122.601460°, respectively (see Figure 2). Project improvements will be located north, east, and south of the existing landfill (primarily immediately adjacent to the existing landfill), with the exception of the proposed stormwater detention basin, which is approximately 700 feet south of the existing landfill, but is adjacent to the current borrow area. The study area includes the entire area proposed to be disturbed, as well as a buffer around the proposed disturbance area, except where private property prevented access (see Figure 2).

1.2 Site Description

The study area is located within areas used for historical and ongoing landfill operations, as well as relatively undisturbed lands characterized by oak woodlands and native vegetation, as well as grassland and chaparral-dominated slopes (see Appendix 1, Photos 1-11). Operation of the existing landfill operations began in 1972, with an expansion in 1999 to its current footprint. Currently landfill areas are dominated by non-native herbaceous vegetation, including crimson clover (*Trifolium incarnatum*), wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum*), six weeks grass (*Festuca myuros*), and red-stemmed filaree (*Erodium cicutarium*), among many others. Large portions of the project area are characterized by ongoing landfill operations, including the current borrow area, storm water retention ponds, landfill, gravel access roads, and weedy areas mowed and maintained for fire prevention (see

Path: \\Willits2019\Projects\2019\419004-ESI-CEQA\GIS\PROJ_MXD\NRA_Fig1_ProjectLocation.mxd User Name: jsousa DATE: 8/22/19, 9:39AM



Eastlake Landfill
Natural Resources Assessment
Eastlake, California

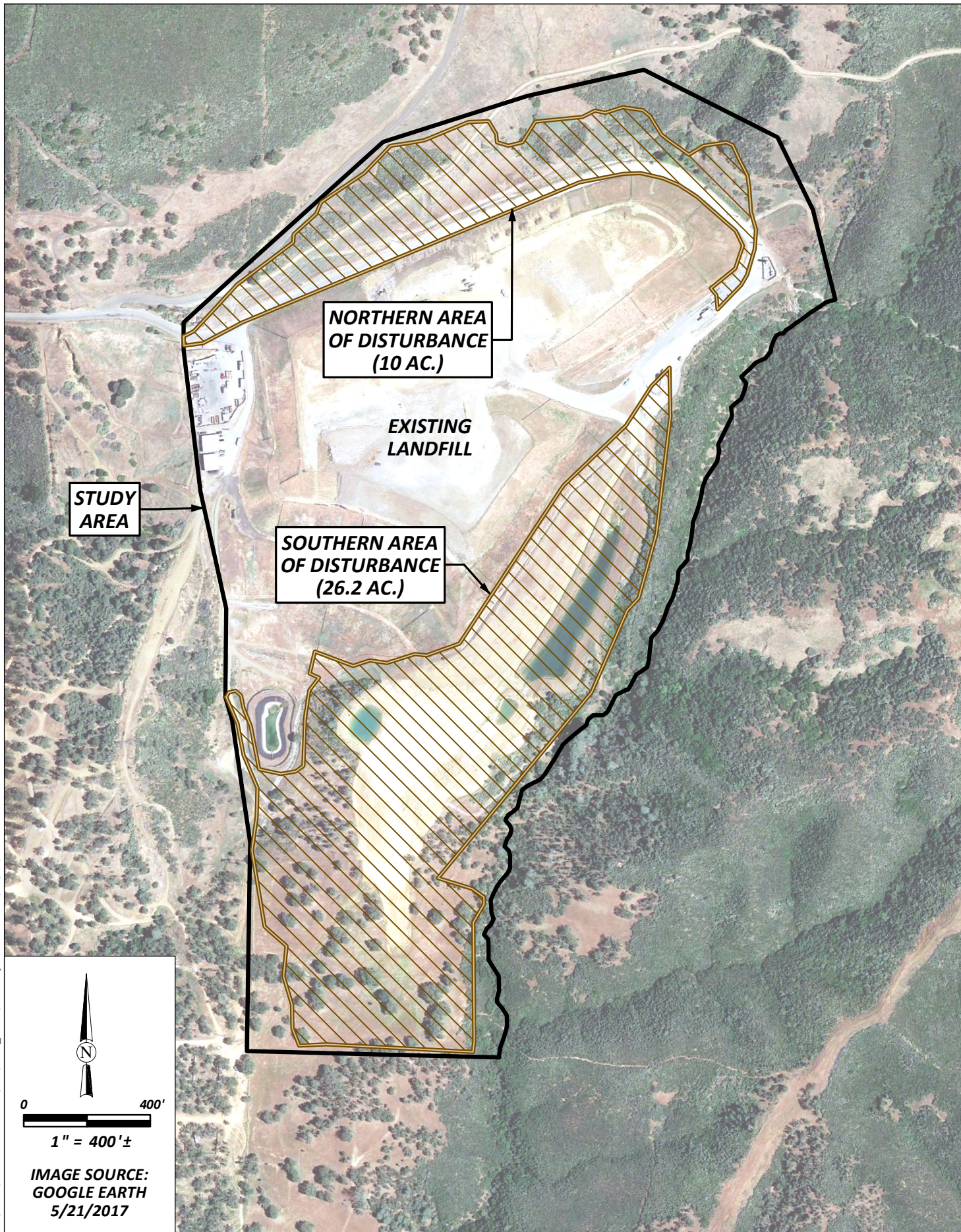
August 2019

Project Location

SHN 419004.020

Figure 1

\\Willits\2019\Projects\2019\419004-ESL-CEQA\GIS\PROJ_MXD\ USER: jsousa DATE: 8/22/19, 9:48AM



Eastlake Landfill
Natural Resources Assessment
Lake County, California

Study Area w/
Potential Areas of Disturbance
SHN 419004.020

August 2019

NRA_Fig2_StudyAreaWithPAD

Figure 2

Appendix 1, Photos 1 and 2). The current borrow area and landfill have very little vegetation or habitat value on account of the ongoing operations; previously disturbed areas have varying levels of vegetation cover due to engineered soil compaction, rock, vehicle travel, and earth moving equipment. Approximately 13.9 acres of the proposed expansion area is previously disturbed or has ongoing operations present, and therefore has very little habitat value.

Relatively undisturbed areas within the study area range from invasive yellow star thistle (*Centaurea solstitialis*) dominated slopes (Appendix 1, Photo 4) to native wildflower fields and blue oak woodlands (see Figure 3 for a map of the habitat areas observed within the study area). Second and third-order streams occur within and adjacent to the study area and present additional habitat, such as riparian woodland. Steeper, drier slopes are dominated by chamise chaparral.

Dominant species within relatively undisturbed portions of the study area include blue oak (*Quercus douglasii*) within the shrub and tree layer, and a wide mix of herbaceous species within the understory (see Appendix 1, Table 3). Open, non-native grasslands were dominated by medusahead (*Elymus caput-medusae*), soft chess (*Bromus hordeaceus*), ripgut brome, wild oat, six weeks grass, and hairy vetch (*Vicia villosa* ssp. *villosa*), among others. Open areas dominated by native species contained a wide range of species and meet the criteria of wildflower fields. Dominant species in these areas included blue dicks (*Dichelostemma variegatum* ssp. *variegatum*), California plantain (*Plantago erecta*), purple sanicle (*Sanicula bipinnatifida*), California goldfields (*Lasthenia californica* ssp. *californica*), and popcorn flower (*Plagiobothrys nothofulvus*), among many others. See Appendix 1, Table 3 for a complete list of the botanical species observed within the study area, and Figure 3 for a map of the vegetation communities and habitat areas observed within the study area.

Adjacent land contains additional blue oak woodland to the south, rural residential development within blue oak woodland to the west, steep, chamise- and grass-covered slopes to the north, as well as a vineyard and green waste disposal facility, and steep, deeply dissected chamise-dominated slopes to the east, interspersed with seasonal drainages and tree-dominated draws.

2.0 Methodology

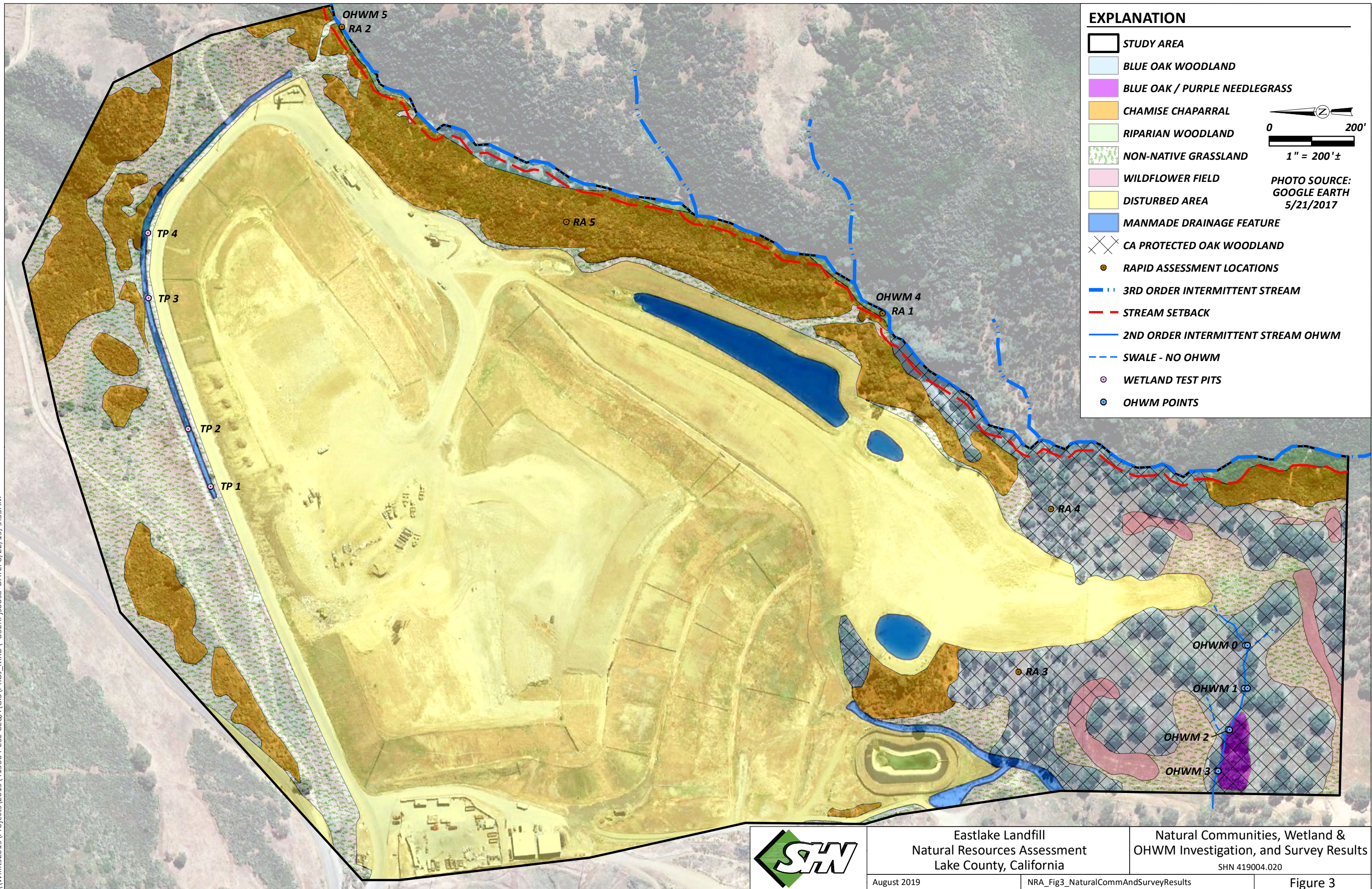
2.1 Literature Review

This NRA includes a review of pertinent literature on habitat characteristics of the site, and a review of information related to special-status plant and animal species that could potentially use the described habitats.

The findings for this report are a result of several sources, including a review of existing literature regarding sensitive resources that have the potential to occur within the site. Resources for this determination included:

- California Natural Diversity Database (CNDDDB) query for the Lower Lake and surrounding United States Geological Survey (USGS) 7.5-minute topographic quadrangles (Clearlake Oaks, Benmore Canyon, Wilbur Springs, Clearlake Highlands, Wilson Lake, Whispering Pines, Middletown, and Jericho Valley) (California Department of Fish and Wildlife [CDFW], 2019a; USGS, 2018)
- Biogeographical Information and Observation System (BIOS; CDFW, 2019b)
- Electronic Inventory of Rare and Endangered Vascular Plants of California (California Native Plant Society [CNPS], 2019) queried for a list of all plant species reported for the Lower Lake and surrounding USGS 7.5-minute topographic quadrangles
- Special Vascular Plants, Bryophytes, and Lichens of California List (CDFW, 2019c)

\\Willits2019\Projects\2019\419004-ESL-CEQA\GIS\PROJ_MXD\ USER: jsousa DATE: 8/22/19, 9:53AM



- Special Animals of California List (CDFW, 2019d)
- United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) was queried for threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of the proposed project and/or may be affected by the proposed project (USFWS, 2019a)

From the database queries, a list of potential target species for the study area was compiled. Tables 1 and 2 in Appendix 2 include species reported by the CNDDDB and USFWS, and species listed in the CNPS inventory of rare plants.

Additionally, the USFWS Critical Habitat Portal was queried for habitat designated as critical for species listed under the Federal Endangered Species Act (FESA). No critical habitat is designated within the study area. The nearest designated critical habitat is 5.5 miles south along Spruce Grove Road for the threatened slender orcutt grass (*Orcuttia tenuis*). Additional critical habitat for the slender orcutt grass is designated 9.5 miles from the study area. No additional critical habitat occurs within 10 miles of the study area.

2.2 Field Observations and Studies

SHN's botanist and ecologist, and senior biologist conducted site visits on May 8 and June 23, 2017, February 7, 2018, and April 16 and June 25, 2019, for biological surveys and habitat assessments. Fieldwork included a total of 37 hours of surveying, not including bat surveys and wetland assessments which were conducted separately. Focused early- and late-season botanical surveys were conducted pursuant to the CDFW *Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities* (CDFW, 2018a), with an attempt to identify all species present within the project-related study areas, including possible species of special concern. In addition to surveying for target species, a list of all botanical and animal species encountered was compiled (Tables 3 and 4 in Appendix 2). Plants were identified to the lowest taxonomic level possible to distinguish special-status species from others. Nomenclature for special-status animals conforms to CDFW guidelines (CDFW, 2019d). Plant community names conform to *A Manual of California Vegetation, Second Edition* (Sawyer et al.; 2009) and the VegCAMP (Vegetation Classification and Mapping Program) Natural Communities List (CDFW; 2018b). Botanical nomenclature of species in this assessment follows the *Jepson Manual* (Baldwin et al., 2012) and subsequent online revisions. The April, May, and June site visits were conducted at seasonally-appropriate times to best detect early- and late-blooming special-status plant species, and a number of nesting bird species. The February site visit was conducted for early-blooming species and to record wetland hydrology across the site. Analysis of the habitat and vegetation communities present within the study area during the site visits indicate that suitable habitat for several special-status plant and animal species exists onsite; however,, much of existing landfill and associated disturbed areas do not have suitable conditions for the special-status species reported as potentially occurring within the area. The areas most likely to support special-status species include riparian woodland, seasonal drainages and other wet areas, oak woodland, rocky areas, native flower fields, and open minimally disturbed grasslands. Habitat assessments were conducted for animal species during site visits. Habitat for special-status species and Sensitive Natural Communities have been mapped (Figure 3) as part of this report and will be discussed further.

Site Photographs from the site visits are included in Appendix 1.

2.3 Bat Surveys

Protocol level bat surveys were conducted as part of this assessment. Bat survey protocol was developed by SHN in February 2018 and was reviewed by CDFW prior to conducting the field work. A total of three surveys were conducted (April 16, June 7, and July 30, 2019) for a total of 11.25 hours of surveying. Survey protocol and results are recorded in Appendix 3 “2019 Bat Survey Report.”

2.4 Wetland and Other Waters Delineation

Wetland delineation methods described in *U.S. Army Corps of Engineers Wetlands Delineation Manual* (United States Army Corps of Engineers [USACE], Environmental Laboratory, 1987) and *The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE, 2010) were used to identify potential wetlands and other waters. The routine method for wetland delineation described in the Environmental Laboratory 1987 manual was used to identify potential wetlands within the study area. The USACE method relies on a three-parameter approach, in which criteria for hydrophytic vegetation, hydric soils, and wetland hydrology must each be met (present at the point of field investigation) to conclude that an area qualifies as a wetland. The Western Mountains, Valley, and Coast Region delineation manual and supplements were used at this site due to average rainfall amounts greater than 30 inches, and the steep nature of the site coupled with the proximity to Clear Lake.

Hydrophytic vegetation refers to plant species known to be adapted to wetland sites. To classify the hydrophytic plants onsite, the most recent *Western Mountains, Valleys, and Coast 2016 Regional Wetland Plant List* was used (USACE, 2016). Hydric soils are those formed under saturated conditions, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (USDA, 2017). Wetland hydrology is demonstrated through direct evidence (primary indicators) or indirect evidence (secondary indicators) of flooding, ponding, or saturation for a significant portion of the growing season (USACE, 2010).

Prior to conducting the field investigation, SHN staff reviewed the USGS topographic quadrangle map (Figure 1); Google Earth (Google Earth, 2017); USDA-NRCS Web Soil Survey website (USDA, 2019); and NWI map (USFWS, 2019b; Appendix 4). Prior to the wetland investigation, a preliminary site investigation was performed to view existing hydrology. During the subsequent wetland test pit (TP) subsurface investigation, sample points were characterized at each pit for the aforementioned botanical, hydrological, and soil parameters.

Wetland TP locations were selected to:

- achieve appropriate coverage and characterization of wetland and upland habitats,
- document potential changes in the vegetative community (such as, a shift in the dominant species), and
- determine the approximate boundary line between wetlands and uplands by evaluating the extent of key wetland criteria (hydrology, hydric soils, and hydrophytic vegetation).

All field mapping was completed with a 300-foot tape measure, with distance referenced from hard points visible on aerial imagery.

2.4.1 Vegetation Methodology

Prior to the field investigation, a review of plant species reported to be within the project area was performed by querying the “Consortium of California Herbaria” (Consortium of California Herbaria, 2019) database records and “Calflora” (Calflora, 2019) observations. Absolute percent cover of each plant species

was visually estimated within the sample point and within each vegetation stratum. The tree stratum was inspected at a 30-foot radius centered on the sample point, and the herb and sapling/shrub strata at a 5-foot radius. Botanical nomenclature follows *The Jepson Manual, Vascular Plants of California* (Baldwin et al., 2012) in addition to the online Jepson Interchange (University of California, Berkeley, 2019) for verification of species whose taxonomy may have changed since its publication.

The 50/20 method¹ was applied to each stratum to determine the dominant plant species and to satisfy the hydrophytic vegetation criteria. If hydric soils and wetland hydrology were present, the prevalence index² was applied. The occurrence and type of plant cover determine whether jurisdictional areas are identified as satisfying the vegetation criteria of a wetland or other waters. Those sites with little or no hydrophytic plant cover, or other sites not capable of supporting hydrophytic plant communities in normal circumstances, are identified as other waters, provided they have an Ordinary High Water Mark.

2.4.2 Soils Methodology

Soils were field-verified for the presence or absence of hydric conditions. All TPs were dug to a minimum depth of 20 inches, and the thickness of each soil horizon was measured. The Munsell Soil Color Chart (Kollmorgen, 1998) was referenced to determine the colors of the moist soil matrix and redoximorphic (redox) features (if present). Soils were closely inspected for hydric soil indicators, as defined by the NRCS “Field Indicators of Hydric Soils in the United States” (USDA-NRCS, 2019).

2.4.3 Hydrology Methodology

The presence (or lack) of wetland hydrology indicators was determined by direct observations for surface and groundwater were made during TP excavations on February 7, 2018 and April 16, 2019, in addition to indirect hydrologic indicators (such as, water marks, drift deposits, sediment deposits, drainage patterns, geomorphic position, water-stained leaves, and similar features). Indicators of extended period saturation would include oxidized rhizospheres surrounding living roots or the presence of reduced iron or sulfur in the soil profile. A TP must contain at least one primary indicator or two secondary indicators to qualify for the hydrology parameter.

2.4.4 Ordinary High Water Mark Delineation Methodology

For purposes of Section 404 of the CWA, the lateral limits of federal jurisdiction over non-tidal water bodies in the absence of adjacent wetlands extend to the Ordinary High Water Mark (OHWM). When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. For purposes of Sections 9 and 10 of the Rivers and Harbors Act of 1899, the lateral extent of federal jurisdiction, which is limited to the traditional navigable waters of the United States, extends to the OHWM, whether or not adjacent wetlands extend landward of the OHWM (USACE, 2014).

USACE regulations define the term OHWM for the purposes of the CWA lateral jurisdiction as follows:

The term “ordinary high water mark” means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving,

¹ The 50/20 rule: for each stratum of the plant community, dominant species are the most abundant species that (when ranked in descending order of abundance and cumulatively totaled) immediately exceed 50% of total dominance measure for the stratum, plus any additional species that individually comprise 20% or more of the total dominance measure for the stratum (USACE, 2010).

² The prevalence index is a weighted-average wetland indicator status of all plant species in the sampling plot or other sampling unit, where each indicator status category is given a numeric code (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5) and weighting is by abundance (absolute percent cover).

changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas at 33 CFR 328.3(e).

The OHWM in non-perennial streams corresponds with the boundaries of the active channel, which are typically expressed by some combination of three primary indicators: a topographic break in slope, change in sediment characteristics, and change in vegetation characteristics (USACE, 2014). The following supporting features should be considered when making an OHWM determination, to the extent that they can be identified and are deemed reasonably reliable (USACE, 2014):

- Drift/wrack
- Erosion/scour
- Bank undercutting
- Root exposure
- Point bars
- Water staining
- Litter removal
- Silt deposits
- Shelving
- Headcut/knickpoint
- Macroinvertebrates

3.0 Environmental Setting

The study area is located on the lower slopes of Quackenbush Mountain, a pre-historic extinct basaltic andesite volcano which is part of the Clearlake volcanics. Land use within the vicinity of the study area includes rural residential development to the west, landfill and associated facilities, green waste and vineyard development to the north, and steep wild lands to the east and south. Prior to the development of the landfill, the study area was likely very similar to the surrounding area, with steep slopes covered in chaparral and grassland, and more gently sloping areas with oak woodland and grassland. Some relatively undisturbed habitat area remains surrounding the existing landfill within and surrounding the study area consisting of chamise chaparral, blue oak woodland, riparian woodland, grassland and native dominated flower fields. The study area is situated at an approximate 1,560-foot to 1,880-foot elevation above mean sea level. The average 30-year precipitation data for this area is 31.42 inches (NOAA, 2019), with the majority of precipitation occurring between November and March. Temperatures in Clearlake range from an average low of 32 degrees Fahrenheit (°F) in December to an average high of 88°F in July; reflecting the Mediterranean climate found within Lake County.

3.1 Hydrology

The project is located within the Upper Cache Creek watershed (hydrologic unit code 18020116), which includes all of Clearlake. Topography across the study area is naturally steep and deeply dissected by ravines; however, lower elevations dominated by blue oak woodland are more gently sloping with localized flats at the top of hill slopes. The majority of the study area is located on the shoulder of Quackenbush Mountain, with stormwater flowing west or east. Water flowing west will flow into Molesworth Creek, which historically had its headwaters in the canyon filled by the existing landfill. Molesworth Creek is a tributary of Clear Lake and flows into the lake approximately 2.15 miles southwest of the study area. Leachate from the existing landfill is not permitted to enter Molesworth Creek, and is collected in a holding pond from which it is pumped to the Clearlake wastewater treatment facility. Water flowing east will enter an unnamed intermittent stream that forms the eastern boundary of the study area. This third-order intermittent stream supports a narrow band of riparian vegetation and surface flows into early summer. This unnamed stream flows south to Cache Creek downstream of the City of Clearlake, approximately 1.92 miles south of the project area.

The USFWS is the federal agency responsible for tracking wetland trends and maintaining an inventory through its National Wetland Inventory (NWI; USFWS, 2019b). The NWI can be queried for specific locations throughout the United States to aid federal, State, and local agencies in making informed decisions concerning wetlands. According to the NWI, four wetland types exist within or adjacent to the study area. This includes one artificially flooded palustrine freshwater wetland (PUBK), and three Riverine wetlands including: Intermittent, seasonally flooded riverine with streambed (R4SBC), Intermittent, temporarily flooded riverine with streambed (R4SBA), and Unknown Perennial, semi-permanently flooded riverine with unconsolidated bottom (R5UBF) (see Appendix 4 for NWI map), which corresponds with the streams mentioned above.

NWI maps are excellent references for scoping the presence or absence of wetlands; however, the resolution of the NWI tends to be on a macro scale, often with no field verification. As recommended by NWI, a site-specific wetland delineation was conducted within the study areas detailing wetland conditions and determining an accurate distribution of wetlands within the study area. No wetlands were observed within the study area. Streams and seasonal drainages with OHWM were delineated and are recorded on Figure 3, including areas that were over mapped and under mapped by the NWI. See Section 5.3.2 Wetlands for additional information on the wetlands found onsite.

3.2 Soils

Soils within the study area consist of the Bally-Phipps complex, 15-30 percent slopes (107), Bally-Phipps-Haploxeralfs association, 30-75 percent slopes (108), Konocti-Hambright-Rock outcrop complex, 30-75 percent slopes (154), and the Phipps complex, 5-15 percent slopes (195) (USDA-NRCS, 2019). These soils are well-drained very gravelly sandy clay loams from alluvium derived from weathered basalts, and are found on hills and slopes. Soils are highly manipulated within large portions of the study area reflecting landfill activities and soil movement. The soils found onsite support a wide range of plant communities including blue oak woodland, chamise chaparral, grassland, and other drought-adapted species. See Appendix 5 for a map of the soils found within the study area.

3.3 Vegetation

Vegetation composition varied widely across the study area, but was representative of inland Mediterranean climates including chamise chaparral, blue oak woodland, grassland, as well as disturbed and developed landfill areas. Vegetation within the disturbed areas was composed primarily of non-native species; however, in less disturbed areas, a wide range of native species were found within wildflower fields, grasslands, chaparral, riparian areas, and blue oak woodlands. A list of all vegetation species observed within the study area during the surveys is reported in Table 3, Appendix 2. See Section 5.3.1 Natural Communities for more information on the natural communities observed onsite.

3.4 Wildlife Habitats

Common wildlife species expected on the site are those associated with northern California chaparral, oak woodland, grassland, and landfills. This includes species that nest in trees, shrubs, or open ground, scavengers, and species that require a mix of available habitat. Wildlife species observed at the site included the common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), wrentit (*Chamaea fasciata*), California quail (*Callipepla fasciata*), white crowned sparrow (*Zonotrichia leucophrys*), jack rabbit (*Lepus californicus* ssp. *californicus*), and western fence lizard (*Sceloporus occidentalis* ssp. *occidentalis*), among others (see Appendix 2, Table 4). Other wildlife species are likely to inhabit the surrounding area and it is expected that there are many other bird, mammal, and amphibian species that might use the project site, if only transitionally. Human activities within the landfill and roadway areas of the study area may limit the

abundance of a variety of birds and animals within those areas. In addition, species such as the American crow are attracted to landfills and are known to have a deleterious effect on other species that might otherwise inhabit the surrounding area.

3.5 Wildlife Movement Corridors

Wildlife movement includes migration (that is, usually one-way per season), inter-population movement (that is, long-term genetic flow), and small travel pathways (that is, daily movement corridors within an animal's territory). Although small travel pathways usually facilitate movement for daily home range activities (such as, foraging or escape from predators), they also provide connection between outlying populations and the main corridor, permitting an increase in genetic flow among populations.

These linkages among habitat types can extend for miles from primary habitat areas and occur on a large scale throughout California. Habitat linkages facilitate movement between populations located in discrete areas and populations located within larger habitat areas. The mosaic of habitats found within a large-scale landscape results in wildlife populations that consist of discrete sub-populations constituting a large single population, which is often referred to as a meta-population. Even where patches of pristine habitat are fragmented, such as occurs with oak woodland and chaparral, the movement between wildlife populations is facilitated through habitat linkages, migration corridors, and movement corridors. Depending on the condition of the corridor, genetic flow between populations may be high in frequency, thus, allowing high genetic diversity within the population, or may be low in frequency. Low-frequency genetic flow may potentially lead to complete isolation and, if pressures are strong, potential extinction (McCullough, 1996; Whittaker, 1998).

The study area (Figure 2) is composed of a mixture of highly-disturbed landfill development and undeveloped chaparral, grassland, and oak woodland habitat (see Figure 3). The study area exists between the developed lands within the City of Clearlake and the surrounding wild lands and sparsely developed lands to the north, east, and south. It is unlikely that large scale terrestrial linkages exist, however, local wildlife movement corridors occur within the surrounding area and portions of the study area. These are expected to be concentrated within riparian or seasonal drainage corridors, and within uninterrupted vegetated areas and oak woodlands. The study area is also known to be an important flyover location for migratory birds using Clear Lake as a stopover location; however, it is unlikely that these species would stop within the study area.

3.6 Offsite Conditions

Offsite conditions are similar to or better than those found within the study area. Undeveloped lands to the east have remained relatively undisturbed, and oak woodland to the south of the study area is intact and abuts riparian areas and chaparral. Land to the north of the study area is sparsely developed, with some vineyards and a green waste facility; however, large areas of intact and contiguous chaparral exist, and abut large tracts of undeveloped land. It is not known what level of invasive species encroachment exists within these parcels, and what level of road building or other development has occurred; however, aerial imagery shows very little development south, north, and east of the study area. Land to the west is developed with rural residential units with dirt roads and off highway vehicle (OHV) tracks.

4.0 Regulatory Setting

Regulatory authority over biological resources is shared by federal, State, and local authorities under a variety of legislative acts. The following section summarizes the federal, State, and local regulations for

special-status species, jurisdictional Waters of the U.S. and State of California, and other sensitive biological resources. This section provides a listing and overview of these federal, State, and local laws; only select regulations will be applicable to this project.

4.1 Federal Laws

4.1.1 Clean Water Act Sections 404 and 401

Under Section 404 (33 U.S. Code (USC) 1344) of the Clean Water Act (CWA), as amended, the U.S. Army Corps of Engineers (USACE) retains primary responsibility for permits to discharge dredged or fill material into Waters of the U.S. (WoUS). All discharges of dredged or fill material into jurisdictional Waters of the U.S. that result in permanent or temporary losses of WoUS are regulated by the USACE. A permit from the USACE must be obtained before placing fill or grading in wetlands or other WoUS, unless the activity is exempt from CWA Section 404 regulation (for example, certain farming and forestry activities).

The USACE defines wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (USACE Environmental Laboratory, 1987). In other words, the USACE defines wetlands by the presence of all three wetland indicators: hydrophytic vegetation, hydric soils, and wetlands hydrology.

WoUS are defined at 33 Code of Federal Regulations (CFR) Part 328. They include traditional navigable waters; relatively permanent, non-navigable tributaries of traditional navigable waters, and certain wetlands. Following recent court cases, the United States Environmental Protection Agency (EPA) and USACE published a memorandum entitled “Clean Water Act Jurisdiction” (USACE/EPA, 2008) to guide the determination of jurisdiction over WoUS, especially for wetlands. The applicability of Section 404 permitting over discharges to wetlands is, therefore, a two-step process: 1) determining the areas that are wetlands, and 2) where a wetland is present, assessing the wetland’s connection to traditional navigable waters and non-navigable tributaries to determine whether the wetland is jurisdictional under the CWA. A wetland is considered jurisdictional if it meets certain specified criteria.

The USACE is required to consult with the USFWS and/or National Marine Fisheries Service (NMFS) under Section 7 of the FESA if the action subject to CWA permitting could result in “Take” of federally-listed species or an adverse effect to designated critical habitat. The project is within the jurisdiction of the Sacramento District of the USACE.

Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into WoUS to obtain a certification from the state in which the discharge originates or would originate, or if appropriate, from the interstate water pollution control agency having jurisdiction over the affected waters at the point where the discharge originates or would originate, that the discharge will comply with the applicable effluent limitations and water quality standards. A certification obtained for the construction of any facility must also pertain to the subsequent operation of the facility. The responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs). The project is within the jurisdiction of the Central Valley RWQCB.

4.1.2 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC Sections 661-667e, March 10, 1934, as amended 1936, 1946, 1947, 1948, 1949, 1958, 1965, 1978, and 1995) requires that whenever waters or channel of a stream or other body of water are proposed or authorized to be modified by a public or private agency under a federal license or permit, the federal agency must first consult with the USFWS and/or NMFS and with the head of

the agency exercising administration over the wildlife resources of the state where construction will occur (in this case the CDFW), with a view to conservation of birds, fish, mammals, and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife is dependent.

If direct permanent impacts will occur to WoUS from a proposed project, then a permit from USACE under CWA Section 404 is required for the construction of the proposed project. USACE is required to consult with USFWS and/or NMFS as appropriate regarding potential impacts to federally-listed species under FESA. Such action may prompt consultation with CDFW, which would review the project pursuant to California Endangered Species Act (CESA) and issue a consistency letter with USFWS and/or NMFS, if required.

4.1.3 Federal Endangered Species Act

The United States Congress passed the FESA in 1973 to protect species that are endangered or threatened with extinction. The FESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend and within which they live. The USFWS and the NMFS are the designated federal agencies responsible for administering the FESA.

The FESA prohibits the “Take” of endangered or threatened wildlife species. A “Take” is defined as harassing, harming (including significantly modifying or degrading habitat), pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species, or any attempt to engage in such conduct (16 USC 1531, 50 CFR 17.3). An activity can be defined as a “Take” even if it is unintentional or accidental. Taking can result in civil or criminal penalties. Activities that could result in “Take” of a federally-listed species require an incidental “Take” authorization resulting from FESA Section 7 consultation or FESA Section 10 consultation. Plants are legally protected under the FESA only if “Take” occurs on federal land or from federal actions, such as, issuing a wetland fill permit.

