

Appendix B3. Wildlife Assessment Report

WILDLIFE ASSESSMENT

FOR

PACIFIC GAS AND ELECTRIC COMPANY'S MORAGA-OAKLAND X 115 kV REBUILD PROJECT ALAMEDA AND CONTRA COSTA COUNTIES, CALIFORNIA



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LIST OF ACRONYMS

AMM	avoidance and minimization measure
APM	Applicant-proposed measure
AWS	Alameda whipsnake
BMP	best management practice
BSA	Biological Study Area
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CRLF	California red-legged frog
CNDDDB	California Natural Diversity Database
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District
FP	Field Protocol
FEIR	Final Environmental Impact Report
FESA	Federal Endangered Species Act
FYLF	foothill yellow-legged frog
kV	kilovolt
LZ/SA	Landing Zone/Staging Area
HCP	PG&E Bay Area Operations and Maintenance Habitat Conservation Plan
ITP	PG&E Bay Area Operations and Maintenance Incidental Take Permit
Nomad	Nomad Ecology
O&M	Operations and Maintenance
PEA	Proponent's Environmental Assessment
PG&E	Pacific Gas and Electric Company
project	Moraga-Oakland X 115 kV Rebuild Project
SA	Staging Area
SBI	Swaim Biological, Inc
SFDFW	San Francisco dusky footed woodrat
SR	State Route
USFWS	United States Fish and Wildlife Service
VRP	Vegetation Restoration Plan

1 INTRODUCTION

This report provides a detailed assessment of wildlife species with potential to occur within or adjacent to the Moraga–Oakland X 115 kilovolt (kV) Rebuild Project (project) located in Alameda and Contra Costa counties. This report includes results from a literature review, site reconnaissance surveys and a brief impact analysis. A detailed analysis of the potential impacts to special-status wildlife species and designated critical habitats associated with the project will be included in the Proponent’s Environmental Assessment (PEA), other environmental regulation compliance documents, and related permit applications. This project will utilize the Pacific Gas and Electric Company (PG&E) Bay Area Operations and Maintenance Habitat Conservation Plan (HCP) and the Bay Area Operations and Maintenance Incidental Take Permit (ITP) (ICF 2016; CDFW 2022) for covered species with potential to occur within the project area. A list of proposed avoidance and minimization measures per the HCP / ITP and recommended measures for species with potential to occur but are not covered by those plans is provided in the PEA Section 5.4.

2 PROJECT LOCATION AND DESCRIPTION

The project area generally runs southwest from Moraga Substation to the project’s terminus just east of Interstate 580 at Oakland X Substation (Figure 1). The project area is largely contiguous east of Skyline Boulevard; west of Skyline Boulevard it is broken up into smaller fragments. Just west of Moraga Substation, a network of access roads runs north to a staging area located at the southeastern end of the community of Wilder. Two isolated staging areas are located off Quarry Road within Sibley Volcanic Regional Preserve. West of State Route (SR) 13, the project area includes the area that parallels Park Boulevard between Monterey Boulevard its junction at Estates Drive as well as the existing lines northwest of Park Boulevard and Park Boulevard itself to Oakland X Substation.

The portion of the lines rebuilt underground will result in removal of approximately 1.2 miles of overhead Lines 1 through 4 between Estates Drive and Oakland X Substation, respectively. Third-party cellular antennas on two existing power line structures will be relocated or removed and minor substation modifications within the existing fence line will occur as part of the project.

3 METHODS

The analysis presented in this report includes a review of existing information regarding biological resources known to occur in the project region and field surveys to evaluate habitat values at and in the vicinity of the project area. There are three defined areas evaluated in this report:

1. *Project area* includes the work areas, staging areas, landing zones and access roads necessary to implement the project.
2. *Biological study area (BSA)* includes the project area plus a 1,000-foot buffer per California Public Utility Commission guidelines. The wildlife BSA included approximately 2,258 acres, with approximately 1,968 acres for the main portion of the project and approximately 290 acres for the potential staging areas near the community of Wilder and off of SR 24.
3. *Field survey area* includes the project area from the community of Wilder to East Bay Regional Park District’s (EBRPD) Wilcox Station Staging Area, and from SR 13 to the intersection of Park Boulevard and Estates Drive. A 50-foot buffer was used around work areas, staging areas, and landing zones, and a 25-foot buffer along access roads.



Figure 1- Project Location

PG&E Moraga- Oakland X
115 kV Rebuild Project
Alameda-Contra Costa Counties, CA
January 2024



3.1 LITERATURE REVIEW AND DATABASE QUERIES

Existing biological resource conditions within and adjacent to the project area were investigated before conducting field surveys. A review of available imagery (Google Earth Pro) was conducted to confirm habitat and land cover types in the wildlife BSA. A query of federally listed, state listed and special-status wildlife species and designated critical habitat for the wildlife BSA was obtained from the following sources:

- U.S. Fish and Wildlife Service’s (USFWS’s) Sacramento Endangered Species Office Information for Planning and Consultation website (Attachment B, USFWS 2023a).
- California Department of Fish and Wildlife (CDFW) Special Animals List, January 2024 (CDFW 2023a)
- CDFW California Natural Diversity Database (CNDDDB) special-status species within 5 miles of the project area and Oakland East quad (Attachment B, CDFW 2023b).
- CDFW California Wildlife Habitat Relationship System (CDFW 2021)
- iNaturalist
- PG&E Bay Area Operations and Maintenance Habitat Conservation Plan (HCP) (ICF 2016)

A CNDDDB list was generated for special-status species within the Oakland East U.S. Geological Survey (USGS) 7.5-minute quadrangle. The CNDDDB search was further refined to a 5-mile buffer around the project footprint with a 2-mile buffer used to evaluate species occurrences within the wildlife BSA. The USFWS IPaC Species list was generated for the project area.

For the purposes of this report, special-status species are defined as wildlife that are protected under the California and Federal Endangered Species Acts (CESA and FESA) or other regulations, and species that are considered rare by the scientific community. Special-status wildlife species are defined as follows:

- Animals listed or proposed for listing as threatened or endangered under the CESA (Fish and Game Code 2050 et seq.; 14 CCR 670.1 et seq.) or the FESA (50 CFR 17.11).
- Animals that are candidates for possible future listing as threatened or endangered under FESA (50 CFR 17; FR Vol. 64, No. 205) and under CESA (California Fish and Game Code 2068).
- Animals that meet the definition of endangered, rare, or threatened under the California Environmental Quality Act (14 CCR 15380) that may include species not found on either state or federal endangered species lists.
- Animals that are designated as by CDFW as “fully protected” or “species of special concern” 5.
- Species protected under the Federal Bald and Golden Eagle Protection Act;
- Birds of Conservation Concern or Watch List species; and
- Bat species that are designated on the Western Bat Working Group’s Regional Bat Species Priority Matrix as “Red or High.” These species are considered to be “imperiled or are at high risk of imperilment.”

The PG&E Bay Area O&M HCP completed modeling of covered species habitat throughout the nine bay area counties in the HCP Plan Area. The HCP provides a conservation strategy that also provides avoidance and minimization of impacts to covered species and their habitat. For large covered activities affecting more than 0.1 acre, PG&E land planners and biologists review and

utilize the habitat modeling completed in the HCP. The habitat mapping in this document relies on modeling conducted for the HCP; aerial imagery, additional information acquired in the field and Nomad vegetation mapping. Where HCP modeled habitat for a covered species is present, the species is considered to have moderate to high potential to occur. Species have the potential to occupy areas outside of modeled habitat mapping where suitable habitat for species exists that was not captured in the HCP modeling.

Special status species occurrences are listed and designated critical habitat within 2 miles of the project area is shown in Figure 3. This report includes an analysis of wildlife with potential to occur in the project area. Special-status plants and sensitive natural communities were assessed by Nomad Ecology (Nomad 2022) in 2021. Results from the Nomad survey were used to inform the wildlife surveys, and scrub habitat mapped during the plant surveys shown on the figures in Attachment B.

3.2 FIELD SURVEYS

Visual reconnaissance surveys of the project area and adjacent accessible areas were conducted by Swaim Biological, Inc. (SBI) biologists Cole Paris and William McCall on December 8, 2023, and by Will McCall and Laura Coatney on December 12, 2023. These surveys included windshield surveys in developed areas, walking meandering transects in accessible undeveloped portions of the project area, and surveying areas that have potential to support habitat for special-status species as identified in desktop-level reviews. During the field surveys on December 8 and 12, 2023, the biologists walked all access routes and investigated the project area along the project alignment from the community of Wilder to EBRPD's Wilcox Station Staging Area and from SR 13 to the intersection of Park Boulevard and Estates Drive. The field survey area included a 50-foot buffer for all work areas, staging areas, and landing zones. Access routes were surveyed with an assumed width of 12 feet of disturbance and a 25-foot buffer on each side (62 feet total). All other work areas west of the Park Boulevard / Estates Drive intersection where the undergrounding will begin were not field surveyed because they occur in heavily populated urban areas, or their habitat quality could be assessed during a desktop review. Protocol-level special-status wildlife surveys were not conducted. November 2023 field observations from PG&E biologist Ode Bernstein are also included in this report. Representative site photos are provided in Attachment A. Species observed during SBI surveys are included below:

Birds:

- California scrub jay (*Aphelocoma californica*)
- red-tailed hawk (*Buteo jamaicensis*)
- Anna's hummingbird (*Calypte anna*)
- Turkey vulture (*Cathartes aura*)
- dark-eyed junco (*Junco hyemalis*)
- California towhee (*Melospiza crissalis*)
- chestnut-backed chickadee (*Poecile rufescens*)

Mammals: San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) nests

Reptiles: Western fence lizard (*Sceloporus occidentalis*)

4 EXISTING ENVIRONMENTAL SETTING

4.1 GENERAL SITE CONDITIONS

The wildlife BSA follows approximately 5 miles of power line that spans from Moraga Substation to Oakland X Substation in Alameda and Contra Costa Counties. The wildlife BSA is largely contiguous east of Skyline Boulevard, west of which it is broken up into smaller fragments (Figures 1 and 2). Just west of Moraga Substation a network of access roads runs north to a staging area located at the southeastern end of the community of Wilder. Two isolated staging areas are located off Quarry Road within East Bay Regional Park District's (EBRPD's) Sibley Volcanic Regional Preserve. West of SR 13, the wildlife BSA includes the area parallel to and along Park Boulevard between Monterey Boulevard and Grosvenor Place. The project area is located on fee and easement property, EBRPD lands, East Bay Municipal Utility District (EBMUD) land, and City of Oakland Parks land between Moraga Substation and Oakland X Substation. The project area traverses portions of EBRPD parks Huckleberry Botanic Regional Preserve, Sibley Volcanic Regional Preserve and the McCosker Sub-Area, and City of Oakland Parks Shepherd Canyon Park and Dimond Park.

The two disjunct staging areas in Sibley Volcanic Regional Preserve approximately 2.2 miles west-northwest of Moraga Substation are shown in Attachment B, Map B-1. At the eastern most edge of the project area near Moraga Substation, a network of roads provide access to another staging area located approximately 0.7 mile to the northwest near the community of Wilder (Wilder Landing Zone and Staging Area [LZ/SA], Attachment B, Map B-2). The project area east of Manzanita Drive and Skyline Boulevard is predominantly open space (Attachment B, Maps B-3, B-4, and B-5), while west of Manzanita Drive it largely consists of residential areas that increase in density moving west (Attachment B, Maps B-5 and B-6). West of SR 13, the project area includes a paved parking lot at the intersection of Monterey Boulevard and Lincoln way, the existing lines in city park and residential areas, and the approximately 1.3 miles of paved surface streets including portions of Park Boulevard ending at Oakland X Substation (Attachment B, Maps B-7, B-8, and B-9).

The topography of the wildlife BSA area runs from Moraga Substation up the gentle to moderately steep east-facing slope of Gudde Ridge in the Berkeley Hills. It then traverses rolling hills before crossing the deep southeast trending canyon of upper San Leandro Creek, crossing the creek's upper reaches. From Manzanita Drive, the wildlife BSA drops down the west-facing slopes of the Berkeley Hills, roughly following Dimond Canyon. The staging areas in Sibley Volcanic Regional Preserve are located on the gentle rounded hills north of Round Top Peak. The east-facing slopes are dominated largely by grassland and oak woodland vegetation communities, while the shadier canyon bottoms support riparian communities. The residential areas west of Manzanita Drive are largely surrounded by oak woodland communities with scattered grasslands, with natural areas becoming increasingly fragmented by residences moving west. Elevations in the wildlife BSA range from approximately 620 feet near Moraga Substation to approximately 1,360 feet near Manzanita Drive and approximately 160 feet near Oakland X Substation. The staging areas in Sibley Volcanic Regional Preserve are at approximately 1,300 feet in elevation.

4.2 VEGETATION COMMUNITIES

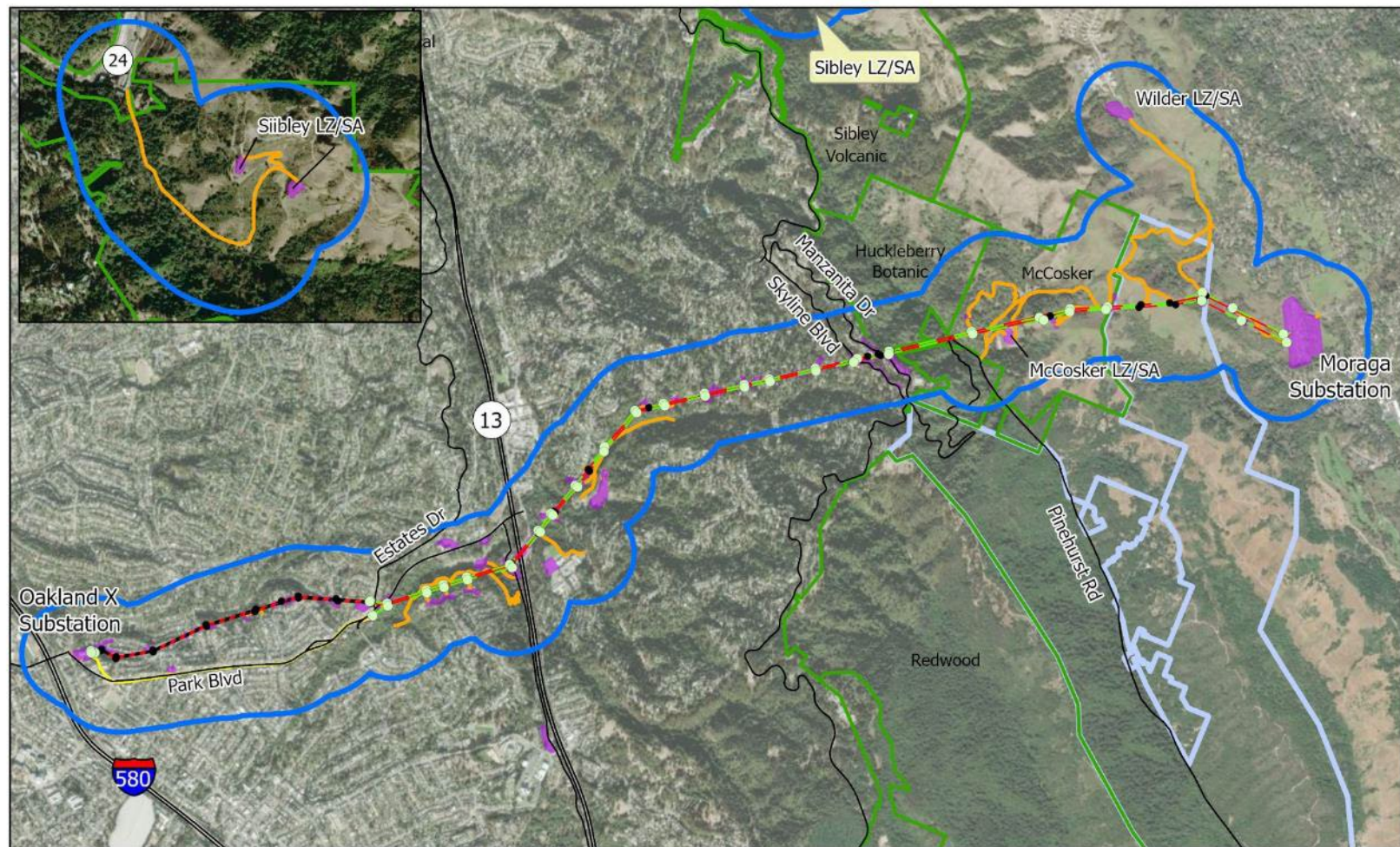
Vegetation communities within the botanical BSA were mapped and described by Nomad in 2021 (Nomad 2022). Holland (1986) and Holland and Keil (1995) provide a generalized natural community-level description for natural communities present within the botanical BSA which

include Non-Native Grassland, Native Grassland, Valley Needlegrass Grassland, Valley Wildrye Grassland, Central Coast Riparian Scrub, Northern Coyote Brush Scrub, Northern Maritime Chaparral, Ruderal, California Bay Forest, Coast Live Oak Woodland, Upland Redwood Forest, Urban Mix, and Freshwater Seep.

Other undescribed, not included in Holland (1986) or Holland and Keil (1995) land cover types present in the botanical BSA include Construction Site, Park, Restoration Site, and Urban. The acreages of unpaved access roads are assigned to the vegetation community through which they cross, while paved surface streets are included in the Urban land cover type. These vegetation communities are described below. The location of land cover types, as defined in Holland (1986), were mapped in the botanical BSA during the 2021 field survey effort.

4.3 AQUATIC RESOURCES

Aquatic resources are discussed here in the context of their key value for wildlife, including special-status wildlife known to occur, or with the potential to occur, in the project area. The project's Aquatic Resource Delineation Report provides more information (Jacobs 2024). Hydrology onsite is influenced by precipitation, surface water runoff, geologic stratigraphy, topography, soil permeability, and plant cover. Eight drainages were identified within the project area (Sowers et al 2010), five are named and three are unnamed. The named drainages from east to west are Moraga Creek, San Leandro Creek, Shephard Creek, Sausal Creek, and Palo Seco Creek. San Leandro Creek drains the project area between Gudde Ridge and Manzanita Drive / Skyline Boulevard and flows south-southeast into San Leandro Reservoir. Shephard Creek drains the upper Berkeley/Oakland Hills east of SR 13 via Shepherd Canyon and flows southwest into Sausal Creek which confluences with Palo Seco Creek at SR 13. Sausal Creek flows south-southwest out of the Berkeley/Oakland Hills through Dimond Canyon and ultimately drains into the Oakland Estuary near Alameda Island.



- Existing Pole
- Proposed Pole
- Existing Overhead Power Line
- Proposed Overhead Power Line
- Overhead Power Lines to be Removed
- Power Lines - Underground
- Access Roads
- Biological Study Area
- Landing Zone / Staging Areas
- EBRPD
- EBMUD

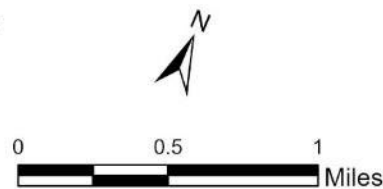


Figure 2 - Project Setting

PG&E - Moraga Oakland X 115 kV
Rebuild Project
January 2024



5 RESULTS

This section describes the special-status wildlife that were determined to have the potential to occur within the project area, designated critical habitat that overlaps the project area, Nomad vegetation mapping, aerial imagery, and HCP modeling relevant to the project area.

5.1 SPECIAL-STATUS WILDLIFE

The literature search identified 31 special-status wildlife species with the potential to occur within the vicinity of the project (Attachment B), with one designated critical habitat area (Figure 3, Table 1).

Twelve special-status species known to be present, or with a moderate to high potential to occur in the project area, are summarized in Table 2 and discussed further in the following section. Discussion of species includes status, distribution, habitat requirements, and potential to occur in or near the project area and wildlife BSA. The remaining species were determined to have low or no potential to occur, based on lack of suitable habitat or the location of the project being located outside of the species' range, and are not further analyzed in this document.

5.1.1 CRITICAL HABITAT

The majority of the project area between Moraga Substation and Manzanita Drive and Skyline Boulevard is located within Alameda whipsnake-designated critical habitat Unit 6 – Caldecott Tunnel (Figure 3) (USFWS 2006). On October 2, 2006, the USFWS issued a final rule designating critical habitat for the Alameda whipsnake; the rule became effective on November 1, 2006 (USFWS 2006). In total, approximately 154,834 acres of critical habitat were designated for the taxon in Alameda, Contra Costa, Santa Clara, and San Joaquin counties, California. Unit 6 is 4,151 acres in size.

The nearest critical habitat unit for the California red-legged frog (CCS-1) is located approximately 4.5 miles to the north. Critical habitat has not yet been designated for the foothill yellow-legged frog.

Table 1. Critical Habitat Units within the Project Area

Common Name	Species	Relationship of Critical Habitat to Project Area	Description
Alameda whipsnake	<i>Masticophis lateralis euryxanthus</i>	The majority of the project area between Moraga Substation and Manzanita Drive and Skyline Boulevard (Figure 3).	Critical Habitat Unit 6, Recovery Unit 6 (Caldecott Tunnel Corridor).

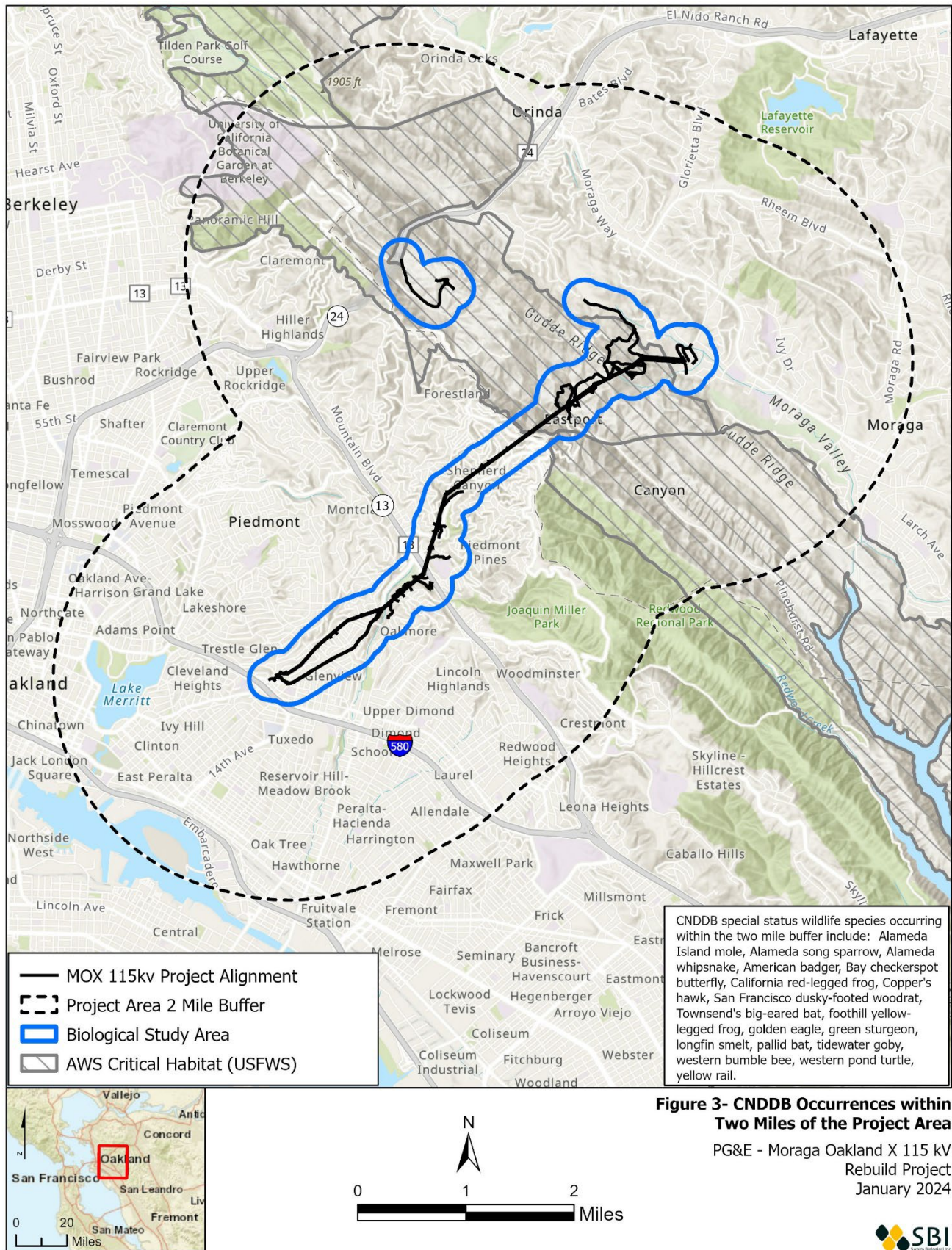


Table 2. Special-status Wildlife Species with Moderate to High Potential to Occur in the Project Area

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
Invertebrates						
<i>Bombus crotchii</i>	Crotch's bumble bee	--	SCE	--	Grassland, shrublands, and chaparral habitats with wildflower foraging habitat; occurs at relatively warm and dry sites, including the Inner Coast Range of California and margins of the Mojave Desert. Can be found in semi-urban settings.	Moderate. Suitable habitat is present within or adjacent to all project areas where grassland, scrub, and foraging habitat is present. The project area is within the current range of the species (CDFW 2023c). Floral resources were documented during Nomad's 2021 surveys that could support the Crotch's bumble bee. SBI surveys were conducted outside of the appropriate season to identify floral resources. There is one CNDDDB record within five miles of the project area which includes an individual photographed in Berkeley in 2015 (occurrence 308). There are no current occurrence records for the project area in the Xerces Bumble Bee Watch (Hatfield et al 2020).
<i>Danaus plexippus plexippus</i>	Monarch butterfly	CE	--	--	Requires milkweed for larval host plant, and late-blooming plants for adult nectar during migration. Overwinters in dense groves of trees, usually eucalyptus, pine, and cypress. Requires very specific microclimatic conditions at overwintering sites, including dappled sunlight, high humidity, fresh water, and an absence of freezing temperatures and high winds.	Low (breeding, overwintering) to Moderate (foraging). Potential suitable overwintering sites in eucalyptus trees are found within or adjacent to the project area including a eucalyptus grove near the Shepherd Canyon LZ/SA and in the McCosker sub-area. There are two CNDDDB occurrences approximately 5 miles to the west. One (occurrence 415) is at Berkeley Aquatic Park, the second (occurrence 322) is next to the Oakland International Airport that are associated with established overwintering sites. No known overwintering sites occur inland in the Berkeley/Oakland Hills area that overlaps with the project area (Xerces 2024). Suitable grassland habitat may support nectar plants for foraging. No native host plants (native milkweed) were found during botanical surveys conducted by Nomad in 2021.

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
Amphibians						
<i>Rana boylei</i> , Central Coast DPS	Foothill yellow- legged frog	FT	SE	SSC	<p>Perennial and ephemeral streams and rivers with rocky substrates and open, sunny banks in forests, chaparral, and woodlands. Use adjacent moist terrestrial habitats for foraging and refugia.</p>	<p>Low to Moderate. Western portion of project area is low, eastern portion of the project area by Moraga Creek is moderate. There are three CNDDDB records within 2 miles of the project area.</p> <p><i>Western portion – east of Manzanita Drive and McCosker Subarea, Attachment B Map B-5 through B-9</i></p> <p>Potentially suitable habitat is present in portions of the project area east of Manzanita Drive and unnamed tributaries of San Leandro Creek west of Pinehurst Road. There are two extirpated occurrence records in this area (occurrence 4 and 5). The habitat is highly fragmented within the project area east of Manzanita Drive and the species has not been encountered in the McCosker Subarea by EBRPD during recent surveys (EBRPD 2018). Therefore, the potential for the species to be encountered within the portions of the project that occur east of Manzanita Drive and upper San Leandro Creek tributaries near McCosker Subarea west of Pinehurst Road is low.</p> <p><i>Eastern portion – Wilder LZ/SA and Moraga Substation, Attachment B Map B-2 and B-3</i></p> <p>Potentially suitable habitat is also present in portions of the project area near Moraga Creek and unnamed tributary streams near Moraga Substation. The only extant record (occurrence 6) is in Moraga Creek northwest of Moraga Substation. The potential for the species to be encountered in the portions of the project area in and near the Wilder LZ/SA and Moraga Substation is moderate.</p>

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
<i>Rana draytonii</i>	California red-legged frog	FT	--	SSC	Lowlands and foothills in or near permanent sources of water (for example, ponds, creeks, and marshes) with emergent or dense riparian vegetation. Riparian, upland habitat, and small mammal burrows are important for movement and refugia.	<p>Moderate to High. Suitable upland, riparian and creek habitat is present within or adjacent to the project areas where stream habitat is present including all eight drainages within the project area. PG&E HCP modeled breeding habitat is present throughout the project area east of Park Boulevard.</p> <p>Two, presumed extant, CNDDDB records are within the dispersal distance (two miles) of the Project area. One is historical (1931), while the other is more recent (1997).</p>
Reptiles						
<i>Actinemys marmorata</i>	Northwestern pond turtle	FC	--	SSC	Permanent and intermittent freshwater aquatic habitats including rivers, streams, lakes, ponds, marshes, and vernal pools. Prefers habitats with abundant basking sites, underwater refugia, and standing or slow-moving water. Nesting sites are on sandy banks and bars or in fields or sunny spots up to a few hundred meters from water.	<p>Low to Moderate: Suitable aquatic habitat, breeding upland habitat, and winter refugia are present in urban creeks in the Sausal Creek Watershed and in the San Leandro Creek Watershed east of Manzanita Drive and Skyline Boulevard. Tributary streams may provide suitable habitat if pools are present.</p> <p>There are four CNDDDB records within 2 miles, with the closest record from Lake Temescal within 2 miles from the project areas near Shepherd Canyon Park (Attachment B, Map B-7). This occurrence is separated from the project area by dense urban development. There is one research grade iNaturalist record in 2022 from Montclair Park within 0.5 mile northwest of the project area near Shepherd Canyon Park.</p>

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
<i>Masticophis lateralis euryxanthus</i>	Alameda whipsnake	FT	ST	--	Throughout the mosaic of Chaparral; scrub; and grassland and woodland communities.	<p>High to Present. Suitable core and perimeter core type habitat is present within and adjacent to the project area with movement habitat present throughout the project area east of SR 13.</p> <p>There are three CNDDDB occurrences within 0.25 mile of the project area east of Manzanita Drive. Occurrence 33 overlaps with the project area near the McCosker Creek Restoration area, occurrence 60 is within 500 feet, and occurrence 95 is within 2,500 feet of the project area. PG&E HCP modeled movement habitat is present within or adjacent to the project area at all work locations east of SR 13 (Attachment B, Maps B-1 through B-7). The HCP movement habitat includes smaller areas of core and perimeter core habitat present within the project area and wildlife BSA that were not modeled as such in the HCP or this report. Due to the presence of suitable habitat for this species that was not captured in the HCP modeling, this species have the potential to occupy area outside the modeled habitat.</p>
Birds						
<i>Accipiter cooperii</i>	Cooper's hawk	--	--	WL	Associated with deciduous, mixed, and coniferous forest, and deciduous stands of riparian habitat in woodlands, riparian corridors, and along habitat edges, will nest in urban areas. They use mature trees with moderate to high crown-depths and canopy cover for nesting.	<p>Moderate (foraging / nesting). Suitable habitat is present within or adjacent to the project area including trees for nesting and urban areas, riparian corridors and oak woodland forest. There are two CNDDDB records within 5 miles of the project area.</p>

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
<i>Aquila chrysaetos</i>	Golden eagle	--	--	FP	Open mountains, foothills, plains, open country. Requires open terrain. In the north and west, found over tundra, prairie, rangeland, or desert; very wide-ranging in winter, more restricted to areas with good nest sites in summer.	High (foraging / nesting). Suitable habitat is present within or adjacent to the project area including large trees for nesting and foraging habitat prevalent in all areas east of Manzanita Drive. There is one CNDDDB record within 5 miles of the project area. A golden eagle nest site has been used consistently since 2005 in Sibley Volcanic Regional Preserve (EBRPD 2018).
Mammals						
<i>Antrozous pallidus</i>	Pallid bat	--	--	SSC	Low elevation arid or semi-arid open areas near water, rocky outcrops, and cliffs. Breeds and roosts in crevices in caves, mines, and cavities.	Moderate. Suitable roosting and foraging habitat is present within and adjacent to the project area wherever trees and structures are present to support roosting, especially along creeks in Sausal Creek and San Leandro Creek Watersheds. There are seven CNDDDB records within 5 miles of the project area.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	--	--	SSC	Mesic habitats, forages around trees and brush along habitat edges. Breeds and roosts in caves, mines, tunnels, cavities or buildings.	Moderate. Suitable roosting and foraging habitat is present within and adjacent to the work areas wherever trees and structures are present to support roosting, especially along creeks in Sausal Creek and San Leandro Creek Watersheds. There is one CNDDDB record within 5 miles of the project area.
<i>Lasiurus blossevillii</i>	Western red bat	--	--	SSC	Prefers edges or habitat mosaics that have trees for roosting and open areas for foraging. Roost sites often are in edge habitats adjacent to streams, fields, or urban areas. Requires water.	Moderate. Suitable roosting and foraging habitat is present within or adjacent to the work area. The majority of the work area is within CDFW predicted habitat (CDFW 2021). There are no CNDDDB records within 5 miles of the project area.

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
<i>Neotoma fuscipes annectens</i>	San Francisco dusky-footed woodrat	--	--	SSC	Forest habitats of moderate canopy and moderate-to-dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	Present. Suitable habitat is present within and adjacent to the project area. Nests were observed adjacent to the project area during site visit surveys. There are 12 unprocessed CNDDDB occurrences documenting individuals, active nests, and observed nest structures in 2020 and 2021 at the McCosker Creek Restoration Area (Attachment B) (CDFW 2023c).

* Status codes are defined as follows:

Federal status:

FT = listed as threatened under Endangered Species Act

FC = candidate for listing as threatened under Endangered Species Act

State Status:

ST = listed as threatened under the California Endangered Species Act

SCE = candidate for listing as endangered under the California Endangered Species Act

SSC = species of special concern

WL = CDFW Watch List

CNDDDB = California Natural Diversity Database

5.1.2 CROTCH'S BUMBLEBEE

The Crotch's bumble bee (*Bombus crotchii*) is state candidate endangered species. The Crotch's bumble bee occurs primarily in California and inhabits open grassland and scrub habitats; nesting occurs underground (Xerces 2018). Bumble bees are social insects that live in colonies composed of a queen, workers, and reproductives (males and new queens). Colonies are annual and only the new, mated queens overwinter. These queens emerge from hibernation in the early spring and immediately start foraging for pollen and nectar and begin to search for a nest site. Nests are often located underground in abandoned rodent nests, or above ground in tufts of grass, old bird nests, rock piles, or cavities in dead trees. Initially, the queen does all of the foraging and care for the colony until the first workers emerge and assist with these duties. Bumble bees collect both nectar and pollen of the plants that they pollinate. In general, bumble bees forage from a diversity of plants, although individual species can vary greatly in their plant preferences (Xerces 2018).

Throughout the project area, grassland habitat with floral resources provides suitable habitat for the Crotch's bumblebee. The project area is within the current range of the species (CDFW 2023c). Floral resources were documented during Nomad's 2021 surveys, though SBI surveys were conducted outside of the appropriate season. There is one CNDDDB record within 5 miles of the project area that includes an individual photographed in Berkeley in 2015 (Occurrence 308). There are no current occurrence records for the project area in the Xerces Bumble Bee Watch (Hatfield et al. 2020).

5.1.3 MONARCH BUTTERFLY

The monarch butterfly (*Danaus plexippus plexippus*) is listed as candidate endangered by the USFWS (2020). On December 15, 2020, the U.S. Fish and Wildlife Service announced that listing the monarch butterfly under the Endangered Species Act is warranted but precluded by other priorities.

Monarchs rely on milkweed for larval development while adults need nectar to fuel their migration. Each fall, last year's generation of adults migrates to overwintering sites, some in coastal California, that provide suitable microhabitat conditions including protection from wind and freezing temperatures. Overwintering sites in coastal California include blue gum eucalyptus groves within mixed urban-farmland development.

There are two presumed extant CNDDDB occurrences approximately 5 miles to the west. One (occurrence 415) is at Berkeley Aquatic Park, the second (occurrence 322) is next to the Oakland International Airport. There are 11 known overwintering sites in Alameda County and two in Contra Costa County (Pelton et al 2016). None of the known overwintering sites are within the wildlife BSA – the two nearest overwintering sites are at Albany Hill which is approximately 7 miles to the northwest and Monarch Bay Golf Course which is approximately 9 miles to the southwest. These and other Bay Area overwintering sites are located close to the Bay and coast, and none are found as far inland as the Berkeley/Oakland Hills at the project area (Xerces 2024).

There is grassland habitat that could support floral foraging resources for monarchs throughout the project area. Grassland habitat near the Moraga Creek and Moraga Substation could support native narrow leaf milkweed based on Calflora habitat prediction models for the species. No milkweed

were observed during the botanical surveys conducted in 2021 (Nomad 2022). Eucalyptus trees are present near the Shepherd Canyon SA and there is a grove near EBRPD McCosker staging area. The potential for occurrence for overwintering sites is low, as is the potential for breeding, although there is moderate potential for monarchs to pass through the area and utilize floral foraging resources.

5.1.4 CALIFORNIA RED-LEGGED FROG

The California red-legged frog (*Rana draytonii*) (CRLF) is listed as federally threatened (USFWS 1996) and is considered a Species of Special Concern by CDFW. Critical habitat was designated in 2010 (USFWS 2010).

The CRLF breeds in wetlands, lakes, ponds, and other still or slow-moving sources of water that remain inundated long enough for larvae to complete metamorphosis, which typically occurs from 11–20 weeks after hatching (Storer 1925). During summer months, CRLF forage and disperse in uplands and are known to take refuge in cool, moist areas, including rodent burrows and soil crevices near aquatic habitats. Adult CRLF tend to be most active at night during wet weather, but they may move through upland areas at any time during the year (USFWS 2002). CRLF may disperse over two miles from breeding ponds but movement distances of up to one mile are more common. Dispersal can be straight line distances between aquatic habitat as well as along creeks and drainages. Dispersal habitat includes upland or riparian zones within one mile of occupied locations, which allows movement between sites (USFWS 2008). Agricultural lands such as row crops, orchards, vineyards, and pastures do not constitute barriers to CRLF dispersal (USFWS 2008, 2010) and CRLF disperse through croplands to reach suitable breeding and upland habitat (ICF International 2010).

The project area intersects multiple drainages that are modeled as suitable breeding habitat in the HCP (Attachment B) (ICF 2016). Modeled suitable breeding habitat is characterized as the riparian area and the actual wetted areas of the stream, creek, or drainage. PG&E used a conservative estimate of 300 feet on each side of streams to delineate suitable breeding habitat in the HCP (ICF 2016).

There are eight presumed extant CNDDDB occurrences within 5 miles of the project area. Two occurrence records are within 1 mile of the project area. The nearest record is approximately 0.5 mile northwest of the Wilder LZ/SA (occurrence 226, 1997). This occurrence is from before the construction of the community of Wilder which has modified the habitat conditions since the observation. Per the occurrence record, two adults were observed in a culvert outlet pool below a siltation pond. While the siltation pond has been modified by the construction of the community of Wilder, a stormwater detention basin is now present nearby which may provide suitable breeding habitat in wet years. The second occurrence within 1 mile of the project area is from “Thornhill Pond” (occurrence 8, 1940s), what is presently the Montclair Swim Club. This pond was constructed and stocked with frogs in the late 19th or early 20th century by a rancher interested in starting a frog farm (Storer 1925). The actual location of “Thornhill Pond” has been disputed. Marc Jennings provided an assessment of this occurrence record and its location as part of a nearby project and believes it was located along the present SR 13 corridor and was demolished during construction of the highway (The Planning Center DC&E 2012). Although it is likely that this

pond and population have been extirpated, suitable breeding and upland habitat continues to be present in nearby drainages.

5.1.5 Foothill Yellow-Legged Frog

The foothill yellow-legged frog federal listing status varies by Distinct Population Segment (DPS); the project is within the boundaries of the Central Coast DPS, where the frog federally listed as threatened (USFWS 2023b). At the state level, the frog's listing varies by clade and the project is within the West/Central Coast clade. Frogs of this clade are state-listed as endangered (CDFW, 2020).

Foothill yellow-legged frogs occur in Pacific river systems from Oregon to Southern California. They are a stream-dwelling frog found in streams with shallow, flowing water with at least some cobble-sized substrate. Egg masses are deposited on the downstream side of cobbles and boulders where slow flowing shallow water levels exist. Eggs are generally deposited between late March and early June, depending on the period of high flow from winter rainfall and melting snow. Eggs need a minimum of 15 weeks to develop before metamorphosis, which typically occurs between July and September. Aquatic and terrestrial insects are thought to be prey items of the foothill yellow-legged frog. Foothill yellow-legged frogs stay close to their aquatic habitat, typically within 10 feet and utilize riparian corridors for movement but have been documented using upland habitats with an average distance of 234 ft from water (range: 52-1,086 ft) (CDFW 2020).

The project area intersects multiple drainages that provide suitable habitat to support foothill yellow-legged frogs; however, the species has not been observed in recent decades. There are six CNDDDB occurrences within 5 miles of the project area and three within 2 miles of the project areas. Two of these population occurrences within the wildlife BSA are considered extirpated (CDFW 2023b), and only one population record is presumed extant. The nearest extant record is located near the community of Wilder (occurrence 6) in Moraga Creek, approximately 2000 feet southeast of the Wilder LZ/SA and overlaps with the access road in the project area (Attachment B, Map B-2). In 1997 two adults were reported in a plunge pool upstream of riparian habitat on private property, however EBRPD biologists believe the occurrence may have been a misidentification (EBRPD 2018; CDFW 2019). Suitable habitat is present in Moraga Creek and unnamed tributaries within the wildlife BSA near Moraga Substation. If a remnant population is present, the species could be using these creeks and immediately adjacent moist uplands near Moraga Substation. The potential for the species to occur in this area (Attachment B Maps B-2 and B-3), given that the 1997 record is still considered extant despite controversy, is determined to be low to moderate.