A federal endangered species is one that is considered in danger of becoming extinct throughout all, or a significant portion, of its range. A federal threatened species is one that is likely to become endangered in the foreseeable future. The USFWS also maintains a list of species proposed for listing as threatened or endangered. Proposed species are those for which a proposed rule to list as endangered or threatened has been published in the Federal Register. In addition to endangered, threatened, and proposed species, the USFWS maintains a list of candidate species. Candidate species are those for which the USFWS has on file sufficient information to support issuance of a proposed listing rule.

Pursuant to the requirements of the FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally-listed endangered or threatened species may be present in the study area and determine whether the proposed project will have a potentially significant impact on such a species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the FESA or result in the destruction or adverse modification of critical habitat designated or proposed to be designated for such species (16 USC 1536[3], [4]). Project-related impacts to species on the FESA endangered or threatened list would be considered significant, and thus, would require mitigation.

4.1.4 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) of 1918 makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in CFR Part 10, including feather or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21; USFWS, 1918). The MBTA also prohibits

disturbance and harassment of nesting migratory birds at any time during their breeding season. The USFWS is responsible for enforcing the MBTA (16 USC 703). The migratory bird nesting season is generally considered to be between March 15 and August 15 within the study region.

4.2 State Laws

4.2.1 Porter-Cologne Water Quality Control Act

The state and RWQCB also maintain independent regulatory authority over the placement of waste, including fill, into waters of the State (WoS) under the Porter-Cologne Water Quality Control Act. WoS are defined by the Act as “any surface water or groundwater, including saline waters, within the boundaries of the state” (SWRCB, 1969). The SWRCB protects all waters in its regulatory scope, but has special responsibility for isolated wetlands and headwaters. These water bodies might not be regulated by other programs, such as Section 404 of the CWA. WoS are regulated by the RWQCBs under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require an USACE permit, or fall under other federal jurisdiction, and have the potential to impact WoS are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, but does involve activities that may result in a discharge of harmful substances to waters of the State, the RWQCBs have the option to regulate such activities under their state authority in the form of waste discharge requirements (WDRs) or certification of WDRs.

4.2.2 California Endangered Species Act

The State of California enacted the CESA in 1984. The CESA is similar to the FESA but pertains to state-listed endangered and threatened species. Under the CESA, the CDFW has the responsibility for maintaining a list of threatened and endangered species designated under state law (California Fish and Game Code [CFGF] 2070). Section 2080 of the CFGF prohibits “Take” of any species that the commission determines to be an endangered or threatened species. “Take” is defined in Section 86 of the CFGF as “to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.”

The State and federal lists of threatened and endangered species are generally similar; however,, a species present on one list may be absent from the other. CESA regulations are also somewhat different from the FESA in that the State regulations included threatened, endangered, and candidate plants on non-federal lands within the definition of “Take.” CESA allows for “Take” incidental to otherwise lawful development projects.

Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the study area and determine whether the proposed project will have a potentially significant impact on such species. Project-related impacts to species on the CESA endangered or threatened list (or, in addition, designated by the CDFW as a “Species of Special Concern,” which is a level below threatened or endangered status) would be considered significant and would require mitigation.

4.2.3 California Environmental Quality Act

California Environmental Quality Act (CEQA) Guidelines Sections 15125(c) and 15380(d) provide that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. Thus, CEQA provides the ability to protect a species from potential project impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

The CNPS maintains a list of plant species native to California whose populations that are significantly reduced from historical levels, occur in limited distribution, or are otherwise rare or threatened with extinction. This information is published in the Inventory of Rare and Endangered Plants of California (CNPS, 2018). Taxa with a CRPR of 1A, 1B, 2A, 2B, and 3 in the CNPS inventory consist of plants that meet the definitions of the CESA of the CFGC, are eligible for state listing, and meet the definition of Rare or Endangered under CEQA Guidelines Sections 15125(c) and 15380(d). Some taxa with a CRPR 4 may meet the definitions of the CESA of the CFGC. CRPR 4 populations may qualify for consideration under CEQA if they are peripheral or disjunct populations; represent the type locality of the species; or exhibit unusual morphology and/or occur on unusual substrates.

Additionally, CDFW maintains lists of special animals and plants. These lists include a species conservation ranking status from multiple sources, including FESA, CESA, and federal departments with unique jurisdictions, CNPS, and other non-governmental organizations. Based on these sources, CDFW assigns a heritage rank to each species according to their degree of imperilment (as measured by rarity, trends, and threats). These ranks follow NatureServe's Heritage Methodology, in which all species are listed with a G (global) and S (state) rank. Species with state ranks of S1-S3 are also considered highly imperiled.

CEQA Guidelines checklist IV(b) calls for the consideration of riparian habitats and sensitive natural communities. Sensitive vegetation communities are natural communities and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. However,, these communities may or may not necessarily contain special-status species. Sensitive natural communities are usually identified in local or regional plans, policies, or regulations, or by CDFW (i.e., the CNDDDB and VegCAMP programs) or the USFWS. Impacts to sensitive natural communities and habitats must be considered and evaluated under CEQA (California Code of Regulations [CCR]: Title 14, Div. 6, Chap. 3, Appendix G).

Although sensitive natural communities do not (at present) have legal protection, CEQA calls for an assessment of whether any such resources would be affected, and requires a finding of significance if there will be substantial losses. High-quality occurrences of natural communities with heritage ranks of 3 or lower are considered by CDFW to be significant resources and fall under the CEQA Guidelines for addressing impacts. Local planning documents (such as general plans) often identify these resources as well. Avoidance, minimizations, or mitigation measures should be implemented if project-affected stands of rare vegetation types or natural communities are considered high-quality occurrences of the given community.

As a trustee agency under CEQA, CDFW reviews potential project impacts to biological resources, including wetlands. In accordance with the CEQA thresholds of significance for biological resources, areas that meet the state criteria of wetlands and could be impacted by a project must be analyzed. Pursuant to CFGC Section 2785, CDFW defines wet areas as "lands which may be covered periodically or permanently with shallow water and which include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, fens, and vernal pools" (CDFW, 1984).

4.2.4 California Fish and Game Code Section 1600

Streams, lakes, and riparian vegetation as habitat for fish and other wildlife species are subject to jurisdiction by the CDFW under Sections 1600-1616 of the CFGC (CDFW, 1994). Any activity that will do one or more of the following: 1) substantially obstruct or divert the natural flow of a river, stream, or lake; 2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or 3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake, generally requires a Streambed Alteration Agreement (SAA).

The term “stream,” which includes creeks and rivers, is defined in the CCR as follows: “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life.” This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation (14 CCR 1.72).

In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. Riparian is defined as “on, or pertaining to, the banks of a stream”; therefore, riparian vegetation is defined as, “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself” (CDFW, 1994). Removal of riparian vegetation also requires an SAA from the CDFW.

4.2.5 California Fish and Game Code Sections 3503 and 3513

According to Section 3503 of the CFGC it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird (except English sparrows [*Passer domesticus*] and European starlings [*Sturnus vulgaris*]). Section 3503.5 specifically protects birds in the orders Falconiformes and Strigiformes (birds-of-prey). Section 3513 essentially overlaps with the MBTA, prohibiting the “Take” or possession of any migratory non-game bird. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “Take” by the CDFW (CDFW, 1998).

4.2.6 Fully Protected Species and Species of Special Concern

The classification of “fully protected” was the CDFW’s initial effort to identify and provide additional protection to those animals that were rare or faced with possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The CFGC sections (fish at Sec. 5515, amphibian and reptiles at Sec. 5050, birds at Sec. 3511, and mammals at Sec. 4700) dealing with “fully protected” species states that these species “...may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species,” (CDFW, 1998) although “Take” may be authorized for necessary scientific research. This language makes the “fully protected” designation the strongest and most restrictive regarding the “Take” of these species. In 2003, the code sections dealing with fully protected species were amended to allow the CDFW to authorize “Take” resulting from recovery activities for state-listed species.

Species of special concern (SSC) are broadly defined as animals not listed under the CESA, but that are nonetheless of concern to the CDFW because they are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by the CDFW, land managers, consulting biologists, and others, and is intended to focus attention on the species to help avert the need for costly listing under CESA and cumbersome recovery efforts that might ultimately be required. This designation is also intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although the SSC designation provides no special legal status, they are given special consideration under CEQA during project review.

Table 2 in Appendix 2 includes potentially-occurring federal and State-listed species and SSC animals that may occur in the study area.

4.2.7 Native Plant Protection Act of 1973

The Native Plant Protection Act (NPPA) of 1973 (Sec. 1900-1913 of the CFGC) includes provisions that prohibit the taking of endangered or rare native plants from the wild and a salvage requirement for landowners. The CDFW administers the NPPA and generally regards as “rare” many plant species included on Lists 1A, 1B, 2A, 2B, 3, and 4 of the CNPS Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2018). These list rankings are assigned to rare species and referred to as the California Rare Plant Rank (CRPR).

Table 1 in Appendix 1 includes potentially-occurring endangered or rare native plants that may occur in the study area (including CNPS lists).

4.2.8 Natural Community Conservation Planning Act

The Natural Community Conservation Planning (NCCP) Act of 1991 is an effort by the State of California, and numerous private and public partners that is broader in its orientation and objectives than the CESA and FESA (refer to discussions above). The primary objective of the NCCP Act is to conserve natural communities at the ecosystem scale while accommodating compatible land use. The NCCP Act seeks to anticipate and prevent the controversies and gridlock caused by species listings by focusing on the long-term stability of wildlife and plant communities and including key interests in the process (CDFW, 1991).

No regionally-occurring natural community or associated plan is listed by the State for the study area.

4.2.9 SB 1334: Oak Woodlands Conservation Act

The Oak Woodlands Conservation Act is intended to reduce impacts to oak woodlands within California through an impact analysis and mitigation if it is determined that a project will result in a significant effect to oak woodlands (California Public Resources Code, 2004). Specifically, a county shall determine whether a project within its jurisdiction may result in the conversion of oak woodlands that will have a significant effect on the environment. If a county determines that there may be a significant effect to oak woodlands, the county shall require one or more of the following oak woodland mitigation alternatives to mitigate the significant effect of the conversion of oak woodlands:

- 1) Conserve oak woodlands through the use of conservation easements.
- 2) (a) Plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees.
(b) The requirement to maintain trees terminates seven years after the trees are planted.
(c) Mitigation shall not fulfill more than one-half of the mitigation requirement for the project.
(d) The requirements imposed may be used to restore former woodlands.
- 3) Contribute funds to the Oak Conservation Fund for the purpose of purchasing oak woodlands conservation easements.
- 4) Other mitigation measures developed by the county.

4.3 Local Laws

4.3.1 County of Lake: Regulations for Waterway or WW Combining District

Waterways within Lake County are protected by the Regulations for the waterway or WW combining district. Article 37 states that the purpose of these regulations is to “Preserve, protect, and restore significant riparian systems, streams and their riparian, aquatic and woodland habitats; protect water quality; control erosion, sedimentation and runoff; and protect the public health and safety by minimizing dangers due to floods and earth slides. These purposes are to be accomplished by setting forth regulations to limit development activities in significant riparian corridors” (County of Lake, 2014).

Section 37.2 states that the WW combining district may be applied on properties containing the following characteristics:

- a) Streams identified as “Natural Areas”, within the Lake County general plan.
- b) Streams identified as “Critical Resource and Conservation Areas” within the Lake County General plan.
- c) Perennial Streams: Any watercourse designated by a solid line symbol on the largest scale United States Geological Survey map most recently published. Perennial streams normally flow throughout the year.
- d) Intermittent streams: Any watercourse designated by a dash and three dots symbol on the largest scale United States Geological Survey map most recently published. Intermittent streams normally flow only in direct response to rainfall and are dry for large parts of the year.
- e) Areas adjacent to those locations identified in Subsections (a) through (d) above that include
 - 1) Wetlands: Those areas that are inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.
 - 2) Riparian vegetation: Those plant species that typically occur in wet areas along streams or marshes. Characteristic species are: Fremont cottonwood (*Populus fremontii*), white alder (*Alnus rhombifolia*), Box elder (*Acer negundo*), dogwood (*Cornus nuttallii*), Willow (*Salix*), and big leaf maple (*Acer macrophyllum*).
 - 3) Natural standing water: Any area designated as standing water on the largest scale United States Geological Survey map most recently published, and that is not man-made, and is adjacent to a perennial or intermittent stream.

Section 37.3 Defines the riparian corridor as:

- b) Riparian corridor: Those areas which fall into the following four categories:
 - 1. Perennial streams: an area extending outward thirty (30) feet from the top of the streambank.
 - 2. Intermittent streams: An area extending outward twenty (20) feet from the top of the streambank.
 - 3. An area extending outward twenty (20) feet from the high water mark of an adjacent area of wetlands or natural body of standing water; or
 - 4. An adjacent area of riparian vegetation. The boundary shall be defined as the outer limit of the occurrence of riparian vegetation and may extend farther than the above specified distances. This boundary can be determined by the Planning Director or Zoning Administrator.

5.0 Special-status Biological Resources

An evaluation was conducted for the potential presence or absence of habitat for special-status plant and animal species. CNDDDB RareFind (CDFW, 2019a), BIOS (CDFW, 2019b), and CNPS (CNPS, 2018) searches were completed for the 7.5-minute USGS Lower Lake quadrangle and the eight adjacent quadrangles. The aforementioned databases were queried for historical and existing occurrences of State- and federally-listed threatened, endangered, and candidate plant and animal species; species proposed for listing; and all plant species listed by the CNPS (Online 2019 inventory). In addition, a list of all federally-listed species that are known to occur or may occur in the vicinity was obtained from the USFWS’ IPaC database (USFWS, 2019a).

Table 1 in Appendix 2 includes all plant species reported from the queries, their preferred habitat, and if there is suitable habitat present within the study area for the species. Table 2 in Appendix 2 includes all animal species reported from the queries, their preferred habitat, and if there is suitable habitat present

within the study area for the species. The potential for occurrence of those species included on the list were then evaluated based on the habitat requirements of each species relative to the conditions observed during the field surveys.

Each species was evaluated for its potential to occur in the study area according to the following criteria:

- **None.** Species listed as having “none” are those species for which:
 - there is no suitable habitat present in the study area (that is, habitats in the study area are unsuitable for the species requirements [for example, elevation, hydrology, plant community, disturbance regime, etc.]).
- **Low.** Species listed as having a “low” potential to occur in the study area are those species for which:
 - there is no known record of occurrence in the vicinity, and
 - there is marginal or very limited suitable habitat present within the study area.
- **Moderate.** Species listed as having a “moderate” potential to occur in the study area are those species for which:
 - there are known records of occurrence in the vicinity, and
 - there is suitable habitat present in the study area.
- **High.** Species listed as having a “high” potential to occur in the study area are those species for which:
 - there are known records of occurrence in the vicinity (there are many records and/or records in close proximity), and
 - there is highly suitable habitat present in the study area.
- **Present.** Species listed as “present” in the study area are those species for which:
 - the species was observed in the study area.

5.1 Special-status Plant Species

Based on a review for special-status plant species, 110 special-status plant species have been reported from the region consisting of the Lower Lake quadrangle and the surrounding quadrangles. Of the special-status plant species reported for the region, 5 species have a high potential of occurrence, and 23 species have a moderate potential of occurrence for a total of 28 species with a moderate or high potential of occurring at the project site (See Appendix 2). Species with a moderate or high potential for occurrence within the study area are listed and described below:

Bent flowered fiddleneck (*Amsinckia lunaris*) is an annual herb in the Boraginaceae family. It is neither state nor federally listed, but is a BLM sensitive species with a CRPR of 1B.2 and a heritage rank of G2G3/S2S3. Its elevation range is reported from 3 to 795 meters above sea level. Within its range state-wide, its blooming period is reported as March through June. This species is reported in cismontane woodland, valley and foothill grassland, and coastal bluff scrub. Within the nine-quad search, one Rarefind occurrence is reported 2.3 miles north of the study area, with an observation date in 1938. Although suitable habitat may exist within the study area for this species, it was not detected.

Twig-like snapdragon (*Antirrhinum virga*) is a perennial herb in the Plantaginaceae family. It is neither state nor federally listed, but has a CRPR of 4.3 and a heritage rank of G3G4/S3S4. Its elevation range is reported

from 100 to 2,015 meters above sea level. Within its range state-wide, its blooming period is reported as June through July. This species is reported from chaparral and lower montane coniferous forest within rocky openings, often on serpentine. There are no Rarefind occurrences for this taxon within the nine-quad search, however, Calflora has several reported observations within 2 miles of the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Konocti manzanita (*Arctostaphylos manzanita* ssp. *elegans*) is a shrub in the Ericaceae family. It is neither state nor federally listed, but has a CRPR of 1B.3 and a heritage rank of G2T3/S3. Its elevation range is reported from 225 to 1,830 meters above sea level. Within its range state-wide, its blooming period is reported as March through May. This species is reported from chaparral, cismontane woodland, and lower montane coniferous forest on volcanic soils. Within the nine-quad search, numerous Rarefind occurrences are reported with the nearest approximately 3.4 miles west of the study area, with an observation date in 1951. Although suitable habitat may exist within the study area for this species, it was not detected.

Brewer's milk-vetch (*Astragalus breweri*) is an annual herb in the Fabaceae family. It is neither State nor federally listed, but has a CRPR of 4.2 and a heritage rank of G3/S3. Its elevation range is reported from 90 to 730 meters above sea level. This species is reported from chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland from grassy flats, meadows moist in the spring, and open slopes in chaparral. There are no Rarefind occurrences for this taxon within the nine-quad search, however, Calflora has a reported observation approximately 8 miles from the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Jepson's milk vetch (*Astragalus rattanii* var. *jepsonianus*) is an annual herb in the Fabaceae family. It is neither State nor federally listed, but is a BLM sensitive species with a CRPR of 1B.2 and a heritage rank of G4T3/S3. Its elevation range is reported from 175 to 1,005 meters above sea level. This species is reported from cismontane woodland, valley and foothill grassland and chaparral where it is found in grasslands or openings in chaparral, often on serpentine. Within the nine-quad search, several Rarefind occurrences are reported, with the nearest approximately 3.9 miles east of the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Rattan's milk-vetch (*Astragalus rattanii* var. *rattanii*) is a perennial herb in the Fabaceae family. It is neither State nor federally listed, but has a CRPR of 4.3 and a heritage rank of G4T4/S4. Its elevation range is reported from 30 to 825 meters above sea level. Within its range state-wide, its blooming period is reported as April through July. This species is reported from chaparral, cismontane woodland, and lower montane coniferous forest where it occurs on open grassy hillsides, gravelly flats in valleys, and gravel bars of stream beds. There are no Rarefind occurrences for this taxon within the nine-quad search, however, Calflora has several reported observations within Lake County. Although suitable habitat may exist within the study area for this species, it was not detected.

Rincon ridge ceanothus (*Ceanothus confusus*) is a shrub in the Rhamnaceae family. It is neither State nor federally listed, but is a BLM sensitive species with a CRPR of 1B.1 and a heritage rank of G1/S1. Its elevation range is reported from 75 to 1,065 meters above sea level. Within its range state-wide, its blooming period is reported as February through June. This species is reported from closed-cone coniferous forest, chaparral, and cismontane woodland where it is known from volcanic or serpentine soils on dry shrubby slopes. Within the nine-quad search, several Rarefind occurrences are reported, with the nearest approximately 9.7 miles southwest of the study area, with an observation date in 1940. Although suitable habitat may exist within the study area for this species, it was not detected.

Brandegee's eriastrum (*Eriastrum brandegeae*) is an annual herb in the Polemoniaceae family. It is neither State nor federally listed, but is a BLM sensitive species with a CRPR of 1B.1 and a heritage rank of G1Q/S1.

Its elevation range is reported from 410 to 845 meters above sea level. Within its range state-wide, its blooming period is reported as April through August. This species is reported from chaparral and cismontane woodland on barren volcanic soils, often in open areas. Within the nine-quad search, several Rarefind occurrences are reported, with the nearest immediately west of the City of Clearlake approximately 2.8 miles west of the study area, with an observation date in 2007. Although suitable habitat may exist within the study area for this species, it was not detected.

Tracy's eriastrum (*Eriastrum tracyi*) is an annual herb in the Polemoniaceae family. It is not federally listed but has a state listing of Rare and is a United States Forest Service (USFS) sensitive species. In addition, it has a CRPR of 3.2 and a heritage rank of G3Q/S3. Its elevation range is reported from 315 to 2,400 meters above sea level. Within its range state-wide, its blooming period is reported as May through July. This species is reported from chaparral, cismontane woodland, and valley and foothill grassland from gravely shale or clay, often in open areas. Within the nine-quad search, one Rarefind occurrence is reported approximately 10.8 miles northeast of the study area, with an observation date in 2009. Although suitable habitat may exist within the study area for this species, it was not detected.

Greene's narrow-leaved daisy (*Erigeron greenei*) is a perennial herb in the Asteraceae family. It is neither State nor federally listed, but has a CRPR of 1B.2 and a heritage rank of G3/S3. Its elevation range is reported from 90 to 835 meters above sea level. Within its range state-wide, its blooming period is reported as May through September. This species is reported from chaparral on serpentine and volcanic substrates, generally in shrubby vegetation. Within the nine-quad search, several Rarefind occurrences are reported, with the nearest approximately 10 miles southwest of the study area, with an observation date in 1940. Although suitable habitat may exist within the study area for this species, it was not detected.

Adobe lily (*Fritillaria pluriflora*) is a perennial (bulb) herb in the Liliaceae family. It is neither State nor federally listed, but is a BLM sensitive species with a CRPR of 1B.2 and a heritage rank of G2G3/S2S3. Its elevation range is reported from 45 to 945 meters above sea level. Within its range state-wide, its blooming period is reported as February through April. This species is reported from chaparral, cismontane woodland, and foothill grassland usually on clay soils, sometimes serpentine. Within the nine-quad search, several Rarefind occurrences are reported, with the nearest being approximately 4.8 miles northeast of the study area, with an observation date in 2010. Although suitable habitat may exist within the study area for this species, it was not detected.

Hall's harmonia (*Harmonia hallii*) is an annual herb in the Asteraceae family. It is neither State nor federally listed, but is a BLM sensitive species with a CRPR of 1B.2 and a heritage rank of G2/S2. Its elevation range is reported from 335 to 930 meters above sea level. Within its range state-wide, its blooming period is reported as April through June. This species is reported from chaparral in open, rocky areas, often on serpentine hills and ridges. Within the nine-quad search, several Rarefind occurrences are reported with the nearest being approximately 1.6 miles south of the study area, with an observation date in 1893. Although suitable habitat may exist within the study area for this species, it was not detected.

Mendocino tarplant (*Hemizonia congesta* ssp. *calyculata*) is an annual herb in the Asteraceae family. It is neither State nor federally listed, but has a CRPR of 4.3 and a heritage rank of G5T3/S3. Its elevation range is reported from 225 to 1,400 meters above sea level. Within its range state-wide, its blooming period is reported as July through November. This species is reported from cismontane woodland and valley and foothill grassland within open woods, forest and grassland, sometimes on serpentine. There is no Rarefind occurrence for this taxon within the nine-quad search, however, Calflora has one reported observation within 5 miles of the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Hayfield tarweed (*Hemizonia congesta* ssp. *congesta*) is an annual herb in the Asteraceae family. It is neither State nor federally listed, but has a CRPR of 1B.2 and a heritage rank of G5T2/S2. Its elevation range is reported from 5 to 520 meters above sea level. Within its range state-wide, its blooming period is reported as April through November. This species is reported from valley and foothill grassland within grassy hills and valleys, often in fallow fields and along roadsides. Within the nine-quad search, one Rarefind occurrence is reported along Highway 29, approximately 10 miles south of the study area, with an observation date in 1980. Although suitable habitat may exist within the study area for this species, it was not detected.

Northern California black walnut (*Juglans hindsii*) is a tree in the Juglandaceae family. It is neither State nor federally listed, but has a CRPR of 1B.1 and a heritage rank of G1/S1. Its elevation range is reported from 0 to 640 meters above sea level. Within its range state-wide, its blooming period is reported as April through May. This species is reported from riparian forest, and riparian woodland on deep alluvial soil associated with a creek or stream. Few extant native stands remain; although it is widely naturalized. Within the nine-quad search, one Rarefind occurrence is reported approximately 11.5 miles southeast of the study area, with an observation date in 2005. Although suitable habitat may exist within the study area for this species, it was not detected.

Colusa layia (*Layia septentrionalis*) is an annual herb in the Asteraceae family. It is neither State nor federally listed, but is a BLM sensitive species with a CRPR of 1B.2 and a heritage rank of G2/S2. Its elevation range is reported from 15 to 1,100 meters above sea level. Within its range state-wide, its blooming period is reported as April through May. This species is reported from chaparral, cismontane woodland, and valley and foothill grassland where it typically forms scattered colonies in fields and grassy slopes in sandy or serpentine soil. Within the nine-quad search, numerous Rarefind occurrences are reported with the nearest being approximately 1.2 miles north of the study area, with an observation date in 1999. Although suitable habitat may exist within the study area for this species, it was not detected.

Bristly Leptosiphon (*Leptosiphon acicularis*) is an annual herb in the Polemoniaceae family. It is neither State nor federally listed, but has a CRPR of 4.2 and a heritage rank of G3/S3. Its elevation range is reported from 55 to 1,500 meters above sea level. Within its range state-wide, its blooming period is reported as April through July. This species is reported from chaparral, cismontane woodland, coastal prairie, and valley and foothill grassland where it is found in grassy areas. There are no Rarefind occurrences for this taxon within the nine-quad search, however, Calflora has two reported observations within 5 miles of the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Large-flowered leptosiphon (*Leptosiphon grandiflorus*) is an annual herb in the Polemoniaceae family. It is neither State nor federally listed, but has a CRPR of 4.2 and a heritage rank of G3G4/S3S4. Its elevation range is reported from 5 to 1,200 meters above sea level. Within its range state-wide, its blooming period is reported as April through August. This species is reported from coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal dunes, coastal prairie, coastal scrub, and valley and foothill grassland where it occurs in open grassy flats, generally on sandy soil. There are no Rarefind occurrences for this taxon within the nine-quad search. Although suitable habitat may exist within the study area for this species, it was not detected.

Broad-lobed leptosiphon (*Leptosiphon latisectus*) is an annual herb in the Polemoniaceae family. It is neither State nor federally listed, but has a CRPR of 4.3 and a heritage rank of G4/S4. Its elevation range is reported from 170 to 1,500 meters above sea level. Within its range state-wide, its blooming period is reported as April through June. This species is reported from broadleaf upland forest and cismontane woodland from open or partially shaded grassy slopes. There are no Rarefind occurrences for this taxon within the nine-quad search, however, Calflora has several reported observations within Lake County. Although suitable habitat may exist within the study area for this species, it was not detected.

Milo Baker's lupine (*Lupinus milo-bakeri*) is an annual herb in the Fabaceae family. It is not federally listed but has a state listing of Threatened. In addition, it has a CRPR of 1B.1 and a heritage rank of G1Q/S1. Its elevation range is reported from 380 to 430 meters above sea level. Within its range state-wide, its blooming period is reported as June through September. This species is reported from cismontane woodland, and valley and foothill grassland in roadside ditches, along small streams, and in dry gravelly areas along roads. Within the nine-quad search, one Rarefind occurrence is reported approximately 13.5 miles northeast of the project area, with an observation date in 1985. Although suitable habitat may exist within the study area for this species, it was not detected.

Heller's bush mallow (*Malacothamnus helleri*) is a shrub in the Malvaceae family. It is neither State nor federally listed, but has a CRPR of 3.3 and a heritage rank of G3Q/S3. Its elevation range is reported from 305 to 635 meters above sea level. Within its range state-wide, its blooming period is reported as May through July. This species is reported from chaparral and riparian woodland, primarily on sandstone and gravel substrates. There are no Rarefind occurrences for this taxon within the nine-quad search however, Calflora has several reported observations within five miles of the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Mt. Diablo cottonweed (*Micropus amphibolus*) is an annual herb in the Asteraceae family. It is neither State nor federally listed, but has a CRPR of 3.2 and a heritage rank of G3G4/S3S4. Its elevation range is reported from 45 to 825 meters above sea level. Within its range state-wide, its blooming period is reported as March through May. This species is reported from valley and foothill grassland, cismontane woodland, chaparral, and broadleaf upland forest in bare, grassy, or rocky slopes. There are no Rarefind occurrences for this taxon within the nine-quad search, however, Calflora has several reported observations within Lake County. Although suitable habitat may exist within the study area for this species, it was not detected.

Navarretia cotulifolia (*Navarretia cotulifolia*) is an annual herb in the Polemoniaceae family. It is neither State nor federally listed, but has a CRPR of 4.2 and a heritage rank of G4/S4. Its elevation range is reported from 4 to 1,830 meters above sea level. Within its range state-wide, its blooming period is reported as May through June. This species is reported from chaparral, cismontane woodland, and valley and foothill grassland in adobe soils. There are no Rarefind occurrences for this taxon within the nine-quad search, however, Calflora has one reported observation within 2 miles of the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Jepson's navarretia (*Navarretia jepsonii*) is an annual herb in the Polemoniaceae family. It is neither State nor federally listed, but has a CRPR of 4.3 and a heritage rank of G4/S4. Its elevation range is reported from 175 to 855 meters above sea level. Within its range state-wide, its blooming period is reported as April through June. This species is reported from chaparral, valley and foothill grassland, and cismontane woodland from habitat edges, and drying flats. There are no Rarefind occurrences for this taxon within the nine-quad search, however, Calflora has one reported observation within 8 miles of the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*) is an annual herb in the Polemoniaceae family. It is neither State nor federally listed, but is a BLM sensitive species with a CRPR of 1B.1 and a heritage rank of G4T2/S2. Its elevation range is reported from 3 to 1,680 meters above sea level. Within its range state-wide, its blooming period is reported as April through July. This species is reported from cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, and lower montane coniferous forest from vernal pools and swales. Within the nine-quad search, numerous Rarefind occurrences are reported, with the nearest being approximately 1 mile west of the study area along Highway 53, with an observation date in 1945. Although suitable habitat may exist within the study area for this species, it was not detected.

Lake County stonecrop (*Sedella leiocarpa*) is an annual herb in the Crassulaceae family. It is both State and federally listed as endangered and has a CRPR of 1B.1 and a heritage rank of G1/S1. Its elevation range is reported from 515 to 640 meters above sea level. Within its range state-wide, its blooming period is reported as April through May. This species is reported from valley and foothill grassland, vernal pools, and cismontane woodlands from level areas that are seasonally wet and dry out in spring typically on substrate of volcanic origin. Within the nine-quad search, several Rarefind occurrences are reported, with the nearest approximately 5.4 miles southwest of the study area, with an observation date in 2011. Although suitable habitat may exist within the study area for this species, it was not detected.

Keck's checkerbloom (*Sidalcea keckii*) is an annual herb in the Malvaceae family. It is not State listed, but it is federally listed as endangered. In addition it has a CRPR of 1B.1 and a heritage rank of G2/S2. Its elevation range is reported from 85 to 505 meters above sea level. Within its range state-wide, its blooming period is reported as April through May. This species is reported from cismontane woodland and valley and foothill grassland on grassy slopes in blue oak woodland. Within the nine-quad search, one Rarefind occurrence is reported, approximately 16.5 miles southeast of the study area, with an observation date in 2002. Although suitable habitat may exist within the study area for this species, it was not detected.

Oval-leaved viburnum (*Viburnum ellipticum*) is a shrub in the Adoxaceae family. It is neither State nor federally listed, but has a CRPR of 2B.3 and a heritage rank of G4G5/S3?. Its elevation range is reported from 215 to 1,400 meters above sea level. Within its range state-wide, its blooming period is reported as May through June. This species is reported from chaparral, cismontane woodland, and lower montane coniferous woodland. Within the nine-quad search, one Rarefind occurrence is reported, approximately 4.9 miles southwest of the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

All special-status plant species reported from the Lower Lake and surrounding quadrangles were searched for, however, the species with moderate or high potential for occurrence were specifically searched for during the surveys. See Appendix 2, Table 1 for a description of the general habitat and microhabitat required for the species reported from the Lower Lake and surrounding quadrangles.

Surveys were conducted at a seasonally-appropriate time for all of the plant species expected to potentially occur within the study area. No special-status plant species were observed within the study area. It is unlikely that any species were missed; however, the findings in this report represent a "snapshot in time" and it is possible that false negative surveys for rare plant species could occur. This report documents the 2017, 2018, and 2019 field investigations, and the findings presented here are based on best professional judgment.

5.2 Special-status Animal Species

Based on a review of special-status animal species, 39 special-status animal species have been reported with the potential to occur in the region consisting of the Lower Lake quadrangle and the eight surrounding quadrangles. Of the special-status animal species potentially occurring in the region, 29 animal species are considered to have a no or low potential to occur at the project site and 10 species have a moderate to high potential (or are present). Species with a moderate or high potential for occurrence or documented as present within the study area are described below.

5.2.1 Amphibians and Reptiles

The western pond turtle (*Emys marmorata*) is a turtle in the Emydidae family. It is not listed under either federal or California endangered species acts, but is considered a species of special concern by CDFW and has a heritage ranking of G3G4/S3. This species is associated with permanent ponds, lakes, streams,

irrigation ditches, or permanent pools along intermittent streams in a wide variety of habitats. Elevations range from near sea level to 1,430 m. The western pond turtle needs basking sites and suitable banks or grassy upland areas. Several man-made stormwater detention ponds exist within the study area, however, constant disturbance, lack of basking sites, and unsuitable banks make it unlikely that this species would be present within the study area. Within the nine-quad search, several Rarefind occurrences are reported, with the nearest west of the City of Clearlake approximately 7 miles west of the study area, with an observation date in 2001. Although suitable habitat may exist within the study area for this species, it was not detected.

5.2.3 Fishes

Several special-status fish species occur within Lower Lake and surrounding quadrangles (See Table 2 in Appendix 2). No special-status fish species occur within or within the vicinity of the project area. Work within seasonal drainages is slated to occur during the dry season, with proper best management practices (BMPs) in place to prevent discharge. Project-related activities are not anticipated to have a significant impact on the special-status fish species.

5.2.2 Birds

The Cooper's hawk (*Accipiter cooperii*) is a bird in the Accipitridae family. It is not listed under either federal or California endangered species acts, but is on the CDFW watch list and has a heritage ranking of G5/S4. This species prefers dense stands of live oak, riparian deciduous or other forests near water, and nests and hunts through the tree canopy. The Cooper's hawk preys on small birds and mammals and will also take reptiles and amphibians. During hunting, it uses cover to hide and attack. Within the nine-quad search, one Rarefind occurrence is reported approximately 13.4 miles northeast of the study area, with an observation date in 1985. Although suitable habitat may exist within the study area for this species, it was not detected.

The osprey (*Pandion haliaetus*) is a bird in the Pandionidae family. It is not listed under either federal or California endangered species acts, but is on the CDFW watch list and has a heritage ranking of G5/S4. This species occurs near rivers, lakes, and coast where large numbers of fish are present. Ospreys are most common around major coastal estuaries and salt marshes. Within the nine-quad search, several Rarefind occurrences are reported surrounding the City of Clearlake, with the nearest approximately 4.8 miles to the northwest of the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

5.2.4 Insects

The western bumblebee (*Bombus occidentalis*) is a bumblebee in the Apidae family. It is not listed under either federal or California endangered species acts, but is a USFS sensitive species and has a heritage ranking of G2G3/S1. This species pollinates a wide variety of flowers and is known to gnaw through flowers to obtain nectar their tongues are too short to reach. Colonies nest in cavities or abandoned burrows. It was once common and widespread; however,, it has seriously declined, possibly due to disease. Within the nine-quad search, one Rarefind occurrence is reported approximately 11 miles southwest of the study area, with an observation date in 1960. Although suitable habitat may exist within the study area for this species, it was not detected.

5.2.5 Mammals

The pallid bat (*Antrozous pallidus*) is a bat in the Vespertilionidae family. It is not listed under either federal or California endangered species acts, but is considered a species of special concern by CDFW and has a heritage ranking of G5/S3. This species is locally common in low elevations in California. Habitats include grasslands, shrublands, woodlands, and forests with open, dry habitats with rocky areas for roosting. Within

the nine-quad search, several Rarefind occurrences are reported, with the nearest occurrence reported adjacent to the City of Clearlake approximately 3.8 miles to the northwest, with an observation date in 1945. Although suitable habitat may exist within the study area for this species, it was not detected.

The Townsend's big-eared bat (*Corynorhinus townsendii*) is a bat in the Vespertilionidae family. It is not listed under either federal or California endangered species acts, but is considered a species of special concern by CDFW and has a heritage ranking of G3G4/S2. This species is known to inhabit mines, caves and buildings where it establishes roosts and maternal colonies to raise young. They feed on a variety of insects. Within the nine-quad search, numerous Rarefind occurrences are reported, with the nearest occurrence reported adjacent to the City of Clearlake approximately 3.9 miles to the northwest, with an observation date in 1949. Although suitable habitat may exist within the study area for this species, it was not detected.

The western red bat (*Lasiurus blossevillei*) is a bat in the Vespertilionidae family. It is not listed under either federal or California endangered species acts, but is considered a species of special concern by CDFW and has a heritage ranking of G5/S3. This species roosts primarily in trees, less often in shrubs in edge habitats, adjacent to streams, fields, or urban habitats. Within the nine-quad search, one Rarefind occurrence is reported, approximately 7.9 miles to the southwest, with an observation date in 2000. Although suitable habitat may exist within the study area for this species, it was not detected.

The hoary bat (*Lasiurus cinereus*) is a bat in the Vespertilionidae family. It is not listed under either federal or California endangered species acts, and has a heritage ranking of G5/S4. This species prefers open habitats, or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. It roosts in foliage of medium to large trees, and feeds on moths and requires open water. This species was observed within the study area. See Appendix 3, 2019 Bat Survey Report results.

The long-eared myotis (*Myotis evotis*) is a bat in the Vespertilionidae family. It is not listed under either federal or California endangered species acts, but is considered a sensitive species by the BLM and has a heritage ranking of G5/S3. This species feeds on a variety of arthropods including moths, flies, spiders, and especially beetles. The long-eared myotis roosts singly, or in small groups in buildings, crevices, spaces under bark, and snags. Caves are used primarily as night roosts. Within the nine-quad search, one Rarefind occurrence is reported, approximately 8 miles to the southwest, with an observation date in 2000. Although suitable habitat may exist within the study area for this species, it was not detected.

The Yuma myotis (*Myotis yumanensis*) is a bat in the Vespertilionidae family. It is not listed under either federal or California endangered species acts, but is considered a sensitive species by the BLM and has a heritage ranking of G5/S4. This species is found in a variety of western lowland habitats, from arid thorn scrub to coniferous forest, but always close to standing water such as lakes and ponds. No Rarefind occurrences are reported from the Lower Lake nine-quad search area. This species was observed within the study area. See Appendix 3, 2019 Bat Survey Report results.

All special-status animal species reported from the Lower Lake and surrounding quadrangles were searched for; however, the species with moderate or high potential for occurrence were specifically searched for during the surveys. See Appendix 2, Table 2 for a description of the general habitat and microhabitat required for the species reported from the Lower Lake and surrounding quadrangles.

Two bat species reported within the scoping results (hoary bat and Yuma myotis) were observed during the protocol level bat surveys conducted during the 2019 survey effort (See Appendix 3, Bat Survey Report). These species do not have a special-status designation within California, but are included on scoping lists. No additional special-status animal species were observed during the survey efforts. It is unlikely that any

species were missed; however, the findings in this report represent a “snapshot in time” and it is possible that false negative surveys could occur. This report documents the 2017, 2018, and 2019 field investigations, and the findings presented here are based on best professional judgment.

5.3 Special-status Natural Communities and Habitats

Sensitive natural communities are habitats that are generally defined by vegetation type and geographical location, and are increasingly restricted in abundance and distribution. Recognition of natural communities is an ecosystem-based approach to maintaining biodiversity in California. Holland-type CNDDDB natural communities are habitat for numerous special-status plant and animal species. CDFW no longer updates their tracking of Holland-type CNDDDB natural communities and has since standardized alliance and association-level vegetation nomenclature for California to comply with the National Vegetation Classification System.

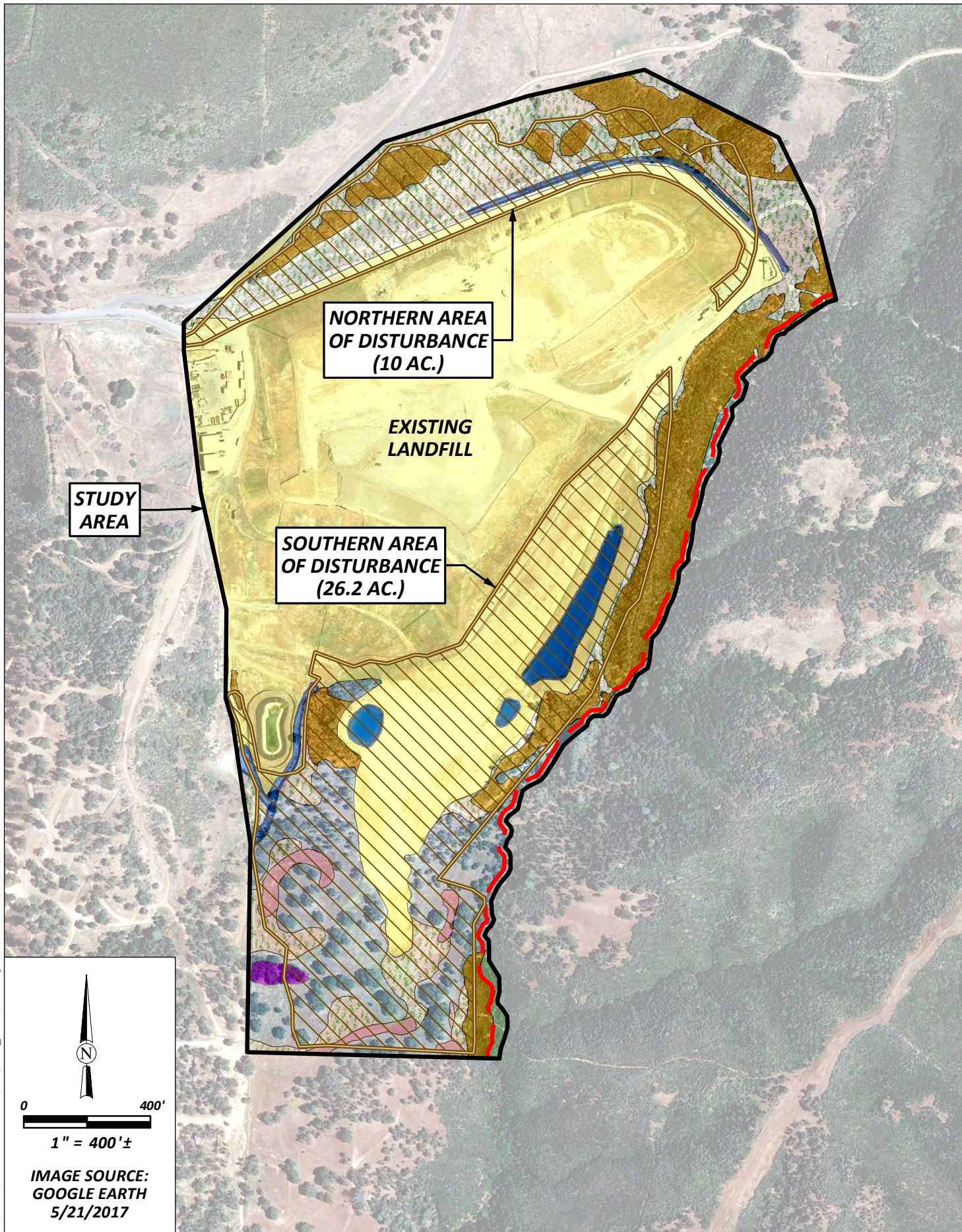
5.3.1 Natural Communities

Four natural communities (defined as vegetation communities) were observed within the study area, in addition to three semi-natural vegetation communities and mixed non-native grassland, disturbed ruderal species dominated areas, and mixed riparian woodland. Vegetation communities within the study area included *Adenostoma fasciculatum* Shrubland Alliance (Chamise chaparral), *Lasthenia californica*-*Plantago erecta*-*Vulpia microstachys* Herbaceous Alliance (California goldfields-dwarf plantain-six weeks fescue flower fields), *Quercus douglasii* Woodland Alliance (Blue oak woodland), and *Quercus douglasii* (*Lotus subpinnatus*-*Nassella pulchra* Association (Blue oak-purple needlegrass Association). Two of the vegetation communities are protected within the state of California, and each of these vegetation communities is discussed below. Additionally, the three semi-natural vegetation communities *Avena* (*barbata*, *fatua*) Semi-Natural Herbaceous Stands (Wild oat grasslands), *Bromus* (*diandrus*, *hordeaceus*) *Brachypodium distachyon* Semi-Natural Herbaceous Stands (Annual brome grasslands), and *Bromus tectorum* Semi-Natural Herbaceous Stands (Cheatgrass grassland) occur within the study area and are described below. The riparian woodland does not meet the criteria for a described vegetation community, but is described further below. Disturbed areas dominated by ruderal vegetation do not meet the definition of a vegetation community, however, species composition is described further below. See Appendix 6 for CNPS releve' field forms representing some of the vegetation communities present within the study area, specifically the blue oak woodland, riparian woodland, chamise chaparral, and non-native grassland.

Chamise chaparral is found within a wide range of conditions, and is the most characteristic and widespread chaparral species in the state. Chamise chaparral is well adapted to fire, and sprouts readily from a semi-buried lignotuber as well as a dormant seed bank following fire events. This vegetation community occurs across cismontane California in a variety of topographic settings from coastal bluffs to steep, lower montane slopes (Sawyer, 2009). Chamise chaparral has a rarity ranking of G5S5, meaning this vegetation community is demonstrably secure statewide and globally due to its worldwide and statewide abundance, and does not qualify for consideration under CEQA, nor is it considered a sensitive vegetation community. This vegetation community was observed on steep slopes across the entire study area (Appendix 1, Photo 11), and it represents approximately 10.71 acres (11.85 percent of the study area), of which approximately 4.42 acres (41 percent) will be impacted by the proposed project (Figure 3 for chamise chaparral extent, and Figure 4 for impact area).

California goldfields-dwarf plantain-six weeks fescue flower fields are known from slopes of all aspects on infertile shallow loam and clay soils. This vegetation community occurs throughout much of cismontane California and is adapted to the unpredictable conditions of the region's Mediterranean climate. This vegetation community is adapted to frequent fires and grazing, however, it does not tolerate soil disturbance, which typically leads to the area becoming dominated by non-native grasses. California

\\Willits2019\Projects\2019\419004-ESL-CEQA\GIS\PROJ_MXD\ USER: jsousa DATE: 8/22/19, 9:59AM



Eastlake Landfill
Natural Resources Assessment
Lake County, California

Potential Areas of Disturbance w/
Natural Communities & Stream Setback
SHN 419004.020

August 2019

NRA_Fig4_PotentialAreaOfDisturbanceDetail

Figure 4

goldfields-dwarf plantain-six weeks fescue flower fields has a rarity ranking of G4S4, meaning this vegetation community is represented by greater than 100 viable occurrences statewide and globally due to its worldwide and statewide abundance and does not qualify for consideration under CEQA; nor is it considered a sensitive vegetation community. This vegetation community was observed on gentle slopes within and adjacent to blue oak woodland and non-native grassland in the southern portion of the project area (see Figure 3). Within these areas there was a wide variety of native species, and native species were dominant (see Appendix 2, Table 3). It represents approximately 0.85 acres (0.94 percent of the study area), of which approximately 0.79 acres (93 percent) will be directly impacted by the proposed project, although it is likely that this vegetation community will be completely removed from the site as a result of the project, due to soil disturbance and non-native grass encroachment (see Figure 3 for flower fields extent, and Figure 4 for impact area).

Blue oak woodland is known from valley bottoms, foothills, rocky outcrops, and slopes, where it is found on shallow, infertile soils. It is widespread within California; however, development, agriculture, changes in fire regime, and non-native vegetation have reduced the extent and regeneration of blue oaks (Sawyer, 2009). Blue oak woodland has a rarity ranking of G4S4, meaning this vegetation community is known from over 100 viable occurrences globally and statewide and is not considered a sensitive vegetation community. Oak woodlands are protected by the Oak Woodlands Conservation Act (SB 1334) due to development pressure and lack of regeneration, and therefore require CEQA analysis and mitigation if a loss of oak trees occurs as a result of the proposed project. This vegetation community was observed on gentle slopes within the southern portion of the study area as well as along the stream on the eastern boundary of the project (see Figure 3 and Appendix 1, Photos 5-10). Herbaceous vegetation within the blue oak woodland varied, from complete non-native grass cover to areas with diverse assemblages of native herbaceous species, recorded in Appendix 2, Table 3. Blue oak woodlands represent approximately 10.47 acres (11.58 percent of the study area), of which approximately 7.71 acres (72 percent) will be impacted by the proposed project (Figure 3 for blue oak woodland extent and Figure 4 for impact area). Any impacts to blue oak woodlands will be mitigated as described in Section 7.0 Recommendations of this report.

Blue oak-purple needlegrass Association describes blue-oak woodland with well-developed native herbaceous species cover in the understory. This vegetation association was observed on a gentle north-facing slope on the south bank of a seasonal drainage (see Figure 3 and Appendix 1, Photo 10). Blue oak-purple needlegrass Association represents approximately 0.25 acres (0.28 percent of the study area), of which approximately 0.08 acres (32 percent) will be impacted by the proposed project. Blue oak-purple needlegrass Association does not have a special rarity designation and will be treated as blue oak woodland. Impacts to this vegetation association will be included within the mitigation calculations for blue oak woodland as described in Section 7.0 Recommendations of this report.

Three semi-natural vegetation communities were mapped within the study area. This included the wild oats grassland, annual brome grassland, and cheatgrass grassland. Wild oat grassland occurs within valley and foothill grasslands, rangelands, wastelands, and within openings (Sawyer, 2009). It was found within the project area on deeper soils and was prevalent throughout the majority of the study area (see Appendix 1, Photos 3, 5, 6, and 9). Annual brome grassland accounts for the largest acreage of grassland vegetation in cismontane California, and is found in all topographic settings in foothills, waste places, rangelands and woodland openings (Sawyer, 2009). Cheatgrass grassland is found in abandoned fields, eroded areas, overgrazed rangeland, road edges, waste places, foothills, and lower montane slopes. These three semi-natural vegetation communities are mapped as non-native grassland, which included areas dominated by soft chess, ripgut brome, cheatgrass, red brome (*Bromus madritensis* ssp. *rubens*), medusa head grass, wild oat, dogtail grass (*Cynosurus echinatus*), Italian wildrye (*Festuca perennis*), and rattail grass (*Festuca myuros*), among others (see Figure 3). Native species were present with low coverage (see Appendix 2, Table 3 for a list of all botanical species observed), however, common native species observed in these non-native

grasslands included blue dicks, California plantain, purple sanicle, California goldfields, and popcorn flower, among many others. Non-native grassland represents approximately 12.10 acres (13.39 percent of the study area), of which approximately 8.24 acres (68 percent) will be impacted by the proposed project (see Figure 3 for non-native grassland extent, and Figure 4 for impact area).

Riparian woodland observed within and adjacent to the study area was limited in extent, but represented additional diversity and habitat supported by residual moisture, or subsurface flow following cessation of winter stream flows. Dominant species within this woodland include California ash (*Fraxinus dipetala*), blue oak, red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), California buckeye (*Aesculus californica*), and grey pine (*Pinus sabiniana*). This diverse assemblage of trees does not meet the criteria for a specific vegetation community; however, it reflects important habitat, canopy cover, and slope stabilization along the unnamed stream on the eastern border of the study area. While this vegetation assemblage is not protected under CEQA, the County of Lake has an intermittent stream setback of 20 feet from the top of bank, or within areas adjacent to riparian vegetation, the boundary is defined as the outer limit of the occurrence of riparian vegetation, which may extend farther than the 20 feet. See Section 4.3.1 County of Lake: Regulations for Waterway or WW Combining District for regulatory language, and Section 5.3.2 Wetlands for additional information. Riparian woodland represents approximately 0.47 acres (0.52 percent of the study area) (see Figure 3 and Appendix 2, Photos 11 and 12). It is not anticipated that this riparian woodland vegetation will be impacted by the proposed project, as the work is estimated to occur at a minimum of 50 feet from the stream, which is further than the required stream and riparian woodland setbacks (See Figure 4 for impact area and Riparian setback).

Disturbed areas associated with on-going landfill operation are dominated by ruderal, primarily non-native species. Dominant species observed within these disturbed areas included: bur chervil (*Anthriscus caulcalis*), Italian thistle (*Carduus pycnocephalus*), yellow star thistle (*Centaurea solstitialis*), red-stemmed filaree, hoary mustard (*Hirschfeldia incana*), prickly lettuce (*Lactuca serriola*), and crimson clover, as well as the non-native grasses mentioned earlier, among others. Disturbed area represents approximately 54.27 acres (60 percent of the study area) (see Figure 3, and Appendix 1, Photos 1-3).

Impacts to blue oak woodlands will be appropriately mitigated as described in Section 7.0 Recommendations and appropriate buffers and BMPs should be established and maintained for the duration of the project to minimize impacts to riparian areas. See Section 7.0 Recommendations for recommended mitigation measures, buffers and setbacks.

5.3.2 Wetlands

A site-specific wetland delineation was conducted within the study area on February 7 and April 16 by SHN botanist, soil scientist, and fisheries biologist. No three-parameter wetlands were documented within the study area. Steep slopes and well-drained soils make it unlikely that wetland conditions would form within the study area. A man-made drainage ditch north of the study area was dominated by hydrophytic vegetation and displayed wetland hydrology, due to the function of the drainage ditch; however, hydric soils were not present within the soils found in the ditch, indicating that it may drain too quickly to support the development of hydric soils (see Appendix 1, Photos 15 and 16). Four test pits were excavated within this drainage feature to ascertain the presence of wetland parameters. Their wetland determination data forms are attached within Appendix 7. The rest of the study area was investigated for wetland conditions; however, no area was found to collect water in sufficient quantity or duration to support hydrophytic vegetation, wetland hydrology, hydric soil development or suppress the growth of vegetation resulting in a sparsely vegetated concave surface. Therefore, no wetlands exist within the project area.

Several man-made stormwater detention ponds occur within the study area, designed to capture and hold stormwater runoff from the site. These features were not delineated due to the anthropogenic creation and

ongoing use. In addition, regular maintenance and use has prevented the establishment of vegetation, and hydric soil has not yet developed due to the recent creation of these features.

5.3.3 OHWM and Streams

An OHWM delineation was conducted on June 23, 2017, and April 16, 2019. Several streams and seasonal drainages within the study area have an OHWM, and are considered jurisdictional features. A rock lined stormwater collection system at the base of the existing landfill was not delineated as a jurisdictional feature due to the constructed nature of the feature, although stormwater from this feature is likely to flow to Molesworth Creek east of the project area.

Project-related work that occurs within or adjacent to creeks and seasonal drainage features that flow into WoUS or WoS will likely fall under the jurisdiction of the U.S. Clean Water Act, California Porter-Cologne Water Quality Control Act, and California Fish and Game Code 1600. A third-order intermittent stream exists along the eastern boundary of the study area, while a second-order intermittent seasonal drainage exists within the center of the study area (Figure 3).

The third-order intermittent stream to the east of the landfill (Appendix 1, Photo 12) is jurisdictional, as evidenced by an OHWM (see Appendix 7, OHWM data sheets 4 and 5), and will be subject to Federal Clean Water Act and/or California's Porter-Cologne Water Quality Control Act; however,, the majority of the stream is outside of the project's area of potential effects and is not proposed to be impacted by the project. The stream maintains surface flows into the early/mid-summer as evidenced by flowing water during the late June site visit. After surface flows cease, residual moisture, or subsurface flow, supports a narrow band of riparian vegetation. Intermittent streams normally flow only in direct response to rainfall and are dry for large parts of the year. Furthermore, the stream was designated intermittent and recorded as such by a dash and three dots symbol on the largest scale United States Geological Survey map most recently published (USGS, 2018) as required by the County for determination of appropriate stream setbacks. The County has a setback of 20 feet from the top of bank of intermittent streams. Or within areas adjacent to riparian vegetation, the boundary is defined as the outer limit of the occurrence of riparian vegetation, which may extend farther than the 20 feet. See Section 4.3.1 County of Lake: Regulations for Waterways or WW Combining District for regulatory language. It is not anticipated that the stream and associated riparian woodland vegetation will be impacted by the proposed project, as the work is estimated to occur at a minimum of 50 feet from the stream, which is further than the required stream and riparian woodland setbacks.

The second-order intermittent seasonal drainage, a tributary of Molesworth Creek, is jurisdictional, as evidenced by an OHWM (see Appendix 7, OHWM data sheets 1-4) and will be subject to Federal Clean Water Act and/or California's Porter-Cologne Water Quality Control Act. This seasonal drainage extends for 450 feet within the center of the proposed borrow site, and approximately 330 feet of streambed with an OHWM will be impacted by the project (see Appendix 1, Photos 13 and 14). This seasonal drainage is not recorded on the United States Geological Survey map, and is not subject to County setbacks; however, impacts to this intermittent seasonal drainage will need to be mitigated as described in Section 7.0 Recommendations.

Several swales and road-related erosional features exist within the northern portion of the study area on the steep slope of Quackenbush mountain. These features were mapped on Figure 3; however, they were not mapped as jurisdictional features due to the lack of OHWM characteristics, and close association with roadway erosion.

6.0 Conclusions

The purpose of this report was to assess the biological resources and habitat available within the study area, and to evaluate project-related impacts. The habitat value and availability were assessed for special-status species and sensitive natural communities that could occur within the study area. See Section 7.0 Recommendations for avoiding and mitigating impacts.

6.1 Special Plant Status Species

Of the 110 special-status plant species potentially occurring in the Lower Lake and surrounding quadrangles, 5 are considered to have a high potential of occurrence and 23 species are considered to have a moderate potential of occurrence. Site investigations were conducted during appropriate seasons for detecting the species with moderate or high potential for occurrence. No special-status plant species were observed within the study area; therefore, the project is not anticipated to directly impact special-status plant species potentially occurring within the vicinity of the project area. Indirect impacts to special-status plant species will result from a loss of available habitat; however, mitigation described in Section 7.0 Recommendations for oak woodland and stream impacts will reduce impacts to less than significant.

6.2 Special Wildlife Status Species

Of the 39 special-status animal species reported from the Lower Lake and surrounding quadrangles, 10 animal species are considered have a moderate to high potential of occurrence or were documented as present within the study area. Two bat species reported during the scoping effort were observed within the project area, the hoary bat and the Yuma myotis. These species are not considered special-status species within the state of California and are not protected under CEQA. Current use of the area as a landfill will not change and the mosaic of surrounding habitat makes it unlikely that the impact to potential habitat onsite will significantly impact the foraging habitats and roosting of these species following removal of vegetation. It is not anticipated that the proposed project will significantly impact these species; however, potential impacts can be minimized to less than significant by conducting vegetation removal from September 1 to October 15, following summer roosting and rearing of young, and prior to hibernation. Impacts to oak woodland will be mitigated as described below. No special-status animal species were observed within the study area; therefore, the project is not anticipated to directly impact any special-status animal species potentially occurring within the vicinity of the project. Indirect impacts to special-status animal species will result from a loss of available habitat; however, mitigation described in Section 7.0 Recommendations for oak woodland and stream impacts will reduce impacts to less than significant.

6.3 Sensitive Natural Communities

The following three special-status natural communities were observed within the study area (Figure 3):

Quercus douglasii Woodland Alliance (Blue oak woodland) and *Quercus douglasii*/*Lotus subpinnatus*-*Nassella pulchra* Association (Blue oak-purple needlegrass Association), both of which are designated protected woodlands under SB1334: Oak Woodlands Conservation Act.

Mixed riparian woodland which is designated a protected habitat under Lake County zoning Waterway combining district protected riparian vegetation.

- Blue oak woodlands represent approximately 10.47 acres (11.58 percent of the study area), of which approximately 7.71 acres (72 percent) will be impacted by the proposed project.
- Blue oak-purple needlegrass Association represents approximately 0.25 acres (0.28 percent of the study area), of which approximately 0.08 acres (32 percent) will be impacted by the proposed project.

- Riparian woodland represents approximately 0.47 acres (0.52 percent of the study area). It is not anticipated that the riparian woodland will be impacted by the project with the implementation of proper setbacks.

See Figure 3 for a map of all vegetation communities and habitat areas found within the study area. See Figure 4 for a map of the vegetation communities and the proposed impacts to those vegetation communities as a result of this project.

Impacts to special-status vegetation communities will be mitigated for as described in Section 7 Recommendations of this report which will result in a less-than-significant impact to special-status natural communities.

6.4 Nesting Birds

All locations with a shrub or tree canopy layer within the study area may provide suitable nesting habitat for a diverse assemblage of migratory birds. Any impacts to woody vegetation including chamise chaparral, blue oak woodland, and riparian woodland may impact nesting birds within the project area. See Section 7.0 Recommendations for measures to minimize impacts to the nesting birds onsite.

6.5 Impacts on Wildlife Movement

Wildlife movement corridors within the study area are expected to be concentrated within riparian or seasonal drainage corridors, and within uninterrupted vegetated areas and oak woodlands. The study area is also known to be an important flyover location for migratory birds using Clear Lake as a stopover location; however, it is unlikely that these species would stop within the study area. Disturbance should remain at a minimum 20 feet from the top of bank associated with the intermittent stream along the eastern boundary of the project area, and should if possible be 50 feet from the top of bank to minimize impacts to wildlife movement corridors. The project will impact a seasonal drainage and oak woodland that may be used for local wildlife movement. It is not anticipated that the project will significantly impact wildlife corridors with the implementation of mitigation contained in Section 7.0 Recommendations for the loss of blue oak woodland and the seasonal drainages in addition to observing the maximum setback from the intermittent stream along the eastern boundary of the study area.

6.6 Wetlands and Riparian Habitats

No three parameter jurisdictional wetlands were observed within the study area; therefore, the project will not impact jurisdictional wetlands.

Jurisdictional waters, as evidenced by an OHWM, were observed within and adjacent to the project area. A third-order intermittent stream exists along the eastern boundary of the project area and supports scattered areas of riparian woodland and a well-developed active channel and OHWM. Stream setbacks and appropriate BMPs to minimize stormwater and erosion will be observed, which will reduce impacts to this waterway.

A second-order seasonal drainage exists within the center of the proposed borrow area, with approximately 450 feet of jurisdictional waters present within the study area as evidenced by an OHWM. Of the 450 feet within the study area, approximately 330 feet will be impacted by the project (see Figure 4). These impacts are unavoidable and will result in the complete removal of this seasonal drainage within the project area. Impacts to the seasonal drainage will be mitigated as described in Section 7.0 Recommendations.

7.0 Recommendations

- Project-related vegetation clearing should occur outside the bird nesting season, which is generally considered to be March 15 through August 15. If project-related brush clearing or structural work on buildings within the vicinity of nesting bird habitat must occur during the breeding season, nesting bird surveys should be performed in those locations by a qualified biologist to ensure that active nests are not destroyed.
- Consider conducting vegetation removal between September 1 and October 15, following summer roosting and rearing of young, and prior to hibernation to reduce impacts to bat species.
- Impacts to oak woodlands will be mitigated according to the guidance contained within the Oak Woodlands Conservation Act which states that:

If a county determines that there may be a significant effect to oak woodlands, the county shall require one or more of the following oak woodland mitigation alternatives to mitigate the significant effect of the conversion of oak woodlands:

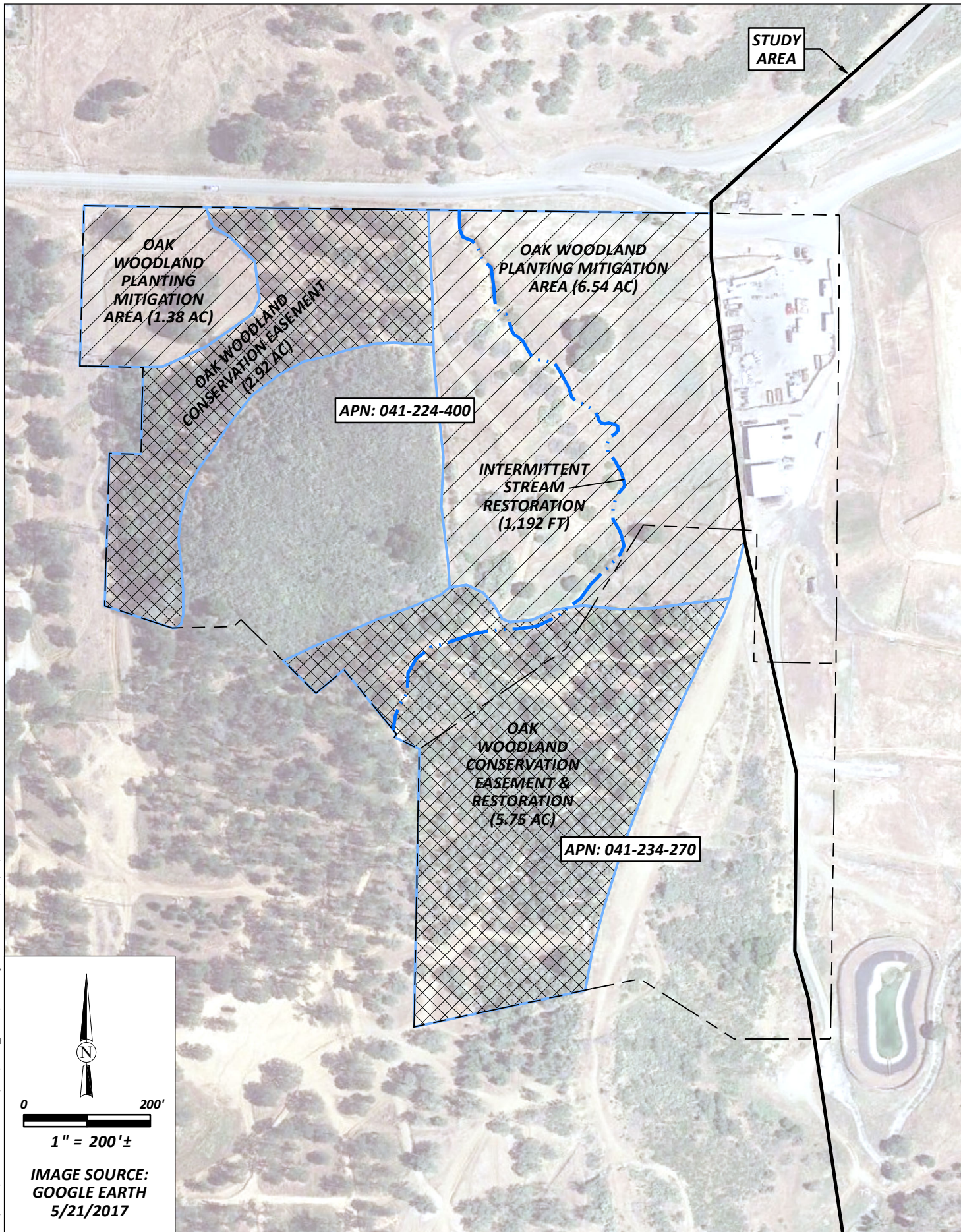
- 1) Conserve oak woodlands through the use of conservation easements.*
- 2) (a) Plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees.
(b) The requirement to maintain trees terminates seven years after the trees are planted
(c) Mitigation shall not fulfill more than one-half of the mitigation requirement for the project.
(d) The requirements imposed may be used to restore former woodlands*
- 3) Contribute funds to the Oak Conservation Fund for the purpose of purchasing oak woodlands conservation easements.*
- 4) Other mitigation measures developed by the county.*

The proposed project will impact (remove) 7.79 acres of well-developed oak woodland. Removal of the 7.79 acres of oak woodland will be mitigated through the establishment of a conservation easement, planting additional oak woodland, and restoration of existing oak woodland. Mitigation will be detailed within a Mitigation Monitoring and Reporting Plan (MMRP). Key points are described below:

Planting and establishment of additional oak woodland will occur within a suitable location to support the development of oak woodland, such as the County-owned parcel immediately adjacent to the Landfill east of the operations and recycling buildings (see Figure 5). This area is currently characterized by non-native grassland and has soils suitable for the support of oak woodland establishment. A total of 7.8 acres of oak woodland would be replanted as part of the mitigation for this project. Replanting oak woodland on the parcel adjacent to the landfill would ensure that habitat is still available for species displaced by the implementation of the project.