The two historic occurrences within the project area, one west of Manzanita Drive and Skyline Boulevard and another adjacent to the McCosker sub-area/Fiddleneck Field LZ/SA populations are considered extirpated. No foothill yellow-legged frogs were observed during aquatic dip net surveys conducted in the Alder and Leatherwood Creeks by EBRPD in April 2018 (EBRPD 2018). It is unlikely that a remnant population exists in this portion of the project area and the potential for this species to occur in this portion of the project area is considered low.

5.1.6 ALAMEDA WHIPSNAKE

The Alameda whipsnake (*Masticophis lateralis euryxanthus*) was listed as threatened under the California Endangered Species Act in 1971. In 1997, the USFWS designated the species as threatened under the federal Endangered Species Act.

Alameda whipsnake (AWS) use a wide variety of habitats including grassland, oak savanna and woodland habitats, but are most frequently found in or near chaparral and scrub habitats (Swaim 1994). In areas of open woodland and grassland where cover such as rock outcrops, fallen logs, or trees structurally similar to brush habitat is present, the use of these habitats likely increases. Small rodent burrows and rock crevices are commonly used by whipsnakes as retreat sites in both grassland and scrub habitats, brush piles, soil crevices and debris piles were also occasionally used (Swaim 1994). AWS are most active between April and late June with a period of highly reduced activity in the winter (Swaim 1994, Alvarez et al. 2021). A secondary peak in activity in the fall has been detected for dispersing young of the year (Swaim 1994).

Much of the project is mapped as movement habitat for AWS in the HCP (Attachment B) (ICF 2016). Movement habitat is defined as grassland, oak savanna, and occasionally oak-bay woodland habitats greater than 500 feet from scrub. Scrub habitat is considered core habitat for AWS and all natural land cover types from 0-500 feet from scrub is considered perimeter core habitat. Nomad (2022) mapped many habitats in and within approximately 130 feet of the project footprint. This mapping documents areas of scrub in the project staging/landing zones and proposed access roads as well as additional scrub within the 130-foot buffer that are not mapped in the HCP. These areas represent core and perimeter habitat inclusions within the HCP mapped movement habitat that were not large enough to be mapped as core and perimeter habitats as part of HCP mapping. There are also additional areas of core and core perimeter habitat that would be revealed if land cover within a 500-foot buffer around the project were mapped rather than the current approximate 130-foot mapped area.

The project also crosses directly through Designated Critical Habitat Unit 6 for the species and suitable habitat is found within or adjacent to the project area east of Manzanita Drive and Skyline Boulevard (Attachment B, Maps B-1 through B-5). In this portion of the project area, there are two presumed extant CNDDDB occurrences. One record (occurrence 33) overlaps with project areas near the Fiddleneck Field LZ/SA and a proposed access road (Attachment B, Map B-4). The record includes an observation of an adult captured during a trapping study in 1990. Immediately southwest of the Fiddleneck Field LZ/SA is a record of an individual that was found dead on Pinehurst Road in 2002 (occurrence 60).

The habitat to the west becomes highly fragmented and is only found in small patches around homes, but individuals could move into the area through Shepherd Canyon where PG&E HCP mapped movement and core and perimeter core habitat is present. There are no known occurrences west of SR 13 within the project area.

5.1.7 NORTHWESTERN POND TURTLE

The northwestern pond turtle (*Actinemys marmorata*) occurs from Baja California to the lower Columbia River in Oregon and Washington (Jennings et al. 1992). Northwestern pond turtles are thoroughly aquatic, preferring the quiet waters of ponds, reservoirs, and sluggish streams (Stebbins

2003). The species occurs in a wide range of both permanent and intermittent aquatic environments (Jennings et al. 1992). Northwestern pond turtles spend considerable time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris. Northwestern pond turtles also spend time in upland habitats during the spring and summer, frequently moving between aquatic and upland habitats (Rathbun et al. 2002). They move up to 1,300 feet or more to upland areas adjacent to watercourses to deposit eggs and overwinter (Jennings and Hayes 1994). Northwestern pond turtles typically become active in March and return to overwintering sites by October or November (Jennings et al. 1992). Suitable habitat for western pond turtle includes California annual grassland, mixed riparian forest woodland, mixed willow riparian scrub, perennial freshwater marsh, pond, riverine stream, sycamore alluvial woodland, valley sink scrub, golf course/urban park, ruderal, and rural residential. In the winter, northwestern pond turtles hibernate underwater in ponds or slow-moving pools or in adjacent woodlands by burying themselves in leaf litter, loose soils, or within burrows.

Although most of the project's work areas are on ridgelines, access roads and the access to staging areas at Wilder and McCosker are within dispersal distance of suitable ponds. The project area is adjacent to suitable aquatic habitat, breeding upland habitat, and winter refugia present in urban creeks in the western portion of the project area between Shepherd Canyon Road and Park Boulevard (Attachment B, Maps B-6, B-7, and B-8). There are four CNDDDB occurrences within 5 miles of the project area. The nearest occurrence (occurrence 63) is from Lake Temescal approximately 1.8 miles to the northwest, although the project area is separated by SR 13 and dense urban development from this record. There is one research grade iNaturalist occurrence in 2022 from Montclair Park within 0.5-mile northwest of the Shepherd Canyon project areas. The potential for this species to occur in this portion of the project area west of Manzanita Drive and Skyline Boulevard is considered moderate.

In the project area east of Manzanita Drive and Skyline Boulevard, pools in tributary streams may provide suitable habitat if the pools could support foraging and basking; however, there are no CNDDDB records within this portion of the wildlife BSA or from these streams. There are two human-made aquatic features outside of the wildlife BSA that could provide suitable habitat that turtles could occupy. One is the stormwater basin that is approximately 0.64 mile to the northwest of the Wilder LZ/SA with riparian connectivity to the project area. The second is a pond on private property that is approximately 0.4 mile southeast of the Fiddleneck LZ/SA. If turtles are occupying these resources, they could disperse into the project area.

Throughout the project area, no impacts are proposed directly within the creeks, and most of the project work is occurring on or near ridgelines away from aquatic habitat. However, portions of access roads and staging areas/landing zones surrounding uplands of mapped drainages could provide potential dispersal and breeding habitat for the species. The work areas near McCosker, Moraga Substation and throughout the eastern edge of the project are within dispersal distance of creeks. The access road from Wilder LZ/SA to Moraga Substation is adjacent to a creek that is near access roads and the staging area/landing zone.

5.1.8 SPECIAL STATUS AND MIGRATORY BIRDS AND RAPTORS

Suitable nesting habitat is present in the grassland, woodland, and shrub habitat as well as electrical towers and urban habitat throughout the project area. In addition to the federal and State protections

listed below, these species, are also protected by the federal Migratory Bird Treaty Act and the California Fish and Game Code, which prohibit take of individuals (including active nests).

5.1.8.1 *Cooper's hawk*

The Cooper's hawk (*Accipiter cooperii*) is a CDFW Watch List species. This medium sized, agile hawk occurs in various types of mixed deciduous forests and open woodlands including riparian woodlands, and forested mountainous regions. It is often found in urban areas nesting in neighborhoods and feeding on birds and small mammals found at backyard feeders. The entire project area is suitable foraging habitat for this species, and areas with trees are suitable nesting habitat. There are two CNDDDB nesting records within 5 miles of the project area.

5.1.8.2 *Golden eagle*

The golden eagle (*Aquila chrysaetos*) is protected under the Federal Bald and Golden Eagle Protection Act and is a CDFW fully protected species. Golden eagles occur in grasslands, oak savannahs, woodlands, and agricultural areas. Nesting habitat includes cliffs and large trees in open or semi-open areas, and golden eagles frequently use the same nesting sites between years or use alternate sites within a territory. Golden eagles mostly prey on rabbits, hares and rodents but also take other mammals, birds, reptiles, and some carrion.

Grassland east of Manzanita Drive and Skyline Boulevard provides suitable foraging habitat with large trees that could support nesting. There is one CNDDDB record of the golden eagle within 5 miles of the project area which corresponds with a known nesting location since 2005 in Sibley Preserve (EBRPD 2018).

5.1.9 BAT SPECIES OF SPECIAL CONCERN

The project area includes open, intact grassland with trees and water sources that supports potential habitat for roosting and foraging bat species. Habitat within the study area contains trees that are suitable for a variety of solitary foliage roosting bat species and may also contain some trees that are suitable for colonial bat species. Mature trees with significant cavities are required for maternal colonies or roosting colonies. The three species discussed below are designated as species of special concern by CDFW (2023a).

5.1.9.1 *Pallid bat*

Pallid bat (*Antrozous pallidus*) day-roosting habitat typically includes rocky outcrops, cliffs, large-diameter live and snag trees, and spacious crevices near open foraging habitats. Pallid bats may also roost in caves, mines, bridges, barns, porches, bat boxes, stone piles, rags, baseboards, rocks, and on the ground. Day roosts are generally warm and out of reach from ground predators and may consist of single- or mixed-sex colonies in crevices or man-made structures. Pallid bats have also been documented using culvert structures and bridges for roosting. The number of individuals in a day roost range from a few individuals to a couple of hundred individuals. There are five CNDDDB records within 5 miles of the project area. All are presumed extant.

5.1.9.2 *Townsend's big-eared bat*

Townsend's big-eared bats (*Corynorhinus townsendii*) are found throughout California, but the details of its distribution are not well known. Townsend's big-eared bats are found in all but

subalpine and alpine habitats and may be found at any season throughout its range. The species requires cavity-type habitats such as caves, tree basal hollows, mines, tunnels, buildings, bridges, or other human-made structures for roosting. Townsend's big-eared bats may use separate sites for night, day, hibernation, or maternity roosts. Hibernation sites are generally cold, but not below freezing. Individuals may move within the hibernaculum to find suitable temperatures. Maternity roosts are found in generally warm sites. Day roosting colonies can range from a singly roosted male or female depending on season to groups of individuals into the hundreds during maternity season. There is one historical CNDDDB record of the Townsend's big-eared bat occurring within 5 miles of the project area.

5.1.9.3 Western red bat

Western red bats (*Lasiurus blossevillei*) can be found throughout California's lower elevations, with many records concentrated in the Central Valley. Like some bats found in California, western red bats make regional seasonal movements between their winter and maternity roosts. As a foliage roosting bat, the western red bat is closely associated with well-developed riparian habitats but will also utilize other habitats (e.g. orchard trees, eucalyptus, tamarisk, etc.) that provide suitable dense clusters of leaves creating suitable roosting sites. Of note, this species has been observed roosting on the ground within leaf clutter. The western red bat is a solitary roosting bat that will often have two pups per year. There are no CNDDDB records within 5 miles of the project area. The entire project area is mapped by CDFW as potential habitat (CDFW 2021).

5.1.10 SAN FRANCISCO DUSKY-FOOTED WOODRAT

The subspecies San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) is designated as a species of special concern by CDFW (2023a). The dusky-footed woodrat is found in mixed coniferous forests, oak and riparian woodlands and chaparral habitats (Carraway and Verts 1991). It is most abundant in areas with dense shrub cover and has been shown to be strongly associated with densely vegetated, structurally complex habitats. The species constructs nests out of sticks and other debris. Nests are constructed on the ground, in rocky outcrops or in trees and are often found in concentrations along riparian corridors. They may be reused by successive generations and some can grow to be six feet or more in height, while others are well-hidden and easily overlooked.

One San Francisco dusky-footed woodrat nest was observed within the project area during reconnaissance field visits by SBI at the structure EN2 work areas. Five nests were observed in November 2023 by PG&E biologists in the same vicinity (Attachment B, Map B-3). There are 12 unprocessed CNDDDB occurrences documenting individuals, active nests and observed nest structures in 2020 and 2021 at the McCosker Ranch (CDFW 2023b) (Attachment B, Map B-4).

6 DISCUSSION AND RECOMMENDATIONS

6.1 IMPACTS ANALYSIS

6.1.1 CROTCH'S BUMBLE BEE

The project has the potential to result in both direct and indirect impacts to Crotch's bumble bees if they are present within the project area during project activities. Potentially suitable habitat is present throughout the project area where grassland and floral resources, including ruderal and weedy areas, are present. Impacts are most likely to occur during ground disturbance or vegetation

removal where floral resources and potential nest sites are present. Impacts will be minimized through implementation of applicable avoidance and minimization measures identified in the HCP, ITP and ITP FEIR (Section 6.2.1).

6.1.2 MONARCH BUTTERFLY

If project activities occur during the winter months, impacts to overwintering monarchs could occur if an overwintering population was identified. Overwintering monarchs are highly dependent on intact forested groves, so brush management (including tree trimming, tree removal, or tall shrub removal) within 328 feet (100 meters) of overwintering sites may negatively influence overwintering monarchs (EPRI 2019).

If project activities occur during the migration and breeding season (starting as early as February through fall), monarchs could be present in the grassland utilizing nectar plants. No native milkweed plants were observed during vegetation surveys, and breeding is not expected. Movement of vehicles, removal of vegetation, and/or grading of roads that directly impact milkweed plants if monarch larvae are found could result in direct impacts to the species. Impacts will be minimized through implementation of applicable avoidance and minimization measures identified in the HCP, ITP and ITP FEIR (Section 6.2.1).

6.1.3 CALIFORNIA RED-LEGGED FROG

The project has the potential to result in both direct and indirect impacts to California red-legged frogs if they are present within the project areas where PG&E modeled suitable breeding habitat exists. Frogs are most likely to be impacted during the breeding season, especially at night or during rain events when they are most active. Movement of vehicles, removal of vegetation, and grading of roads could crush or bury metamorphs, juveniles, and adults in upland areas as well as frogs using adjacent aquatic areas for dispersal, basking, foraging, or sheltering. Suitable upland habitat is present at all work and staging areas within 200 feet from the community of Wilder to Skyline Boulevard (Attachment B, Maps B-1 through B-5); these areas would be the most likely to have impacts occur. However, the species could potentially be found anywhere within the project area east of Park Boulevard within 200 feet of streams (Attachment B, Maps B-1 through B-8). While impacts could potentially occur within HCP-modeled suitable breeding habitat, no direct impacts to known breeding habitat will occur. HCP measures and ITP FEIR measures designed to avoid and minimize impacts to California red-legged frog are provided in Section 6.2.1.

6.1.4 FOOTHILL YELLOW-LEGGED FROG

The project has the potential to result in both direct and indirect impacts to foothill yellow-legged frogs if they are present within the project areas near Moraga Substation and the Wilder LZ/SA. There is an access road that travels between Moraga Substation and the Wilder LZ/SA that falls within the 1997 CNDDDB occurrence. In this area (Attachment B Map B-2 and B-3), PG&E modeled suitable breeding habitat for the California red-legged frog is assumed to also provide potentially suitable breeding habitat for the foothill yellow-legged frog. Impacts from project activities are most likely during late winter through early spring and late summer through early winter when frogs are dispersing to and from creek breeding habitat. No direct impacts to breeding habitat are currently proposed to occur. Movement of vehicles, removal of vegetation, and/or

grading of roads could crush or bury metamorphs, juveniles, and adults in upland areas as well as frogs using adjacent aquatic areas for dispersal, basking, foraging, or sheltering. Measures incorporated in the HCP and ITP FEIR for the protection of California red-legged frog (Section 6.2.1) would also serve to reduce the potential impacts to foothill yellow-legged frog.

6.1.5 ALAMEDA WHIPSNAKE

The project has the potential to result in both direct and indirect impacts to Alameda whipsnake if they are present within the project area during project activities, most notably at project areas east of Manzanita Drive and Skyline Boulevard (Attachment B, Map B-1 through B-5). Direct impacts include both impacts on individual whipsnakes that could be encountered during implementation of project activities and the permanent and temporary loss of modeled habitat. Some Alameda whipsnake core habitat and perimeter core habitat will be impacted with ground disturbance and temporary loss of vegetation associated with the project. The potential to affect Alameda whipsnakes is greatest in core and perimeter core habitats. Movement of vehicles, removal of vegetation, and/or grading of roads in core and perimeter core habitats could result in take of whipsnake. HCP and ITP measures designed to avoid and minimize impacts to Alameda whipsnake (Section 6.2.1) will be implemented for the project. HCP and ITP requirements for mitigation (Section 6.2.1) will also be followed.

6.1.6 NORTHWESTERN POND TURTLE

Although most of the work will be on hills and ridgelines away from potential aquatic habitat, the access road that travels between Moraga Substation and the Wilder LZ/SA are located in areas where upland movement and nesting could occur. If northwestern pond turtles are present in the upland areas that surround the creeks, there is the potential for direct and indirect impacts within the project areas near creeks or ponds. If project activities occur during winter brumation, it is unlikely they would be easily encountered during surveys. While no direct impacts to known breeding habitat are currently proposed to occur, movement of vehicles, removal of vegetation, and/or grading of roads could crush or bury juveniles and adults in upland areas. Project activities along access roads that occur adjacent to aquatic areas could result in disturbances to turtles using those aquatic features for dispersal, basking, foraging, or sheltering. Construction activities (such as grading and movement of heavy equipment) could result in the destruction of pond turtle nests containing eggs or young individuals if affected areas are being used for egg deposition. Measures incorporated in the HCP and ITP FEIR for the protection of California red-legged frog (Section 6.2.1) would also serve to reduce the potential impact to northwestern pond turtle.

6.1.7 NESTING BIRDS/RAPTORS

Suitable bird nesting habitat occurs throughout the project area. If the project occurs during the typical avian nesting period (February 1 through August 31), there is the potential for both direct and indirect impacts to nesting birds. Measures incorporated in the HCP and ITP FEIR will be implemented for the project (Section 6.2.1). Specifically, preconstruction surveys will be conducted by a qualified biologist prior to project activities following PG&E's processes and procedures outlined in PG&E's Nesting Birds: Species-Specific Buffer for PG&E Activities guidance (Attachment C) to protect birds if they are documented nesting in areas that could be affected by project activities.

6.1.8 BATS

The project area is located within and adjacent to potential foraging habitat, maternity roost habitat, and day-and-night roosting habitat for many bat species, including the western red bat, Townsend's big-eared bat, and the pallid bat. Trees within the project area have the potential to support roosting bats. Bats may roost in cracks, crevices, exfoliating bark, or within the foliage of the trees. Tree removal or pruning and noise associated with project activities could result in the injury, mortality, or disturbance of roosting bats if they are present in cavities, crevices, furrowed bark, or foliage of trees. Construction disturbance adjacent to bridges or other structures in the wildlife BSA could disturb bats that may roost on these structures (pallid bat or maternity colonies of non-special-status bats). During the maternity season or hibernation period, mortality of roosting bats that results from tree removal or pruning or other disturbances could affect individuals, but is not expected to result in a substantial reduction in the local populations of these species. Measures incorporated in the ITP FEIR designed to avoid and minimize impacts to bats will be implemented for the project (Section 6.2.1).

6.1.9 SAN FRANCISCO DUSKY-FOOTED WOODRAT

Suitable habitat is present throughout much of the project area; six woodrat nests have been observed, and it is likely other nests will be discovered near other work areas and/or staging areas. If woodrat nests cannot be avoided by project activities, there is the potential for direct impacts associated with nest dismantling and relocation. PG&E has an existing woodrat relocation plan agreement with EBRPD. To further reduce potential impacts to this species, PG&E will implement the relocation plan in the event a nest is found that cannot be avoided (Attachment D).

6.2 AVOIDANCE AND MINIMIZATION MEASURES

The PG&E Bay Area O&M HCP and the Bay Area O&M ITP provide coverage for the planned project activities for HCP covered species – California red-legged frog and Alameda whipsnake and ITP covered species Alameda whipsnake. The HCP and ITP also have general measures for nesting birds and raptors although they are not covered species. Additional measures to protect special-status species were proposed as Applicant Proposed Measures (APMs) in the ITP FEIR. Applicable avoidance and minimization measures per the HCP, ITP, and APMs from the ITP FEIR are included in PEA Section 5.4.

For species not specifically covered for take under the HCP or ITP, such as Crotch's bumble bee, monarch butterfly, foothill yellow-legged frog, northwestern pond turtle, San Francisco dusky-footed woodrat, bats, and nesting birds, the HCP and ITP adopt general measures such as restricted work area access, speed limits, training and monitoring, equipment inspection, erosion control, trench inspections and ramps for wildlife, and other general measures that also provide protection for non-covered species. The ITP FEIR APMs also provide protection for non-covered species, including bats and nesting birds. Avoidance and minimization measures of potential impacts to these non-covered species are discussed in PEA Section 5.4.