A total of 7.8 acres of existing oak woodland would be put into a conservation easement as mitigation for this project in addition to the 7.8 acres of oak woodland planting. Over eight acres of mature oak woodland exists on parcels adjacent to the landfill, specifically the parcels immediately east of the operations and recycling buildings (see Figure 5). Placing these oak woodlands into a conservation easement would help protect oak woodlands in the vicinity of the project from further disturbance. Some of these woodlands have been degraded by OHV use, and have large areas of erosion, gulying, and loss of herbaceous species diversity. Part of the mitigation for oak woodland loss would be the restoration of these woodlands and the permanent protection of these areas from

\\Willits2019\Projects\2019\419004-ESL-CEQA\GIS\PROJ_MXD\ USER: jsousa DATE: 8/22/19, 10:02AM



Eastlake Landfill
Natural Resources Assessment
Lake County, California

Proposed Mitigation Area

SHN 419004.020

August 2019

NRA_Fig5_ProposedMitigationArea

Figure 5

vehicular travel using fencing, boulders, and signage. Native herbaceous vegetation would be planted in this area. At a minimum, oak woodland mitigation plantings and restoration area would be monitored for seven years, as required by the Oak Woodland Conservation Act.

Oak woodland planting and establishment, conservation easements, and restoration would result in a total of 15.6 acres of oak woodland protection, representing a 2:1 mitigation ratio for the loss of 7.79 acres of blue oak woodland. Details of the mitigation effort will be documented in the Eastlake Landfill Mitigation Monitoring and Reporting Plan (MMRP) to be developed for this project. This includes specific mitigation boundaries, number of trees, timing of planting, type of fencing, irrigation requirements, and monitoring details.

- Impacts to jurisdictional waters will be mitigated through the restoration of 1,000 linear feet of seasonal drainage comparable to that being lost as a result of this project. This represents a 3:1 replacement for the loss of 330 linear feet of jurisdictional waters as a result of this project. A highly degraded and eroded seasonal drainage within the County-owned parcel immediately east of the operations and recycling buildings provides the opportunity for restoration, with over 1,000 linear feet in need of restoration within the parcel (see Figure 5). Mitigation details and restoration effort will be described within the Eastlake Landfill MMRP to address impacts to jurisdictional waters as a result of this project.
- Potential impacts to the intermittent stream along the eastern edge of the landfill will be avoided by providing adequate setbacks from the stream and associated riparian woodlands. A 50-foot buffer is recommended to minimize impacts, however, a 20-foot buffer is the minimum buffer required except where riparian woodland vegetation exceeds this. Where project activities will occur within close proximity (50 feet or less) to the intermittent stream, these resources should be demarcated by high-visibility construction fencing during the project construction period in a manner sufficient to avoid unintentional impacts.
- Limit ground disturbance and vegetation clearing to the minimal extent necessary to accomplish project goals.
- Use native and locally-sourced plant material for revegetation if needed.
- All BMPs detailed within the project description shall be adhered to in order to reduce impacts during construction.

8.0 References

- Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds). (2012). *The Jepson Manual: Vascular Plants of California, Second Edition*. Berkeley, CA:University of California Press, Berkeley.
- Calflora. (2019). "Calflora" database. Berkeley, CA:Calflora. Accessed August 2019 at: <http://calflora.org/>.
- California Department of Fish and Wildlife. (1984). "California Endangered Species Act. Fish and Game Code sections 2070, 2080, 2785." Sacramento, CA:CDFW.
- . (1994). "A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1616, Fish and Game Code." Sacramento, CA:CDFW.
- . (1991). "Natural Community Conservation Planning Act. Fish and Game Code Section 2800." Sacramento, CA:CDFW.
- . (1998). "Fish and Game Code Sections 1900-1913, 3503, 3513." Sacramento, CA:CDFW.

- . (2018a). "Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities." Accessed July 2019 at:
https://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf.
- . (2018b). Vegetation Classification and Mapping Program (VegCAMP), "Natural Communities List." Sacramento, CA:CDFW. Accessed July 2019 at:
http://www.dfg.ca.gov/biogeodata/vegcamp/natural_communities.asp.
- . (2019a). "California Natural Diversity Database (CNDDDB)." Accessed July 2019 at:
<http://www.dfg.ca.gov/biogeodata/cnddb/>. Sacramento, CA:CDFW.
- . (2019b). "Biogeographic Information and Observation System (BIOS), Version 5.77.14." Sacramento, CA:CDFW. Accessed July 2019 at: <http://bios.dfg.ca.gov/>.
- . (2019c). "Special Vascular Plants, Bryophytes, and Lichens List." Sacramento, CA:CDFW.
- . (2019d). "Special Animals List." Sacramento, CA:CDFW.
- California Native Plant Society. (2018). "CNPS Rare Plant Program, Inventory of Rare and Endangered Plants (online edition, v8-02)." Sacramento, CA:CNPS. Accessed April 2018 at:
<http://www.rareplants.cnps.org>.
- California Natural Resources Agency. (1970). "California Environmental Quality Act. CCR: Title 14, Div. 6, Chap. 3, Appendix G; Sections 15125(c) and 15380(d)." Sacramento, CA:CNRA.
- California Public Resources Code. (2004). SB1334 Oak Woodlands Conservation Act, Section 21083.4, Chapter 732. Sacramento, CA. Accessed July 2019 at:
[leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=200320040SB1334](http://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=200320040SB1334).
- Consortium of California Herbaria. (2019). "Consortium of California Herbaria" database. Berkeley, CA:CCH. Accessed July 2019 at: <http://ucjeps.berkeley.edu/consortium/>.
- County of Lake. (2014). *Lake County Zoning Ordinance: Article 37 Waterway Combining District* (Amended 2014). Lakeport, CA:County of Lake.
- Google Earth. (5/21/2017), Lake County, California. 38.9486 N and -122.6018 W, Accessed July, 2019. NR: Google Earth.
- Kollmorgen Instruments Corporation. (1998). *Munsell Soil Color Charts*. Baltimore, MD:Macbeth Division of Kollmorgen Instruments Corporation.
- McCullough, Dale R. (ed). (1996). *Metapopulations and Wildlife Conservation*. Washington D.C.:Island Press.
- National Oceanic & Atmospheric Administration, National Climatic Data Center. (2019). NOAA/NCDC Database, Clearlake 4 SE Station, CA US. Accessed July 2019 at: <https://www.ncdc.noaa.gov/cdo-web/datatools/normals>.
- Natural Resources Conservation Service, United States Department of Agriculture. (2019) Web Soil Survey. Accessed August 2019 at: <https://websoilsurvey.sc.egov.usda.gov/>.
- Sawyer, J.O., T. Keeler-Wolf, and J. Evans. (2009). *A Manual of California Vegetation, Second Edition*. Sacramento, CA:CNPS Press.
- State Water Resource Control Board. (1969). "Porter-Cologne Water Quality Control Act. CWC Section 7." Sacramento, CA:SWRCB.
- Thomson, R.C. (2016). California Amphibian and Reptile Species of Special Concern. Oakland, CA: University of California Press, co-published with California Department of Fish and Wildlife.

- U. S. Army Corps of Engineers Environmental Laboratory. (January 1987). *Corps of Engineers Wetlands Delineation Manual: Wetlands Research Program Technical Report Y-87-1*. Vicksburg, MS:USACE.
- . (2010). *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountain, Valleys, and Coast Region*, J.S. Wakeley, R.W. Lichvar, and C.V. Noble (eds) ERDC/EL TR-08-03. Vicksburg, MS: USACE Research and Development Center.
- . (2014). *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States*, M. K. Mersel and R. W. Lichvar (eds) ERDC/CRREL TR-14-13. Vicksburg, MS: USACE Research and Development Center.
- . (2016). *Western Mountains, Valleys, and Coast: 2016 Regional Wetland Plant List*, Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin (eds), ERDC/CRREL. Vicksburg, MS: USACE Research and Development Center.
- U.S. Army Corps of Engineers/Environmental Protection Agency. (2008). "Clean Water Act Jurisdiction." Washington, D.C.:USACE/EPA.
- U.S. Department of Agriculture, Natural Resources Conservation Service. (2017). *Field Indicators of Hydric Soils in the United States, Version 7.0*. Hurt, G.W. and L.M. Vasilas (eds.). NR: USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils.
- . (2019). Soil Mapping portal. Accessed August 2019 at: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.
- U.S. Environmental Protection Agency. (2002). "Clean Water Act of 1972, 33 USC § 1251, 1344 et seq." Washington, D.C.:EPA.
- . Section 328, 401, 404 of the Clean Water Act, 33 USC § 1341, 1344. Washington, D.C.:EPA.
- U.S. Fish and Wildlife Service. (1918). "Migratory Bird Treaty Act. 50 CFR 21, 16 USC 703." Washington, D.C.:USFWS.
- . (1934). "The Fish and Wildlife Coordination Act (16 USC Sections 661-667e, March 10, 1994, as amended 1936, 1946, 1947, 1949, 1958, 1965, 1978, and 1995)." Washington, D.C.:USFWS.
- . (1973). "Endangered Species Act. 16 USC 1532, 16 USC 1531, 1536, 50 CFR 17.3." Washington, D.C.:USFWS.
- . (2019a). Information, Planning and Conservation System (IPAC), "Trust Resources List." Washington D.C.:USFWS. Accessed July 2019 at: <https://ecos.fws.gov/ipac/location/index>.
- . (2019b). "National Wetland Inventory." Washington D.C.:USFWS. Accessed July 2019 at: <http://fws.gov/wetlands/data/mapper.html>.
- . (2019c). Critical Habitat Portal. Accessed July 2019 at: <http://ecos.fws.gov/crithab/>.
- U.S. Geological Survey. (2018). Lower Lake 7.5-Minute Quadrangle. NR:USGS. Accessed July 2019 at: <https://ngmdb.usgs.gov/topoview/>
- University of California, Berkeley. (2019). "Jepson eFlora." Accessed July 2019 at: <http://ucjeps.berkeley.edu/eflora/>.
- Whitaker, Doug and R.L. Knight (eds). (Summer 1998). *Understanding Wildlife Responses to Humans. Wildlife Society Bulletin, Vol. 26, No. 2.* pp. 312-317. Bethesda, MD:Wildlife Society.

Site Photographs

1



Photo 1: Looking south from landfill towards borrow area and detention pond. Note oak woodlands adjacent to borrow area. Photo taken April 2017.



Photo 2: The borrow area, looking north and up toward the landfill. Photo is representative of most disturbed areas at Eastlake Sanitary Landfill. Photo taken April 2017.



Photo 3: Looking north toward existing landfill from within the proposed borrow area. Note soil disturbance associated with ongoing landfill operations. Photo taken April 16, 2019.



Photo 4: Looking north upslope at Quackenbush Mountain. Photo taken directly north of the landfill and landfill access road. Note extensive yellow star thistle infestation. Photo taken June 2017.



Photo 5: top of the slope within the study area looking northeast. Note well-developed herbaceous layer, as well as soil disturbance along the northern portion of the study area. Photo taken April 16, 2019.



Photo 6: Looking southeast within the proposed borrow area. Note open herbaceous-dominated areas surrounded by well-developed blue oak woodland. Photo taken April 16, 2019.



Photo 7: Looking northwest into blue oak woodland down slope of existing borrow area. Note mature blue oak trees and thick herbaceous layer. Photo taken April 2017.



Photo 8: Looking south towards the seasonal drainage. Note well-developed blue oak woodlands. Photo taken June 25, 2019.



Photo 9: Looking southeast within the study area across the seasonal drainage. Note dominance of the open grassland by medusa head (*Elymus caput-medusae*, golden color in foreground). Also note well-developed blue oak woodland in background. Native herbaceous species dominate the understory of this section of blue oak woodland, including purple needlegrass. Photo taken June 25, 2019.



Photo 10: Looking west within blue oak woodland south of the seasonal drainage. Area is dominated by native herbaceous species and is characterized by multi-aged blue oak. Photo taken June 25, 2019.



Photo 11: Habitat adjacent to the Eastlake Sanitary Landfill, looking east over adjacent drainage area. Note extensive chamise dominated chaparral, oak woodlands, and larger trees associated with the drainage. Photo taken April 2017.



Photo 12: Drainage/riparian area to the east of the project area. Note overhanging vegetation and flowing water. Photo taken April 2017.



Photo 13: Looking west within the study area adjacent to the seasonal drainage. Note sparsely vegetated channel roughly corresponding with the OHWM at this location. Photo taken April 16, 2019.



Photo 14: Seasonal drainage looking east, upstream. Note eroded channel corresponding with OHWM at this location. Photo is taken of OHWM Point #2 represented on Figure 3. Photo taken April 16, 2019.



Photo 15: Looking west across area investigated for wetland conditions. Note test pit in foreground and standing water. Photo taken February 2018.



Photo 16: Looking east across area investigated for wetland conditions, near the location of TP4. Note lack of standing water. Photo taken February 2018.

Species Lists

2

Table 1
Regionally-Occurring Special-status Plant Species Scoping List CNDDDB, CNPS, IPaC (July 29, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Scientific Name	Common Name	Family	Bloom Period	Heritage Ranks	FedList	CalList	Other Status	Rare Plant	General Habitat	Micro-Habitat	Potential of Occurrence
<i>Allium fimbriatum</i> var. <i>purdyi</i>	Purdy's onion	Alliaceae	Apr-Jun	G4G5T3 / S3	None	None	--	4.3	Cismontane woodland, chaparral.	Open, rocky places usually in serpentine chaparral; 300-600 m.	Low
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	Boraginaceae	Mar-Jun	G2G3 / S2S3	None	None	BLM_S	1B.2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub.	3-795 m.	High
<i>Antirrhinum subcordatum</i>	dimorphic snapdragon	Plantaginaceae	Apr-Jul	G3 / S3	None	None	USFS_S	4.3	Chaparral, lower montane coniferous forest.	Generally on serpentine or shale in foothill woodland or chaparral on S- and W-facing slopes. 185-800 m.	Low
<i>Antirrhinum virga</i>	twig-like snapdragon	Plantaginaceae	Jun-Jul	G3G4 / S3S4	None	None	--	4.3	Chaparral, lower montane coniferous forest.	Rocky openings; often on serpentine. 100-2015 m.	Moderate
<i>Arabis blepharophylla</i>	coast rockcress	Brassicaceae	Feb-May	G4 / S4	None	None	--	4.3	Broadleaf upland forest, coastal prairie, coastal scrub, coastal bluff scrub.	Rocky sites. 3-1100 m.	Low
<i>Arabis modesta</i>	modest rockcress	Brassicaceae	Mar-Jul	G3 / S3	None	None	--	4.3	Chaparral, lower montane coniferous forest.	Intergrades with <i>A. oregana</i> in Siskiyou County; may be a variety of that plant. 120-800 m.	Low
<i>Arabis oregana</i>	Oregon rockcress	Brassicaceae	May	G3G4Q / S3	None	None	--	4.3	Chaparral, lower montane coniferous forest.	serpentine. 600-1830 m.	Low
<i>Arctostaphylos manzanita</i> ssp. <i>elegans</i>	Konocti manzanita	Ericaceae	Mar-May	G5T3 / S3	None	None	--	1B.3	Chaparral, cismontane woodland, lower montane coniferous forest.	Volcanic soils. 225-1830 m.	Moderate
<i>Arctostaphylos stanfordiana</i> ssp. <i>raichei</i>	Raiche's manzanita	Ericaceae	Feb-Apr	G3T2 / S2	None	None	SB_US DA	1B.1	Chaparral, lower montane coniferous forest.	Rocky, serpentine sites. Slopes and ridges. 485-1070 m.	Low
<i>Asclepias solanoana</i>	serpentine milkweed	Apocynaceae	May-Jul(Aug)	G3 / S3	None	None	--	4.2	Chaparral, cismontane woodland, lower montane coniferous forest.	Grows on serpentine soils; confined to clearings and gentle slopes with southern exposure. 230-1860 m.	None
<i>Astragalus breweri</i>	Brewer's milk-vetch	Fabaceae	Apr-Jun	G3 / S3	None	None	--	4.2	Chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland.	Grassy flats, meadows moist in spring, and open slopes in chaparral; commonly on or near volcanic or serpentine. 90-730 m.	Moderate
<i>Astragalus clevelandii</i>	Cleveland's milk-vetch	Fabaceae	Jun-Sep	G4 / S4	None	None	--	4.3	Chaparral, cismontane woodland, riparian forest.	Ultramafic seeps and creeks; sandy stream banks, gravel bars moist in spring, hillside seeps on slopes. 200-1500 m.	None

Table 1
Regionally-Occurring Special-status Plant Species Scoping List CNDDb, CNPS, IPaC (July 29, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Scientific Name	Common Name	Family	Bloom Period	Heritage Ranks	FedList	CalList	Other Status	Rare Plant	General Habitat	Micro-Habitat	Potential of Occurrence
<i>Astragalus rattanii</i> var. <i>jepsonianus</i>	Jepson's milk-vetch	Fabaceae	Mar-Jun	G4T3 / S3	None	None	BLM_S	1B.2	Cismontane woodland, valley and foothill grassland, chaparral.	Commonly on serpentine in grassland or openings in chaparral. 175-1,005 m.	Moderate
<i>Astragalus rattanii</i> var. <i>rattanii</i>	Rattan's milk-vetch	Fabaceae	Apr-Jul	G4T4 / S4	None	None	--	4.3	Chaparral, cismontane woodland, lower montane coniferous forest.	Open grassy hillsides, gravelly flats in the valleys, and gravel bars of stream beds. 30-825 m.	Moderate
<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	Asteraceae	Mar-Jun	G2 / S2	None	None	BLM_S USFS_S	1B.2	Chaparral, valley and foothill grassland, cismontane woodland.	Sometimes on serpentine. 35-1,465 m.	Low
<i>Brasenia schreberi</i>	watershield	Cabombaceae	June-Sept.	G5/S3	None	None	--	2B.3	freshwater wetlands, still standing waters.	Ponds and slow-moving streams and marshes and swamps. <2,200 m	None
<i>Brodiaea rosea</i>	Indian Valley brodiaea	Themidaceae	May-Jun	G2 / S2	None	E	BLM_S USFS_S	1B.1	Closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland, meadows.	serpentine gravelly creek bottoms, and in meadows and swales. 335-1,450 m.	Low
<i>Calamagrostis ophitidis</i>	serpentine reed grass	Poaceae	Apr-Jul	G3 / S3	None	None	--	4.3	Chaparral, lower montane coniferous forest, meadows, valley and foothill grassland.	serpentine, rocky sites. 90-1,065 m.	None
<i>Calochortus uniflorus</i>	pink star-tulip	Liliaceae	Apr-Jun	G4 / S4	None	None	--	4.2	Coastal scrub, coastal prairie, north coast coniferous forest, meadows and seeps.	Seasonally moist meadows, sometimes within coastal scrub, or forested habitats. Usually at low elevations on the coast. 10-1,070 m.	Low
<i>Calyptridium quadripetalum</i>	four-petaled pussypaws	Montiaceae	Apr-Jun	G4 / S4	None	None	--	4.3	Chaparral, lower montane coniferous forest.	Sandy or gravelly areas; generally serpentine. 315-2,040 m.	Low
<i>Calystegia collina</i> ssp. <i>oxyphylla</i>	Mt. St. Helena morning-glory	Convolvulaceae	Apr-Jun	G4T3 / S3	None	None	--	4.2	Chaparral, lower montane coniferous forest, valley and foothill grassland.	On serpentine barrens, slopes, and hillsides. 280-1,010 m.	None
<i>Calystegia collina</i> ssp. <i>tridactylosa</i>	three-fingered morning glory	Convolvulaceae	April-June	G4T1/ S1	None	None	--	1B.2	Chaparral, cismontane woodland, openings.	Rocky, gravelly, grassy opening, often on serpentine soils. 0-600 m.	None
<i>Carex praticola</i>	northern meadow sedge	Cyperaceae	May-Jul	G5 / S2	None	None	--	2B.2	Meadows and seeps.	Moist to wet meadows. 15-3,200 m.	None

Table 1
Regionally-Occurring Special-status Plant Species Scoping List CNDDb, CNPS, IPaC (July 29, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Scientific Name	Common Name	Family	Bloom Period	Heritage Ranks	FedList	CalList	Other Status	Rare Plant	General Habitat	Micro-Habitat	Potential of Occurrence
<i>Castilleja rubicundula</i> var. <i>rubicundula</i>	pink creamsacs	Orobanchaceae	Apr-Jun	G5T2 / S2	None	None	BLM_S	1B.2	Chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland.	Openings in chaparral or grasslands. On serpentine. 20-915 m.	None
<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	Rhamnaceae	Feb-Jun	G1 / S1	None	None	BLM_S	1B.1	Closed-cone coniferous forest, chaparral, cismontane woodland.	Known from volcanic or serpentine soils, dry shrubby slopes. 75-1,065 m.	Moderate
<i>Ceanothus divergens</i>	Calistoga ceanothus	Rhamnaceae	Feb-Apr	G2 / S2	None	None	BLM_S	1B.2	Chaparral.	Rocky, serpentine or volcanic sites. 170-950 m.	Low
<i>Centromadia parryi</i> ssp. <i>parryi</i>	pappose tarplant	Asteraceae	May-Nov	G3T2 / S2	None	None	BLM_S	1B.2	Chaparral, coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grassland.	Vernally mesic, often alkaline sites. 2-420 m.	None
<i>Centromadia parryi</i> ssp. <i>rudis</i>	Parry's rough tarplant	Asteraceae	May-Oct	G3T3 / S3	None	None	--	4.2	Valley and foothill grasslands, vernal pools.	Alkaline, vernally mesic seeps; sometimes roadsides. 0-100 m.	None
<i>Chlorogalum pomeridianum</i> var. <i>minus</i>	dwarf soaproot	Agavaceae	May-Aug	G5T2T3 / S2S3	None	None	BLM_S USFS_S	1B.2	Chaparral.	serpentine. 305-1,000 m.	None
<i>Clarkia gracilis</i> ssp. <i>tracyi</i>	Tracy's clarkia	Onagraceae	Apr-Jul	G5T3 / S3	None	None	--	4.2	Chaparral.	Openings, usually on serpentine. 65-650 m.	Low
<i>Collomia diversifolia</i>	serpentine collomia	Polemoniaceae	May-Jun	G4 / S4	None	None	--	4.3	Chaparral, cismontane woodland.	On ultramafic soils, rocky or gravelly sites. 300-600 m.	Low
<i>Cordylanthus tenuis</i> ssp. <i>brunneus</i>	serpentine bird's-beak	Orobanchaceae	Jul-Aug	G4G5T3 / S3	None	None	--	4.3	Chaparral, closed-cone coniferous forest, cismontane woodland.	On barren, rocky serpentine soil. 475-915 m.	None
<i>Cordylanthus tenuis</i> ssp. <i>capillaris</i>	Penell's bird beak	Orobanchaceae	June-Sept.	G4G5T1/S1	E	R	--	1B.2	closed cone coniferous forest, chaparral.	Serpentine soils in chaparral, 200m.	None
<i>Cryptantha dissita</i>	serpentine cryptantha	Boraginaceae	Apr-Jun	G2 / S2	None	None	BLM_S	1B.2	Chaparral.	serpentine outcrops. 135-735 m.	None
<i>Cryptantha excavata</i>	deep-scarred cryptantha	Boraginaceae	Apr-May	G1 / S1	None	None	BLM_S	1B.3	Cismontane woodland.	Sandy, gravelly, dry streambanks. 100-500 m.	None

Table 1
Regionally-Occurring Special-status Plant Species Scoping List CNDDb, CNPS, IPaC (July 29, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Scientific Name	Common Name	Family	Bloom Period	Heritage Ranks	FedList	CalList	Other Status	Rare Plant	General Habitat	Micro-Habitat	Potential of Occurrence
<i>Delphinium uliginosum</i>	swamp larkspur	Ranunculaceae	May-Jun	G3 / S3	None	None	--	4.2	Chaparral, valley and foothill grassland.	In moist drainages, meadows, and creek beds, on mesic ultramafic substrates. 340-610 m.	None
<i>Downingia willamettensis</i>	Cascade downingia	Campanulaceae	June-July	G4/S2	None	None	--	2B.2	Cismontane woodland, valley and foothill grasslands, vernal pools.	Lake margins. 15-1,110 m.	None
<i>Equisetum palustre</i>	marsh horsetail	Equisetaceae	unk	G5 / S1S3	None	None	--	3	Marshes and swamps.	45-1,000 m.	None
<i>Eriastrum brandegeae</i>	Brandegee's eriastrum	Polemoniaceae	Apr-Aug	G1Q / S1	None	None	BLM_S	1B.1	Chaparral, cismontane woodland.	On barren volcanic soils; often in open areas. 410-845 m.	Moderate
<i>Eriastrum tracyi</i>	Tracy's eriastrum	Polemoniaceae	May-Jul	G3Q / S3	None	R	USFS_S	3.2	Chaparral, cismontane woodland, valley and foothill grassland.	Gravelly shale or clay; often in open areas. 315-2,400 m.	Moderate
<i>Erigeron greenei</i>	Greene's narrow-leaved daisy	Asteraceae	May-Sep	G3 / S3	None	None	--	1B.2	Chaparral.	serpentine and volcanic substrates, generally in shrubby vegetation. 90-835 m.	Moderate
<i>Eriogonum nervulosum</i>	Snow Mtn buckwheat	Polygonaceae	Jun-Sep	G2 / S2	None	None	BLM_S USFS_S	1B.2	Chaparral.	Dry serpentine outcrops, balds, and barrens. 445-2,105 m.	None
<i>Eriogonum tripodum</i>	tripod buckwheat	Polygonaceae	May-Jul	G4 / S4	None	None	USFS_S	4.2	Cismontane woodland, chaparral.	Gravelly slopes and flats; often on serpentine. 200-1,600 m.	Low
<i>Eryngium constancei</i>	Loch Lomond button-celery	Apiaceae	Apr-Jun	G1 / S1	E	E	--	1B.1	Vernal pools.	Volcanic ash flow vernal pools. 460-855 m.	None
<i>Erythranthe nudata</i>	bare monkeyflower	Phrymaceae	May-Jun	G4 / S4	None	None	--	4.3	Chaparral, cismontane woodland.	Moist areas, often along drainages and roadsides in serpentine seeps. 250-700 m.	None
<i>Erythronium helenae</i>	St. Helena fawn lily	Liliaceae	Mar-May	G3 / S3	None	None	--	4.2	Chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland.	Often assoc. with serpentine; also on volcanics. Commonly grows in the open, inter-shrub spaces. 350-1,220 m.	Low
<i>Extriplex joaquinana</i>	San Joaquin spearscale	Chenopodiaceae	Apr-Oct	G2 / S2	None	None	BLM_S	1B.2	Chenopod scrub, alkali meadow, playas, valley and foothill grassland.	In seasonal alkali wetlands or alkali sink scrub with <i>Distichlis spicata</i> , <i>Frankenia</i> , etc. 1-835 m.	None
<i>Fritillaria pluriflora</i>	adobe-lily	Liliaceae	Feb-Apr	G2G3 / S2S3	None	None	BLM_S	1B.2	Chaparral, cismontane woodland, foothill grassland.	Usually on clay soils; sometimes serpentine. 45-945 m.	Moderate
<i>Fritillaria purdyi</i>	Purdy's fritillary	Liliaceae	Mar-Jun	G4 / S4	None	None	--	4.3	Chaparral, cismontane woodland, lower montane coniferous forest.	Usually on serpentine. 175-2,255 m.	Low

Table 1
Regionally-Occurring Special-status Plant Species Scoping List CNDDb, CNPS, IPaC (July 29, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Scientific Name	Common Name	Family	Bloom Period	Heritage Ranks	FedList	CalList	Other Status	Rare Plant	General Habitat	Micro-Habitat	Potential of Occurrence
<i>Gratiola heterosepala</i>	Boggs Lake hedge-hyssop	Plantaginaceae	Apr-Aug	G2 / S2	None	E	BLM_S	1B.2	Marshes and swamps (freshwater), vernal pools.	Clay soils; usually in vernal pools, sometimes on lake margins. 4-2,410 m.	None
<i>Grimmia torenii</i>	Toren's grimmia	Grimmiaceae	Moss	G2 / S2	None	None	--	1B.3	Cismontane woodland, lower montane coniferous forest, chaparral.	Openings, rocky, boulder and rock walls, carbonate, volcanic. 325-1,160 m.	Low
<i>Harmonia hallii</i>	Hall's harmonia	Asteraceae	Apr-Jun	G2 / S2	None	None	BLM_S	1B.2	Chaparral.	serpentine hills and ridges. Open, rocky areas within chaparral. 335-930 m.	Moderate
<i>Helianthus exilis</i>	serpentine sunflower	Asteraceae	Jun-Nov	G3Q / S3	None	None	USDA_SB	4.2	Chaparral, cismontane woodland.	serpentine seeps. 150-1,525 m.	None
<i>Hemizonia congesta</i> ssp. <i>calyculata</i>	Mendocino tarplant	Asteraceae	Jul-Nov	G5T3 / S3	None	None	--	4.3	Cismontane woodland, valley and foothill grassland.	Grassland, open woods, and forests; sometimes on serpentine. 225-1,400 m.	Moderate
<i>Hemizonia congesta</i> ssp. <i>congesta</i>	hayfield tarweed	Asteraceae	April-Nov.	G5T2 / S2	None	None	--	1B.2	Valley and foothill grassland.	Grassy valleys and hills, often in fallow fields; sometimes along roadsides. 5-520 m.	Moderate
<i>Hesperolinon adenophyllum</i>	glandular western flax	Linaceae	May-Aug	G2G3 / S2S3	None	None	BLM_S	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	serpentine soils; generally found in serpentine chaparral. 425-1,345 m.	Low
<i>Hesperolinon bicarpellatum</i>	two-carpellate western flax	Linaceae	May-Jul	G3 / S3	None	None	--	1B.2	serpentine chaparral.	serpentine barrens at edge of chaparral. 60-1,005 m.	None
<i>Hesperolinon didymocarpum</i>	Lake County western flax	Linaceae	May-Jul	G1 / S1	None	E	BLM_S	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	serpentine soil in open grassland and near chaparral. 325-400 m.	None
<i>Hesperolinon drymarioides</i>	drymaria-like western flax	Linaceae	May-Aug	G2 / S2	None	None	BLM_S USFS_S	1B.2	Closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland.	serpentine soils, mostly within chaparral. 395-2,000 m.	None
<i>Hesperolinon sharsmithiae</i>	Sharsmith's western flax	Linaceae	May-Jul	G2Q / S2	None	None	BLM_S	1B.2	Chaparral.	serpentine substrates. 270-300 m.	None
<i>Horkelia bolanderi</i>	Bolander's horkelia	Rosaceae	(May)Jun-Aug	G1 / S1	None	None	BLM_S	1B.2	Lower montane coniferous forest, chaparral, meadows and seeps, valley and foothill grassland.	Grassy margins of vernal pools and meadows. 455-855 m.	Low
<i>Imperata brevifolia</i>	California satintail	Poaceae	Sep-May	G4 / S3	None	None	USFS_S	2B.1	Coastal scrub, chaparral, riparian scrub, Mojave desert scrub, meadows and seeps (alkali), riparian scrub.	Mesic sites, alkali seeps, riparian areas. 3-1,495 m.	None

Table 1
Regionally-Occurring Special-status Plant Species Scoping List CNDDb, CNPS, IPaC (July 29, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Scientific Name	Common Name	Family	Bloom Period	Heritage Ranks	FedList	CalList	Other Status	Rare Plant	General Habitat	Micro-Habitat	Potential of Occurrence
<i>Juglans hindsii</i>	Northern California black walnut	Juglandaceae	Apr-May	G1 / S1	None	None	USDA_SB	1B.1	Riparian forest, riparian woodland. Few extant native stands remain; widely naturalized.	Deep alluvial soil, associated with a creek or stream. 0-640 m.	Moderate
<i>Lasthenia burkei</i>	Burke's goldfields	Asteraceae	Apr-Jun	G1 / S1	E	E	--	1B.1	Vernal pools, meadows and seeps.	Most often in vernal pools and swales. 15-600 m.	Low
<i>Layia septentrionalis</i>	Colusa layia	Asteraceae	Apr-May	G2 / S2	None	None	BLM_S	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Scattered colonies in fields and grassy slopes in sandy or serpentine soil. 15-1,100 m.	High
<i>Legenere limosa</i>	legenere	Campanulaceae	Apr-Jun	G2 / S2	None	None	BLM_S	1B.1	Vernal pools.	In beds of vernal pools. 1-880 m.	None
<i>Leptosiphon acicularis</i>	bristly leptosiphon	Polemoniaceae	Apr-Jul	G3 / S3	None	None	--	4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland.	Grassy areas, woodland, chaparral. 55-1,500 m.	High
<i>Leptosiphon grandiflorus</i>	large-flowered leptosiphon	Polemoniaceae	April-August	G3G4 / S3S4	None	None	--	4.2	Coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal dunes, coastal prairie, coastal scrub, valley and foothill grassland.	Open, grassy flats, generally sandy soil. 5-1,200 m.	Moderate
<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	Polemoniaceae	Mar-May	G3 / S3	None	None	USDA_SB	1B.2	Chaparral, cismontane woodland.	Open to partially shaded grassy slopes. On volcanics or the periphery of serpentine substrates. 55-855 m.	Low
<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	Polemoniaceae	April-June	G4/S4	None	None	--	4.3	Broadleaf upland forest, cismontane woodland.	Open or partially shaded grassy slopes. 170-1,500 m.	High
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i>	woolly meadowfoam	Limnanthaceae	Mar-May(Jun)	G4T4 / S3	None	None	--	4.2	Chaparral, cismontane woodland, valley and foothill grassland, vernal pools.	Vernally wet areas, ditches, and ponds. 60-1,335 m.	Low
<i>Lomatium hooveri</i>	Hoover's lomatium	Apiaceae	Apr-Jul	G3 / S3	None	None	--	4.3	Chaparral, cismontane woodland.	serpentine soils, or rarely volcanic. 300-885 m.	Low
<i>Lomatium repostum</i>	Napa lomatium	Apiaceae	Mar-Jun	G3 / S3	None	None	--	4.3	Chaparral, cismontane woodland.	Rocky areas, volcanic & serpentine soils w/ mixed chaparral & black oak woodland communities. 90-830 m.	Low
<i>Lupinus milo-bakeri</i>	Milo Baker's lupine	Fabaceae	Jun-Sep	G1Q / S1	None	T	SB_RSA BG	1B.1	Cismontane woodland, valley and foothill grassland.	In roadside ditches, dry gravelly areas along roads, and along small streams. 380-430 m.	Moderate

Table 1
Regionally-Occurring Special-status Plant Species Scoping List CNDDb, CNPS, IPaC (July 29, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Scientific Name	Common Name	Family	Bloom Period	Heritage Ranks	FedList	CalList	Other Status	Rare Plant	General Habitat	Micro-Habitat	Potential of Occurrence
<i>Lupinus sericatus</i>	Cobb Mountain lupine	Fabaceae	Mar-Jun	G2 / S2	None	None	BLM_S	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest, broadleaved upland forest.	In stands of knobcone pine-oak woodland, on open wooded slopes in gravelly soils; sometimes on serpentine. 275-1,525 m.	None
<i>Malacothamnus helleri</i>	Heller's bush-mallow	Malvaceae	May-Jul	G3Q / S3	None	None	--	3.3	Chaparral, riparian woodland.	Sandstone, gravel. 305-635 m.	Moderate
<i>Micropus amphibolus</i>	Mt. Diablo cottonweed	Asteraceae	Mar-May	G3G4 / S3S4	None	None	--	3.2	Valley and foothill grassland, cismontane woodland, chaparral, broadleaf upland forest.	Bare, grassy or rocky slopes. 45-825 m.	Moderate
<i>Mielichhoferia elongata</i>	elongate copper moss	Mielichhoferiaceae	Moss	G5 / S4	None	None	USFS_S	4.3	Cismontane woodland.	Very acidic, metamorphic rock or substrate; usually in higher portions in fens. Often on substrates naturally enriched w/ heavy metals (e.g. copper). 500-1300 m.	None
<i>Myosurus minimus</i> ssp. <i>apus</i>	little mousetail	Ranunculaceae	Mar-Jun	G5T2Q / S2	None	None	--	3.1	Vernal pools, valley and foothill grassland. This subspecies has taxonomic problems; distinguishing between this and <i>M. sessilis</i> is difficult. Hybrid?	Alkaline soils. 20-640 m.	None
<i>Navarretia cotulifolia</i>	cotula navarretia	Polemoniaceae	May-Jun	G4 / S4	None	None	--	4.2	Chaparral, cismontane woodland, valley and foothill grassland.	Adobe soils. 4-1830 m.	Moderate
<i>Navarretia jepsonii</i>	Jepson's navarretia	Polemoniaceae	Apr-Jun	G4 / S4	None	None	--	4.3	Chaparral, valley and foothill grassland, cismontane woodland.	Habitat edges, drying flats; sometimes on serpentine. 175-855 m.	Moderate
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	Polemoniaceae	Apr-Jul	G4T2 / S2	None	None	BLM_S	1B.1	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest.	Vernal pools and swales; adobe or alkaline soils. 3-1680 m.	Moderate
<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	few-flowered navarretia	Polemoniaceae	May-Jun	G4T1 / S1	E	T	SB_RSA BG	1B.1	Vernal pools.	Volcanic ash flow, and volcanic substrate vernal pools. 425-855 m.	Low
<i>Navarretia leucocephala</i> ssp. <i>plieantha</i>	many-flowered navarretia	Polemoniaceae	May-Jun	G4T1 / S1	E	E	SB_RSA BG	1B.2	Vernal pools.	Volcanic ash flow vernal pools. 30-915 m.	Low
<i>Navarretia linearifolia</i> ssp. <i>pinnatisecta</i>	pinnate-leaved navarretia	Polemoniaceae	June-August	G4G5 T4/S4	None	None	--	4.3	Chaparral, lower montane coniferous forest.	Serpentine or volcanics. 300-2,200 m.	Low

Table 1
Regionally-Occurring Special-status Plant Species Scoping List CNDDb, CNPS, IPaC (July 29, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Scientific Name	Common Name	Family	Bloom Period	Heritage Ranks	FedList	CalList	Other Status	Rare Plant	General Habitat	Micro-Habitat	Potential of Occurrence
<i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i>	adobe navarretia	Polemoniaceae	Apr-Jun	G4T3 / S3	None	None	--	4.2	Valley and foothill grassland, vernal pools.	Clay soils; sometimes on serpentine. 100-1,000 m.	Low
<i>Navarretia nigelliformis</i> ssp. <i>radians</i>	shining navarretia	Polemoniaceae	April-July	G4T2/ S2	None	None	BLM_S	1B.2	Cismontane woodland, valley and foothill grassland, vernal pools.	Found in grassland, not restricted to vernal pools. 60-975 m.	Low
<i>Navarretia paradoxinota</i>	Porter's navarretia	Polemoniaceae	May-Jun(Jul)	G2 / S2	None	None	--	1B.3	Meadows and seeps.	Serpentinite, openings, vernal mesic, often drainages. 175-875 m.	Low
<i>Orcuttia tenuis</i>	slender Orcutt grass	Poaceae	May-Sep(Oct)	G2 / S2	T	E	SB_UC BBG	1B.1	Vernal pools.	Often in gravelly substrate. 25-1,755 m.	None
<i>Orobanche valida</i> ssp. <i>howellii</i>	Howell's broomrape	Orobanchaceae	Jun-Sep	G4T4 / S4	None	None	--	4.3	Chaparral.	On rocky volcanic or serpentine slopes in open chaparral; reported on <i>Garrya fremontii</i> , <i>Quercus chrysolepis</i> . 180-1,740 m.	Low
<i>Panicum acuminatum</i> var. <i>thermale</i>	Geysers panicum	Poaceae	Jun-Aug	G5T2Q / S2	None	E	BLM_S	1B.2	Closed-cone coniferous forest, riparian forest, valley and foothill grassland.	Usually around moist, warm soil in the vicinity of hot springs. 455-2,470 m.	None
<i>Penstemon newberryi</i> var. <i>sonomensis</i>	Sonoma beardtongue	Plantaginaceae	Apr-Aug	G4T2 / S2	None	None	--	1B.3	Chaparral.	Crevices in rock outcrops and talus slopes. 180-1,405 m.	None
<i>Piperia leptopetala</i>	narrow-petaled rein orchid	Orchidaceae	May-July	G4/S4	None	None	--	4.3	Cismontane woodland, lower montane conifer forest, upper montane conifer forest.	380-2,225 m.	Low
<i>Piperia michaelii</i>	Michael's rein orchid	Orchidaceae	Apr-Aug	G3 / S3	None	None	--	4.2	Coastal bluff scrub, coastal scrub, cismontane woodland, chaparral, closed-cone and lower montane conifer forest.	Mudstone and humus, generally dry sites. 3-915 m.	Low
<i>Plagiobryoides vinosula</i>	wine-colored tufa moss	Bryaceae	Moss	G3G4 / S2	None	None	--	4.2	Cismontane woodland, meadows and seeps, Mojave desert scrub, pinyon and juniper woodland, riparian woodland.	Usually granitic rock or granitic soil along seeps and streams, sometimes clay. 30-1,735 m.	None
<i>Potamogeton zosteriformis</i>	eel-grass pondweed	Potamogetonaceae	Jun-Jul	G5 / S3	None	None	--	2B.2	Marshes and swamps.	Ponds, lakes, streams. 90-2,135 m.	None

Table 1
Regionally-Occurring Special-status Plant Species Scoping List CNDDb, CNPS, IPaC (July 29, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Scientific Name	Common Name	Family	Bloom Period	Heritage Ranks	FedList	CalList	Other Status	Rare Plant	General Habitat	Micro-Habitat	Potential of Occurrence
<i>Puccinellia simplex</i>	California alkali grass	Poaceae	Mar-May	G3 / S2	None	None	--	1B.2	Meadows and seeps, chenopod scrub, valley and foothill grasslands, vernal pools.	Alkaline, vernal mesic. Sinks, flats, and lake margins. 1-915 m.	None
<i>Sedella leiocarpa</i>	Lake County stonecrop	Crassulaceae	Apr-May	G1 / S1	E	E	--	1B.1	Valley and foothill grassland, vernal pools, cismontane woodland.	Level areas that are seasonally wet and dry out in late spring; substrate usually of volcanic origin. 515-640 m.	Moderate
<i>Senecio clevelandii</i> var. <i>clevelandii</i>	Cleveland's ragwort	Asteraceae	Jun-Jul	G4?T3 Q / S3	None	None	--	4.3	Chaparral.	Mesic serpentine soil, along creeks and in moist meadows. 365-900 m.	None
<i>Sidalcea keckii</i>	Keck's checkerbloom	Malvaceae	Apr-May	G2 / S2	E	None		1B.1	Cismontane woodland, valley and foothill grassland.	Grassy slopes in blue oak woodland. On serpentine-derived, clay soils sometimes. 85-505 m.	High
<i>Sidalcea oregana</i> ssp. <i>hydrophila</i>	marsh checkerbloom	Malvaceae	(Jun)Jul-Aug	G5T2 / S2	None	None	--	1B.2	Meadows and seeps, riparian forest.	Wet soil of streambanks, meadows. 455-2,030 m.	Low
<i>Streptanthus brachiatus</i> ssp. <i>brachiatus</i>	Socrates Mine jewelflower	Brassicaceae	May-Jun	G2T1 / S1	None	None	BLM_S	1B.2	Chaparral, closed-cone coniferous forest.	serpentine areas and serpentine chaparral. 605-1,950 m.	None
<i>Streptanthus brachiatus</i> ssp. <i>hoffmanii</i>	Freed's jewelflower	Brassicaceae	May-Jul	G2T2 / S2	None	None	BLM_S	1B.2	Chaparral, cismontane woodland.	serpentine rock outcrops, primarily in geothermal development areas. 485-1,040 m.	None
<i>Streptanthus hesperidis</i>	green jewelflower	Brassicaceae	May-Jul	G2 / S2	None	None	--	1B.2	Chaparral, cismontane woodland.	Openings in chaparral or woodland; serpentine, rocky sites. 240-765 m.	None
<i>Streptanthus morrisonii</i> ssp. <i>elatus</i>	three peaks jewel flower	Brassicaceae	Jun-Sep	G2T2 / S2	None	None	BLM_S	1B.2	Chaparral.	serpentine barrens, outcrops, and talus; 80-815 m.	None
<i>Streptanthus morrisonii</i> ssp. <i>kruckebergii</i>	Kruckeberg's jewelflower	Brassicaceae	Apr-Jul	G2T1 / S1	None	None	BLM_S	1B.2	Cismontane woodland.	Scattered serpentine outcrops near the Lake/Napa County line. 240-665 m.	None
<i>Thelypodium brachycarpum</i>	short-podded thelypodium	Brassicaceae	May-August	G3/S3	None	None	--	4.2	Chaparral, lower montane conifer forest, meadows and seeps.	Serpentine gravel & alkaline soils. In Oregon, on alluvial clays of river plains and lake basins. 670-2,560 m.	Low
<i>Toxicoscordion fontanum</i>	marsh zigadenus	Melanthiaceae	Apr-Jul	G3 / S3	None	None	--	4.2	Chaparral, cismontane woodland, lower montane conifer forest, meadows, seeps, marshes, swamps.	Vernally moist or marshy areas; often on serpentine areas. 15-1,000 m.	Low

<p align="center"> Table 1 Regionally-Occurring Special-status Plant Species Scoping List CNDDB, CNPS, IPaC (July 29, 2019) Lower Lake and Surrounding Quadrangles East Lake Landfill Expansion, Clearlake California </p>

Scientific Name	Common Name	Family	Bloom Period	Heritage Ranks	FedList	CalList	Other Status	Rare Plant	General Habitat	Micro-Habitat	Potential of Occurrence
<i>Trifolium hydrophilum</i>	saline clover	Fabaceae	Apr-Jun	G2 / S2	None	None	--	1B.2	Marshes and swamps, valley and foothill grassland, vernal pools.	Mesic, alkaline sites. 1-335 m.	None
<i>Viburnum ellipticum</i>	oval-leaved viburnum	Adoxaceae	May-Jun	G4G5 / S3?	None	None	--	2B.3	Chaparral, cismontane woodland, lower montane coniferous forest.	215-1,400 m.	Moderate

1. Species indicator status as assigned by Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), and California Department of Fish and Wildlife (CDFW)
 - C: candidate
 - CT: candidate threatened
 - D: delisted
 - DPS: distinct population segment
 - E: endangered
 - ESU: evolutionarily significant unit
 - FP: fully protected
 - PT: proposed threatened
 - SSC: species of special concern
 - T: threatened
 - WL: watch list
2. Species Heritage rank as assigned by California Department of Fish and Wildlife (CDFW)
 - G1/S1: critically imperiled
 - G2/S2: imperiled
 - G3/S3: vulnerable
 - G4/S4: apparently secure
 - G5/S5: secure

Table 2
Regionally-Occurring Special-status Wildlife Species List (CNDDDB & IPaC August 6, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Species Latin Name	Common Name	Status (Federal/State/Other) ¹ Global & State Rank	General Habitat Requirements	Potential for Occurrence
Amphibians / Reptiles				
<i>Dicamptodonensatus</i>	California Giant Salamander	--/--/SSC G3S2S3	A large salamander that primarily occurs in humid coastal forests, especially Douglas fir, Redwood, red fir and montane and valley-foothill habitats and live in or near streams in damp forests. Adults and larvae found in cool, rocky streams lakes & ponds.	None
<i>Emys marmorata</i>	Western pond turtle	--/--/SSC G3G4S3	Associate with permanent ponds. Lakes, streams, irrigation ditches or permanent pools along intermittent streams in a wide variety of habitats. Elevations range from near sea level to 1430 m.	Moderate
<i>Rana boylii</i>	foothill yellow-legged frog	--/CT/SSC G3S3	A frog with dorso-lateral ridges. This species usually occurs in or near quiet permanent water of streams, marshes, ponds, lakes, and other quiet bodies of water. In summer, frogs aestivate in small mammal burrows, leaf litter, or other moist sites in or near (within a few hundred feet of) riparian areas. Individuals may range far from water along riparian corridors and in damp thickets and forests.	Low
<i>Rana draytonii</i>	California red-legged frog	T/--/SSC G2G3S2S3	Requires a variety of habitats with aquatic breeding elements (pools and backwaters of streams, ponds, marshes, springs, etc.) and upland habitats (downed woody vegetation, leaf litter, small mammal burrows) for protection from desiccation and predators.	None
<i>Taricharivularis</i>	Red-bellied newt	--/--/SSC G4S2	Range among Sonoma, Mendocino, Humboldt and Lake Counties, Inhabits primarily redwood forests, but also found in mixed conifers, valley-foothill woodland.	None
Birds				
<i>Accipiter cooperii</i>	Cooper's Hawk	--/--/WL G5S4	Dense stands of live oak, riparian deciduous or other forests near water, nests and hunts through the tree canopy. Preys on small birds and mammals, also takes reptiles and amphibians. Uses cover to hide and attack.	Moderate
<i>Aquila chrysaetos</i>	Golden eagle	--/--/FP WL G5S3	Wide ranging bird that prefers to build nests in high locations such as cliffs. They hunt a variety of habitats such as forest openings and agricultural fields where they take small mammals.	None
<i>Ardea alba</i>	great egret	--/--/S G5S4	Nesting colony special-status. Freshwater, brackish, and marine wetlands. During the breeding season they live in colonies in trees or shrubs with other waterbirds.	Low
<i>Ardea herodias</i>	great blue heron	--/--/-- G5S4	Nesting colony special-status. Most breeding colonies are located within 2 to 4 miles of feeding areas, often in isolated swamps or on islands, and near lakes and ponds bordered by forests	Low
<i>Athene cunicularia</i>	Burrowing owl	--/--/SSC G4S3	Yearlong resident of open, dry grasslands and desert habitats and in grass, forms and open shrub stages of pinyon-juniper and ponderosa pine habitats.	None

Table 2
Regionally-Occurring Special-status Wildlife Species List (CNDDDB & IPaC August 6, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Species Latin Name	Common Name	Status (Federal/State/Other) ¹ Global & State Rank	General Habitat Requirements	Potential for Occurrence
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	FT/SE/-- G5T2T3S1	Requires large tracts of dense, riparian woodlands with well-developed understories of deciduous trees and shrubs, especially willows for breeding and roost sites.	None
<i>Falco mexicanus</i>	Prairie falcon	--/--/WL G5S4	Uncommon permanent resident ranges from southeastern deserts northwest to the Central Valley and along the inner Coast Ranges & Sierra Nevada. Associates primarily with perennial grasslands, savannahs, agricultural fields desert scrub.	None
<i>Haliaeetus leucocephalus</i>	Bald eagle	FD/SE/FP G5S3	Wide ranging bird that build large nests high in tree tops or on cliffs. They hunt a variety of habitats such as open water, forest openings, agricultural fields for mammals, also prey upon carrion.	None
<i>Pandion haliaetus</i>	Osprey	--/--/WL G5S4	Ospreys are associated with rivers, lakes and ocean inlets/bays/estuaries. They are an exclusive fish eater. Nests are platforms at the top of trees, telephone/power poles or other vertical structures that have views of water.	Moderate
<i>Progne subis</i>	Purple martin	--/--/SSC G5S3	Uses woodlands and low elevation coniferous forests, montane hardwoods and riparian habitats. Nests in tall, old trees near a body of water and occasionally in residential areas.	Low
<i>Strix occidentalis caurina</i>	Northern spotted owl	FT/ST/SSC G3T3S2S3	Northern spotted owl is generally found in coastal to mountainous mature coniferous forests. This species nests in cavities or on natural platforms of dense mature forests.	None
Insects/Crustaceans / Mollusks				
<i>Bombus occidentalis</i>	western bumble bee	--/--/S G2G3S1	Nests occur primarily in underground cavities such as old squirrel or other animal nests and in open west-southwest slopes bordered by trees, although a few nests have been reported from above-ground locations such as in logs among railroad ties.	Moderate
<i>Dubiraphia brunnescens</i>	brownish dubiraphian riffle beetle	--/--/-- G1S1	Occurs among submerged roots, e.g., of willows, on rocky lake shores.	None
<i>Gonidea angulata</i>	western ridged mussel	--/--/-- G3S1S2	Eggs incubate and hatch into microscopic mussel infants – called glochidia – which need to attach themselves to the gills or fins of a passing host fish.	None
<i>Hedychridium milleri</i>	Borax Lake cuckoo wasp	--/--/-- G1S1	Central California, nest parasite.	None
<i>Margaritifera falcata</i>	western pearlshell	--/--/-- G4G5S1S2	Eggs incubate and hatch into microscopic mussel infants – called glochidia – which need to attach themselves to the gills or fins of a passing host fish.	None
<i>Ochthebius reticulatus</i>	Wilbur Springs minute moss beetle	--/--/-- G1S1	High salinity water.	None

Table 2
Regionally-Occurring Special-status Wildlife Species List (CNDDDB & IPaC August 6, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Species Latin Name	Common Name	Status (Federal/State/Other) ¹ Global & State Rank	General Habitat Requirements	Potential for Occurrence
<i>Paracoenia calida</i>	Wilbur Springs shore fly	--/--/-- G1S1	High salinity water.	None
<i>Pyrgulopsis ventricosa</i>	Clear Lake pyrg	--/--/-- G1S1	Restricted to the Seigler Creek drainage in the south end of the Clear Lake basin	None
<i>Saldula singeri</i>	Wilbur Springs shorebug	--/--/-- G1S1	High salinity water. Wilbur Hot Springs.	None
Fish				
<i>Archoplites interruptus</i>	Sacramento perch	--/--/SSC G2G3S1	Adapted for life in sloughs, slow moving rivers and large lakes of the Central Valley but prefer fairly cool and fresh rivers, lakes and estuaries.	None
<i>Lavinia symmetricus ssp. 4</i>	Clear Lake-Russian River roach	--/--/SSC G4T2T3S2S3	Generally found in small streams and are well adapted to intermittent watercourses and are tolerant of a relatively wide range of temperatures and dissolved oxygen levels.	None
<i>Lavinia exilicauda chi</i>	Clear Lake hitch	--/T/-- G4T1S1	Endemic to Clear Lake and its tributaries. Spawn in low-gradient tributary streams and backwater areas with clean fine-to medium sized gravels. Return to lake after spawning.	None
<i>Hypomesustranspacificus</i>	Delta Smelt	FT/SE/-- G1S1	Endemic to California only, occurs in the San Francisco Estuary, spawns in fresh water tributaries and rears in low salinity zones. Feeds primarily on zooplankton.	None
Mammals				
<i>Antrozous pallidus</i>	Pallid bat	--/--/SSC G5S3	Locally common in low elevations in California. Habitats include grasslands, shrublands woodlands and forests with open, dry habitats with rocky areas for roosting.	Moderate
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	--/--/SSC G3G4S2	This bat is known to inhabit mines, caves and buildings where it establishes roosts and maternal colonies to raise young. They feed on a variety of insects.	Moderate
<i>Lasionycteris noctivagans</i>	silver-haired bat	--/--/-- G5S3S4	The Silver-haired Bat spends the majority of its life in forested habitats and is especially reliant on old growth forests for roost space.	None
<i>Lasiurus blossevillei</i>	Western red bat	--/--/SSC G5S3	Roosts primarily in trees, less often in shrubs in edge habitats, adjacent to streams, fields or urban habitats.	Moderate
<i>Lasiurus cinereus</i>	hoary bat	--/--/-- G5S4	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	Present

Table 2
Regionally-Occurring Special-status Wildlife Species List (CNDDDB & IPaC August 6, 2019)
Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California

Species Latin Name	Common Name	Status (Federal/State/Other) ¹ Global & State Rank	General Habitat Requirements	Potential for Occurrence
<i>Myotis evotis</i>	long-eared myotis	--/--/S G5S3	Great Basin from the Oregon border south through the Tehachapi Mts. to the Coast Ranges. This species has been found in nearly all brush, woodland, and forest habitats, from sea level to at least 2,700 m (9,000 ft), but coniferous woodlands and forests seem to be preferred.	Moderate
<i>Myotis lucifugus</i>	little brown bat (San Bernardino Mtns Pop.)	--/--/-- G3S2S3	Buildings, caves, trees, rocks, and wood piles as roost sites.	None
<i>Myotis thysanodes</i>	fringed myotis	--/--/S G4S3	The fringed myotis uses open habitats, early successional stages, streams, lakes, and ponds as foraging areas. Roosts in caves, mines, buildings, and crevices. Separate day and night roosts may be used. Requires water.	Low
<i>Myotis yumanensis</i>	Yuma myotis	--/--/S G5S4	Found in a variety of western lowland habitats, from arid thorn scrub to coniferous forest, but always close to standing water such as lakes and ponds.	Present
<i>Pekania pennanti</i>	Fisher, West Coast DPS	--/SCT/SSC G5T2T3QS2S3	Utilizes low- to mid-elevation mixed hardwood coniferous forests with a diversity of physical ground structure habitats for prey species. Important Fisher habitat includes relatively large trees, high canopy closure and abundant snags.	None

1. Species indicator status as assigned by Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), California Department of Fish and Wildlife (CDFW), US Forest Service, (USFS) and California Department of Forestry & Fire Protection (CDF):

C: candidate	FP: fully protected
CT: candidate threatened	PT: proposed threatened
D: delisted	S: Sensitive
DPS: distinct population segment	SSC: species of special concern
E: endangered	T: threatened
ESU: evolutionarily significant unit	“—”: No Status Assigned
WL: watch list	

2. Species Heritage rank as assigned by California Department of Fish and Wildlife (CDFW):

G1/S1: critically imperiled
G2/S2: imperiled
G3/S3: vulnerable
G4/S4: apparently secure
G5/S5: secure

Table 3
Botanical Species Observed April/June 2017, February, 2018, and April/June 2019
Eastlake Sanitary Landfill, Clearlake, CA

Scientific Name	Common Name	Family	Native?
Trees			
<i>Fraxinus dipetala</i>	California ash	Oleaceae	Y ¹
<i>Pinus sabiniana</i>	grey pine	Pinaceae	Y
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood	Salicaceae	Y
<i>Quercus berberidifolia</i>	scrub oak	Fagaceae	Y
<i>Quercus douglasii</i>	blue oak	Fagaceae	Y
<i>Quercus wislizeni</i> var. <i>wislizeni</i>	interior live-oak	Fagaceae	Y
<i>Salix laevigata</i>	red willow	Salicaceae	Y
<i>Salix lasiolepis</i>	arroyo willow	Salicaceae	Y
Shrubs			
<i>Adenostoma fasciculatum</i> var. <i>fasciculatum</i>	chamise	Rosaceae	Y
<i>Aesculus californica</i>	California buckeye	Sapindaceae	Y
<i>Arctostaphylos manzanita</i> ssp. <i>manzanita</i>	common manzanita	Ericaceae	Y
<i>Baccharis pilularis</i> ssp. <i>consanguinea</i>	coyote brush	Asteraceae	Y
<i>Ceanothus cuneatus</i> var. <i>cuneatus</i>	wedgeleaf ceanothus	Rhamnaceae	Y
<i>Cercocarpus betuloides</i> var. <i>betuloides</i>	Mtn. Mahogany	Rosaceae	Y
<i>Diplacus aurantiacus</i>	sticky monkey flower	Phrymaceae	Y
<i>Eriodictyon californicum</i>	yerba santa	Boraginaceae	Y
<i>Heteromeles arbutifolia</i>	California holly	Rosaceae	Y
<i>Lepechinia calycina</i>	pitcher sage	Lamiaceae	Y
Ferns and Allies			
<i>Aspidotis californica</i>	lcelip fern	Pteridaceae	Y
<i>Pellaea mucronata</i> var. <i>mucronata</i>	bird's foot fern	Pteridaceae	Y
<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>	gold-back fern	Pteridaceae	Y
Sedges and Rushes			
<i>Cyperus eragrostis</i>	tall flatsedge	Cyperaceae	Y
<i>Juncus bufonius</i> var. <i>bufonius</i>	toad rush	Juncaceae	Y
<i>Juncus occidentalis</i>	western rush	Juncaceae	Y
<i>Juncus effusus</i> ssp. <i>pacificus</i>	common rush	Juncaceae	Y
<i>Juncus patens</i>	spreading rush	Juncaceae	Y
<i>Juncus tenuis</i>	slender rush	Juncaceae	Y
Grasses			
<i>Aegilops geniculata</i>	ovate goatgrass	Poaceae	N ²
<i>Aira caryophyllea</i>	silver hair grass	Poaceae	N
<i>Avena barbata</i>	slender oat	Poaceae	N
<i>Avena fatua</i>	wild oat	Poaceae	N
<i>Briza minor</i>	small quaking grass	Poaceae	N
<i>Bromus carinatus</i>	California brome	Poaceae	Y
<i>Bromus diandrus</i>	ripgut brome	Poaceae	N
<i>Bromus hordeaceus</i>	soft chess	Poaceae	N
<i>Bromus madritensis</i> ssp. <i>rubens</i>	red brome	Poaceae	N
<i>Bromus tectorum</i>	cheat grass	Poaceae	N
<i>Cynosurus echinatus</i>	dogtail grass	Poaceae	N

Table 3
Botanical Species Observed April/June 2017, February, 2018, and April/June 2019
Eastlake Sanitary Landfill, Clearlake, CA

Scientific Name	Common Name	Family	Native?
<i>Danthonia californica</i>	California oatgrass	Poaceae	Y
<i>Elymus caput-medusae</i>	medusa head	Poaceae	N
<i>Elymus elymoides</i> var. <i>elymoides</i>	squirrel tail grass	Poaceae	Y
<i>Festuca bromoides</i>	brome fescue	Poaceae	N
<i>Festuca idahoensis</i>	Idaho fescue	Poaceae	Y
<i>Festuca microstachys</i>	small fescue	Poaceae	Y
<i>Festuca myuros</i>	six weeks grass	Poaceae	N
<i>Festuca perennis</i>	wildrye	Poaceae	N
<i>Gastridium phleoides</i>	nitgrass	Poaceae	N
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley	Poaceae	N
<i>Hordeum vulgare</i>	regreen barley	Poaceae	N
<i>Melica californica</i> var. <i>nevadensis</i>	California melic grass	Poaceae	Y
<i>Phalaris aquatica</i>	harding grass	Poaceae	N
<i>Phalaris arundinacea</i>	canary reedgrass	Poaceae	N
<i>Phalaris paradoxa</i>	hood canary grass	Poaceae	N
<i>Poa annua</i>	annual grass	Poaceae	N
<i>Poa bulbosa</i>	bulbous bluegrass	Poaceae	N
<i>Polypogon monspeliensis</i>	rabbits foot grass	Poaceae	N
<i>Stipa pulchra</i>	purple needlegrass	Poaceae	Y
Herbs			
<i>Achillea millefolium</i>	common yarrow	Asteraceae	Y
<i>Achyrachaena mollis</i>	blow-wives	Asteraceae	Y
<i>Acmispon wrangelianus</i>	Chilean trefoil	Fabaceae	Y
<i>Allium serra</i>	jeweled onion	Alliaceae	Y
<i>Amsinckia intermedia</i>	common fiddleneck	Boraginaceae	Y
<i>Amsinckia menziesii</i>	small flowered fiddleneck	Boraginaceae	Y
<i>Anthriscus caucalis</i>	bur chervil	Apiaceae	N
<i>Artemisia douglasiana</i>	California mugwort	Asteraceae	Y
<i>Astragalus gambelianus</i>	dwarf locoweed	Fabaceae	Y
<i>Athysanus pusillus</i>	dwarf athysanus	Brassicaceae	Y
<i>Brassica nigra</i>	black mustard	Brassicaceae	N
<i>Brodiaea elegans</i> ssp. <i>elegans</i>	harvest brodiaea	Themidaceae	Y
<i>Calochortus amabilis</i>	golden fairy lantern	Liliaceae	Y
<i>Calochortus luteus</i>	yellow mariposa lily	Liliaceae	Y
<i>Calochortus superbus</i>	mariposa lily	Liliaceae	Y
<i>Carduus pycnocephalus</i>	Italian thistle	Asteraceae	N
<i>Castilleja attenuata</i>	narrow leaf owl's clover	Orobanchaceae	Y
<i>Castilleja foliolosa</i>	woolly Indian paintbrush	Orobanchaceae	Y
<i>Centaurea melitensis</i>	Maltese star thistle	Asteraceae	N
<i>Centaurea solstitialis</i>	yellow star thistle	Asteraceae	N
<i>Cerastium glomeratum</i>	mouse-ear chickweed	Caryophyllaceae	N
<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	wavy leaf soap plant	Agavaceae	Y
<i>Clarkia affinis</i>	chaparral clarkia	Onagraceae	Y
<i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i>	winecup clarkia	Onagraceae	Y
<i>Claytonia parviflora</i> ssp. <i>grandiflora</i>	spring beauty	Montiaceae	Y
<i>Claytonia parviflora</i> ssp. <i>parviflora</i>	miner's lettuce	Montiaceae	Y

Table 3
Botanical Species Observed April/June 2017, February, 2018, and April/June 2019
Eastlake Sanitary Landfill, Clearlake, CA