7 REFERENCES

- Alvarez, Jeff A., Kelly A. Davidson, Fernando Villalba, Denise Amador, and Angelica V. Sprague. 2021. *Atypical Habitat Use by the Threatened Alameda Whipsnake in the Eastern Bay Area of California*. Western Wildlife 8:8-12.
- California Department of Fish and Wildlife (CDFW). 2019. *Status Review of the Foothill Yellow-Legged Frog (Rana boylei) in California*. Report to The Fish and Game Commission. State of California Natural Resources Agency. September 20.
- California Fish and Game Commission. 2020. *California Notice of Findings for Foothill Yellow-Legged Frog (Rana boylei)*. March 10.
- California Department of Fish and Wildlife (CDFW). 2021. *Biogeographic Data Branch*. California Wildlife Habitat Relationship System, Version 10.1.20. Sacramento, California.
- California Department of Fish and Wildlife (CDFW). 2022. Incidental Take Permit 2081-2015-031-03 for the PG&E Bay Area Operations and Maintenance Project
- California Department of Fish and Wildlife (CDFW). 2023a. “Special Animals List.” *California Natural Diversity Database*. October.
- California Department of Fish and Wildlife (CDFW). 2023b. Biogeographic Data Branch. California Natural Diversity Database and Unprocessed Records 5-mile Query. December.
- California Department of Fish and Wildlife (CDFW). 2023c. *Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species*. California Department of Fish and Wildlife. June 6.
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline>.
- California Department of Fish and Wildlife (CDFW). 2024. Foothill Yellow-legged Frog Clade Boundaries [ds2865]. Accessed March 13.
https://gis.data.ca.gov/datasets/dfb1bce58d79400aa9ea747906d2b32f_0/explore?location=37.262786%2C-120.446246%2C8.00
- Carraway, L.N. and B.J Verts. 1991. *Neotoma fuscipes*. Mammalian Species 386:1-10.
- Electrical Power Distribution Institute (EPRI). 2019. *Conservation Actions for Electric Power Companies to Support Monarch Butterflies*. Report produced for Xerces Society of Invertebrate Conservation.
- East Bay Regional Park District (EBRPD). 2018. *Final Environmental Impact Report SCH#2017062055*. Sibley Volcanic Regional Preserve Land Use Plan Amendment, Resolution No. 2018-11-287.
- Hatfield R., E. Sellers, J. Kerr, and M. Larrivée. 2020. “Bumble Bee Watch.” Xerces Society. Version 1.9. U.S. Geological Survey.
- Holland, R. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game, The Resources Agency. 156 pp.





- Holland, V.L. and D.J. Keil. 1995. *California Vegetation*. Kendall/Hunt Pub. Co. Dubuque, Iowa. 516 pp.
- ICF International. 2022. *Pacific Gas and Electric Company Bay Area Operations & Maintenance Incidental Take Permit Environmental Impact Report*. Sacramento, California. Prepared for Pacific Gas and Electric Company, San Francisco, CA. April.
- ICF International. 2016. *Pacific Gas and Electric Company Bay Area Operations & Maintenance Habitat Conservation Plan*. Draft. Sacramento, California. Prepared for Pacific Gas and Electric Company, San Francisco, CA. September.
- ICF International. 2010. *East Alameda County Conservation Strategy*. Final Draft. San Jose, CA. Prepared for: East Alameda County Conservation Strategy Steering Committee, Livermore, CA.
- iNaturalist. Available from <https://www.inaturalist.org>.
- Jacobs Engineering Group, Inc. 2024. *Pacific Gas and Electric Company Moraga-Oakland X 115kV Rebuild Project Aquatic Resources Delineation Report*. Draft. February.
- Jennings, Mark and Marc Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*.
- Jennings, M.R., M.P. Hayes, and D.C. Holland. 1992. A petition to the U.S. Fish and Wildlife Service to place the California red-legged frog (*Rana aurora draytonii*) and the western pond turtle (*Clemmys marmorata*) on the list of endangered and threatened wildlife and plants.
- Lind, Amy Jo. 2005. *Reintroduction of a Declining Amphibian: Determining an Ecologically Feasible Approach for the Foothill Yellow-legged Frog (Rana boylei) Through Analysis of Decline Factors, Genetic Structure, and Habitat Associations*. Dissertation.
- Nomad Ecology. 2022. *Botanical Resources Survey Report, Protocol-Level Rare Plant Surveys for Pacific Gas and Electric Company's Moraga-Oakland X Project, Alameda and Contra Costa Counties, California*. Draft.
- Pelton, E., S. Jepsen, C. Schultz, C. Fallong and S.H. Black. 2016. *State of the Monarch Butterfly Overwintering Sites in California*. 40+vipp. Portland, OR. Available online at www.xerces.org
- The Planning Center DC&E. 2012. *St. John's Church Project Final Environmental Impact Report/Response to Comments for the City of Oakland, Alameda County, California*. State Clearinghouse Number: 2008032031
- Rathbun, Galen B., Norman J. Scott, Jr. and Thomas G. Murphey *Terrestrial Habitat Use by Pacific Pond Turtles in a Mediterranean Climate*. The Southwestern Naturalist, Jun., 2002, Vol. 47, No. 2 (Jun., 2002), pp. 225- 235
- Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation*. Second edition. California Native Plant Society, Sacramento. 1300 pp.
- Stebbins, R.C. 2003. *A Field Guide to Western Reptiles and Amphibians*. Third edition. Houghton Mifflin Co., New York, NY. 533 pp.

- Storer, Tracy I. 1925. *A Synopsis of the Amphibia of California*. University of California Publications in Zoology. Vol. 27, p. 1–342.
- Sowers by Janet M. Sowers, Ranon Dulberg, Jason Holmberg, Marco Ticci and Christopher M. Richard. Creek & Watershed Map of Western Alameda County – a Digital Database, ver. 1.0, October 2010, Oakland Museum of California. www.museumca.org/creeks
- Swaim, K. E. 1994. *Aspects of the Ecology of the Alameda Whipsnake, Masticophis lateralis euryxanthus*. M.S. Thesis, California State University, Hayward., 140 pp.
- U.S. Fish and Wildlife Service (USFWS) IPaC. 2023a. U.S. Fish and Wildlife Service Information for Planning and Consultation. <https://ipac.ecosphere.fws.gov/>.
- U.S. Fish and Wildlife Service (USFWS) 2023b. Foothill Yellow-Legged Frog; Threatened Status with Section 4(d) Rule for Two Distinct Population Segments and Endangered Status for Two Distinct Population Segments.
- U.S. Fish and Wildlife Service (USFWS). 2020. Endangered and Threatened Wildlife and Plants; 12-Month Finding for the Monarch Butterfly. Federal Register Vol. 85, No. 243.
- U.S. Fish and Wildlife Service (USFWS). 2010. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the California Red-Legged Frog; Final Rule, Federal Register. 75:12815-12864.
- U.S. Fish and Wildlife Service (USFWS). 2008. Revised Critical Habitat for the California Red-legged Frog; Proposed Rule. Federal Register 50: 53492. September 16.
- U.S. Fish and Wildlife Service (USFWS). 2006. Final Designation of Critical Habitat for the Alameda Whipsnake. Federal Register Vol. 71, No. 190.
- U.S. Fish and Wildlife Service (USFWS). 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). U. S. Fish and Wildlife Service, Portland, Oregon. Viii + 173 pp.
- U. S. Fish and Wildlife Service (USFWS). 1996. Endangered and Threatened wildlife and plants; final determination of Threatened status for the California red-legged frog, proposed rule. *Federal Register* 61:25813 – 25833.
- Xerces Society for Invertebrate Conservation, Defenders of Wildlife, Center for Food Safety (Xerces). 2018. A Petition to the State of California Fish and Game Commission to List The Crotch bumble bee (*Bombus crotchii*), Franklin’s bumble bee (*Bombus franklini*), Suckley cuckoo bumble bee (*Bombus suckleyi*), and western bumble bee (*Bombus occidentalis occidentalis*) as Endangered under the California Endangered Species Act. <https://www.xerces.org/sites/default/files/2019-10/CESA-petition-Bombus-Oct2018.pdf>
- Xerces Society for Invertebrate Conservation, Defenders of Wildlife, Center for Food Safety (Xerces). 2024. Map of overwintering sites. <https://westernmonarchcount.org/map-of-overwintering-sites/>

ATTACHMENT A

REPRESENTATIVE PHOTOGRAPHS

Attachment A: Representative Photographs

 <p>Photo 1. Wilder Staging Area (Attachment B, Map B-2)</p>	 <p>Photo 2. Sibley – Old Tunnel Road Staging Area (Attachment B, Map B-1).</p>
 <p>Photo 3. Tower EN1 Circuits 1 and 2 (Attachment B, Map B-3)</p>	 <p>Photo 4. Approximate location of foothill yellow-legged frog record near Wilder (Occurrence 6) (Attachment B, Map B-2)</p>

Attachment A: Representative Photographs



Photo 5. Tower EN9 Access Road landslide east of Manzanita Drive and Skyline Boulevard (Attachment B, Map B-5)



Photo 6. Tower EN9 Staging Area (Attachment B, Map B-5)

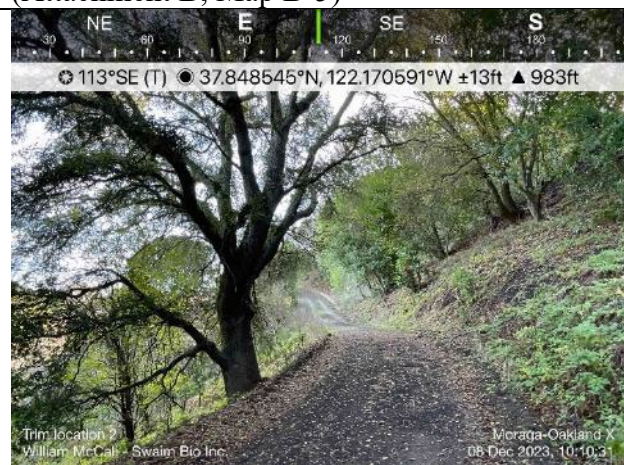


Photo 7. Access route to Tower EN3 (Attachment B, Map B-3)



Photo 8. Tower EN3 work area (Attachment B, Map B-3)

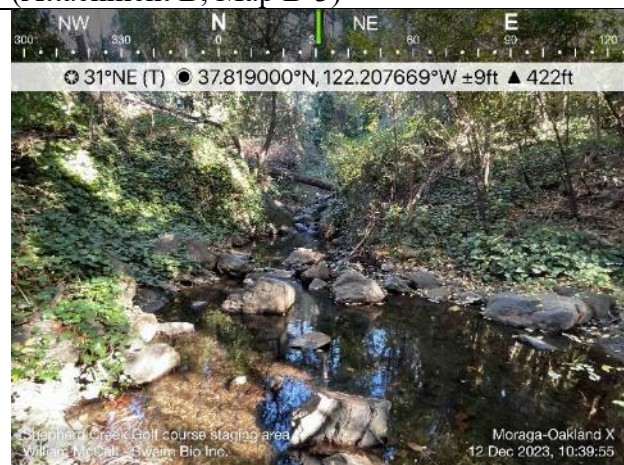


Photo 9. Sausal Creek at Shepherd Canyon LZ/SA (Attachment B, Map B-7)



Photo 10. Palo Seco Creek (Attachment B, Map B-7)

Attachment A: Representative Photographs



Photo 11. Tower EN25 Circuits 1 and 2
(Attachment B, Map B-8)



Photo 12. Tower EN27 Circuits 3 and 4
(Attachment B, Map B-7)

ATTACHMENT B

**SENSITIVE BIOLOGICAL RESOURCES
IN AND NEAR THE PROJECT AREA**

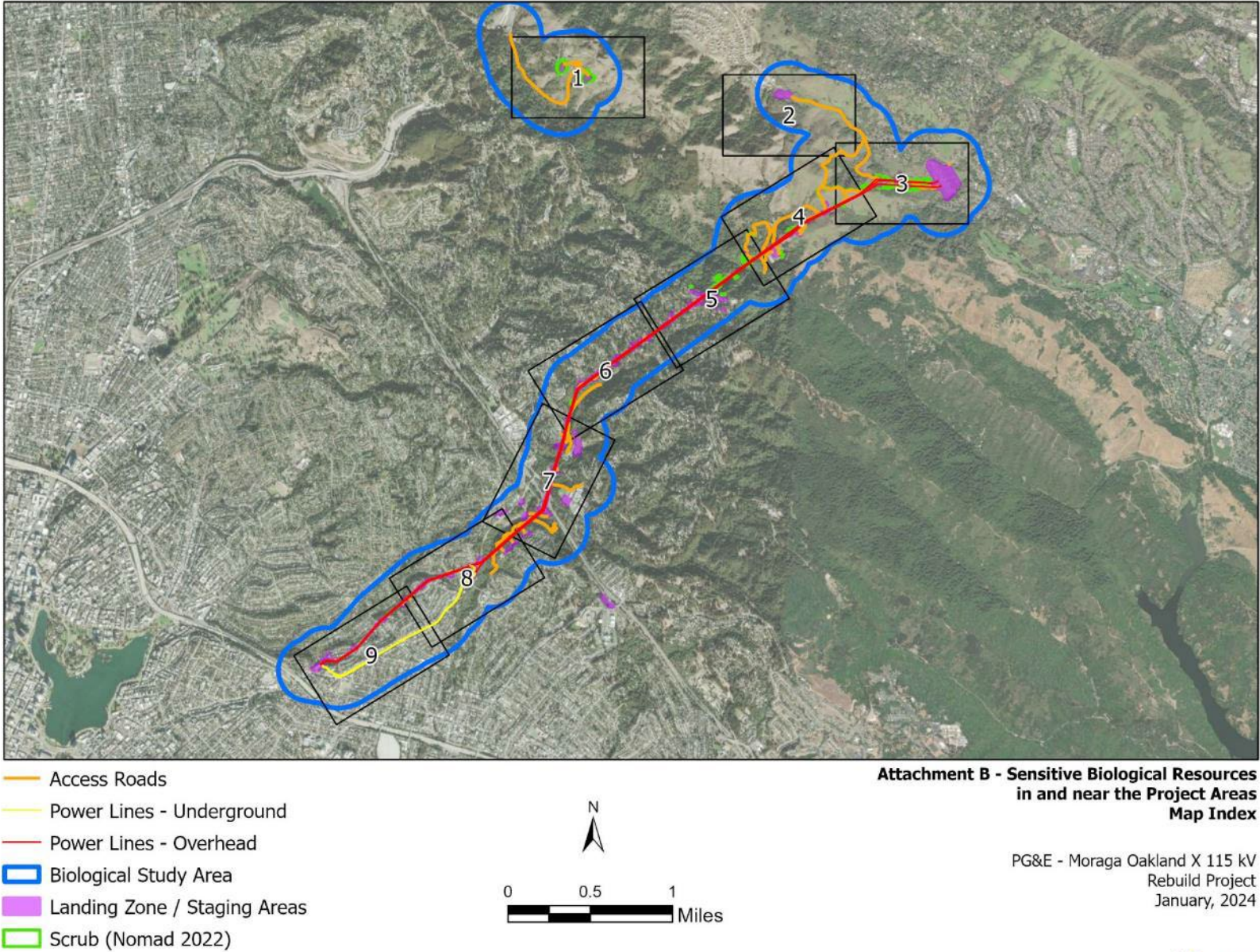
Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Sensitive Biological Resources in and near the Project Areas

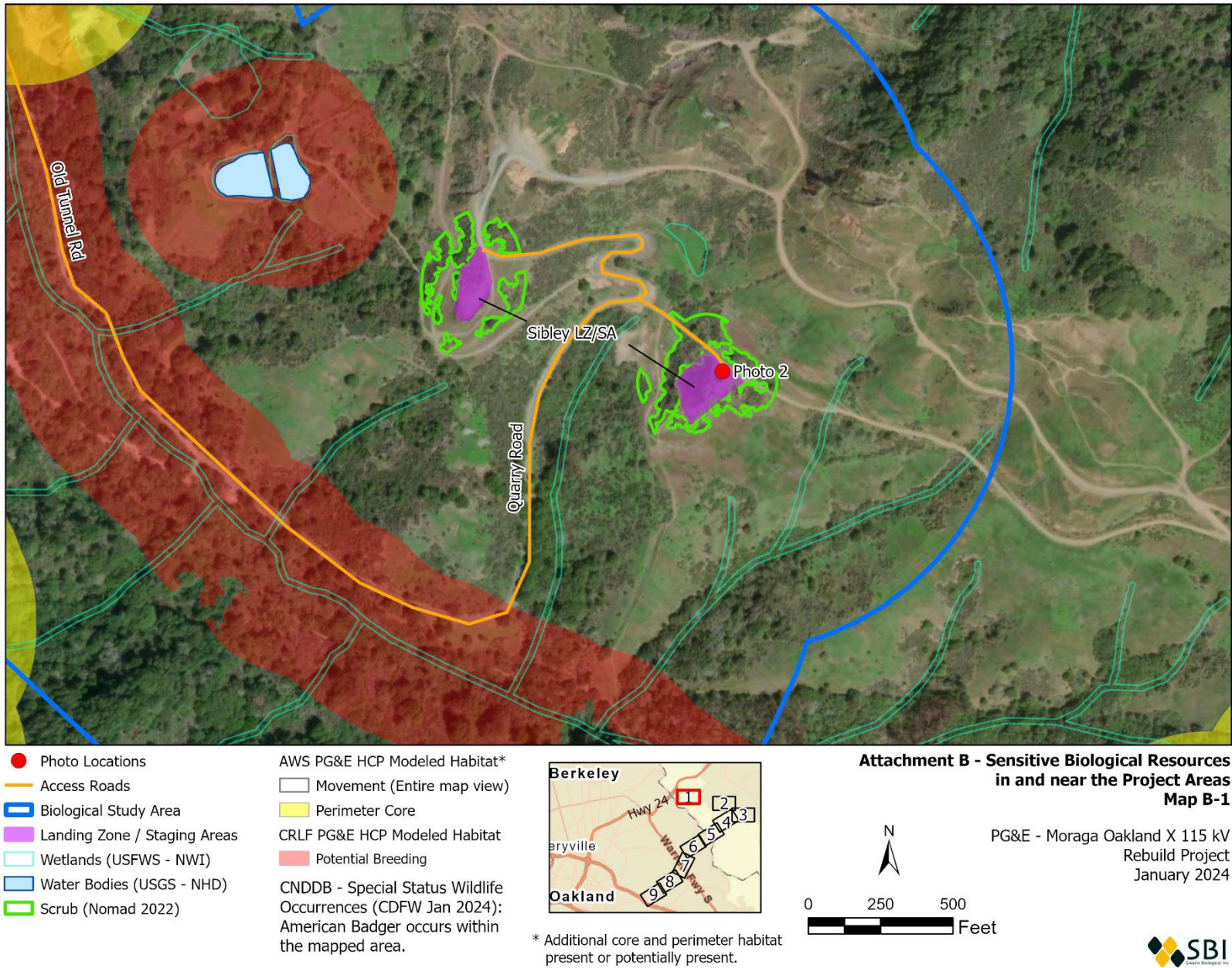
Map Index

Maps 1 through 9.