Scientific Name	Common Name	Family	Native?
<i>Collinsia heterophylla</i> var. <i>heterophylla</i>	Chinese houses	Plantaginaceae	Y
<i>Collinsia sparsiflora</i> var. <i>collina</i>	hillside collinsia	Plantaginaceae	Y
<i>Cordylanthus pilosus</i> ssp. <i>pilosus</i>	hairy bird's beak	Orobanchaceae	Y
<i>Croton setiger</i>	turkey mullein	Euphorbiaceae	Y
<i>Cryptantha flaccida</i>	beaked cryptantha	Boraginaceae	Y
<i>Cynoglossum grande</i>	pacific hounds tongue	Boraginaceae	Y
<i>Daucus pusillus</i>	American wildcarrot	Apiaceae	Y
<i>Delphinium variegatum</i> ssp. <i>variegatum</i>	royal larkspur	Ranunculaceae	Y
<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i>	blue dicks	Themidaceae	Y
<i>Epilobium densiflorum</i>	willow herb	Onagraceae	Y
<i>Erigeron canadensis</i>	horseweed	Asteraceae	Y
<i>Eriophyllum lanatum</i> var. <i>achilleoides</i>	yarrow-leaved wooly sunflower	Asteraceae	Y
<i>Erodium cicutarium</i>	red-stemmed filaree	Geraniaceae	N
<i>Erythranthe guttata</i>	seep monkey flower	Phrymaceae	Y
<i>Eschscholzia californica</i>	California poppy	Papaveraceae	Y
<i>Euphorbia crenulata</i>	Chinese caps	Euphorbiaceae	Y
<i>Galium aparine</i>	cleaver plant	Rubiaceae	Y
<i>Galium divaricatum</i>	Lamarck's bedstraw	Rubiaceae	N
<i>Geranium dissectum</i>	cutleaf geranium	Geraniaceae	N
<i>Geranium molle</i>	crane's bill geranium	Geraniaceae	N
<i>Gilia tricolor</i> ssp. <i>tricolor</i>	bird's eyes	Polemoniaceae	Y
<i>Grindelia camporum</i>	common gumplant	Asteraceae	Y
<i>Herniaria hirsuta</i>	herniaria	Caryophyllaceae	N
<i>Hirschfeldia incana</i>	hoary mustard	Brassicaceae	N
<i>Holocarpha virgata</i> ssp. <i>virgata</i>	pitgland tarweed	Asteraceae	Y
<i>Hypochaeris glabra</i>	smooth cat's ear	Asteraceae	N
<i>Hypochaeris radicata</i>	hairy cats-ear	Asteraceae	N
<i>Lactuca serriola</i>	prickly lettuce	Asteraceae	N
<i>Lamium amplexicaule</i>	henbit	Lamiaceae	N
<i>Lasthenia californica</i> ssp. <i>californica</i>	California goldfields	Asteraceae	Y
<i>Lathyrus nissolia</i>	grassleaf pea	Fabaceae	N
<i>Leptosiphon bicolor</i>	true baby stars	Polemoniaceae	Y
<i>Linum bienne</i>	flax	Linaceae	N
<i>Logfia filaginoides</i>	California cottonrose	Asteraceae	Y
<i>Logfia gallica</i>	narrowleaf cottonrose	Asteraceae	N
<i>Lomatium caruifolium</i>	caraway-leaf lomatium	Apiaceae	Y
<i>Lomatium dasycarpum</i> ssp. <i>dasycarpum</i>	woolly fruited lomatium	Apiaceae	Y
<i>Lomatium triternatum</i>	Lewis's lomatium	Apiaceae	Y
<i>Lupinus bicolor</i>	annual lupine	Fabaceae	Y
<i>Lysimachia arvensis</i>	scarlet pimpernel	Myrsinaceae	N
<i>Lythrum hyssopifolia</i>	hyssop loosestrife	Lythraceae	N
<i>Madia gracilis</i>	grassy tarweed	Asteraceae	Y
<i>Madia</i> sp.	Madia species	Asteraceae	?
<i>Matricaria discoidea</i>	pineapple weed	Asteraceae	Y
<i>Medicago polymorpha</i>	bur clover	Fabaceae	N

Table 3
Botanical Species Observed April/June 2017, February, 2018, and April/June 2019
Eastlake Sanitary Landfill, Clearlake, CA

Scientific Name	Common Name	Family	Native?
<i>Melilotus indicus</i>	annual yellow sweetclover	Fabaceae	N
<i>Micropus californicus</i> var. <i>californicus</i>	cottontop	Asteraceae	Y
<i>Microseris laciniata</i> ssp. <i>laciniata</i>	cutleaf scorzonella	Asteraceae	Y
<i>Navarretia pubescens</i>	downy pincushion	Polemoniaceae	Y
<i>Nemophylla heterophylla</i>	canyon nemophila	Boraginaceae	Y
<i>Pedicularis densiflora</i>	Indian warrior	Orobanchaceae	Y
<i>Perideridia kelloggii</i>	Kellogg's yampah	Apiaceae	Y
<i>Petrorhagia dubia</i>	pinkgrass	Caryophyllaceae	N
<i>Plagiobothrys nothofulvus</i>	rusty hair popcorn flower	Boraginaceae	Y
<i>Plantago erecta</i>	California plantain	Plantaginaceae	Y
<i>Plantago major</i>	common plantain	Plantaginaceae	N
<i>Plectritis ciliosa</i>	longspur seablush	Valerianaceae	Y
<i>Primula hendersonii</i>	shooting star	Primulaceae	Y
<i>Psilocarphus tenellus</i>	wooly marbles	Asteraceae	Y
<i>Ranunculus occidentalis</i>	western buttercup	Ranunculaceae	Y
<i>Raphanus sativa</i>	wild radish	Onagraceae	N
<i>Rigiopappus leptocladus</i>	wireweed	Asteraceae	Y
<i>Rumex crispus</i>	curly dock	Polygonaceae	N
<i>Sanicula bipinnatifida</i>	purple sanicle	Apiaceae	Y
<i>Sanicula crassicaulis</i>	pacific sanicle	Apiaceae	Y
<i>Sanicula tuberosa</i>	tuberous sanicle	Apiaceae	Y
<i>Scutellaria californica</i>	California skullcap	Lamiaceae	Y
<i>Senecio vulgaris</i>	common groundsel	Asteraceae	N
<i>Sidalcea hartwegii</i>	Hartweg checkerbloom	Malvaceae	Y
<i>Sidalcea hirsuta</i>	hairy checkerbloom	Malvaceae	Y
<i>Silene gallica</i>	common catchfly	Caryophyllaceae	N
<i>Silene laciniata</i> ssp. <i>californica</i>	California Indian pink	Caryophyllaceae	Y
<i>Sisyrinchium bellum</i>	blue-eyed grass	Iridaceae	Y
<i>Sonchus oleraceus</i>	sow thistle	Asteraceae	N
<i>Stachys ajugoides</i>	bugle hedgenettle	Lamiaceae	Y
<i>Stellaria media</i>	chickweed	Caryophyllaceae	N
<i>Torilis arvensis</i>	field hedge parsley	Apiaceae	N
<i>Toxicoscordion</i> sp.	death camas	Melanthiaceae	Y
<i>Trifolium bifidum</i> var. <i>decipiens</i>	notch-leaf clover	Fabaceae	Y
<i>Trifolium depauperatum</i> var. <i>depauperatum</i>	cowbag clover	Fabaceae	Y
<i>Trifolium dubium</i>	Shamrock clover	Fabaceae	N
<i>Trifolium hirtum</i>	rose clover	Fabaceae	N
<i>Trifolium incarnatum</i>	crimson clover	Fabaceae	N
<i>Trifolium microdon</i>	thimble clover	Fabaceae	Y
<i>Trifolium olivaceum</i>	olive clover	Fabaceae	Y
<i>Trifolium variegatum</i> var. <i>variegatum</i>	variegated clover	Fabaceae	Y
<i>Trifolium willdenovii</i>	tomcat clover	Fabaceae	Y
<i>Triphysaria eriantha</i> ssp. <i>eriantha</i>	butter n eggs	Orobanchaceae	Y
<i>Triteleia laxa</i>	Ithuriel's spear	Themidaceae	Y
<i>Typha latifolia</i>	cattail	Typhaceae	Y
<i>Verbascum blattaria</i>	moth mullein	Scrophulariaceae	N

Table 3 Botanical Species Observed April/June 2017, February, 2018, and April/June 2019 Eastlake Sanitary Landfill, Clearlake, CA			
Scientific Name	Common Name	Family	Native?
<i>Vicia sativa</i>	spring vetch	Fabaceae	N
<i>Vicia villosa</i>	hairy vetch	Fabaceae	N
<i>Viola douglasii</i>	Douglas violet	Violaceae	Y
<i>Wyethia angustifolia</i>	narrow-leaf mule ears	Asteraceae	Y
<i>Yabea microcarpa</i>	California hedge-parsley	Apiaceae	Y
<i>Zeltnera venusta</i>	charming centaury	Gentianaceae	Y
Vines			
<i>Lonicera interrupta</i>	chaparral honeysuckle	Caprifoliaceae	Y
<i>Symphoricarpos mollis</i>	creeping snowberry	Caprifoliaceae	Y
<i>Marah fabacea</i>	California man-root	Cucurbitaceae	Y
<i>Toxicodendron diversilobum</i>	poison oak	Anacardiaceae	Y
184 Species			66% Native
1. Y: Yes 2. N: No 3. ?: Unknown			

Table 4
Animal Species Observed April/June 2017, February 2018, and April/June 2019
Eastlake Sanitary Landfill, Clearlake, CA

Scientific Name	Common Name	Family	Nesting Habit	Listing Status
Amphibians				
<i>Anaxyrusboreus ssp. halophilus</i>	California toad	Bufonidae	N/A	NL ¹
Birds				
<i>Anas platyrhynchos</i>	mallard	Anatidae	on ground, concealed by vegetation.	NL
<i>Buteo jamaicensis</i>	red tailed hawk	Accipitridae	crown of large trees with open view.	NL
<i>Callipepla californica</i>	California quail	Odontophoridae	Shallow depression on the ground.	NL
<i>Chamaea fasciata</i>	wrentit	Paradoxornithidae	well hidden in dense vegetation.	NL
<i>Zonotrichia leucophrys</i>	White-crowned sparrow	Passerellidae	Nests low in bushes or on ground under shrubs.	NL
<i>Zonotrichia atricapilla</i>	Gold-crowned sparrow	Passerellidae	Nests on the ground or on a low branch.	NL
<i>Sitta carolinensis</i>	White-breasted nuthatch	Sittidae	Cavity nester.	NL
<i>Spinus psaltria</i>	Lesser goldfinch	Fringillidae	Nests placed in a bush or at low to mid level of trees.	NL
<i>Carpodacus purpureus</i>	Purple finch	Fringillidae	Nests built on horizontal branches or in a tree fork.	NL
<i>Melospiza crissalis</i>	California towhee	Passerellidae	Nests in low branches or shrubs.	NL
<i>Charadrius vociferus</i>	killdeer	Charadriidae	shallow depression on bare ground.	NL
<i>Corvus brachyrhynchos</i>	American crow	Corvidae	In tree canopy, March-July	NL
<i>Corvus corax</i>	Common raven	Corvidae	In tree canopy, March-July	NL
<i>Melanerpes formicivorus</i>	acorn woodpecker	Picidae	shared cavity within a large tree	NL
<i>Meleagris gallopavo</i>	wild turkey	Phasianidae	on ground, next to large tree or shrubs	NL
<i>Molothrus ater</i>	brown-headed cowbird	Icteridae	does not build nests, parasitizes other species.	NL
<i>Oreothlypis celata</i>	orange crowned warbler	Parulidae	On ground, at base of gullies, trees.	NL
<i>Zenaidura macroura</i>	mourning dove	Columbidae	Branches of trees and on ground.	NL
Insects				
<i>Nymphalisantiopa</i>	mourning cloak	Nymphalidae	N/A	NL
Mammals				
<i>Lepus californicus ssp. californicus</i>	jack rabbit	Leporidae	N/A	NL
Reptiles				
<i>Sceloporus occidentalis</i> ssp. <i>occidentalis</i>	western fence lizard	Iguanidae	N/A	NL
1. NL: Not Listed. Species that are not specifically Listed are still protected under the Migratory Bird Treaty Act.				

Table 5 Bat Species Electronically Detected Using Wildlife Acoustics Echo Meter Touch 2 Pro East Lake Landfill, Clearlake, California				
Survey Date	Species Detected	Common Name	Status¹ (Federal/State/CDFW)	# of Detections
April 16, 2019	No Bats Detected	-	-	0
June 7, 2019	<i>Eptesicus fuscus</i>	Big-brown bat	--/--/-- (not listed)	1
June 7, 2019	<i>Parastrellus hesperus</i>	Canyon bat	--/--/-- (not listed)	2
June 7, 2019	<i>Myotis yumanensis</i>	Yuma myotis	--/--/S	6
July 30, 2019	<i>Myotis californicus</i>	California myotis	--/--/-- (not listed)	4
July 30, 2019	<i>Myotis yumanensis</i>	Yuma myotis	--/--/S	16
July 30, 2019	<i>Lasiurus cinereus</i>	Hoary bat	--/--/-- (not listed)	11
July 30, 2019	<i>Eptesicus fuscus</i>	Big-brown bat	--/--/-- (not listed)	2
July 30, 2019	<i>Myotis lucifugus</i>	Little-brown bat	--/--/-- (not listed)	1
July 30, 2019	<i>Parastrellus hesperus</i>	Canyon bat	--/--/-- (not listed)	14
1. Species indicator status as assigned by Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), California Department of Fish and Wildlife (CDFW), US Forest Service, (USFS) and California Department of Forestry & Fire Protection (CDF): S: Sensitive				

2019 Bat Survey Report

3



Phone: (707) 459-4518 Email: info@shn-engr.com Web: shn-engr.com
335 S. Main Street, Willits, CA 95490-3977

Reference: 419004

August 16, 2019

Mark Erickson
SCS Engineers
3843 Brickway Blvd.
Santa Rosa, CA 95403

Subject: 2019 Bat Survey Report – Eastlake Landfill Expansion, Lake County, CA

Dear Mr. Erickson:

This report presents survey results for special status bat species conducted between April 16 and July 30, 2019 at the Eastlake Sanitary Landfill (ESL) located on Davis Road in the city of Clearlake, Lake County California.

Introduction

The County of Lake is in the process of planning and permitting for potential expansion of the ESL with State and Federal agencies. As part of the permitting process, an assessment of the project's potential impacts to special status bat species; the Pallid bat (*Antrozous pallidus*), the Townsend's big-eared bat (*Corynorhinus townsendii*) and the Western Red bat (*Lasiurus blossevilli*), were identified by a query of the California Department of Fish and Wildlife Services (CDFW's) California Natural Diversity Database (CNDDDB) that may utilize the project area.

A query of the CNDDDB was conducted on August 6, 2019 to determine if these special-status animals have been detected within the USGS Quadrangle where the project is located (Lower Lake) in addition to the eight USGS Quadrangle maps surrounding the project area. CNDDDB search results indicated that both the Pallid bat and the Townsend's big-eared bat were detected in several adjacent Quadrangles and the Western Red bat was only identified within the Whispering Pines Quadrangle, (see Appendix 1, CNDDDB Data). In addition to the site specific CNDDDB database query for the Project area, the CDFW website was queried for the most current Mammal Species of Special Concern list to other bat species that may be present but were not addressed by the CNDDDB (see Appendix 2, CDFW Mammal Species List). A query of the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (IPaC) was also conducted for Federal special-status bat species that may occur at the project location, but no bat species were identified.

In the absence of a State of California Bat Survey Protocol, a bat survey protocol was developed by SHN, in cooperation and coordination with CDFW personnel in order to assess the potential for bat presence at the project site. SHN provided the Bat Survey Protocol for review and comment to CDFW on February 27, 2018. The Bat Survey Protocol had been reviewed by CDFW personnel and their comments had

been incorporated into the finalized Bat Survey Protocol, *Presence/Absence of Special Status Species for the Eastlake Sanitary Landfill Expansion Project*, (SHN, 2018). This Survey Protocol formed the basis for the 2019 survey effort with a slight modification to the survey period to extend it later in the summer to capture bat activity during the warmer months including juvenile emergence throughout the Project location (see Figure 1, Appendix 4, Eastlake Sanitary Landfill Project Location and Figure 2, Appendix 5, Study Area with Potential Areas of Disturbance).

Survey Methods

The methodologies described in the Bat Survey Protocol were utilized to determine if special-status bats occur at the proposed expansion areas of the site or utilize any of the building associated with facility operations. As described in the Protocol, three separate surveys were to be conducted in the spring and summer of 2019 utilizing the following survey components:

- Conduct roost assessment of the trees and outbuildings prior to sunset with the installation of motion activated infra-red cameras if bat use indicators are detected,
- Conduct direct visual observations of the potential roost sites circa sunset, and
- Utilize the Acoustic echolocation equipment with bat species identification software equipment (Wildlife Acoustics Echo Meter Touch Pro 2) for a minimum of 3 hours after sunset within the proposed expansion area.

Survey Results

Preliminary and protocol level surveys were conducted over a four-month period between April 16 and July 30, 2019 (see Appendix 3, Bat Survey Data).

April 16, 2019 - Survey Visit 1

A roost assessment was conducted at the various outbuildings by examining them directly for bats, as well as searching for physical evidence of bat use (guano, urine spray, roosting, scratch marks, etc.). No bats or physical evidence of bat use was observed at any of the sites, so therefore no motion activated infrared cameras were set up at the processing plant.

A preliminary site investigation was conducted throughout the open grassland and scattered oak habitat where the proposed landfill expansion is expected to occur. Several oak trees were identified within and adjacent to the project area as having potential to provide roosting habitat as a result of their cavities and sections of loose bark. During sunset, these potential roosting sites were observed for emerging bats. The echolocation equipment was also set up during this time for continuous coverage and potential echolocation signals from other bats emerging in the same vicinity. During the nighttime echolocation surveys, various locations throughout the project area were surveyed to cover the areas where bat activity would likely be observed for feeding or drinking activities at the grass/oak habitat as well as at the two pond sites.

No bats were observed emerging from the potential roost sites and no echolocation signals were detected throughout the remainder of the survey period.

June 7, 2019 - Survey Visit 2

The second survey began at the grass/oak habitats for the emergence of bats from tree cavities or from loose bark habitats. No bats were visually observed emerging from the potential roost sites within the survey area. As darkness fell, several bats were observed flying rapidly overhead and recorded by the echolocation equipment. Bat activity continued well after dusk and the echolocation equipment identified three bat species (*Myotis yumanensis* - Yuma myotis, *Parastrellus hesperus* - Canyon bat and *Eptesicus fuscus* - Big brown bat) during the survey period.

July 31, 2019 - Survey Visit 3

The third protocol level survey included a roost assessment of the outbuildings, a roost emergence survey of the oak habitats and the use of echolocation equipment throughout the area of habitats associated with landfill expansion plans. All yielded no signs of bat roosting at these locations.

At dusk, several bats were observed flying overhead and were registered by the echolocation equipment. As dusk progressed into total darkness, the echolocation equipment continued to register and identify six bat species, (*Myotis californicus* - California myotis, *Myotis yumanensis* - Yuma myotis, *Parastrellus hesperus* - Canyon bat, *Eptesicus fuscus* - Big brown bat, *Myotis lucifugus* - Little brown bat and *Lasiurus cinereus* - Hoary bat) during the survey period.

Conclusion

Based on the results of the presence/absence survey conducted over a fifteen-week period (April 16th through July 31, 2019) bat use of the project area was minimal during the onset of spring but as summer progressed and the temperature increased, so did bat activity. The echolocation device did register several echolocation signals which did not result in a positive species identification. These signals (frequency and waveform patterns) were compared with echolocation signals of special-status species identified in the CNDDDB database as having a potential to occur in the area, but the signals were not similar. Therefore, the proposed project should have no effect on special-status bat species.

While no CDFW special-status bat species were detected during the 2018 and 2019 Bat Surveys, the take of bats in general is a CDFW code violation, therefore the Permittee should consult with CDFW on methods to avoid and minimize potential impacts to bats or their roosting habitats through the timing of tree removal in the southern boundary of the project area as this area has potential roosting habitat associated with the trees. It is our professional opinion that the proposed property associated with the Project is not utilized by special-status bat species and through prudent use of timing for vegetation removal, the Project will not adversely affect any species of bats.

Please call me at 707-459-4518 if you have any questions.

Mr. Mark Erickson
Eastlake Sanitary Landfill Expansion – 2019 Bat Survey
August 16, 2019
Page 4

Sincerely,

SHN



Warren Mitchell,
Senior Biologist

WSM:amg

- Attachments:
1. CNDDDB Data
 2. CDFW Mammal Species List
 3. Bat Survey Data
 4. Project Location
 5. Study Area with Potential Areas of Disturbance

References Cited

California Department of Fish and Game. (1998). Fish and Game Code. Sacramento, CA: California Department of Fish and Wildlife (CDFW).

---. (2019a). California Natural Diversity Database. Accessed at:
<http://www.dfg.ca.gov/biogeodata/cnddb>. August 2019.

---. (2019b). California Natural Diversity Database. Accessed at: <http://bios.dfg.ca.gov/>. August 2019.

SHN Consulting Engineers and Geologists. 2018. "Presence/Absence of Special Status Species for the Eastlake Sanitary Landfill Expansion Project". February 2018. Willits, CA: SHN.

CNDDDB DATA

1

Regionally Occurring Special Status Wildlife Species List (CNDDDB & IPaC August 6, 2019)

**Lower Lake and Surrounding Quadrangles
East Lake Landfill Expansion, Clearlake California**

Species Latin Name	Common Name	Status (Federal/State/Other) ¹ Global & State Rank	General Habitat Requirements	Potential for Occurrence
Mammals				
<i>Antrozous pallidus</i>	Pallid bat	--/--/SSC G5S3	Locally common in low elevations in California. Habitats include grasslands, shrublands woodlands and forests with open, dry habitats with rocky areas for roosting.	Moderate
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	--/--/SSC G3G4S2	This bat is known to inhabit mines, caves and buildings where it establishes roosts and maternal colonies to raise young. They feed on a variety of insects.	Moderate
<i>Lasionycteris noctivagans</i>	silver-haired bat	--/--/-- G5S3S4	The Silver-haired Bat spends the majority of its life in forested habitats and is especially reliant on old growth forests for roost space.	None
<i>Lasiurus blossevillei</i>	Western red bat	--/--/SSC G5S3	Roosts primarily in trees, less often in shrubs in edge habitats, adjacent to streams, fields or urban habitats.	Moderate
<i>Lasiurus cinereus</i>	hoary bat	--/--/-- G5S4	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	Low
<i>Myotis evotis</i>	long-eared myotis	--/--/S G5S3	Great Basin from the Oregon border south through the Tehachapi Mts. to the Coast Ranges. This species has been found in nearly all brush, woodland, and forest habitats, from sea level to at least 2700 m (9000 ft), but coniferous woodlands and forests seem to be preferred.	Moderate
<i>Myotis lucifugus</i>	little brown bat (San Bernardino Mtns Pop.)	--/--/-- G3S2S3	Buildings, caves, trees, rocks, and wood piles as roost sites.	None
<i>Myotis thysanodes</i>	fringed myotis	--/--/S G4S3	The fringed myotis uses open habitats, early successional stages, streams, lakes, and ponds as foraging areas. Roosts in caves, mines, buildings, and crevices. Separate day and night roosts may be used. Requires water.	Low
<i>Myotis yumanensis</i>	Yuma myotis	--/--/S G5S4	Found in a variety of western lowland habitats, from arid thorn scrub to coniferous forest, but always close to standing water such as lakes and ponds.	Moderate
<i>Pekania pennanti</i>	Fisher, West Coast DPS	--/SCT/SSC G5T2T3QS2S3	Utilizes low- to mid-elevation mixed hardwood coniferous forests with a diversity of physical ground structure habitats for prey species. Important Fisher habitat includes relatively large trees, high canopy closure and abundant snags.	None

Regionally Occurring Special Status Wildlife Species List (CNDDDB & IPaC August 6, 2019)

Lower Lake and Surrounding Quadrangles

East Lake Landfill Expansion, Clearlake California

Species Latin Name	Common Name	Status (Federal/State/Other) ¹ Global & State Rank	General Habitat Requirements	Potential for Occurrence
<p>1. Species indicator status as assigned by Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), California Department of Fish and Wildlife (CDFW), US Forest Service, (USFS) and California Department of Forestry & Fire Protection (CDF)</p> <div> <div>C: candidate</div> <div>CT: candidate threatened</div> <div>D: delisted</div> <div>DPS: distinct population segment</div> <div>E: endangered</div> <div>ESU: evolutionarily significant unit</div> <div>WL: watch list</div> </div> <div> <div>FP: fully protected</div> <div>PT: proposed threatened</div> <div>S: Sensitive</div> <div>SSC: species of special concern</div> <div>T: threatened</div> <div>“—”: No Status Assigned</div> </div> <p>2. Species Heritage rank as assigned by California Department of Fish and Wildlife (CDFW)</p> <div> <div>G1/S1: critically imperiled</div> <div>G2/S2: imperiled</div> <div>G3/S3: vulnerable</div> <div>G4/S4: apparently secure</div> <div>G5/S5: secure</div> </div>				

CDFW MAMMAL SPECIES LIST

2



**California Department of Fish and Wildlife
California Natural Diversity Database (CNDDDB)**



SPECIAL ANIMALS LIST

August 2019

Listing and Special Status Information

CALIFORNIA ENDANGERED SPECIES ACT (CESA) LISTING CODES: The listing status of each species is current as of the date of this list. The most current changes in listing status will be found in the “Endangered and Threatened Animals List,” which the CNDDDB updates and issues quarterly.

SE	State listed as Endangered
ST	State listed as Threatened
SCE	State candidate for listing as Endangered
SCT	State candidate for listing as Threatened
SCD	State candidate for delisting

FEDERAL ENDANGERED SPECIES ACT (ESA) LISTING CODES: The listing status is current as of the date of this list. The most current changes in listing status will be found in the “Endangered and Threatened Animals List,” which the CNDDDB updates and issues quarterly. Federal listing actions contained in the Federal Register are also available at: <http://www.regulations.gov>.

FE	Federally listed as Endangered
FT	Federally listed as Threatened
FPE	Federally proposed for listing as Endangered
FPT	Federally proposed for listing as Threatened
FPD	Federally proposed for delisting
FC	Federal candidate species (former Category 1 candidates)

Section 4(c)(2)(A) of the Act requires the U.S. Fish and Wildlife Service to conduct a **review** of listed species at least once every **five** years. Five year reviews from the Sacramento Fish and Wildlife Office are available at: <https://www.fws.gov/sacramento/es/Five-Year-Reviews/>.

OTHER STATUS CODES

The status of species on the Special Animals List according to other conservation organizations is provided. Taxa on these lists are reviewed for inclusion in the CNDDDB Special Animals List, but are not automatically included. For example, taxa that are regionally rare within a portion of California may not be included, because they may be of lesser conservation concern across their full range in California.

American Fisheries Society (AFS): Designations for freshwater and diadromous species were taken from the paper:

Jelks, H.L., S.J. Walsh, N.M. Burkhead, S. Contreras-Balderas, E. Díaz-Pardo, D.A. Hendrickson, J. Lyons, N.E. Mandrak, F. McCormick, J.S. Nelson, S.P. Platania, B.A. Porter, C.B. Renaud, J.J. Schmitter-Soto, E.B. Taylor, and M.L. Warren, Jr. 2008. Conservation status of imperiled North American freshwater and diadromous fishes. Fisheries 33(8):372-407. Available at: http://www.fs.fed.us/rm/pubs_other/rmrs_2008_jelks_h001.pdf

Designations for marine and estuarine species were taken from the paper:

Musick, J.A. et al. 2000. "Marine, Estuarine, and Diadromous Fish Stocks at Risk of Extinction in North America (Exclusive of Pacific Salmonids). Fisheries 25(11):6-30. Available at: <http://www.flmnh.ufl.edu/fish/sharks/sawfish/Reprint1390.pdf>

BLM Sensitive: Bureau of Land Management (BLM) Manual §6840 states that "BLM sensitive species are: (1) species listed or proposed for listing under the Endangered Species Act (ESA), and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as Bureau sensitive by the State Director(s). All Federal candidate species, proposed species, and delisted species in the 5 years following delisting will be conserved as Bureau sensitive species." The California-BLM Sensitive Animals list is available at: <https://www.blm.gov/programs/fish-and-wildlife/threatened-and-endangered/state-te-data/california>.

CDF Sensitive: California Department of Forestry and Fire Protection classifies "sensitive species" as those species that warrant special protection during timber operations. The list of "sensitive species" is given in §895.1 (Definitions) of the California Forest Practice Rules. The 2016 Forest Practice Rules are available at: http://www.calfire.ca.gov/resource_mgt/resource_mgt_forestpractice.php.

CDFW Species of Special Concern (SSC): It is the goal and responsibility of the Department of Fish and Wildlife to maintain viable populations of all native species. To this end, the Department has designated certain vertebrate species as Species of Special Concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of designating species as "Species of Special Concern" is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long term viability. Not all "Species of Special Concern" have declined equally; some species may be just starting to decline, while others may have already reached the point where they meet the criteria for listing as a "Threatened" or "Endangered" species under the State and/or Federal Endangered Species Acts. More information is available at: <https://www.wildlife.ca.gov/Conservation/SSC>.

CDFW Fully Protected: The classification of Fully Protected was the State's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under the California and/or Federal Endangered Species Acts; the exceptions are white-tailed kite, golden eagle, trumpeter swan, northern elephant seal, and ring-tailed cat. The white-tailed kite and the golden eagle are tracked in the CNDDDB; the trumpeter swan, northern elephant seal, and ring-tailed cat are not. The Fish and Game Code sections dealing with Fully Protected species state that these species "...may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected" species, although take may be authorized for necessary scientific research. This language arguably makes the "Fully Protected" designation the strongest and most restrictive regarding the "take" of these species. In 2003, the code sections dealing with Fully Protected species were amended to allow the Department to authorize take resulting from recovery activities for state-listed species. More information on Fully Protected species and the take provisions can be found in the Fish and Game Code, (birds at §3511, mammals at §4700,

reptiles and amphibians at §5050, and fish at §5515). Additional information on Fully Protected fish can be found in the California Code of Regulations, Title 14, Division 1, Subdivision 1, Chapter 2, Article 4, §5.93. The category of Protected Amphibians and Reptiles in Title 14 has been repealed. [The Fish and Game Code](#) and [Title 14 of the California Code of Regulations](#) are available online.

IUCN - The International Union for Conservation of Nature (IUCN): The IUCN assesses, on a global scale, the conservation status of species, subspecies, varieties, and even selected subpopulations in order to highlight taxa threatened with extinction, and therefore promote their conservation. Detailed information on the IUCN and the Red List is available at: <http://www.iucnredlist.org>.

Marine Mammal Commission Marine Mammal Species of Special Concern: Section 202 of the Marine Mammal Protection Act directs the Marine Mammal Commission, in consultation with its Committee of Scientific Advisors, to make recommendations to the Department of Commerce, the Department of the Interior, and other federal agencies on research and management actions needed to conserve species of marine mammals. To meet this charge, the Commission devotes special attention to particular species and populations that are vulnerable to various types of human-related activities, impacts, and contaminants. Such species may include marine mammals listed as Endangered or Threatened under the Endangered Species Act or as depleted under the Marine Mammal Protection Act. In addition, the Commission often directs special attention to other species or populations of marine mammals not so listed whenever special conservation challenges arise that may affect them. More information on the Marine Mammal Protection Act and the Marine Mammal Species of Special Concern list is available at: <http://www.mmc.gov/priority-topics/species-of-concern/>.

North American Bird Conservation Initiative (NABCI): The North American Bird Conservation Initiative is a coalition of government agencies and private organizations that works to ensure the long-term health North America's native bird populations. They publish an annual State of the Birds report which includes a watch list of bird species in need of conservation help. Species on the list are assigned to either the Red Watch List for species with extremely high vulnerability, or Yellow Watch List for species that may be range restricted or may be more widespread but with declines and high threats. More information is available at: <http://stateofthebirds.org>.

National Marine Fisheries Service (NMFS) Species of Concern: The Office of Protected Resources (OPR) is a headquarters program office of NOAA's National Marine Fisheries Service (NOAA Fisheries Service, or NMFS), under the U.S. Department of Commerce, with responsibility for protecting marine mammals and endangered marine life. NOAA's Office of Protected Resources works to conserve, protect, and recover species under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). The category "Species of Concern" was established by the National Marine Fisheries Service (NMFS) effective 15 April 2004. Species of Concern are those species about which NOAA's National Marine Fisheries Service (NMFS) has some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act (ESA). "Species of Concern" status does not carry any procedural or substantive protections under the ESA, but is meant to draw proactive attention and conservation action to these species. More information is available at: <http://www.nmfs.noaa.gov/pr/species/concern>.

U.S. Fish and Wildlife Service: Birds of Conservation Concern: The goal of the *Birds of Conservation Concern 2008* report is to accurately identify the migratory and non-migratory bird species (beyond those already designated as Federally Threatened or Endangered) that represent our highest conservation priorities and draw attention to species in need of conservation action. This report is available at:

<http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>.

U.S. Forest Service Sensitive: USDA Forest Service defines sensitive species as plant and animal species identified by a regional forester that are not listed or proposed for listing under the Federal Endangered Species Act for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. Regional Foresters shall identify sensitive species occurring within the region. California is the Pacific Southwest Region (Region 5). More information is available at: <http://www.fs.usda.gov/main/r5/plants-animals> and at: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5435266.xlsx.

Western Bat Working Group (WBWG): The WBWG is composed of agencies, organizations, and individuals interested in bat research, management, and conservation from the 13 western states and provinces. The goals are (1) to facilitate communication among interested parties and reduce risks of species decline or extinction; (2) to provide a mechanism by which current information on bat ecology, distribution, and research techniques can be readily accessed; and (3) to develop a forum to discuss conservation strategies, provide technical assistance, and encourage education programs. Species are ranked as High, Medium, or Low Priority in each of 10 regions in western North America. Because California includes multiple regions where a species may have different WBWG Priority ranks, the CNNDDB includes categories for Medium-High, and Low-Medium Priority. The CNNDDB tracks bat species that are at least Low-Medium Priority in California. More information is available at: <http://www.wbwg.org>.

Xerces Society Red List: The Xerces Society is an international non-profit organization dedicated to protecting biological diversity through invertebrate conservation. The Society advocates for invertebrates and their habitats by working with scientists, land managers, educators, and citizens on conservation and education projects. Their core programs focus on endangered species, native pollinators, and watershed health. More information on the Red List is available at: <http://www.xerces.org>.