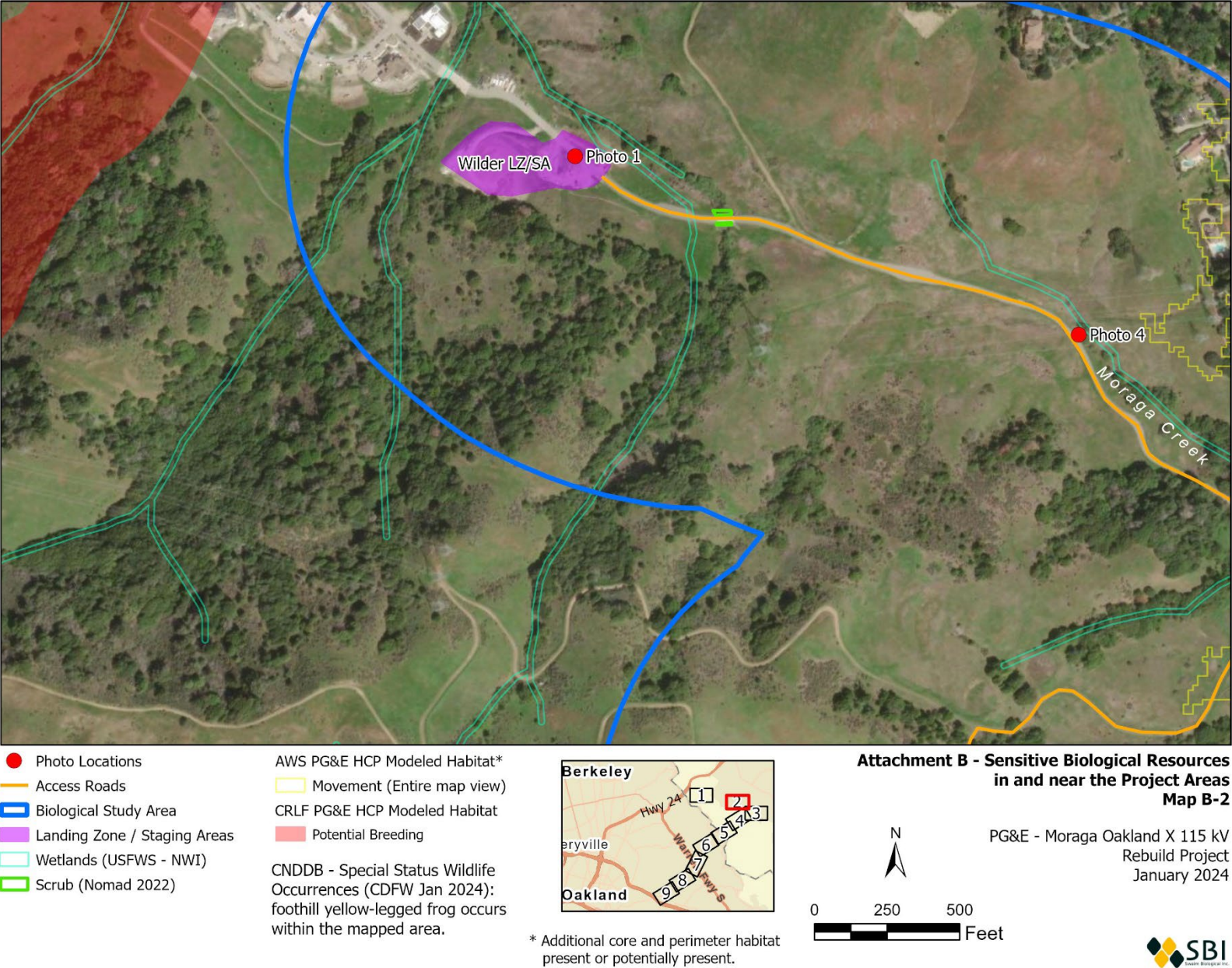
Attachment B: Special Status Species Maps and Potential to Occur Evaluation



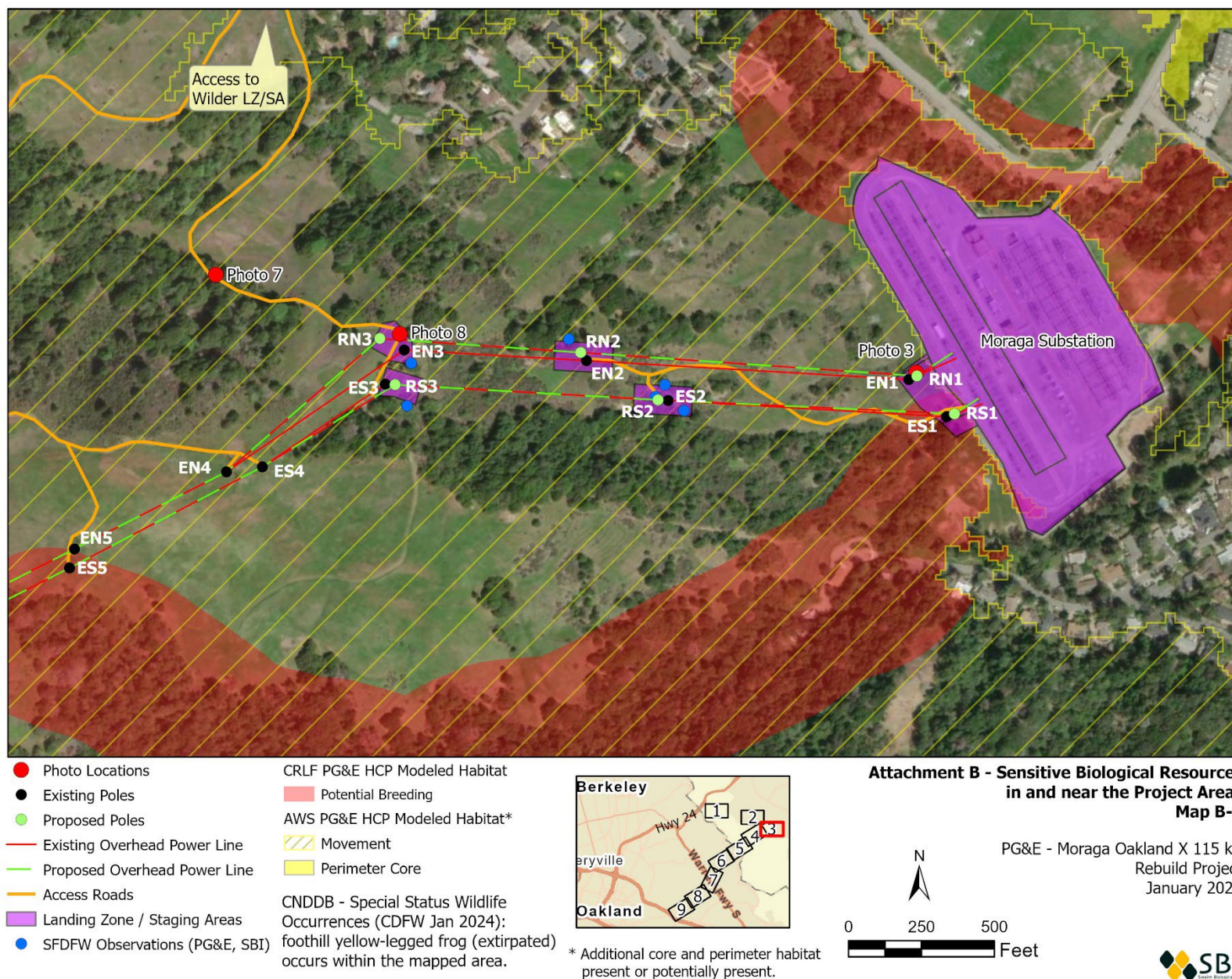
Attachment B: Special Status Species Maps and Potential to Occur Evaluation



Attachment B: Special Status Species Maps and Potential to Occur Evaluation



Attachment B: Special Status Species Maps and Potential to Occur Evaluation



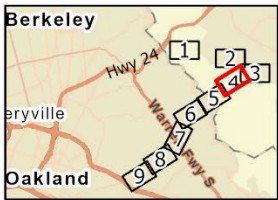
Moraga–Oakland X 115 kV Rebuild Project
Alameda and Contra Costa Counties, CA

Wildlife Assessment
April 2024

Attachment B: Special Status Species Maps and Potential to Occur Evaluation



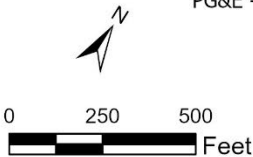
- Photo Locations
 - Existing Poles
 - Proposed Poles
 - Existing Overhead Power Line
 - Proposed Overhead Power Line
 - Access Roads
 - Wetlands (USFWS - NWI)
 - Landing Zone / Staging Areas
 - Scrub (Nomad 2022)
- AWS PG&E HCP Modeled Habitat*
- Movement (Entire map area)
- CRLF PG&E HCP Modeled Habitat
- Potential Breeding
- CNDDDB - Special Status Wildlife Occurrences (CDFW Jan 2024): foothill yellow-legged frog (extirpated), Alameda whipsnake, San Francisco dusky-footed woodrat occur within the mapped area.



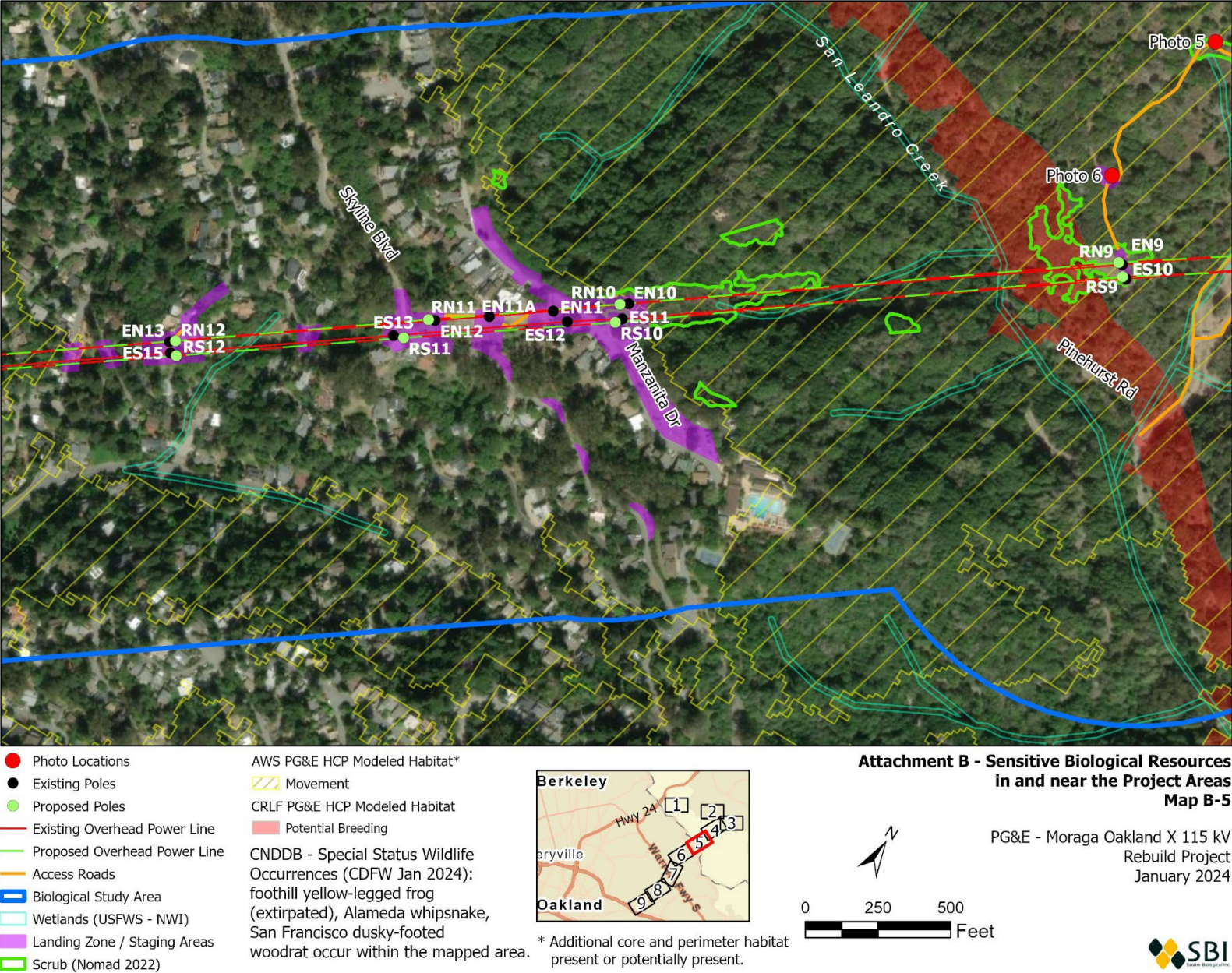
* Additional core and perimeter habitat present or potentially present.

Attachment B - Sensitive Biological Resources in and near the Project Areas
Map B-4

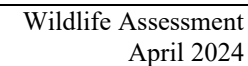
PG&E - Moraga Oakland X 115 kV Rebuild Project
January 2024



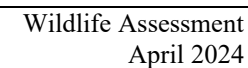
Attachment B: Special Status Species Maps and Potential to Occur Evaluation



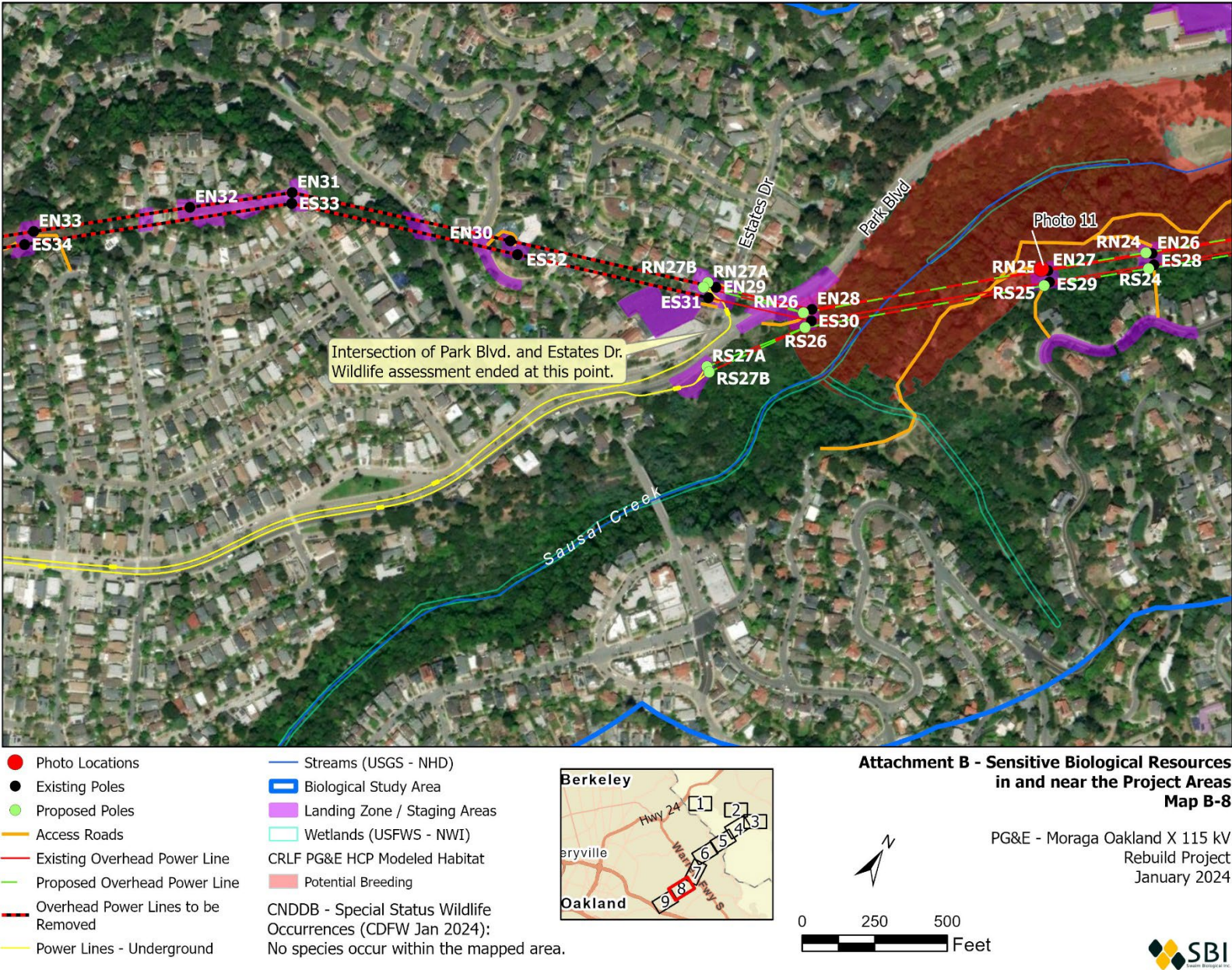
Moraga–Oakland X 115 kV Rebuild Project
Alameda and Contra Costa Counties, CA



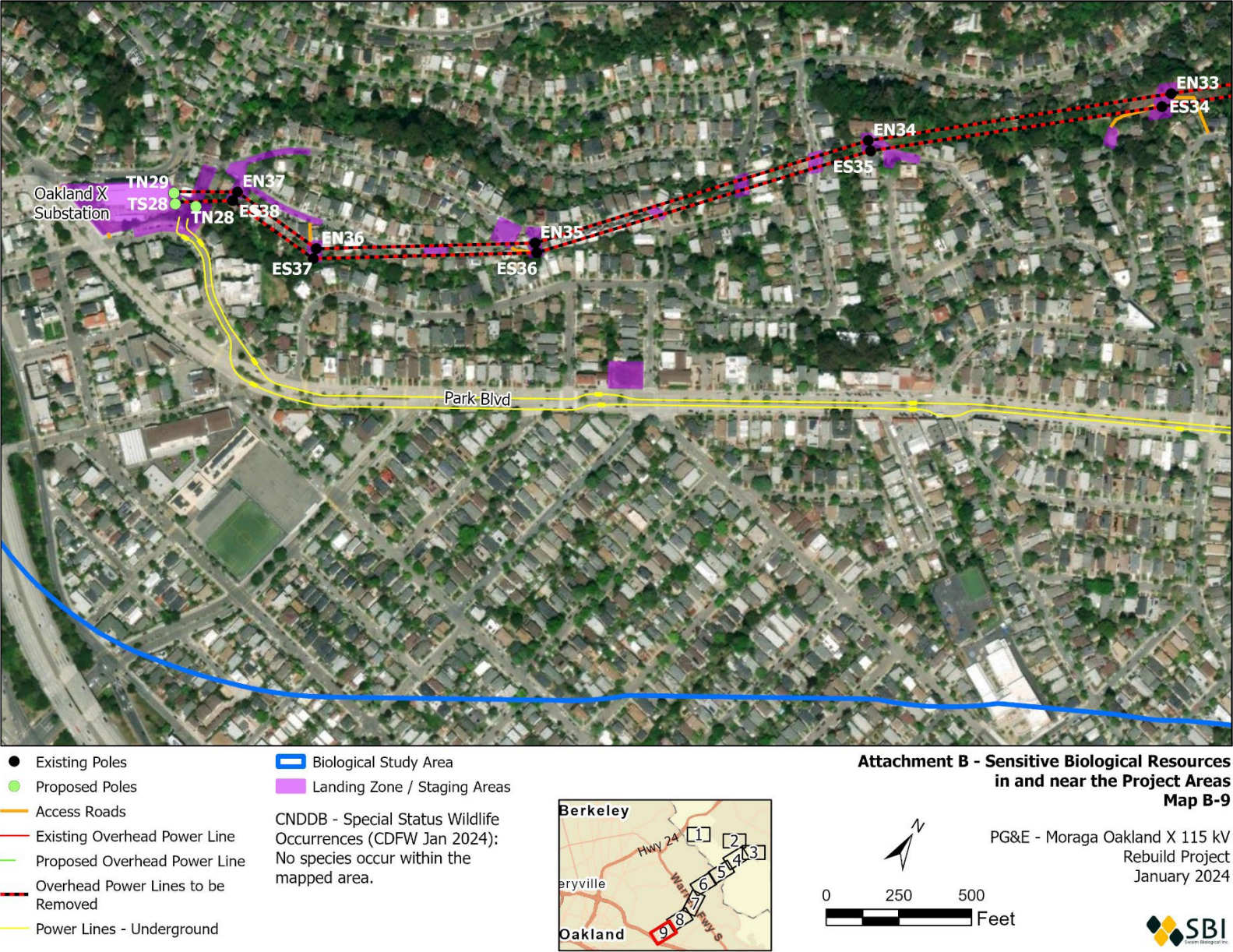
Moraga–Oakland X 115 kV Rebuild Project
Alameda and Contra Costa Counties, CA



Attachment B: Special Status Species Maps and Potential to Occur Evaluation



Attachment B: Special Status Species Maps and Potential to Occur Evaluation



Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Table B-1. All Special-status Species Evaluated with Potential to Occur

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
Invertebrates						
<i>Bombus crotchii</i>	Crotch's bumble bee	--	SCE	--	Grassland, shrublands, and chaparral habitats with wildflower foraging habitat; occurs at relatively warm and dry sites, including the Inner Coast Range of California and margins of the Mojave Desert. Can be found in semi-urban settings.	Moderate. Suitable habitat is present within or adjacent to all project areas where grassland, scrub, and foraging habitat is present. The project area is within the current range of the species (CDFW 2023c). Floral resources were documented during Nomad's 2021 surveys that could support the Crotch's bumble bee. SBI surveys were conducted outside of the appropriate season to identify floral resources. There is one CNDDDB record within five miles of the project area which includes an individual photographed in Berkeley in 2015 (occurrence 308). There are no current occurrence records for the project area in the Xerces Bumble Bee Watch (Hatfield et al 2020).
<i>Bombus occidentalis</i>	Western bumble bee	--	SCE	--	Wet or moist meadows with abundant floral resources, roadside areas, and other areas containing forage species preferred by bumble bees. May occur in grassland and scrub areas and forest openings.	Low. Current California populations are mostly restricted to high elevation sites in the Sierra Nevada.
<i>Danaus plexippus plexippus</i>	Monarch butterfly	FC	--	--	Requires milkweed for larval host plant, and late-blooming plants for adult nectar during migration. Overwinters in dense groves of trees, usually eucalyptus, pine, and cypress. Requires very specific microclimatic conditions at overwintering sites, including dappled sunlight, high humidity, fresh water, and an absence of freezing temperatures and high winds.	Low (breeding, overwintering) to Moderate (foraging). Potential suitable overwintering sites in eucalyptus trees are found within or adjacent to the project area including a eucalyptus grove near the Shepherd Canyon LZ/SA and in the McCosker sub-area. There are two CNDDDB occurrences approximately 5 miles to the west. One (occurrence 415) is at Berkeley Aquatic Park, the second (occurrence 322) is next to the Oakland International Airport that are associated with established overwintering sites. No known overwintering sites occur inland in the Berkeley/Oakland Hills area that overlaps with the project area (Xerces 2024). Suitable grassland habitat may support nectar plants for foraging. No native host plants (native milkweed) were found during botanical surveys conducted by Nomad in 2021.

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
<i>Euphydryas editha bayensis</i>	Bay checkerspot butterfly	FT	--	--	Native grasslands on serpentine outcrops. Primary larval host plant is California plantain (<i>Plantago erecta</i>). May also use purple owl's clover (<i>Castilleja densiflora</i>) and exserted paintbrush (<i>C. exserta</i>).	Not expected. Species is thought to be extirpated from the area.
Fish						
<i>Acipenser medirostris</i>	Green sturgeon – southern DPS	FT	--	--	San Francisco Bay estuary and associated rivers. Spawns in the Sacramento, Feather, and Yuba Rivers. Presence in upper Stanislaus and San Joaquin Rivers may indicate spawning. Non-spawning adults occupy marine and estuarine waters. Delta Estuary is important for rearing juveniles.	Not expected. No suitable habitat present within or adjacent to the project area.
<i>Archoplites interruptus</i>	Sacramento perch	--	--	SSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley.	Not expected. No suitable habitat present within or adjacent to the project area.
<i>Eucyclogobius newberryi</i>	Tidewater goby	FE	--	--	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River.	Not expected. No suitable habitat present within or adjacent to the project area.
<i>Spirinchus thaleichthys</i>	Longfin smelt	FC	ST	--	Found along the Pacific coast of the United States from Alaska to California. In California, Longfin Smelt is historically found in the San Francisco Estuary and the Sacramento and San Joaquin Delta, Humboldt Bay, and the estuaries of the Eel River and Klamath River. Uses a variety of habitats from nearshore waters to estuaries and lower portions of freshwater streams.	Not expected. No suitable habitat present within or adjacent to the project area.

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
Amphibians						
<i>Ambystoma californiense</i>	California tiger salamander	FT	ST	SSC	Ponds and vernal pools in grassland; and oak woodland.	Low. Suitable aquatic and upland habitats are present within or adjacent to the project area but no extant occurrences within 5 miles. Only occurrence within 5 miles is from Alameda Island in 1886.
<i>Rana boylei</i> , <i>Central Coast DPS</i>	Foothill yellow-legged frog	FT	ST	SSC	Perennial streams and rivers with rocky substrates and open, sunny banks in forests, chaparral, and woodlands.	Low to Moderate. Western portion of project area is low, eastern portion of the project area by Moraga Creek is moderate. There are three CNDDDB records within 2 miles of the project area. <i>Western portion – east of Manzanita Drive and McCosker Subarea, Attachment B Map B-5 through B-9</i> Potentially suitable habitat is present in portions of the project area east of Manzanita Drive and unnamed tributaries of San Leandro Creek west of Pinehurst Road. There are two extirpated occurrence records in this area (occurrence 4 and 5). The habitat is highly fragmented within the project area east of Manzanita Drive and the species has not been encountered in the McCosker Subarea by EBRPD during recent surveys (EBRPD 2018). Therefore, the potential for the species to be encountered within the portions of the project that occur east of Manzanita Drive and upper San Leandro Creek tributaries near McCosker Subarea west of Pinehurst Road is low. <i>Eastern portion – Wilder LZ/SA and Moraga Substation, Attachment B Map B-2 and B-3</i> Potentially suitable habitat is also present in portions of the project area near Moraga Creek and unnamed tributary streams near Moraga Substation. The only extant record (occurrence 6) is in Moraga Creek northwest of Moraga Substation. The potential for the species to be encountered in the portions of the project area in and near the Wilder LZ/SA and Moraga Substation is moderate.

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
<i>Rana draytonii</i>	California red-legged frog	FT	--	SSC	Lowlands and foothills in or near permanent sources of water (for example, ponds, creeks, and marshes) with emergent or dense riparian vegetation. Riparian, upland habitat, and small mammal burrows are important for movement and refugia.	Moderate to High. Suitable upland, riparian and creek habitat is present within or adjacent to the project areas where stream habitat is present including all eight drainages within the project area. PG&E HCP modeled breeding habitat is present throughout the project area east of Park Boulevard. Two, presumed extant, CNDDDB records are within the dispersal distance (two miles) of the Project area. One is historical (1931), while the other is more recent (1997).
Reptiles						
<i>Actinemys marmorata</i>	Northwestern pond turtle	FC	--	SSC	Permanent and intermittent freshwater aquatic habitats including rivers, streams, lakes, ponds, marshes, and vernal pools. Prefers habitats with abundant basking sites, underwater refugia, and standing or slow-moving water. Nesting sites are on sandy banks and bars or in fields or sunny spots up to a few hundred meters from water.	Low to Moderate: Suitable aquatic habitat, breeding upland habitat, and winter refugia are present in urban creeks in the Sausal Creek Watershed and in the San Leandro Creek Watershed east of Manzanita Drive and Skyline Boulevard. Tributary streams may provide suitable habitat if pools are present. There are four CNDDDB records within 2 miles, with the closest record from Lake Temescal within 2 miles from the project areas near Shepherd Canyon Park (Attachment B, Map B-7). This occurrence is separated from the project area by dense urban development. There is one research grade iNaturalist record in 2022 from Montclair Park within 0.5 mile northwest of the project area near Shepherd Canyon Park.
<i>Anniella pulchra</i>	Northern California legless lizard	--	--	SSC	Sandy or loose loamy soils. Habitats include stabilized dunes; beaches; chaparral; and pine oak woodland. Often found in soil or leaf litter under vegetation.	Not expected. Suitable habitat is present within or adjacent to the project area, but nearest occurrence is from 1935 and the species is thought to be extirpated from the area. The project area is outside of the known current range of the species.
<i>Masticophis lateralis euryxanthus</i>	Alameda whipsnake	FT	ST	--	Throughout the mosaic of Chaparral; scrub; and grassland and woodland communities.	High to Present. Suitable core and perimeter core type habitat is present within and adjacent to the project area with movement habitat present throughout the project area east of SR 13. There are three CNDDDB occurrences within 0.25 mile of the project area east of Manzanita Drive. Occurrence 33 overlaps with the project area near the McCosker Creek Restoration area,

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
						occurrence 60 is within 500 feet, and occurrence 95 is within 2,500 feet of the project area. PG&E HCP modeled movement habitat is present within or adjacent to the project area at all work locations east of SR 13 (Attachment B, Maps B-1 through B-7). The HCP movement habitat includes smaller areas of core and perimeter core habitat present within the project area and wildlife BSA that were not modeled as such in the HCP or this report. Due to the presence of suitable habitat for this species that was not captured in the HCP modeling, this species have the potential to occupy area outside the modeled habitat.
Birds						
<i>Accipiter cooperii.</i>	Cooper's hawk	--	--	WL	Associated with deciduous, mixed, and coniferous forest, and deciduous stands of riparian habitat in woodlands, riparian corridors, and along habitat edges, will nest in urban areas. They use mature trees with moderate to high crown-depths and canopy cover for nesting	Moderate (foraging / nesting). Suitable habitat is present within or adjacent to the project area including trees for nesting and urban areas, riparian corridors and oak woodland forest. There are two CNDDDB records within 5 miles of the project area.
<i>Aquila chrysaetos</i>	Golden eagle	--	--	FP	Open mountains, foothills, plains, open country. Requires open terrain. In the north and west, found over tundra, prairie, rangeland, or desert; very wide-ranging in winter, more restricted to areas with good nest sites in summer.	High (foraging / nesting). Suitable habitat is present within or adjacent to the project area including large trees for nesting and foraging habitat prevalent in all areas east of Manzanita Drive. There is one CNDDDB record within 5 miles of the project area. A golden eagle nest site has been used consistently since 2005 in Sibley Volcanic Regional Preserve (EBRPD 2018).
<i>Athene cunicularia</i>	burrowing owl	--	--	SSC	Open arid and semi-arid habitats with short emergent vegetation; including grasslands; deserts; agricultural fields; ruderal areas and open landscaped areas.	Low: Suitable foraging habitat is present but no burrows greater than 4 inches were observed during site visits. Only two CNDDDB occurrences within 5 miles of the project area. Both occurrences from 1980's near Oakland Airport
<i>Charadrius nivosus</i>	Western snowy plover	FT	--	SSC	Sandy beaches; large alkali lake shorelines; and salt pond levees; dunes. Require sandy; gravelly or friable soils for nesting.	Not expected. No habitat suitable to support this species is present within the work area.

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
<i>Coturnicops noveboracensis</i>	Yellow rail	--	--	SSC	Freshwater marsh.	Not expected. No habitat suitable to support this species is present within the project area.
<i>Geothlypis trichas sinuosa</i>	Saltmarsh common yellowthroat	--	--	SSC	Emergent wetlands. Typically inhabits low, dense vegetation near water. Nests in vegetation 12 feet above ground. Remaining populations occur in coastal riparian and wetland areas through greater San Francisco Bay.	Not expected. No habitat suitable to support this species is present within the project area.
<i>Laterallus jamaicensis coturniculus</i>	California black rail	--	ST	FP	Tidal salt marshes of the northern San Francisco Bay, primarily in San Pablo and Suisun Bays. Prefers marshes close to the water (bay or river); large; away from urban areas; and saline to brackish with a high proportion of <i>Salicornia</i> , <i>Scirpus maritimus</i> , <i>Juncus</i> , and <i>Typha</i> .	Not expected. No habitat suitable to support this species is present within the project area.
<i>Melospiza melodia pusillulai</i>	Alameda song sparrow	--	--	SSC	Restricted to tidal marshes along the fringes of South San Francisco Bay.	Not expected. No habitat suitable to support this species is present within the project area.
<i>Rallus obsoletus obsoletus</i>	California Ridgway's rail	FE	SE	FP	Salt marshes and brackish marshes traversed by tidal sloughs in the vicinity of the San Francisco Bay. Associated with pickleweed.	Not expected. No habitat suitable to support this species is present within the project area.
<i>Sterna antillarum browni</i>	California least tern	FE	SE	FP	Abandoned salt ponds and along estuarine shores in San Francisco Bay. Feeds primarily in willow estuaries or lagoons where small fish are abundant. Nests on barren to sparsely vegetated site near water; usually on sandy or gravelly substrate.	Not expected. No suitable breeding habitat present within or adjacent to the project area.

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
Mammals						
<i>Antrozous pallidus</i>	Pallid bat	--	--	SSC	Low elevation arid or semi-arid open areas near water, rocky outcrops, and cliffs. Breeds and roosts in crevices in caves, mines, and cavities.	Moderate. Suitable roosting and foraging habitat is present within and adjacent to the project area wherever trees and structures are present to support roosting, especially along creeks in Sausal Creek and San Leandro Creek Watersheds. There are seven CNDDB records within 5 miles of the project area.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	--	--	SSC	Mesic habitats, forages around trees and brush along habitat edges. Breeds and roosts in caves, mines, tunnels, cavities or buildings.	Moderate. Suitable roosting and foraging habitat is present within and adjacent to the work areas wherever trees and structures are present to support roosting, especially along creeks in Sausal Creek and San Leandro Creek Watersheds. There is one CNDDB record within 5 miles of the project area.
<i>Lasiurus blossevillii</i>	western red bat	--	--	SSC	Prefers edges or habitat mosaics that have trees for roosting and open areas for foraging. Roost sites often are in edge habitats adjacent to streams, fields, or urban areas. Requires water.	Moderate. Suitable roosting and foraging habitat is present within or adjacent to the work area. The majority of the work area is within CDFW predicted habitat (CDFW 2021). There are no CNDDB records within 5 miles of the project area.
<i>Neotoma fuscipes annectens</i>	San Francisco dusky-footed woodrat	--	--	SSC	Forest habitats of moderate canopy and moderate-to-dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	Present. Suitable habitat is present within and adjacent to the project area. Nests were observed adjacent to the project area during site visit surveys. There are 12 unprocessed CNDDB occurrences documenting individuals, active nests, and observed nest structures in 2020 and 2021 at the McCosker Creek Restoration Area (Attachment B) (CDFW 2023c).
<i>Reithrodontomys raviventris</i>	Salt-marsh harvest mouse	FE	SE	FP	Salt and brackish marshes of San Francisco; San Pablo; and Suisun Bay. Pickleweed is primary habitat. Requires upland areas for flood escape.	Not expected. No suitable breeding habitat present within or adjacent to the project area.
<i>Scapanus latimanus parvus</i>	Alameda Island mole	--	--	SSC	Only known from Alameda Island. Found in a variety of habitats, especially annual and perennial grasslands.	Not expected. Project area is outside known range of the species and species is thought to be extirpated.

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Scientific Name	Common Name	Status*			Habitat	Potential for Occurrence
		Federal	State	CDFW		
<i>Taxidea taxus</i>	American badger			SSC	Open areas; plains and prairies; farmland and woodland edges. Constructs deep burrows for the pursuit of prey and for sleeping.	Low. Suitable habitat is present within or adjacent to the project area but no large burrows observed. Only CNDDDB records within 5 miles of project area are historical (around 100 years) and land cover has converted to woodland, brushland, and development altering the potential for occurrence.

* Status codes are defined as follows:

Federal status:

FT = listed as threatened under Endangered Species Act

FC = candidate for listing as threatened under Endangered Species Act

State Status:

ST = listed as threatened under the California Endangered Species Act

SCE = candidate for listing as endangered under the California Endangered Species Act

SSC = species of special concern

WL = CDFW Watch List

CNDDDB = California Natural Diversity Database

IPaC

U.S. Fish & Wildlife Service

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWM Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Alameda and Contra Costa counties, California



Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📠 (916) 414-6713

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Salt Marsh Harvest Mouse <i>Reithrodontomys raviventris</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/613	Endangered

Birds

NAME	STATUS
California Clapper Rail <i>Rallus longirostris obsoletus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern <i>Sterna antillarum browni</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Western Snowy Plover <i>Charadrius nivosus nivosus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) <i>Masticophis lateralis euryxanthus</i> Wherever found There is final critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/5524	Threatened

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Northwestern Pond Turtle <i>Actinemys marmorata</i>	Proposed Threatened
Wherever found	
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i>	Threatened
Wherever found	
There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2891	
California Tiger Salamander <i>Ambystoma californiense</i>	Threatened
There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	
Foothill Yellow-legged Frog <i>Rana boylei</i>	Threatened
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5133	

Fishes

NAME	STATUS
Tidewater Goby <i>Eucylogobius newberryi</i>	Endangered
Wherever found	
There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/57	

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i>	Candidate
Wherever found	
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	

Crustaceans

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

NAME	STATUS
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Pallid Manzanita <i>Arctostaphylos pallida</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8292	Threatened
Presidio Clarkia <i>Clarkia franciscana</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3890	Endangered
Robust Spineflower <i>Chorizanthe robusta</i> var. <i>robusta</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9287	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Alameda Whipsnake (=striped Racer) <i>Masticophis lateralis</i> <i>euryxanthus</i> https://ecos.fws.gov/ecp/species/5524#crithab	Final

Bald & Golden Eagles

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act¹ and the Migratory Bird Treaty Act².

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats³, should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

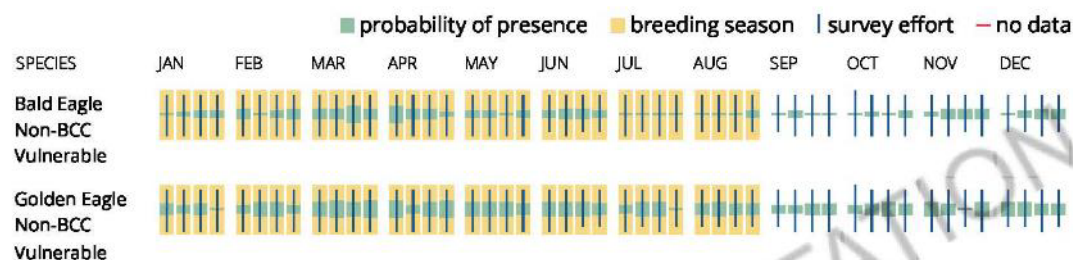
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What if I have eagles on my list?

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats³ should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Allen's Hummingbird <i>Selasphorus sasin</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow <i>Passerculus sandwichensis beldingi</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Black Oystercatcher <i>Haematopus bachmani</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9591	Breeds Apr 15 to Oct 31
Black Skimmer <i>Rynchops niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Black Turnstone <i>Arenaria melanocephala</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Black-chinned Sparrow <i>Spizella atrogularis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9447	Breeds Apr 15 to Jul 31

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Bullock's Oriole <i>Icterus bullockii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
California Thrasher <i>Toxostoma redivivum</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Cassin's Finch <i>Carpodacus cassinii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Clark's Grebe <i>Aechmophorus clarkii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat <i>Geothlypis trichas sinuosa</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Gull-billed Tern <i>Gelochelidon nilotica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31
Lawrence's Goldfinch <i>Carduelis lawrencei</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Long-eared Owl <i>asio otus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Marbled Godwit <i>Limosa fedoa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Nuttall's Woodpecker <i>Picoides nuttallii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20
Oak Titmouse <i>Baeolophus inornatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656	Breeds Mar 15 to Jul 15
Olive-sided Flycatcher <i>Contopus cooperi</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Tricolored Blackbird <i>Agelaius tricolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Western Grebe <i>aechmophorus occidentalis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

Willet *Tringa semipalmata*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Wrentit *Chamaea fasciata*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Mar 15 to Aug 10

Yellow-billed Magpie *Pica nuttalli*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9726>

Breeds Apr 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the

Attachment B: Special Status Species Maps and Potential to Occur Evaluation

probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

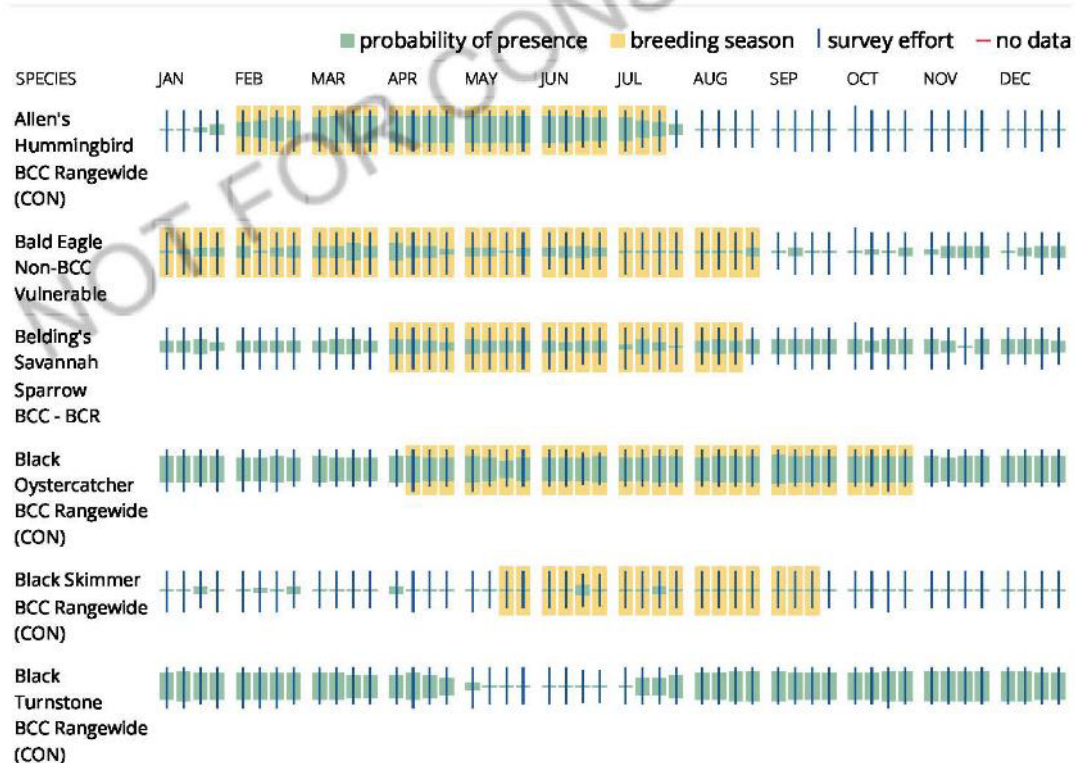
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