Special Animals List - August 2019

Mammals

Species	Comment	Rank	ESA	CESA	Other Status	Notes
TALPIDAE (moles)						
+ <i>Scapanus latimanus insularis</i> Angel Island mole		G5THQ SH	None	None		
+ <i>Scapanus latimanus parvus</i> Alameda Island mole		G5THQ SH	None	None	CDFW:SSC	
SORICIDAE (shrews)						
+ <i>Sorex lyelli</i> Mount Lyell shrew		G3G4 S3S4	None	None	CDFW:SSC IUCN:LC	
+ <i>Sorex ornatus relictus</i> Buena Vista Lake ornate shrew		G5T1 S1	Endangered	None	CDFW:SSC	
+ <i>Sorex ornatus salarius</i> Monterey shrew		G5T1T2 S1S2	None	None	CDFW:SSC	
+ <i>Sorex ornatus salicornicus</i> southern California saltmarsh shrew		G5T1? S1	None	None	CDFW:SSC	
+ <i>Sorex ornatus sinuosus</i> Suisun shrew		G5T1T2Q S1S2	None	None	CDFW:SSC	
+ <i>Sorex ornatus willetti</i> Santa Catalina shrew		G5T1 S1	None	None	CDFW:SSC	
+ <i>Sorex vagrans halicoetes</i> salt-marsh wandering shrew		G5T1 S1	None	None	CDFW:SSC	
<i>Sorex vagrans paludivagus</i> Monterey vagrant shrew		G5T1 S1	None	None		
PHYLLOSTOMIDAE (leaf-nosed bats)						
+ <i>Choeronycteris mexicana</i> Mexican long-tongued bat		G4 S1	None	None	CDFW:SSC IUCN:NT WBWG:H	
+ <i>Leptonycteris yerbabuenae</i> lesser long-nosed bat		G4 S1	Delisted	None	CDFW:SSC IUCN:VU WBWG:H	Yes
+ <i>Macrotus californicus</i> California leaf-nosed bat		G4 S3	None	None	BLM:S CDFW:SSC IUCN:LC WBWG:H	
VESPERTILIONIDAE (evening bats)						
+ <i>Antrozous pallidus</i> pallid bat		G5 S3	None	None	BLM:S CDFW:SSC IUCN:LC USFS:S WBWG:H	
+ <i>Corynorhinus townsendii</i> Townsend's big-eared bat		G3G4 S2	None	None	BLM:S CDFW:SSC IUCN:LC USFS:S WBWG:H	
+ <i>Euderma maculatum</i> spotted bat		G4 S3	None	None	BLM:S CDFW:SSC IUCN:LC WBWG:H	
+ <i>Lasionycteris noctivagans</i> silver-haired bat		G5 S3S4	None	None	IUCN:LC WBWG:M	
+ <i>Lasiurus blossevillei</i> western red bat		G5 S3	None	None	CDFW:SSC IUCN:LC WBWG:H	Yes
+ <i>Lasiurus cinereus</i> hoary bat		G5 S4	None	None	IUCN:LC WBWG:M	
+ <i>Lasiurus xanthinus</i> western yellow bat		G5 S3	None	None	CDFW:SSC IUCN:LC WBWG:H	Yes

BAT SURVEY DATA

3

**BAT SURVEY & BIOLOGICAL OBSERVATION RECORD:****Lake County – Landfill Expansion Project**

Biological Inspector(s): Warren Mitchell				Date: <u>4/16/19</u> . Page 1 of <u>1</u> .	
<input checked="" type="checkbox"/> Survey Log				Survey # <u>1</u> .	
<input checked="" type="checkbox"/> Document to File or				Start Time: <u>19:30</u> . End Time: <u>23:00</u>	
<input type="checkbox"/> Corrective Action Needed (see description below)				Total Time: <u>3</u> Hrs. <u>30</u> min.	
Resources Investigated: <input type="checkbox"/> General <input type="checkbox"/> Cultural <input checked="" type="checkbox"/> Biological <input type="checkbox"/> Other					

Weather:	Clear <input checked="" type="checkbox"/>	Partly Cloudy <input type="checkbox"/>	Overcast <input type="checkbox"/>	Rain <input type="checkbox"/>	Snow <input type="checkbox"/>
Temp (°F):	To 32 <input type="checkbox"/>	33 - 50 <input type="checkbox"/>	51 - 70 <input type="checkbox"/>	71 - 90 <input checked="" type="checkbox"/>	91 + <input type="checkbox"/>
Wind:	Still <input checked="" type="checkbox"/>	Light <input checked="" type="checkbox"/>	Moderate <input type="checkbox"/>	High <input type="checkbox"/>	Storm <input type="checkbox"/>

Area (s) Inspected:

Bridge(s): ☐ Open Oak Woodlands: ☒ Riparian Corridor: ☐ ☒ Other Outbuildings .

Bat # *	Species Code	Number of Occurrences	Time Code (Special Status Species Only)	Notes
1.	<u>No ID</u>	<u>UNK - 5</u>		<u>Echolocation equipment picked up interference of some sort. Comparison of frequency - pulse rates did not match any bat signatures, special status or otherwise.</u>
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

Special Status Species Observed? ☐ Y or ☒ N

Special Status Species Notes:

Other Notes: Began Survey by searching outbuildings for physical evidence of roosting use, guano, urine spray, scratch marks and emergence at sun set. No evidence or bats detected.

* Only the first encounter of each species detected will be listed, except for Special Status Species, others will be tallied.

Photo(s) Attached: ☐ Y or ☐ N (if yes, description(s)): GPS Coordinates: 39.949315 / -122.602182

DISTRIBUTION	1. Office	REPORTED	
	2. Contractor	BY:	<u>W. Mitchell</u>
	3. _____		DATE: <u>4/16/19</u>
		REVIEWED	
		BY:	DATE: _____

**BAT SURVEY & BIOLOGICAL OBSERVATION RECORD:****Lake County - East Lake Landfill Expansion Project**

Biological Inspector(s): Warren Mitchell		Date of Visit: <u>6 / 7 / 19</u> . Page 1 of 1.			
<input checked="" type="checkbox"/> Survey Log		Survey # <u>2</u> .			
<input checked="" type="checkbox"/> Document to File or		Start Time: <u>20:45</u> . Stop Time: <u>00:15</u> .			
<input type="checkbox"/> Corrective Action Needed (see description below)		Total Survey Time: <u>3 Hrs. 30 min.</u>			
Resources Investigated: <input type="checkbox"/> General <input type="checkbox"/> Cultural <input checked="" type="checkbox"/> Biological <input type="checkbox"/> Other					
Weather:	Clear <input checked="" type="checkbox"/>	Partly Cloudy <input type="checkbox"/>	Overcast <input type="checkbox"/>	Rain <input type="checkbox"/>	Snow <input type="checkbox"/>
Temp (°F):	To 32 <input type="checkbox"/>	33 - 50 <input type="checkbox"/>	51 - 70 <input checked="" type="checkbox"/>	71 - 90 <input type="checkbox"/>	91 + <input type="checkbox"/>
Wind:	Still <input checked="" type="checkbox"/>	Light <input checked="" type="checkbox"/>	Moderate <input type="checkbox"/>	High <input type="checkbox"/>	Storm <input type="checkbox"/>
Area (s) Inspected:					
Out Buildings: <input checked="" type="checkbox"/> Open Oak Woodlands: <input checked="" type="checkbox"/> Ponds: <input checked="" type="checkbox"/> <input type="checkbox"/> Other _____.					
Bat # *	Species Code	Number of Occurrences	Time Code (for Special Status Species Only)	Comments	
1.	EPT FUS	1 - ①		Big brown bat	
2.	PAR HES	11 - ②		Canyon bat	
3.	MYO YUM	11 - ⑥		Yuma myotis	
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.	No Id	1111 *			
Special Status Species Observed? <input type="checkbox"/> Y or <input checked="" type="checkbox"/> N					
Special Status Species Notes:					
Other Notes: * Compared pulse rates + frequencies w/ special status species, but were not compatible.					
Only the first encounter of each species detected will be listed, except for Special Status Species, others will be tallied.					
Photo(s) Attached: <input type="checkbox"/> Y or <input type="checkbox"/> N (if yes, description(s)):					
DISTRIBUTION	1. Office	REPORTED BY:	DATE: <u>6/10/19</u>		
	2. Contractor	BY: <u>W. Mitchell</u>			
	3. _____	REVIEWED BY:			
	4. _____	BY:			

**BAT SURVEY & BIOLOGICAL OBSERVATION RECORD:****Lake County - East Lake Landfill Expansion Project**

Biological Inspector(s): Warren Mitchell

Date of Visit: 7/30/19. Page 1 of 1.☒ Survey LogSurvey # 3.☒ Document to File orStart Time: 20:00. Stop Time: 00:15.☐ Corrective Action Needed (see description below)Total Survey Time: 4 Hrs. 15 min.Resources Investigated: ☐ General ☐ Cultural ☒ Biological ☐ Other

Weather:	Clear <input checked="" type="checkbox"/>	Partly Cloudy <input type="checkbox"/>	Overcast <input type="checkbox"/>	Rain <input type="checkbox"/>	Snow <input type="checkbox"/>
Temp (°F):	To 32 <input type="checkbox"/>	33 - 50 <input type="checkbox"/>	51 - 70 <input type="checkbox"/>	71 - 90 <input checked="" type="checkbox"/>	91 + <input type="checkbox"/>
Wind:	Still <input checked="" type="checkbox"/>	Light <input checked="" type="checkbox"/>	Moderate <input type="checkbox"/>	High <input type="checkbox"/>	Storm <input type="checkbox"/>

Area (s) Inspected:

Out Buildings: ☒ Open Oak Woodlands: ☒ Ponds: ☒ ☐ Other _____.

Bat # *	Species Code	Number of Occurrences	Time Code (for Special Status Species Only)	Comments
1.	MYO CAL	IIII		California myotis
2.	MYO YUM	HT HT HT I		Yuma myotis
3.	LAS CIN	HT HT I		Hoary bat
4.	EPT FUS	II		Big brown bat
5.	MYO LUC	I		Little brown bat
6.	PAR HES	HT HT IIII		Canyon bat
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.	No Id	HT HT II		
20.				

Special Status Species Observed? ☐ Y or ☒ N

Special Status Species Notes:

Other Notes: * Compared pulse rates + frequencies w/ special status species but were not similar.

Only the first encounter of each species detected will be listed, except for Special Status Species, others will be tallied.

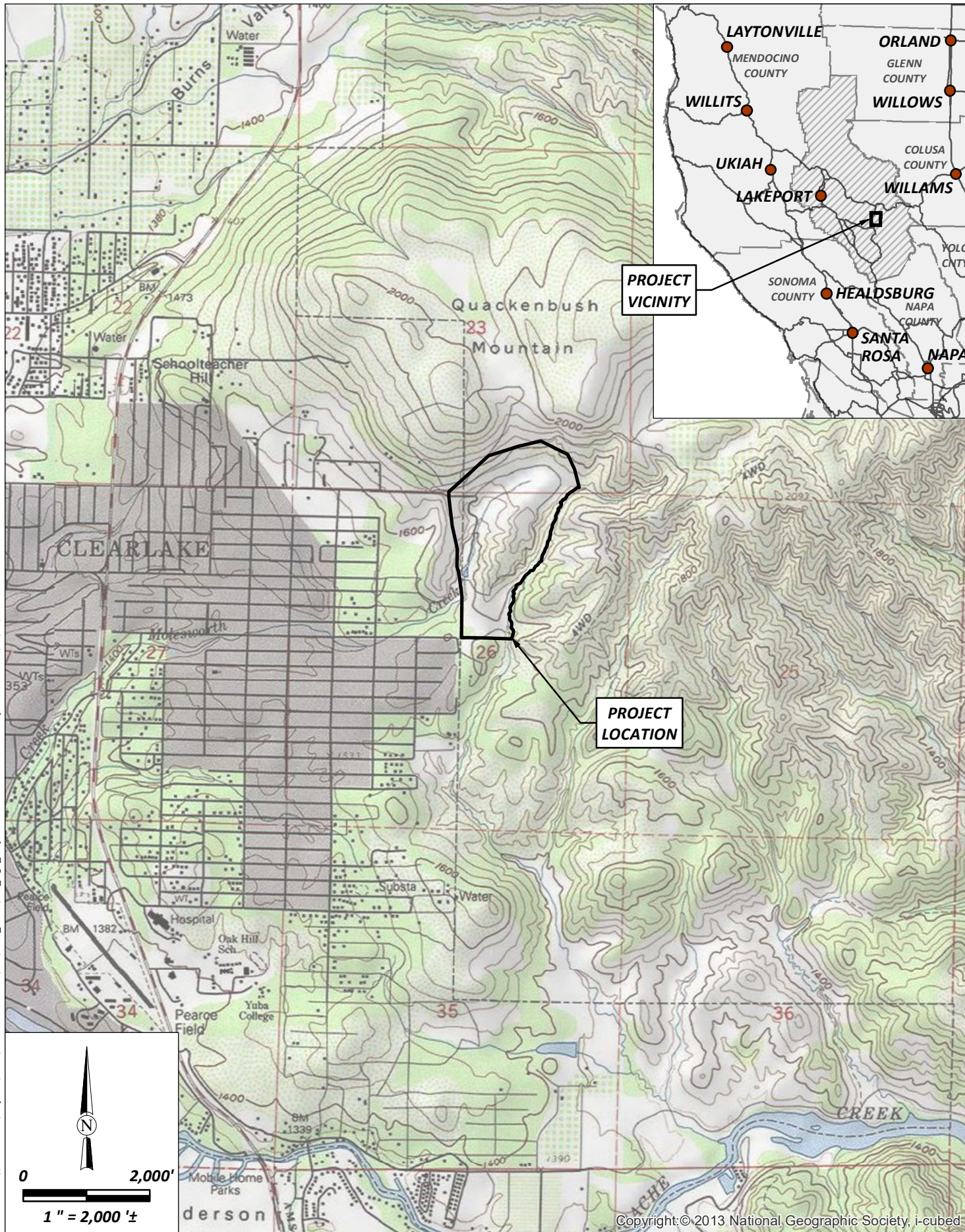
Photo(s) Attached: ☐ Y or ☐ N (if yes, description(s)):

DISTRIBUTION	1. Office	REPORTED		DATE: <u>7/31/19</u>
	2. Contractor	BY:	<u>W. Mitchell</u>	
	3. _____	REVIEWED		
	4. _____	BY:		DATE: _____

PROJECT LOCATION

4

Path: \\Willits2019\Projects\2019\419004-ESI-CEQA\GIS\PROJ_MXD\BAT_Fig1_ProjectLocation.mxd User Name: jsousa DATE: 8/16/19, 1:13PM



Eastlake Landfill
2019 Bat Survey Report
Eastlake, California

Project Location

SHN 419004.020

August 2019

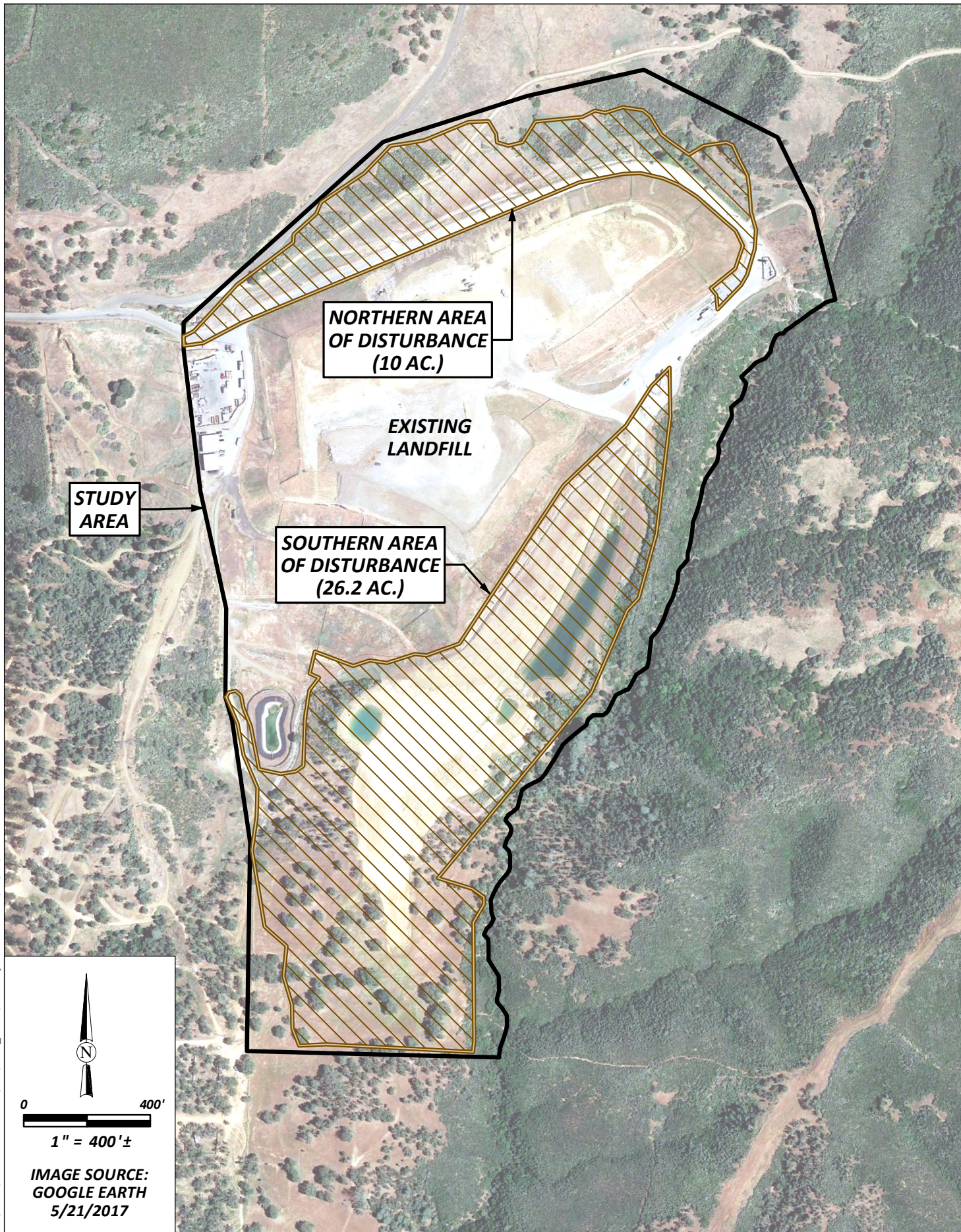
BAT_Fig1_ProjectLocation

Figure 1

STUDY AREA WITH
POTENTIAL AREAS OF
DISTURBANCE

5

\\Willits2019\Projects\2019\419004-ESL-CEQA\GIS\PROJ_MXD\ USER: jsousa DATE: 8/16/19, 1:18PM



Eastlake Landfill
2019 Bat Survey Report
Lake County, California

Study Area w/
Potential Areas of Disturbance
SHN 419004.020

August 2019

BAT_Fig2_StudyAreaWithPAD

Figure 2

National Wetlands Inventory

4



1:12,871




0 0.1 0.2 0.4 mi




0 0.175 0.35 0.7 km

Molesworth Creek

U.S. Fish and Wildlife Service, National Standards and Support Team,
wetlands_team@fws.gov

■ Estuarine and Marine Deepwater
■ Estuarine and Marine Wetland

 Freshwater Emergent Wetland
 Freshwater Forested/Shrub Wetland
 Freshwater Pond

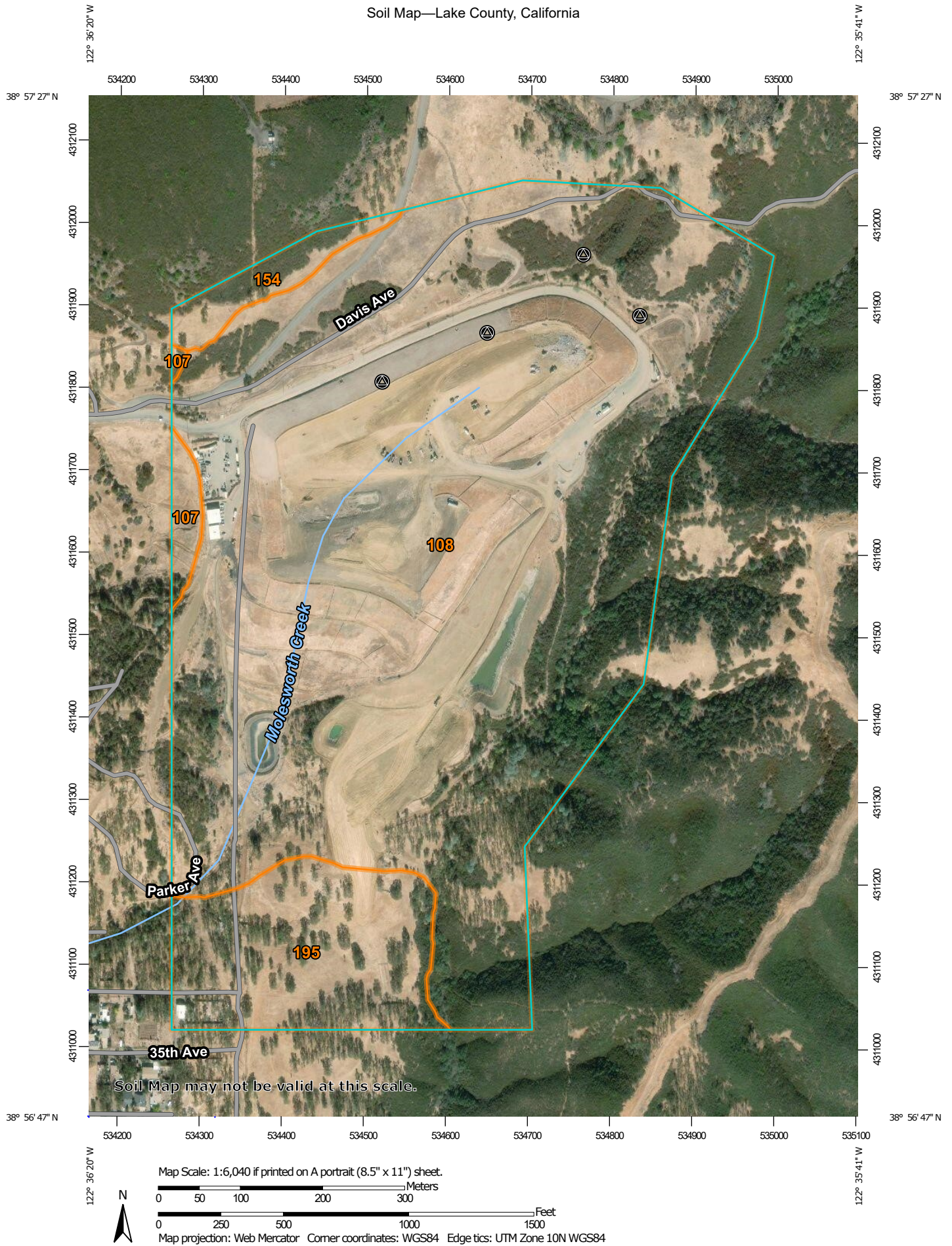
 Lake
 Other
 Riverine

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Soils Map

5

Soil Map—Lake County, California



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lake County, California

Survey Area Data: Version 15, Sep 17, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 18, 2016—Nov 4, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
107	Bally-Phipps complex, 15 to 30 percent slopes	1.6	1.1%
108	Bally-Phipps-Haploxerafls association, 30 to 75 percent slopes	119.7	86.1%
154	Konocti-Hambright-Rock outcrop complex, 30 to 75 percent slopes	3.0	2.1%
195	Phipps complex, 5 to 15 percent slopes	14.8	10.6%
Totals for Area of Interest		139.0	100.0%

**CNPS Vegetation Rapid
Assessment and
Releve' Field Forms**

6

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised April 28, 2016)

Riparian
Woodland

For Office Use:	Final database #:	Final vegetation type:	Alliance Association
I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION			circle: Relevé or <u>RA</u>
Database #:	Date: <u>6/23/17</u>	Name of recorder: <u>Joseph K. Siler</u>	
		Other surveyors: <u>Greg Becanel</u>	
	Location Name: <u>Escalante Lake Trail</u> <u>Sheet 1</u>		
GPS name: <u>iphone</u>	For Relevé only: Bearing°, left axis at ID point _____ of Long / Short side		
UTME _____	UTMN _____	Zone: 11 NAD83 GPS error: ft./ m./ PDOP _____	
Decimal degrees: LAT <u>38.95082</u>	LONG <u>122.59943</u>		
GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) _____ bearing ° _____ inclination ° _____			
and record: Base point ID _____ Projected UTM: UTM _____ UTMN _____			
Camera Name:	Cardinal photos at ID point:		
Other photos:			
Stand Size (acres): <1, 1-5, >5 Plot Size (m²): 100 / _____ Plot Shape _____ x _____ m RA Radius _____ m			
Exposure, Actual °: _____ NE NW SE SW Flat Variable Steepness, Actual °: _____ 0° 1-5° > 5-25° > 25			
Topography: Macro: top upper <u>mid</u> lower bottom Micro: convex flat <u>concave</u> undulating			
Geology code: _____ Soil Texture code: _____ Upland or <u>Wetland/Riparian</u> (circle one)			
% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)			
H2O: <u>1</u> BA Stems: <u>40</u> Litter: <u>rot</u> Bedrock: <u>0</u> Boulder: <u>1</u> Stone: <u>5</u> Cobble: <u>5</u> Gravel: <u>3</u> Fines: <u>3</u> =100%			
% Current year bioturbation _____ Past bioturbation present? Yes / No % Hoof punch _____			
Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.			
Site history, stand age, comments: <u>see sketch #2.</u> <u>Riparian 50 ft wide @ Mouth.</u> <u>Trees</u>			
Disturbance code / Intensity (L,M,H): _____ / _____ / _____ / _____ / _____ "Other" _____ / _____			
II. HABITAT DESCRIPTION			
Tree DBH: <u>T1</u> (<1" dbh), <u>T2</u> (1-6" dbh), <u>T3</u> (6-11" dbh), <u>T4</u> (11-24" dbh), <u>T5</u> (>24" dbh), <u>T6</u> multi-layered (T3 or T4 layer under T5, >60% cover)			
Shrub: <u>S1</u> seedling (<3 yr. old), <u>S2</u> young (<1% dead), <u>S3</u> mature (1-25% dead), <u>S4</u> decadent (>25% dead)			
Herbaceous: <u>H1</u> (<12" plant ht.), <u>H2</u> (>12" ht.)			
Desert Riparian Tree/Shrub: <u>1</u> (<2ft. stem ht.), <u>2</u> (2-10ft. ht.), <u>3</u> (10-20ft. ht.), <u>4</u> (>20ft. ht.)			
Desert Palm/Joshua Tree: <u>1</u> (<1.5" base diameter), <u>2</u> (1.5-6" diam.), <u>3</u> (>6" diam.)			
III. INTERPRETATION OF STAND			
Field-assessed vegetation Alliance name: _____			
Field-assessed Association name (optional): _____			
Adjacent Alliances/direction: _____ / _____, _____ / _____			
Confidence in Alliance identification: L M H Explain: _____			
Phenology (E,P,L): Herb Shrub Tree Other identification or mapping information: _____			

SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover:

Total % Vasc Veg cover:

% Cover - Conifer tree / Hardwood tree:

Regenerating Tree: 10

Shrub: 50'

Herbaceous: 80

Height Class - Conifer tree / Hardwood tree:

Regenerating Tree: 4

Shrub: 3

Herbaceous: 2

Height classes: 1= $\leq 1/2$ m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10= ≥ 50 m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Page 2

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised April 28, 2016)

Riparian Woodland

For Office Use:	Final database #:	Final vegetation type:	Alliance Association
I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION			circle: Relevé or RA
Database #:	Date: <u>6/23/2017</u>	Name of recorder: <u>Greg O'Leary</u>	
		Other surveyors:	
	Location Name: <u>Exotic hill</u> Sheet 2		
GPS name: <u>Iphone</u>	For Relevé only: Bearing°, left axis at ID point _____ of <u>Long</u> / <u>Short</u> side		
UTME _____	UTMN _____	Zone: 11 NAD83 GPS error: ft./ m./ PDOP _____	
Decimal degrees: LAT <u>38.95428</u>	LONG <u>-122.59711</u>		
GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) _____ bearing ° _____ inclination ° _____			
and record: Base point ID _____ Projected UTM: UTME _____ UTMN _____			
Camera Name: _____ Cardinal photos at ID point: _____			
Other photos: _____			
Stand Size (acres): <1, 1-5, >5 Plot Size (m²): 100 / _____ Plot Shape _____ x _____ m RA Radius _____ m			
Exposure, Actual °: _____ NE NW SE SW Flat Variable Steepness, Actual °: _____ 0° 1-5° > 5-25° > 25			
Topography: Macro: top upper <u>mid</u> lower bottom Micro: convex <u>flat</u> <u>concave</u> undulating			
Geology code: _____ Soil Texture code: _____ Upland or Wetland/Riparian (circle one)			
% Surface cover: _____ (incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)			
H2O: <u>0</u>	BA Stems: <u>35</u>	Litter: <u>0</u>	Bedrock: <u>0</u> Boulder: <u>1</u> Stone: <u>2</u> Cobble: <u>3</u> Gravel: <u>8</u> Fines: <u>57</u> =100%
% Current year bioturbation _____ Past bioturbation present? Yes / No % Hoof punch _____			
Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.			
Site history, stand age, comments: <u>see OHW sheet. Riparian 50-70ft wide. (100)</u> <u>cobble channel. 1.6ft deep or channel.</u>			
Disturbance code / Intensity (L,M,H): _____ / _____ / _____ "Other" _____ / _____			
II. HABITAT DESCRIPTION			
Tree DBH : <u>T1</u> (<1" dbh), <u>T2</u> (1-6" dbh), <u>T3</u> (6-11" dbh), <u>T4</u> (11-24" dbh), <u>T5</u> (>24" dbh), <u>T6</u> multi-layered (T3 or T4 layer under T5, >60% cover)			
Shrub: <u>S1</u> seedling (<3 yr old), <u>S2</u> young (<1% dead), <u>S3</u> mature (1-25% dead), <u>S4</u> decadent (>25% dead)			
Herbaceous: <u>H1</u> (<12" plant ht.), <u>H2</u> (>12" ht.)			
Desert Riparian Tree/Shrub: <u>1</u> (<2ft. stem ht.), <u>2</u> (2-10ft. ht.), <u>3</u> (10-20ft. ht.), <u>4</u> (>20ft. ht.)			
Desert Palm/Joshua Tree: <u>1</u> (<1.5" base diameter), <u>2</u> (1.5-6" diam.), <u>3</u> (>6" diam.)			
III. INTERPRETATION OF STAND			
Field-assessed vegetation Alliance name: _____			
Field-assessed Association name (optional): _____			
Adjacent Alliances/direction: _____ / _____ / _____			
Confidence in Alliance identification: L M H Explain: _____			
Phenology (E,P,L): Herb Shrub Tree Other identification or mapping information: _____			

(Revised April 28, 2016)

SPECIES SHEET

% Cover -

$$\begin{array}{r} 1.5 \\ 4.5 \end{array}$$

∠

99

Shrub: 40

Shrub: 40

Herbaceous: 62

4.5

Shrub: 3

Shrub: 3

Herbaceous: 1

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

Stratum

Species

	% cover
1	100
2	100
3	100
4	100
5	100
6	100
7	100
8	100
9	100
10	100
11	100
12	100
13	100
14	100
15	100
16	100
17	100
18	100
19	100
20	100
21	100
22	100
23	100
24	100
25	100
26	100
27	100
28	100
29	100
30	100
31	100
32	100
33	100
34	100
35	100
36	100
37	100
38	100
39	100
40	100
41	100
42	100
43	100
44	100
45	100
46	100
47	100
48	100
49	100
50	100
51	100
52	100
53	100
54	100
55	100
56	100
57	100
58	100
59	100
60	100
61	100
62	100
63	100
64	100
65	100
66	100
67	100
68	100
69	100
70	100
71	100
72	100
73	100
74	100
75	100
76	100
77	100
78	100
79	100
80	100
81	100
82	100
83	100
84	100
85	100
86	100
87	100
88	100
89	100
90	100
91	100
92	100
93	100
94	100
95	100
96	100
97	100
98	100
99	100
100	100

C

Final species determination

5

10

20
7

15

5

5

104

10+

2

1

1

Page 2

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised April 28, 2016)

Blue Oak woodland

For Office Use:	Final database #:	Final vegetation type: Alliance <u>Blue Oak woodland</u>	Association
I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION			circle: Relevé or <u>RA</u>
Database #:	Date: <u>May 8, 2017</u>	Name of recorder: <u>Greg O'Connell</u>	
		Other surveyors: <u>Joseph Seler</u>	
	Location Name: <u>Eastlake Landfill</u> <u>Sheet 3</u>		
GPS name: _____		For Relevé only: Bearing°, left axis at ID point _____ of <u>Long</u> / <u>Short</u> side	
UTME _____		UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP _____	
Decimal degrees: LAT <u>38.949924</u>		LONG <u>122.602509</u>	
GPS within stand? <u>Yes</u> / No If No, cite from GPS to stand: distance (m) _____ bearing ° _____ inclination ° _____			
and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____			
Camera Name: <u>iPhone</u> Cardinal photos at ID point: _____			
Other photos: _____			
Stand Size (acres): <u><1</u> , <u>1-5</u> , <u>>5</u> Plot Size (m²): 100 / _____ Plot Shape _____ x _____ m RA Radius _____ m			
Exposure, Actual °: <u>270</u> NE <u>NW</u> SE SW Flat Variable Steepness, Actual °: <u>15</u> ° 0° 1-5° <u>>5-25</u> ° > 25			
Topography: Macro: top upper <u>mid</u> lower bottom Micro: convex flat <u>concave</u> undulating			
Geology code: _____ Soil Texture code: _____ <u>Upland</u> or Wetland/Riparian (circle one)			
% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)			
H ₂ O: <u>0</u> BA Stems: <u>15</u> Litter: <u>30</u> Bedrock: <u>0</u> Boulder: <u>0</u> Stone: <u>0</u> Cobble: <u>0</u> Gravel: <u>5</u> Fines: <u>50</u> = 100%			
% Current year bioturbation <u>0</u> Past bioturbation present? Yes / <u>No</u> % Hoof punch <u>0</u>			
Fire evidence: <u>Yes</u> / No (circle one) If yes, describe in Site history section, including date of fire, if known.			
Site history, stand age, comments: <u>Area appears to have experienced fire in the past five years. Blue oak ~ +/- 50 years old.</u> <u>Access Roads.</u>			
Disturbance code / Intensity (L,M,H): _____ / _____ / _____ "Other" _____ / _____			
II. HABITAT DESCRIPTION			
Tree DBH : <u>T1</u> (<1" dbh), <u>T2</u> (1-6" dbh), <u>T3</u> (6-11" dbh), <u>T4</u> (11-24" dbh), <u>T5</u> (>24" dbh), <u>T6</u> multi-layered (T3 or T4 layer under T5, >60% cover)			
Shrub: <u>S1</u> seedling (<3 yr. old), <u>S2</u> young (<1% dead), <u>S3</u> mature (1-25% dead), <u>S4</u> decadent (>25% dead)			
Herbaceous: <u>H1</u> (<12" plant ht.), <u>H2</u> (>12" ht.)			
Desert Riparian Tree/Shrub: <u>1</u> (<2ft. stem ht.), <u>2</u> (2-10ft. ht.), <u>3</u> (10-20ft. ht.), <u>4</u> (>20ft. ht.)			
Desert Palm/Joshua Tree: <u>1</u> (<1.5" base diameter), <u>2</u> (1.5-6" diam.), <u>3</u> (>6" diam.)			
III. INTERPRETATION OF STAND			
Field-assessed vegetation Alliance name: _____			
Field-assessed Association name (optional): _____			
Adjacent Alliances/direction: _____ / _____ / _____			
Confidence in Alliance identification: L M H Explain: _____			
Phenology (E,P,L): Herb Shrub Tree Other identification or mapping information: _____			

(Revised April 28, 2016)

SPECIES SHEET

% NonVasc cover: 2 Total % Vasc Veg cover: 80

% Cover - Conifer tree / Hardwood tree: 0/15 Regenerating Tree: 5 Shrub: 2 Herbaceous: 70

Height Class - Conifer tree / Hardwood tree: 8 / 6 Regenerating Tree: 4 Shrub: 2 Herbaceous: 1

Height classes: 1= $\leq 1/2$ m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10= ≥ 50 m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Unusual species: _____

(Revised April 28, 2016)

SPECIES SHEET

SPECIES SHEET

% Cover -

Conifer tree / Hardwood tree:

% NonVasc cover:

Total % Vasc Veg cover:

Regenerating Tree:

Shrub:

Herbaceous:

Height Class - Conifer tree / Hardwood tree:

Regenerating Tree:

Shrub:

Herbaceous:

Height classes: 1= $\leq 1/2$ m, 2= $1/2-1$ m, 3= $1-2$ m, 4= $2-5$ m, 5= $5-10$ m, 6= $10-15$ m, 7= $15-20$ m, 8= $20-35$ m, 9= $35-50$ m, 10= ≥ 50 m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Unusual species: _____

Wildcat Semi-natural

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised April 28, 2016)

For Office Use:	Final database #:	Final vegetation type:	Wildcat Grassland
I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION			circle: Relevé or <u>RA</u>
Database #:	Date: 5/8/2017	Name of recorder: Jorg Salo	
		Other surveyors: Greg O'Connell	
	Location Name: Earlake landfill Sheet (6)		
GPS name: _____		For Relevé only: Bearing°, left axis at ID point _____ of Long / Short side	
UTME _____		UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP _____	
Decimal degrees: LAT _____		LONG _____	
GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) _____ bearing ° _____ inclination ° _____			
and record: Base point ID _____ Projected UTM: UTME _____ UTMN _____			
Camera Name: _____		Cardinal photos at ID point: _____	
Other photos: _____			
Stand Size (acres): <1, 1-5, >5 Plot Size (m²): 100 / _____ Plot Shape _____ x _____ m RA Radius _____ m			
Exposure, Actual °: _____ NE NW SE SW Flat Variable Steepness, Actual °: _____ 0° 1-5° >5-25° >25			
Topography: Macro: top upper mid lower bottom		Micro: convex flat concave undulating	
Geology code: _____		Soil Texture code: _____ Upland or Wetland/Riparian (circle one)	
% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)			
H2O: 0 BA Stems 60 Litter: 15 Bedrock: 0 Boulder: 0 Stone: 2 Cobble: 3 Gravel: 5 Fines: 15 =100%			
% Current year bioturbation _____ Past bioturbation present? Yes / No % Hoof punch _____			
Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.			
Site history, stand age, comments: Possible historical grazing & grading			
Disturbance code / Intensity (L,M,H): _____ / _____ / _____ "Other" _____ / _____			
II. HABITAT DESCRIPTION			
Tree DBH: T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)			
Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)			
Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)			
Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)			
Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)			
III. INTERPRETATION OF STAND			
Field-assessed vegetation Alliance name: _____			
Field-assessed Association name (optional): _____			
Adjacent Alliances/direction: _____ / _____			
Confidence in Alliance identification: L M H Explain: _____			
Phenology (E,P,L): Herb Shrub Tree Other identification or mapping information: _____			

(Revised April 28, 2016)

SPECIES SHEET

Database #: _____

% NonVasc cover:

Total % Vasc Veg cover:

% Cover - Conifer tree / Hardwood tree:

Regenerating Tree:

Shrub: 

Herbaceous:

Height Class - Conifer tree / Hardwood tree:

Regenerating Tree:

Shrub: /

Herbaceous:

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
	Avena barb.	40		
	Bromus madritensis r.	2		
	Bromus horc.	3		
	Festuca perennis	10		
	Festuca bromoides	4		
	Bromus tectorum	5		
	Centaurea solstitialis	15		
	Carduus pycnocephalus	1		
	Erodium cicutarium	3		
	Vicia villosa	4		
	Bromus diandrus	5		
	Oenothera purpurea quad.	1		
	Calochortus luteus	1		
	Leptosiphon bicolor	1		
	Triticum incarnetum	5		
	Sistrinchium bellum	1		
	Petrophloeobacca	1		
	Hemlock Menziesii	1		
	Triticum laxo	1		
	Eschscholtzia calif.	1		

Unusual species:

(Revised April 28, 2016)

[illegible]

(Revised April 28, 2016)

SPECIES SHEET

% Cover - Conifer tree / Hardwood tree: 0 / 1 % NonVasc cover: 1 Total % Vasc Veg cover: 99
Height Class - Conifer tree / Hardwood tree: 0 / 5 Regenerating Tree: 3 Shrub: 98 Herbaceous: 2
 Regenerating Tree: 3 Shrub: 4 Herbaceous: 1
 Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Unusual species: _____

**Wetland Determination
Data Forms and
OHWM Delineation
Cover Sheets**

7

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Eastlake Landfill City/County: Lake County Sampling Date: 2/7/18
 Applicant/Owner: Eastlake Landfill State: CA Sampling Point: TP1
 Investigator(s): Joseph Siler, Warren Mitchell Section, Township, Range: Sec. 23, T13N, R7W, MDM
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): A, MLRA 5 Lat: 38.954899° Long: -122.601720 Datum: _____
 Soil Map Unit Name: 108-Bally-Phipps Haploxeralfs assoc. 30-75% NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ☒
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>5ft</u>) 1. <u>Hirschfeldia incana</u> <u>1</u> <u>NL</u> 2. <u>Croton setiger</u> <u>2</u> <u>NL</u> 3. <u>Festuca perennis</u> <u>20</u> <input checked="" type="checkbox"/> <u>FAC</u> 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ <u>23</u> = Total Cover <u>11.5</u> <u>4.6</u>				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>77%</u>				
Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 5 - Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____				
Remarks:				

SOIL

Sampling Point: TP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/3	75	10YR 4/1	21	D	m	SiCL	
6-12			5YR 3/4	4	C	m		
6-12	10YR 5/3	82	10YR 2/1	3	C	m	SiCL	afew gravels
			5YR 4/3	15	C	m		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1) ☐ Sandy Redox (S5)
☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6)
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)
☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3)
☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6)
☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7)
☐ Sandy Gleyed Matrix (S4) ☐ Redox Depressions (F8)

- ☐ 2 cm Muck (A10)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: strong odor upon ped splitting... seems to be Dimethyl sulfide 0-6"
 " " Carbon Disulfide 6-12"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
☐ High Water Table (A2) ☐ Salt Crust (B11)
☒ Saturation (A3) ☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) ☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) ☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) ☐ Presence of Reduced Iron (C4)
☒ Algal Mat or Crust (B4) ☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Iron Deposits (B5) ☐ Stunted or Stressed Plants (D1) (LRR A)
☐ Surface Soil Cracks (B6) ☐ Other (Explain in Remarks)
☐ Inundation Visible on Aerial Imagery (B7)
☒ Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Geomorphic Position (D2)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)
☐ Raised Ant Mounds (D6) (LRR A)
☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____Water Table Present? Yes X No _____ Depth (inches): 6 inchesSaturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): SurfaceWetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Eastlake landfill City/County: Lake County Sampling Date: 2/7/2018
 Applicant/Owner: Eastlake landfill State: CA Sampling Point: TP 2
 Investigator(s): Joseph Salar, Warren Mitchell Section, Township, Range: Sec. 23, T13N, R7W, MDM
 Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR): A, MLRA 5 Lat: 38.954899° Long: -122.601720 Datum: _____
 Soil Map Unit Name: 108-Bally-Phipps Haploxeralfs assoc. 30-75% NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No _____			
Remarks:					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____				
2. _____				Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____				
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
_____ = Total Cover				UPL species _____ x 5 = _____
Herb Stratum (Plot size: <u>5ft</u>)				Column Totals: _____ (A) _____ (B)
1. <u>Festuca perennis</u>	<u>97</u>	<u>✓</u>	<u>FAC</u>	Prevalence Index = B/A = _____
2. <u>Hirschfeldia incana</u>	<u>1</u>		<u>NL</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
_____ = Total Cover <u>98</u>				
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>2%</u>				
Remarks:				

SOIL

Sampling Point: TP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-6	10YR 3/4	97	10YR 3/2	3	D	m	Xgr CoSL	
6-12	10YR 4/3	89	10YR 4/2	5	D	m	Vgr CoSL	
			5YR 4/6	6	C	m		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1) ☐ Sandy Redox (S5)
☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6)
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)
☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3)
☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6)
☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7)
☐ Sandy Gleyed Matrix (S4) ☐ Redox Depressions (F8)

- ☐ 2 cm Muck (A10)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
☒ High Water Table (A2) ☐ Salt Crust (B11)
☒ Saturation (A3) ☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) ☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) ☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) ☐ Presence of Reduced Iron (C4)
☐ Algal Mat or Crust (B4) ☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Iron Deposits (B5) ☐ Stunted or Stressed Plants (D1) (LRR A)
☐ Surface Soil Cracks (B6) ☐ Other (Explain in Remarks)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Saturation Visible on Aerial Imagery (C9)
☒ Geomorphic Position (D2)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)
☐ Raised Ant Mounds (D6) (LRR A)
☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____
 Water Table Present? Yes ☒ No _____ Depth (inches): 8 inches
 Saturation Present? Yes ☒ No _____ Depth (inches): 6 inches
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Eastlake Landfill City/County: Lake County Sampling Date: 2/7/18
 Applicant/Owner: Eastlake Landfill State: CA Sampling Point: TP3
 Investigator(s): Joseph Soler, Warren Mitchell Section, Township, Range: Sec. 23, T13 N, R7W, MDM
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR): A, MLRA 5 Lat: 38.954899° Long: -122.601720° Datum: _____
 Soil Map Unit Name: Baly-Phelps Haploxeralfs assoc. 30-75% 108 NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No _____			
Remarks:					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
1. _____																		
2. _____																		
3. _____																		
4. _____																		
_____ = Total Cover				Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = _____																	
FAC species _____	x 3 = _____																	
FACU species _____	x 4 = _____																	
UPL species _____	x 5 = _____																	
Column Totals: _____	(A) _____ (B) _____																	
Sapling/Shrub Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 5 - Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. _____																		
2. _____																		
3. _____																		
4. _____																		
5. _____																		
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Hirschfeldia incana</u>	<u>4</u>	<u>✓</u>	<u>NL</u>															
2. <u>Festuca petennis</u>	<u>23</u>	<u>✓</u>	<u>FAC</u>															
3. <u>Centaurea solstitialis</u>	<u>5</u>		<u>NL</u>															
4. _____																		
5. _____																		
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
11. _____																		
<u>32</u> = Total Cover <u>16</u> <u>6.4</u>																		
Woody Vine Stratum (Plot size: _____)																		
1. _____																		
2. _____																		
_____ = Total Cover																		
% Bare Ground in Herb Stratum <u>68</u>	_____ = Total Cover																	
Remarks:																		

Sampling Point: TP3

HYDROLOGY

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>12 inches</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10 inches</u>		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Eastlake landfill City/County: Lake County Sampling Date: 2/7/18
 Applicant/Owner: Eastlake Landfill State: CA Sampling Point: TP4
 Investigator(s): Joseph Saler, Warren Mitchell Section, Township, Range: Sec. 23, T13N, R7W, MDM
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR): A, MLRA 5 Lat: 38.954899° Long: -122.601720° Datum: _____
 Soil Map Unit Name: 108-Bally-Phips Haploxeralfs assoc. 30-75% NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Populus fremontii</u>	<u>20%</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Salix lasiolepis</u>	<u>7%</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
<u>27</u> = Total Cover				
<u>13.5</u> <u>5.4</u>				
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. _____				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>5ft</u>)				Hydrophytic Vegetation Indicators:
1. <u>Typha latifolia</u>	<u>10</u>		<u>OBL</u>	1 - Rapid Test for Hydrophytic Vegetation
2. <u>Festuca perennis</u>	<u>81</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	2 - Dominance Test is >50%
3. <u>Geranium dissectum</u>	<u>1</u>		<u>NL</u>	3 - Prevalence Index is ≤3.0 ¹
4. <u>Vicia sativa</u>	<u>1</u>		<u>UPL</u>	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____				5 - Wetland Non-Vascular Plants ¹
6. _____				Problematic Hydrophytic Vegetation ¹ (Explain)
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____				
9. _____				
10. _____				
11. _____				
<u>93</u> = Total Cover				
<u>46.5</u> <u>18.6</u>				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____				
2. _____				
<u>7%</u> = Total Cover				
% Bare Ground in Herb Stratum <u>7%</u>				
Remarks:				

SOIL

Sampling Point: TP 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-8	7.5 YR 4/3	68	10Y 4/1	24	D	m	SL	
			10YR 3/3	8	D	PL		
8-12	10YR 4/3	92	10YR 4/1	8	D	m	CoSCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1) ☐ Sandy Redox (S5)
☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6)
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)
☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3)
☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6)
☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7)
☐ Sandy Gleyed Matrix (S4) ☐ Redox Depressions (F8)

- ☐ 2 cm Muck (A10)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No XRemarks: Dimethyl sulfide smell in upper 8"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
☒ High Water Table (A2) ☐ Salt Crust (B11)
☒ Saturation (A3) ☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) ☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) ☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) ☐ Presence of Reduced Iron (C4)
☐ Algal Mat or Crust (B4) ☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Iron Deposits (B5) ☐ Stunted or Stressed Plants (D1) (LRR A)
☐ Surface Soil Cracks (B6) ☐ Other (Explain in Remarks)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Saturation Visible on Aerial Imagery (C9)
☒ Geomorphic Position (D2)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)
☐ Raised Ant Mounds (D6) (LRR A)
☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____Water Table Present? Yes X No _____ Depth (inches): 6.5 inSaturation Present? Yes X No _____ Depth (inches): Surface
(includes capillary fringe)Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Project: Eastlake LandfillDate: 6/23/2017Location: OHWM 5 (upstream location)Investigator(s): Joseph Siler, Greg O'Connell**Project Description:**

Expansion of existing landfill, including soil borrow sites, stormwater retention features and landfill footprint

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

Well developed channel, Seasonal stream (dry during OHWM delineation)
Class II. Willow, Buckeye, California ash make a shrubby riparian cover.
Small trees, branches littered within stream channel

Off-site Information

Remotely sensed image(s) acquired? ☒ Yes ☐ No [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

Aerial imagery of study area. Stream and approximate OHWM delineation locations noted.

Hydrologic/hydraulic information acquired? ☐ Yes ☒ No [If yes, attach information to datasheet(s) and describe below.] Description:

List and describe any other supporting information received/acquired:

Topographic maps, aerial imagery

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☒ Sharp ($> 60^\circ$) | ☐ Moderate ($30-60^\circ$) | ☐ Gentle ($< 30^\circ$) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	40	5	20	3		Y
Below OHWM		10	30	50	10	N

Notes/Description:

Well defined streambed with cobbles, gravel and sand.

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	40	60	70	30
Below OHWM	20	0	15	65

Notes/Description:

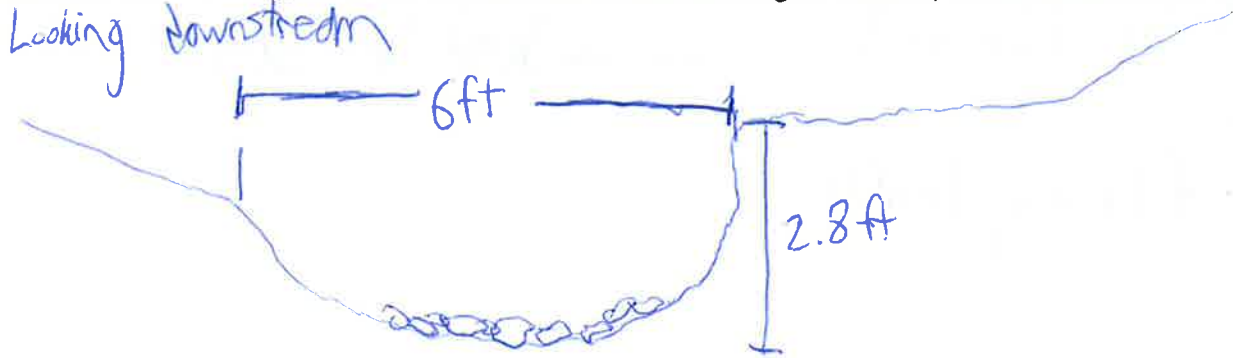
Vegetation varies, with several canopy levels, all below 10m tall

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

Project: Eastlake landfillDate: 6/23/2017Location: OHWM 4 (Downstream)Investigator(s): Joseph Siler, Greg O'Connell**Project Description:**Expansion of Existing landfill**Describe the river or stream's condition (disturbances, in-stream structures, etc.):**Well developed channel, seasonal stream (dry during OHWM delineation)
Class II stream. Blue oak, Manzanita, red willow, becharis pilularis
make up riparian cover. Small trees, downed branches within stream
channel.(38.95082, -122.59943)**Off-site Information****Remotely sensed image(s) acquired?** ☐ Yes ☐ No [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:**Hydrologic/hydraulic information acquired?** ☐ Yes ☐ No [If yes, attach information to datasheet(s) and describe below.] Description:**List and describe any other supporting information received/acquired:**

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☒ Sharp ($> 60^\circ$) | ☐ Moderate ($30-60^\circ$) | ☐ Gentle ($< 30^\circ$) | ☐ None

Notes/Description:

Break in slope is less sharp on left side of stream (looking downstream)

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	80	2	13	5	0	Y
Below OHWM	0	3	80	12	5	N

Notes/Description:

Cobble and gravel streambed, with some scattered boulders

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	45	30	80	20
Below OHWM	45 15	0	80 5	80

Notes/Description:

Tree canopy extends over OHWM. Some herbaceous species on upper and OHWM

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

Project: Eastlake Landfill ExpansionDate: 4/16/2019Location: Eastlake, CA OHWM#3Investigator(s): Joseph Jaler, Warren Mitchell**Project Description:**

Expansion of existing landfill, including soil borrow sites, stormwater retention features and landfill footprint.

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

The stream is in relatively undisturbed condition, ephemeral with flows likely corresponding closely with rainfall events. Significant recent deposition of fine sediment likely as a result of soil removal upstream.

Off-site Information

Remotely sensed image(s) acquired? ☒ Yes ☐ No [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

Aerial imagery of study area. Stream and approximate OHWM delineation locations noted.

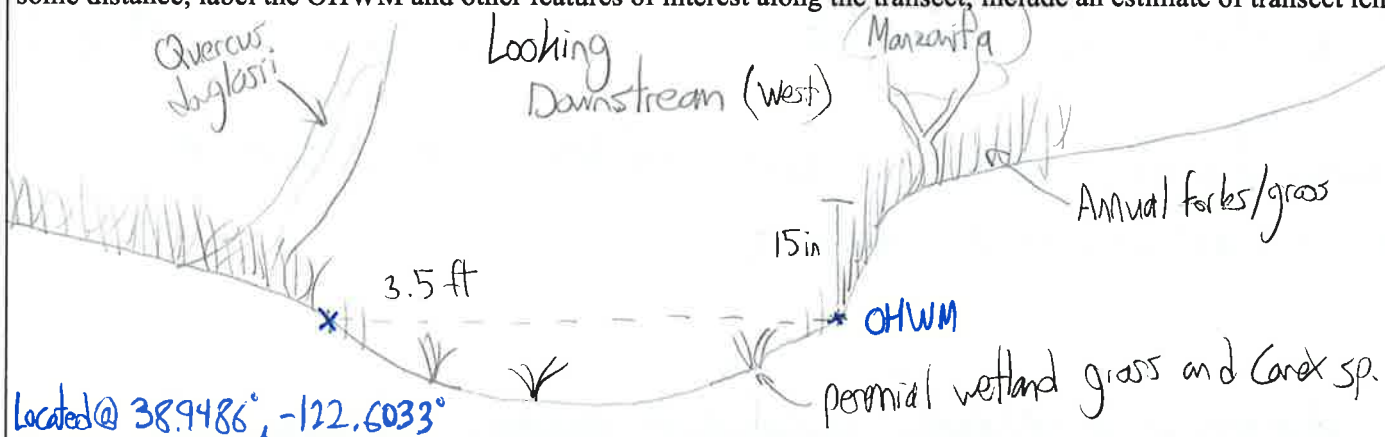
Hydrologic/hydraulic information acquired? ☐ Yes ☒ No [If yes, attach information to datasheet(s) and describe below.] Description:

List and describe any other supporting information received/acquired:

Topographic maps, aerial imagery.

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☐ Sharp ($> 60^\circ$) | ☒ Moderate ($30-60^\circ$) | ☒ Gentle ($< 30^\circ$) | ☐ None

Notes/Description:

Break in slope moderate on right bank and gentle on left bank.

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	clay 100%	—	—	—	—	Y
Below OHWM	silt 40%	10%	—	—	—	N

Notes/Description:

Soils above OHWM were densely packed clays with developed soil horizons. Soil below OHWM primarily silt and sand, no soil horizons evident.

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	100%	20%	100%	0-5%
Below OHWM	80%	5%	8%	92%

Notes/Description:

Quercus douglasii rooted above OHWM but canopy extended over entire stream. Dense annual herb cover above OHWM, sparse below OHWM.

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

- Erosion/scour
- water staining
- Litter removal
- silt deposits

Project: East Lake Landfill ExpansionDate: 4/16/19Location: Eastlake CA OHWM #2Investigator(s): Joseph Saler, Warren Mitchell**Project Description:**

Expansion of existing landfill, including soil borrow sites, stormwater retention features and landfill footprint.

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

The stream is in relatively undisturbed condition, ephemeral with flows likely corresponding with rainfall events. Significant recent deposition of fine sediment likely as a result of soil removal upstream. OHWM delineation point #2 immediately upstream of topographic swale.

Off-site Information

Remotely sensed image(s) acquired? ☒ Yes ☐ No [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

Aerial imagery of study area. Stream and approx. OHWM delineation points noted.

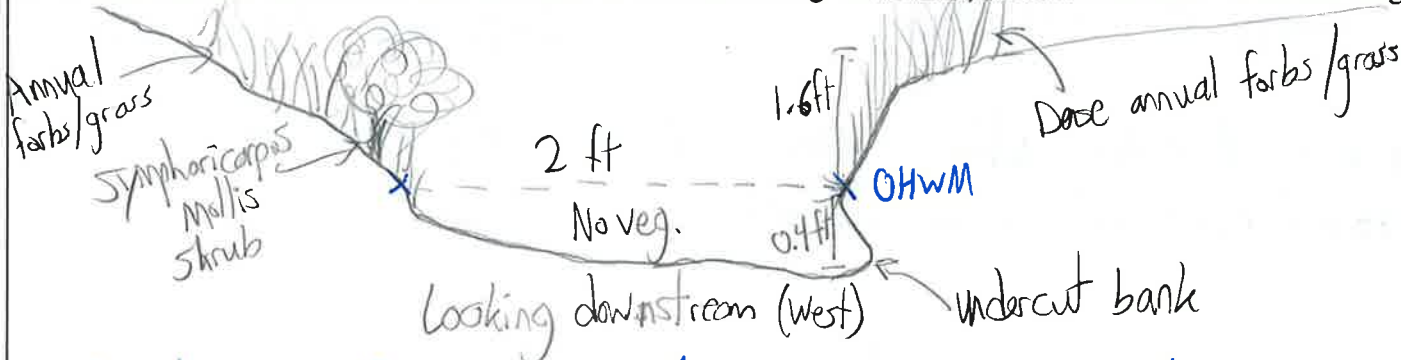
Hydrologic/hydraulic information acquired? ☐ Yes ☒ No [If yes, attach information to datasheet(s) and describe below.] Description:

List and describe any other supporting information received/acquired:

Topographic maps, aerial imagery.

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



located at: 38.9486°, -122.6029° (100 ft upstream from OHWM #3)

Break in Slope at OHWM: ☐ Sharp (> 60°) | ☒ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description:

Break in slope moderate. on right bank the area below the OHWM is being undercut

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	100% dense clay	—	—	—	—	Y
Below OHWM	85% silt	2%	10%	3%	—	N

Notes/Description:

Soils above OHWM were densely packed clays w/ developed soil horizons.
Soil below OHWM primarily silt with little sand and some gravel and cobbles.
-No soil horizons evident.

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	80%	10%	98%	2–10%
Below OHWM	47%	0%	1–2%	98–100%

Notes/Description:

Quercus douglasii rooted above and away from OHWM, canopy extended mostly over stream.
Dense annual herb cover above OHWM, No veg. here sparse below OHWM.

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

- Erosion / scar
- Bank undercutting
- Water staining
- Litter removal
- Silt deposits

Project: East Lake Landfill ExpansionDate: 4/16/19Location: Eastlake, CA OHWM #1Investigator(s): Joseph Saler, Warren Mitchell**Project Description:**See Coversheet**Describe the river or stream's condition (disturbances, in-stream structures, etc.):**See Coversheet**Off-site Information**

Remotely sensed image(s) acquired? ☒ Yes ☐ No [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

see coversheet

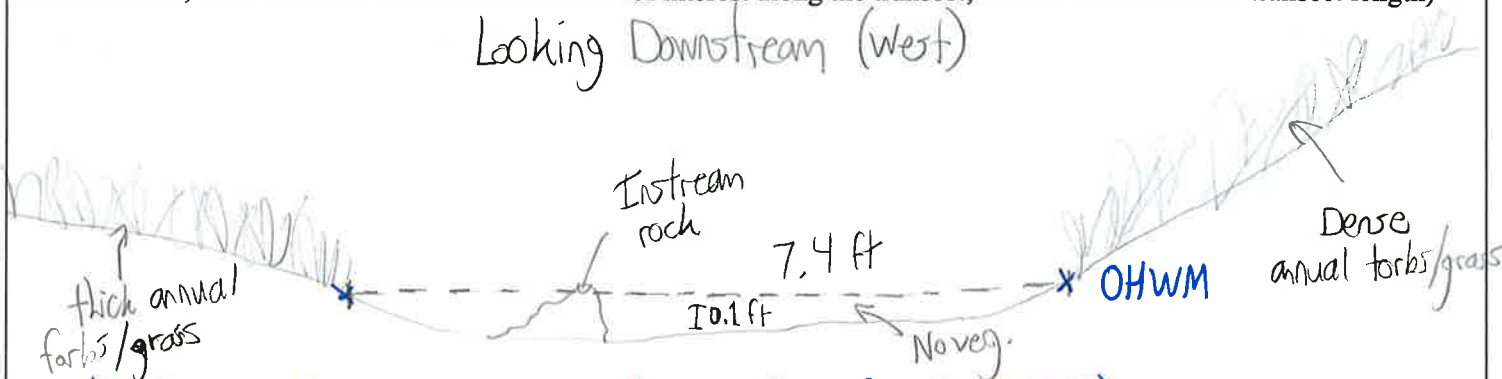
Hydrologic/hydraulic information acquired? ☐ Yes ☒ No [If yes, attach information to datasheet(s) and describe below.] Description:

List and describe any other supporting information received/acquired:see cover sheet

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

Looking Downstream (West)



Located at: 38.9485° , -122.6027° (100ft upstream from OHWM #2)

Break in Slope at OHWM: ☐ Sharp ($> 60^{\circ}$) | ☐ Moderate ($30-60^{\circ}$) | ☒ Gentle ($< 30^{\circ}$) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	100%	—	—	—	—	Y
Below OHWM	85%	5%	—	—	10%	N

Notes/Description:

soils above OHWM were densely packed clay with more organic matter than other locations and distinct soil horizons
soils below OHWM primarily silt with some sand. A moderately size boulder was in the center.

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	20%	0	100%	0-2%
Below OHWM	0%	0	0-2%	98-100%

Notes/Description:

Quercus douglasii canopy extends to area above OHWM, does not reach stream. No shrubs present. Dense annual herb cover above OHWM, no veg / very sparse below OHWM

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

- Erosion/scour
- Litter removal
- Point bars (below OHWM)

Project: Eastlake Landfill ExpansionDate: 4/16/2019Location: Eastlake, CA OHWM #0Investigator(s): Joseph Jaler, Warren Mitchell**Project Description:**See cover sheet**Describe the river or stream's condition (disturbances, in-stream structures, etc.):**see cover sheet**Off-site Information**

Remotely sensed image(s) acquired? ☒ Yes ☐ No [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

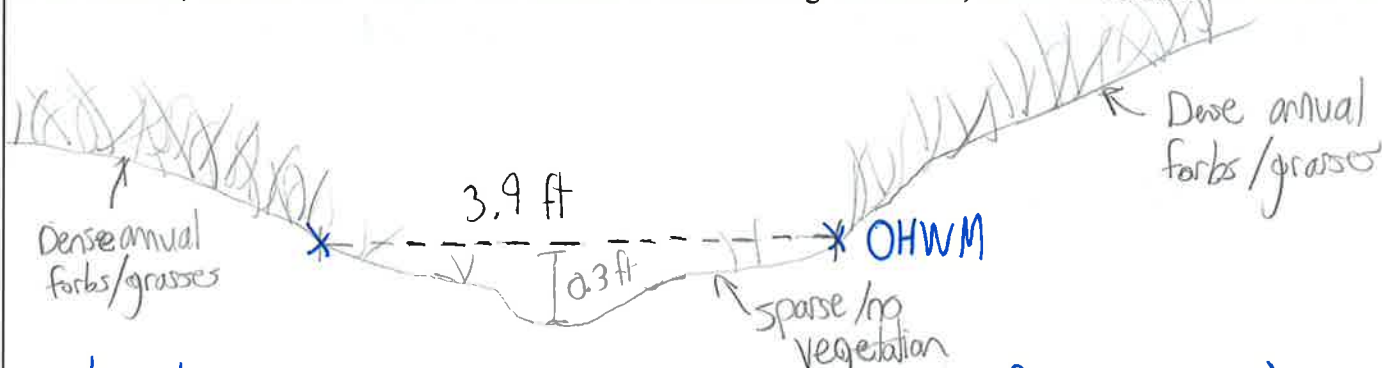
See cover sheet

Hydrologic/hydraulic information acquired? ☐ Yes ☒ No [If yes, attach information to datasheet(s) and describe below.] Description:

List and describe any other supporting information received/acquired:see cover sheet

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Located at: 38.9484°, -122.6023° (100 ft upstream from OHWM#1)

Break in Slope at OHWM: ☐ Sharp (> 60°) | ☐ Moderate (30–60°) | ☒ Gentle (< 30°) | ☐ None

Notes/Description:

Slope approximately 20% above OHWM (right bank) and 1% below OHWM

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	100% Clay	—	—	—	—	Y
Below OHWM	95% silt	5% sand	—	—	—	N

Notes/Description:

Soils above OHWM were densely packed clay with high organic matter content and distinct soil horizons. Soils below OHWM primarily silt with some silt. Recent erosion has added substantial sediment at this location, a small channel has been cut in center.

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	0	0	98–100%	0–2%
Below OHWM	0	0	0–2%	98–100%

Notes/Description:

Dense annual herb cover above OHWM, no veg/very sparse below OHWM

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

- Erosion/scour
- Point bars
- Litter removal
- Silt deposits

Note: OHWM characteristics diminish, and became about approximately 75 ft upstream of this point, indicating termination of flows.



Eureka, CA | Arcata, CA | Redding, CA | Willits, CA | Coos Bay, OR | Klamath Falls, OR

www.shn-engr.com