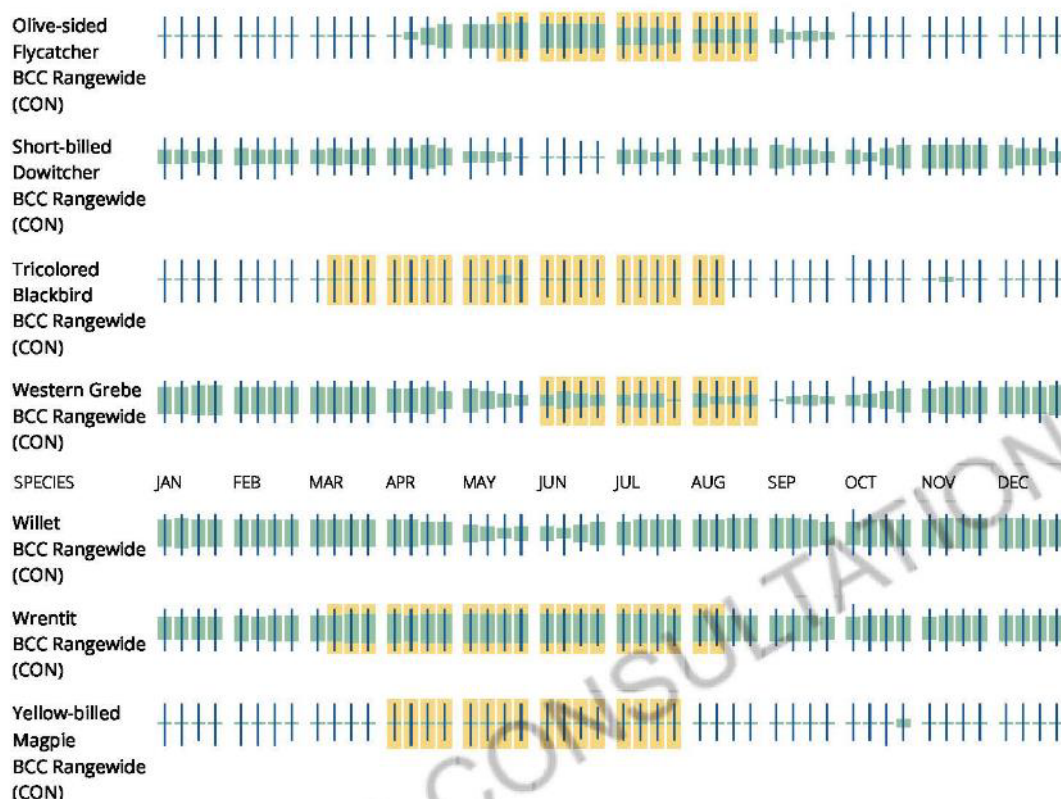
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Attachment B: Special Status Species Maps and Potential to Occur Evaluation



Attachment B: Special Status Species Maps and Potential to Occur Evaluation



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid

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cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to

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you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER POND

[PUBHx](#)

RIVERINE

[R4SBA](#)

[R4SBC](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

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The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubefield worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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Selected Elements by Common Name California Department of Fish and Wildlife California Natural Diversity Database



Query Criteria: Quad (Oakland East (3712272)) AND Taxonomic Group (Fish OR Amphibians OR Reptiles OR Birds OR Mammals)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Alameda Island mole <i>Scapanus latimanus parvus</i>	AMABB02031	None	None	G5T1Q	SH	SSC
Alameda song sparrow <i>Melospiza melodia pusillula</i>	ABPBXA301S	None	None	G5T2T3	S2	SSC
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	ARADB21031	Threatened	Threatened	G4T2	S2	
American badger <i>Taxidea taxus</i>	AMAJF04010	None	None	G5	S3	SSC
American peregrine falcon <i>Falco peregrinus anatum</i>	ABNKD06071	Delisted	Delisted	G4T4	S3S4	
Berkeley kangaroo rat <i>Dipodomys heermanni berkeleyensis</i>	AMAFD03061	None	None	G4T1	S2	
California black rail <i>Laterallus jamaicensis coturniculus</i>	ABNME03041	None	Threatened	G3T1	S2	FP
California red-legged frog <i>Rana draytonii</i>	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California Ridgway's rail <i>Rallus obsoletus obsoletus</i>	ABNME05011	Endangered	Endangered	G3T1	S2	FP
California tiger salamander - central California DPS <i>Ambystoma californiense pop. 1</i>	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Cooper's hawk <i>Accipiter cooperii</i>	ABNKC12040	None	None	G5	S4	WL
foothill yellow-legged frog - central coast DPS <i>Rana boylei pop. 4</i>	AAABH01054	Threatened	Endangered	G3T2	S2	
golden eagle <i>Aquila chrysaetos</i>	ABNKC22010	None	None	G5	S3	FP
green sturgeon - southern DPS <i>Acipenser medirostris pop. 1</i>	AFCAA01031	Threatened	None	G2T1	S1	
hoary bat <i>Lasiurus cinereus</i>	AMACC05032	None	None	G3G4	S4	
longfin smelt <i>Spirinchus thaleichthys</i>	AFCHB03010	Candidate	Threatened	G5	S1	
pallid bat <i>Antrozous pallidus</i>	AMACC10010	None	None	G4	S3	SSC
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	AMAFF08082	None	None	G5T2T3	S2S3	SSC
silver-haired bat <i>Lasionycteris noctivagans</i>	AMACC02010	None	None	G3G4	S3S4	

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Report Printed on Wednesday, December 06, 2023

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Information Expires 6/1/2024

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Selected Elements by Common Name California Department of Fish and Wildlife California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
tidewater goby <i>Eucyclogobius newberryi</i>	AFCQN04010	Endangered	None	G3	S3	
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010	None	None	G4	S2	SSC
western pond turtle <i>Emys marmorata</i>	ARAAD02030	Proposed Threatened	None	G3G4	S3	SSC
yellow rail <i>Coturnicops noveboracensis</i>	ABNME01010	None	None	G4	S2	SSC

Record Count: 23

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Selected Elements by Common Name California Department of Fish and Wildlife California Natural Diversity Database



Query Criteria: Quad> IS <(Oakland East (3712272))> AND <Other Status Contains (USFWS_BCC-Birds of Conservation Concern)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Alameda song sparrow <i>Melospiza melodia pusillula</i>	ABPBXA301S	None	None	G5T2T3	S2	SSC
yellow rail <i>Coturnicops noveboracensis</i>	ABNME01010	None	None	G4	S2	SSC

Record Count: 2

ATTACHMENT C

NESTING BIRDS: SPECIES-SPECIFIC BUFFERS FOR PG&E ACTIVITIES

Nesting Birds: Species-Specific Buffers for PG&E Activities

Within PG&E's Avian Program, standard nest buffers were developed for all common and special-status birds present within its Service Territory. There are no standard nest buffers specified in the Migratory Bird Treaty Act (MBTA) or within California Fish and Game Code. Table 1 provides nest buffers based on the best available information, including relevant literature review and avian biology. Disturbance factors including *nest location*, *human activity*, *activity duration*, and *noise level* may influence nesting behavior and reproductive success, and were each considered in establishing standard buffer distances for individual species. Where regulatory agencies have provided information on nest buffer distances for special-status species, those buffer distances are primarily used as *standard buffers* in Table 1. *Standard buffers* are species-specific buffer distances between occupied nest sites and work activities where work will not occur while the nest is active (containing eggs or young). These standard buffers are intended to be applied to nests located in proximity to PG&E activities at a sufficient distance to provide suitable nest protection. For example, a nesting black-crowned night heron has a standard buffer distance of 400 feet (Table 1).

Because it is not always possible to apply the standard buffer, non-standard species-specific buffer distances have also been established. As part of the determination of these non-standard buffers, PG&E activities are assigned disturbance rankings (Low, Medium, or High) for each factor identified above. Evaluation of all disturbance factors combined produces an overall disturbance category by assessing each disturbance factor for one or more PG&E activities. If the overall disturbance category is high, the standard buffer will generally apply. If the evaluation results in low or medium overall disturbance categories, the standard buffer is applied as feasible or reduced buffers may be appropriate. For example, in some circumstances it may be necessary to perform certain types of work within the standard buffer. In these cases, biologists consider all relevant site-specific conditions, including the species' tolerance for disturbance, work activity type, noise levels, and distance to nest to determine if reducing the standard buffer is appropriate. Alternatively, the buffer may be increased beyond the standard buffer for certain exceptions. Helicopters are the main exception that may require increased buffers.

Table 1 lists the standard buffers and non-standard buffer ranges for activities with low-medium and medium-high disturbances. Nest buffers will be implemented and adjusted by the biologist¹.

The following site-specific conditions are considered in determining if a reduced or increased buffer is appropriate:

- **Disturbance.** Evaluate nest disturbance, including consideration of activity intensity and duration, construction type, amount of habitat disturbance, level of human disturbance or acclimation, activity length, and the amount of noise generated by the activity.
- **Existing Conditions.** Assess site conditions to determine if there is acclimation to human disturbance.
- **Nest Concealment.** Evaluate surrounding habitat for its ability to provide visual and/or acoustic barriers between the nest and construction.
- **Species Natural History.** Consider individual species' natural history, nest stage (incubation, rearing, fledging), and known tolerances to disturbance.
- **Habituation.** Consider species habituation to new or ongoing activities.
- **Environmental Conditions.** Consider weather and other related factors.
- **Helicopter Use.** Consider helicopter type, flight plans, and duration.

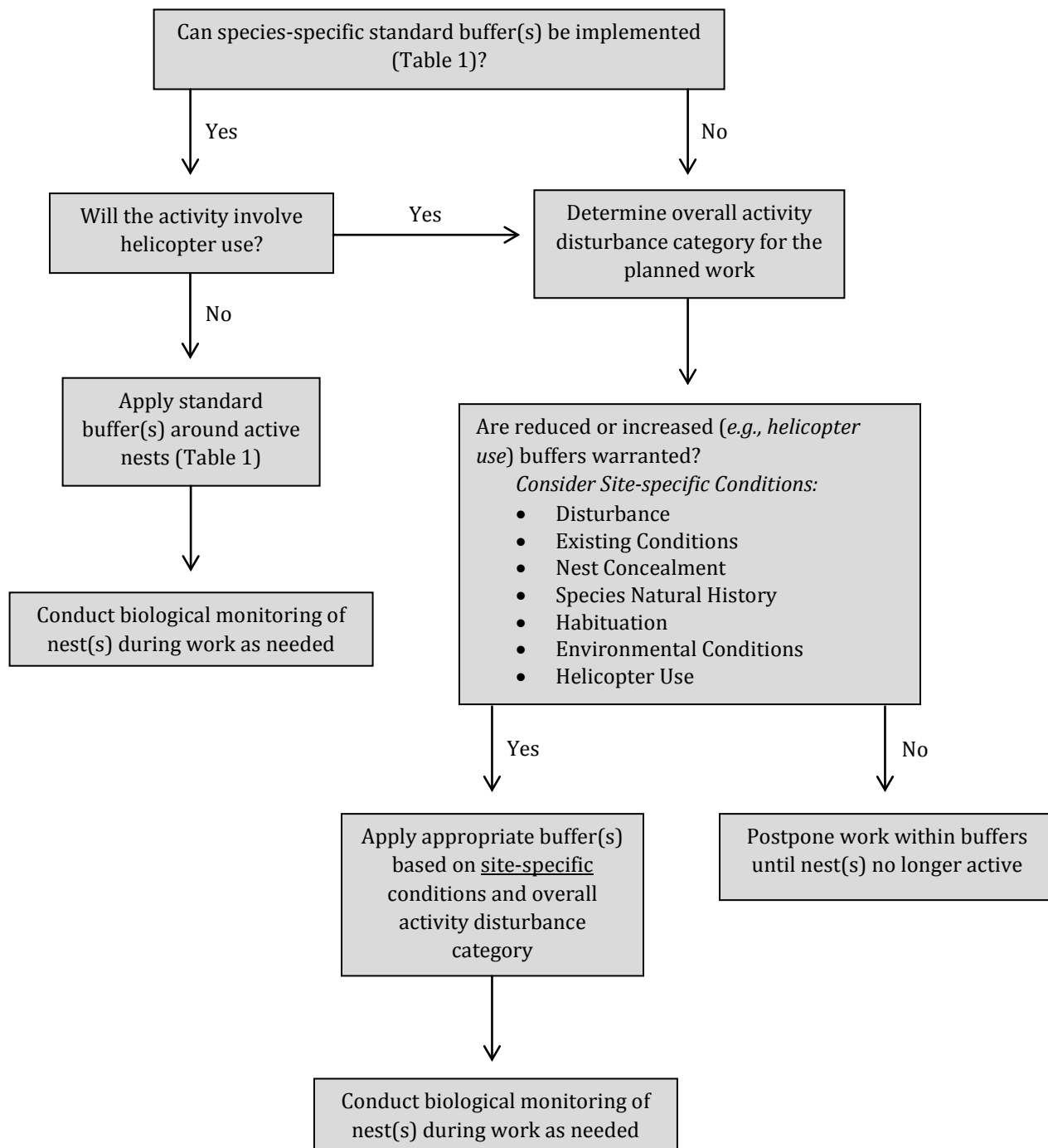
Nest Buffer Implementation Guidelines

Step/Task/Responsible	Outcome and Components
1. Desktop review <i>Biologist</i>	<ul style="list-style-type: none"> ● Assess habitat types and potential nesting bird species ● Identify potentially appropriate buffers for the species that may nest
2. Preconstruction nesting bird surveys <i>Biologist</i>	<ul style="list-style-type: none"> ● Conduct preconstruction surveys within the standard buffers ● Document species detections including nests and active nests
3. Assign Buffers <i>Biologist</i>	<ul style="list-style-type: none"> ● Assess intensity/duration of activity ● Assess acclimation to human disturbance ● Assess site-specific conditions ● Consider species' natural history, reproductive stage, tolerances to disturbance, and observed behavior ● Evaluate and assign standard, reduced, or increased buffers
4. Implement Buffers <i>Biologist/Biological Monitor</i>	<ul style="list-style-type: none"> ● Implement buffers when work activities are occurring ● Conduct periodic biological monitoring where needed ● Adjust buffers as appropriate

¹ Biologist refers to an individual with a bachelor's degree or above in a field related to biological sciences and demonstrated field expertise in ornithology, in particular, nesting behavior; these qualified biologists may be PG&E employees or contractors.

Species-Specific Buffers for PG&E Activities

Buffer Assignment Process – Quick Reference



Other Biological Considerations in Determining Buffers

- Provisioning frequency of hatchlings or older young
- Egg turning
- Egg incubation (female or male or combination)
- Egg hardiness
- Ambient Temperatures
- Heat tolerance (eggs or nestlings)
- Cold tolerance (eggs or nestlings)
- Unsheltered nest risk
- Premature fledging risk
- Unattended nests and predation risk

Time on Nest is Important. An egg initially requires a controlled heat input, but later in incubation the embryo may produce more heat and may need to be cooled rather than heated. Ambient temperatures need to be considered. Unattended unsheltered nests may experience temperature extremes (heat or cold). Egg turning during incubation is also a critical component for successful hatching; absence of turning during incubation will result in reduced and delayed hatching. During the nestling stage for altricial birds (i.e., birds that typically require feeding by adults), adults must provision food to nestlings. Provisioning rate is highly variable between species and is correlated to clutch size and body size, but most birds make frequent trips to attend nestlings. Collectively referred to as brooding, these forms of parental care are essential for reproductive success. Unattended nests also may experience increased rates of predation. Premature fledging is more likely to occur during later nest stages, when young are nearing fledging stage but not yet capable of flight.

Table 1. Species-specific Nest Buffers for PG&E Work Activities

**Atypically high-intensity activities, such as helicopter use usually require increased buffers beyond the standard buffer*

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
Mallard	<i>Anas platyrhynchos</i>	Scrapes under overhanging cover or in dense vegetation in uplands near water.	Ground	March through June; single brood.	Clutch incubated for 26–29 days by female; young are precocial.	100	30–100	15–30
Cinnamon Teal	<i>Anas cyanoptera</i>	Scrapes under overhanging cover or in dense vegetation in uplands near water.	Ground	April through August; single brood.	Clutch incubated for 24–25 days by female; young are precocial.	100	30–100	15–30
Canada Goose	<i>Branta canadensis</i>	Scrapes on slightly elevated, firm ground in uplands near water.	Ground	February through June; single brood.	Clutch incubated for 27–28 days by female; young are precocial.	100	30–100	15–30
Wood Duck	<i>Aix sponsa</i>	Cavities in riparian woodlands and other woodland habitats near water.	Up to 60 feet	April through August; single or double brood.	Clutch incubated for 27–35 days by female; young are precocial.	100	30–100	15–30
Blue-winged Teal	<i>Anas discors</i>	Scrapes in dense grass or forbs in wetlands or grasslands near water.	Ground	June through July; single brood	Clutch incubated for 23–24 days by female; young are precocial.	100	30–100	15–30
Northern Shoveler	<i>Anas clypeata</i>	Scrapes in low grasses or forbs in uplands near water.	Ground	March through July; single brood.	Clutch incubated for 25–27 days by female; young are precocial.	100	30–100	15–30
Gadwall	<i>Anas strepera</i>	Scrapes in dense, low emergent vegetation or grasses in uplands near water.	Ground	April through July; single brood.	Clutch incubated for 22–29 days by female; young are precocial.	100	30–100	15–30
American Wigeon	<i>Anas americana</i>	Scrapes in dense vegetation cover in uplands near water.	Ground	May through July; single brood.	Clutch incubated for 24–25 days by female; young are precocial.	100	30–100	15–30

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
Redhead	<i>Aythya americana</i>	Platform nests over water in dense vegetation; occasionally nests in uplands near water.	Ground	April through June; single brood.	Clutch incubated for 24–26 days by both sexes; young are precocial.	100	30–100	15–30
Ring-necked Duck	<i>Aythya collaris</i>	Platform nests over water in dense emergent vegetation in wetlands.	Ground	May through August; single brood.	Clutch incubated for approximately 26 days by female; young are precocial.	100	30–100	15–30
Common Merganser	<i>Mergus merganser</i>	Cavities in trees, snags and stumps in riparian woodlands.	Up to 200 feet	March through September; single brood.	Clutch incubated for 28–32 days by female; young are precocial.	100	30–100	15–30
Ruddy Duck	<i>Oxyura jamaicensis</i>	Platform nests constructed on shallow water in dense, tall emergent vegetation.	Ground	April through October; single or double brood.	Clutch incubated for approximately 23 days by female; young are precocial.	100	30–100	15–30
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Platform nests constructed in emergent vegetation bordering open water.	Ground	March through July; double brood.	Clutch incubated for approximately 23 days by both sexes; young are precocial.	100	30–100	15–30
Eared Grebe	<i>Podiceps nigricollis</i>	Platform nests in water on emergent wetland vegetation.	Ground	April through July; single brood.	Clutch incubated for approximately 21 days by both sexes by both sexes; young are precocial.	100	30–100	15–30
Western Grebe	<i>Aechmophorus occidentalis</i>	Platform nests in emergent vegetation or open water or, less frequently, on dry land near water.	Ground	May through August; single brood.	Clutch incubated for approximately 23 days by both sexes; young are precocial.	100	30–100	15–30

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
Clark's Grebe	<i>Aechmophorus clarkii</i>	Platform nests constructed in emergent vegetation or open water or, less frequently, on dry land near water.	Ground	May through August; single brood.	Clutch incubated for approximately 23 days by both sexes; young are precocial.	100	30–100	15–30
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Platform nests on islands, on the ground or in trees; also in power poles and other artificial structures. Colonial nester.	Ground	March through August; single brood.	Clutch incubated for 25–29 days by both sexes; altricial young fledge at 37–44 days.	400	75–400	50–75
Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>	Platform nests on steep cliffs along rocky and exposed shorelines along outer coasts, bays, inlets, estuaries, rapids, coves, surge narrows, harbors, lagoons, and coastal log-storage sites. Colonial nester.	Ground	April through August; single or double brood	Clutch incubated for 28–32 days by both sexes; altricial young fledge at approximately 47 days	400	75–400	50–75
American Bittern	<i>Botaurus lentiginosus</i>	Platform nests in shallow water or on ground near water.	Ground	April through July; single brood.	Clutch incubated for approximately 24 days by female; altricial young fledge at approximately 14 days.	100	50–100	25–50
Least Bittern	<i>Ixobrychus exilis</i>	Platform nests about a foot above the water in freshwater marshes.	Ground	March through July; double brood.	Clutch incubated for 16–19 days by both sexes; altricial young fledge at 13–15 days.	100	50–100	25–50

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
Great Blue Heron	<i>Ardea herodias</i>	Platform nests in tall trees or other types of vegetation near water. Colonial nester.	Up to 130 feet	January through July; single brood.	Clutch incubated for 25–29 days by both sexes; altricial young fledge at approximately 60 days.	400	75–400	50–75
Great Egret	<i>Ardea alba</i>	Platform nests in tall trees or other types of vegetation near water. Colonial nester.	10–80 feet	March through July; single brood.	Clutch incubated for approximately 26 days; semi-altricial young fledge at approximately 35–42 days.	400	75–400	50–75
Snowy Egret	<i>Egretta thula</i>	Platform nests in tall trees or other types of vegetation near water. Colonial nester.	Up to 30 feet but usually 10–15 feet	March through July; single brood.	Clutch incubated for 20–24 days by both sexes; semi-altricial young fledge at 21–28 days.	400	75–400	50–75
Cattle Egret	<i>Bubulcus ibis</i>	Platform nests in tall shrubs and trees near water.	Up to 30 feet but usually 5–15 feet	April to July; single brood.	Clutch incubated for 23–25 days; semi-altricial young fledge at about 40 days.	400	75–400	50–75
Green Heron	<i>Butorides striatus</i>	Platform nests in shrubs, trees, thickets, or other vegetation near water.	10–30 feet, sometimes higher	March through July; single or double brood.	Clutch incubated for 19–21 days by both sexes; semi-altricial young fledge at 21–23 days.	100	50–100	25–50
Black-crowned Night-Heron	<i>Nycticorax</i>	Platform nests in shrubs, trees, thickets, or other vegetation near water. Colonial nester.	Up to 150 feet	January through June; double brood.	Clutch incubated for approximately 24 days by female; semi-altricial young fledge at 42–49 days.	400	75–400	50–75
White-faced Ibis	<i>Plegadis chihi</i>	Platform nests of emergent wetland vegetation in extensive wetlands. Colonial nester.	Ground	May to July; single brood.	Clutch incubated for 20–26 days by both sexes; altricial young fledge at 10–12 days.	400	75–400	50–75

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
Turkey Vulture	<i>Cathartes aura</i>	Caves, rock crevices, possibly abandoned buildings, or other dark, secluded sites.	Up to 20 feet	March through June; single brood.	Clutch incubated for 37–41 days by both sexes; semi-altricial young fledge at approximately 77 days.	300	100–300	50–100
California Condor	<i>Gymnogyps californianus</i>	Caves on high, remote cliff-faces or in hollow in large redwood snag.	Cliff	Year-round, with egg-laying usually occurring in January or February; single brood.	Clutch incubated for 42–50 days by both sexes; semi-altricial young fledge at 35–49 days.	3,960	CR ^a	CR
White-tailed Kite	<i>Elanus caeruleus</i>	Platform nests in tall trees near grasslands, oak savannah, or other open habitats.	12–60 feet	February through July; sometimes double brood.	Clutch incubated for 28–30 days by both sexes; semi-altricial young fledge at 34–40 days.	300	200–300	100–200
Osprey	<i>Pandion haliaetus</i>	Platform nests on treetops, rocky outcrops, or utility poles near water.	Up to 60 feet	Mid-March through August; single brood.	Clutch incubated for 32–33 days by both sexes; semi-altricial young fledge at 51–59 days.	300	100–300	50–100
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Platform nests in large trees or rocky outcrops close to lakes and large rivers.	50–180 feet	January to August; single brood.	Clutch incubated for 35–46 days by both sexes; semi-altricial young fledge at 70–77 days.	2,640	CR	CR
Northern Harrier	<i>Circus cyaneus</i>	Platform nests on ground in grasslands and open marshland with vegetative cover.	Ground	March through August; single brood.	Clutch incubated for 29–39 days by both sexes; altricial young fledge at 37 days.	300	200–300	100–200
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Platform nests in trees in riparian woodland or other forested habitat with thick cover.	10–60 feet	April through August; single brood.	Clutch incubated for 30–35 days by both sexes; semi-altricial young fledge at approximately 23 days.	300	100–300	50–100

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Cooper's Hawk	<i>Accipiter cooperii</i>	Platform nests in trees in riparian woodlands or other forested habitat.	20–60 feet	March through July; single brood.	Clutch incubated for 36 days by female while male provisions her; semi-altricial young fledge at 30–34 days.	300	100–300	50–100
Northern Goshawk	<i>Accipiter gentilis</i>	Platform nests in top of tall coniferous or deciduous trees in mature forest.	Up to 75 feet	April through August; single brood.	Clutch incubated for 36–41 days by female while male provisions her; semi-altricial young fledge at 45 days old	1,320	200–1,320	100–200
Red-shouldered Hawk	<i>Buteo lineatus</i>	Platform nests below canopy in a variety of tree species.	20–60 feet	March through June; single brood.	Clutch incubated for 23–25 days by both sexes; semi-altricial young fledge at 35–42 days.	300	100–300	50–100
Swainson's Hawk	<i>Buteo swainsoni</i>	Platform nests in isolated trees in grasslands and agricultural areas.	5–30 feet	April through late June; single brood.	Clutch incubated for approximately 28 days by both sexes; semi-altricial young fledge at 28–35 days.	1,320–2,640	CR	CR
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Platform nests in tall trees and other structures in a variety of open habitats.	35–90 feet	February through September; single brood.	Clutch incubated for 28–32 days by both sexes; semi-altricial young fledge at approximately 42 days.	250	100–300	50–100
Ferruginous Hawk	<i>Buteo regalis</i>	Nest in substrates ranging from cliffs, trees, utility structures, and farm buildings to haystacks and relatively level ground.	Up to 70 feet	Early March through May; single brood	Clutch incubated for 32–33 days by both sexes; altricial and nidicolous young fledge at 38–50 days.	300	100–300	50–100

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Golden Eagle	<i>Aquila chrysaetos</i>	Platform nests on rock ledges of outcrops or cliffs, and occasionally trees, in proximity to grassland, farmland, oak savannah, and other foraging grounds.	10–100 feet or higher on cliffs	February through July; single brood.	Clutch incubated for 43–45 days by female and occasionally male; semi-altricial young fledge at 63–70 days.	2,640	CR	CR
American Kestrel	<i>Falco sparverius</i>	Cavities in trees or other structures near grasslands, agricultural areas, oak savannah, or other open areas.	7–80 feet	March through July; may double brood.	Clutch incubated for 29–30 days by female while male provisions her; semi-altricial young fledge at approximately 30 days.	200	50–200	25–50
Prairie Falcon	<i>Falco mexicanus</i>	Ledges under overhangs on rock outcrops or cliffs near grassland, farmland, oak savannah, or other foraging habitat.	30–40 feet	March to May; single brood.	Clutch incubated for 29–31 days by female while male provisions her; semi-altricial young fledge at 40 days.	300	100–300	50–100
American Peregrine Falcon	<i>Falco peregrinus</i>	Cliff ledges, tall buildings, high bridges, and other high locations near open habitats.	High on cliffs or tall structures	March through June; single brood.	Clutch incubated for 28–29 days by both sexes; semi-altricial young fledge at 35–42 days.	500	CR	CR
Mount Pinos Sooty Grouse	<i>Dendragapus fuliginosus</i>	Scrapes near logs, shrubs, or other cover in coniferous forests, shrub-steppe habitat, and subalpine forests.	Ground	April through August; single brood.	Clutch incubated for 26–28 days by female; young are precocial.	100	50–100	25–50
Ruffed Grouse	<i>Bonasa umbellus</i>	Scrapes near the base of stumps, trees, or logs in forested habitat.	Ground	February through August; single brood.	Clutch incubated for approximately 24 days by female; young are precocial.	100	50–100	25–50

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Wild Turkey	<i>Meleagris gallopavo</i>	Scrapes in thick, low vegetation in oak woodlands and forest edges and clearings.	Ground	March through August; single brood.	Clutch incubated for approximately 28 days by female; young are precocial.	100	30–100	15–30
Gambel's Quail	<i>Callipepla gambellii</i>	Scrapes under shrubs in desert habitats.	Ground	April through June; single or (rarely) double brood	Clutch incubated for 21–23 days by female while male guards; young are precocial.	100	50–100	25–50
California Quail	<i>Callipepla californica</i>	Scrapes under shrubs in riparian woodland, coastal scrub, chaparral, shrub-steppe, and mixed-hardwood forest.	Ground	March through July; single or double brood.	Clutch incubated for 21–23 days by female; young are precocial.	100	50–100	25–50
Mountain Quail	<i>Oreortyx pictus</i>	Scrapes under shrubs in mountain woodland and scrub habitats, usually near water.	Ground	April through June; single brood.	Clutch incubated for 24–25 days by female; young are precocial.	100	50–100	25–50
California Black Rail	<i>Laterallus jamaicensis coturniculus</i>	Cup nests on or near ground at upper edges of tidal marshes.	0–1 foot	March through July; single brood.	Clutch incubated for 17–20 days by both sexes; young are semi-precocial.	300–600	CR	CR
Clapper Rail (California, Yuma, Light-footed)	<i>Rallus longirostris obscurus/yumanensis/levipes</i>	Platform nests in dense tidal marsh vegetation dominated by cordgrass or gumplant.	0–1 foot	February through August; single or double brood.	Clutch incubated for 23–29 days by both sexes; young are semi-precocial.	700	CR	CR
Virginia Rail	<i>Rallus limicola</i>	Platform nests in dense emergent vegetation in freshwater or estuarine marshes.	0–1 foot	April through June; single or double brood.	Clutch incubated for 14–16 days by both sexes; young are precocial.	100	50–100	25–50
Sora	<i>Porzana carolina</i>	Cup nests secured to reeds and rushes in freshwater or estuarine marshes.	0–1 foot	April through August; single brood.	Clutch incubated for approximately 14 days by both sexes; young are precocial.	100	50–100	25–50

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Common Gallinule	<i>Gallinula galeata</i>	Platform nests in dense vegetation at edge of marshes and other freshwater habitats.	Ground or water level	April through June; single or double brood.	Clutch incubated for 19–22 days by both sexes; young are precocial.	100	50–100	25–50
American Coot	<i>Fulica americana</i>	Platform nests in dense vegetation at edge of marshes and other freshwater habitats.	Ground or water level	March through July; single or double brood.	Clutch incubated for 21–24 days by both sexes; young are precocial.	100	30–100	15–30
Greater Sandhill Crane	<i>Grus canadensis tabida</i>	Platform nests in wetland vegetation on dry ground or shallow water in extensive marsh systems or grasslands.	Ground	April through August; single brood.	Clutch incubated for approximately 30 days by both sexes; young are precocial.	500	CR	CR
Western Snowy Plover	<i>Charadrius alexandrinus nivosus</i>	Scrapes on sand beaches/bars, salt pannes, or dry river beds.	Ground	April through August; double or triple brood.	Clutch incubated for approximately 24 days by both sexes; young are precocial.	600 (coastal) 300 (interior)	CR (coastal) 200–300 (interior)	CR (coastal) 100–200 (interior)
Killdeer	<i>Charadrius vociferus</i>	Scrapes in open places usually in areas with short grass, sand, or gravel.	Ground	March through June; sometimes double brood.	Clutch incubated for 24–26 days by both sexes; young are precocial.	75	30–75	15–30
Black-necked Stilt	<i>Himantopus mexicanus</i>	Scrapes or plant tufts/tussocks in fresh, brackish, or salt marshes.	Ground	April through June; single brood.	Clutch incubated for 25–26 days by both sexes; young are precocial.	150	50–150	25–50
American Avocet	<i>Recurvirostra americana</i>	Scrapes on salt pannes, dikes, levees, and bare islands.	Ground	April through June; single brood.	Clutch incubated for 22–24 days by both sexes; young are precocial.	150	50–150	25–50

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Spotted Sandpiper	<i>Actitis macularia</i>	Scrapes in grasses among rocks, wrack, or driftwood.	Ground	April through August; single brood.	Clutch incubated for approximately 21 days by male; young are precocial.	75	30–75	15–30
Wilson's Snipe	<i>Gallinago gallinago</i>	Scrapes in dense, medium to tall marshy or wet meadow vegetation.	Ground	April to August; single brood.	Clutch incubated for 17–20 days by female; young are precocial.	75	30–75	15–30
Lesser Yellowlegs	<i>Tringa flavipes</i>	Scrapes on shallow wetlands, trees or shrubs, and open areas.	Ground	Late April to mid-May; single brood.	Clutch incubated for 22–23 days by both sexes; young are precocial.	75	30–75	15–30
Whimbrel	<i>Numenius phaeopus</i>	Hummocks or mounds near dwarfed shrub, flat heath tundra, in grass or sedge tussocks, and on gravel.	Ground	Early June to early July; single brood.	Clutch incubated 22–28 days by both sexes; young are precocial.	75	30–75	15–30
Black Skimmer	<i>Rynchops niger</i>	Saucer-shaped depressions on beaches, bars, dredge deposition, salt marsh.	Ground	May through August; single brood.	Clutch incubated 21–23 days by both sexes; young are semi-precocial.	300	100–300	50–100
Long-billed Curlew	<i>Numenius americanus</i>	Scrapes in short-grass or mixed-prairie habitat with flat to rolling topography.	Ground	Mid-late March to early July; single brood.	Clutch incubated for 27–29 days by both sexes; young are precocial.	75	30–75	15–30
Marbled Godwit	<i>Limosa fedoa</i>	Scrapes in short, sparsely to moderately vegetated landscapes that include native grassland and wetland complexes with a variety of wetland classes (ephemeral to semipermanent).	Ground	Mid-May to late June; single brood.	Clutch incubated for 23–26 days by both sexes; young are precocial	75	30–75	15–30

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California Gull	<i>Larus californicus</i>	Scrapes on islands in alkali or freshwater lakes and ponds or salt ponds.	Ground	April through August; single brood.	Clutch incubated for 23–27 days by both sexes; young are precocial.	150	50–150	25–50
Western Gull	<i>Larus occidentalis</i>	Ledges on cliffs, bluffs, bridges, buildings, and other areas inaccessible to nest predators.	Ground/cliff	April through August; single brood.	Clutch incubated for 30–32 days by both sexes; young are semi-precocial.	150	50–150	25–50
Caspian Tern	<i>Sterna caspia</i>	Scrapes on islands, beaches, and levees.	Ground	April through August; single brood.	Clutch incubated for approximately 20 days by both sexes; semi-precocial young fledge at approximately 14 days.	300	100–300	50–100
Forster's Tern	<i>Sterna forsteri</i>	Scrapes on open levees, islands, and occasionally reed beds.	Ground	April through September; single brood.	Clutch incubated for approximately 23 days by both sexes; semi-altricial young fledge after approximately 7 days.	300	100–300	50–100
California Least Tern	<i>Sterna antillarum</i>	Scrapes on bare sandy or gravelly substrates in undisturbed areas.	Ground	May through June; single brood.	Clutch incubated for 20–25 days by both sexes; young are semi-precocial.	600	CR	CR
Black Tern	<i>Chlidonias niger</i>	Platform nests constructed of dead plant stems in freshwater wetlands and flooded rice fields.	Ground	May through August; single brood.	Clutch incubated for 20–22 days by both sexes; semi-precocial young fledge at approximately 14 days.	300	100–300	50–100

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Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Horizontal limbs of large, old-growth conifers.	20–250 feet	March through September; likely a single brood.	Clutch incubated for approximately 30 days by both sexes; semi-precocial young fledge at approximately 21 days.	1,320 (high disturbance) ^b	CR	CR
Cassin's Auklet	<i>Ptychoramphus aleuticus</i>	Excavates burrows in soft soil, sod or natural cavities such as rock crevices and under trees, cacti or logs. Colonial nester.	Ground/cliff	Varies within November through May; single and double brood.	Clutch incubated 37–42 days by both sexes; altricial young confined to nest for 30 days.	400	75–400	50–75
Band-tailed Pigeon	<i>Columba fasciata</i>	Platform nests in trees or shrubs in oak woodlands, mixed hardwood forests, and mixed coniferous forests, usually in areas with oak trees.	5–180 feet	March through November; double or triple brood.	Clutch incubated for 18–20 days by both sexes; altricial young fledge at 25–30 days.	75	50–75	25–50
Mourning Dove	<i>Zenaida macroura</i>	Platform nests in a tree or shrub, but also on buildings or on ground, in a variety of habitats.	0–25 feet	February through September; several broods.	Clutch incubated for 14–15 days by both sexes; altricial young fledge at 13–15 days.	50	20–50	10–20
Western Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Platform nests in bushes or trees in dense, wide riparian woodlands.	2–20 feet	June through July; single brood.	Clutch incubated for 9–11 days by both sexes; altricial young fledge at 21 days.	500	CR	CR
Greater Roadrunner	<i>Geococcyx californianus</i>	Cup nests in dense, brushy habitats in desert, sagebrush, and chaparral habitats.	3–15 feet	April through June; double brood.	Clutch incubated for 16–20 days by male; altricial young fledge at 18–30 days.	100	50–100	25–50

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Barn Owl	<i>Tyto alba</i>	Cavities in trees, buildings, crevices in rocks, outcrops, cliffs and quarries.	1–400 feet	January through May; often double broods.	Clutch incubated for 32–34 days by female while male provisions her; altricial young fledge at 60 days.	150	100–150	50–100
Flammulated Owl	<i>Otus flammeolus</i>	Cavities in trees, including aspens, oaks, pines, or other trees in forested areas.	10–40 feet	May through October; single brood.	Clutch incubated for 21–24 days by female while male provisions her; altricial young fledge at 20–26 days	200	100–200	50–100
Western Screech Owl	<i>Otus kennicottii</i>	Cavities in trees, particularly cottonwoods, in open woodlands.	10–30 feet	March through June; single brood.	Clutch incubated for 21–30 days by female while male provisions her; altricial young fledge at approximately 28 days.	200	100–200	50–100
Great Gray Owl	<i>Strix nebulosa</i>	Near high elevation meadows, on broken top trees or stick nests of other species.	30–50 feet	Late March through early July; single brood	Average clutch incubated for 29.7 days by female, with male provisioning her; semi-precocial young fledge at 21–28 days but can be dependent on nest site and male parent until fall.	1,320	CR	CR
Great Horned Owl	<i>Bubo virginianus</i>	Cavities or large nest platforms of other species in trees, rock ledges, or caves.	Uses existing platforms at various heights	January through May; single brood.	Clutch incubated for 26–35 days by female while male provisions her; altricial young fledge at 28–35 days.	300	100–300	50–100

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Northern Pygmy Owl	<i>Glaucidium gnoma</i>	Cavities in trees in oak woodlands and coniferous forests.	8–20 feet	April through August; number of broods unknown.	Clutch incubated for 25–30 days by female while male provisions her; semi-altricial young fledge at approximately 23 days.	200	50–200	25–50
Spotted Owl (Northern/California)	<i>Strix occidentalis caurina/occidentalis</i>	Cavities or platforms (natural or old nests of other species) in coniferous or mixed hardwood forests.	30–165 feet	March through August; single brood.	Clutch incubated for 29–30 days by female while male provisions her; altricial young fledge at 34–36 days.	1,320 (high disturbance) ^b	CR	CR
Burrowing Owl	<i>Athene cunicularia</i>	Small mammal burrows in open grasslands or at the edge of agricultural areas.	Ground	February through August; single brood.	Clutch incubated for 27–30 days by female while male provisions her; altricial young fledge at 40–45 days.	250	CR	CR
Long-eared Owl	<i>Asio otus</i>	Platform nests built by other species high in trees in coniferous forests or mixed woodlands.	10–30 feet	February through May; single brood.	Clutch incubated for 25–30 days by female while male provisions her; altricial young fledge at 23–24 days.	300	100–300	50–100
Short-eared Owl	<i>Asio flammeus</i>	Scrapes in tall, dense vegetation in grasslands and freshwater or brackish marshes.	Ground	March through July; single or possibly double brood.	Clutch incubated for 21–28 days by female while male provisions her; semi-altricial young leave nest at 31–36 days.	300	100–300	50–100
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	Cavities in trees in forested areas.	5–50 feet	March through August; single or double brood.	Clutch incubated for 21–28 days by female; semi-altricial young fledge at approximately 30 days.	200	100–200	50–100

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Lesser Nighthawk	<i>Chordeiles acutipennis</i>	Scrapes on bare gravelly or sandy ground in desert and sparsely vegetated habitats.	Ground	April through July; single or double brood.	Clutch incubated for 18–19 days by female; semi-precocial young fledge after 3 weeks.	75	30–75	20–30
Common Nighthawk	<i>Chordeiles minor</i>	Scrapes on bare gravelly or sandy ground in open areas within chaparral, grasslands, and forest openings.	Ground	June through July; double brood.	Clutch incubated for 18–20 days by female; semi-precocial young fledge after about 21 days.	75	30–75	20–30
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	Scrapes on bare gravelly, sandy, or leaf-litter-covered ground in grasslands and desert habitats.	Ground	March through August; double brood.	Clutch incubated for 20–21 days by both sexes; young are precocial.	75	30–75	20–30
Black Swift	<i>Cypseloides niger</i>	Sheltered crevices or ledges on cliff faces on coast or under waterfall.	20–45 feet	May through September; single brood.	Clutch incubated for 21–27 days by both sexes; altricial young fledge at 45–49 days.	75	30–75	15–30
Vaux's Swift	<i>Chaetura vauxi</i>	Cavities in redwoods, other conifers, and occasionally sycamores, chimneys, and buildings.	Up to 50 feet	May through August; single brood.	Clutch incubated for 18–20 days; altricial young fledge at approximately 28 days.	75	30–75	15–30
White-throated Swift	<i>Aeronautes saxatalis</i>	Rock cracks and crevices on cliffs and tall bridges.	10–195 feet	May through July; single brood.	Clutch incubated for 20–27 days; altricial young fledge at 40–46 days.	75	30–75	15–30
Black-chinned Hummingbird	<i>Arcgilochus alexandri</i>	Cup nests in trees and shrubs in woodlands, urban areas, and other habitats with nectar sources.	4–10 feet	April through June; two or three broods.	Clutch incubated for 13–16 days by female; altricial young fledge at approximately 21 days.	50	20–50	15–20

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Anna's Hummingbird	<i>Calypte anna</i>	Cup nests in trees and shrubs in woodlands, urban areas, and other habitats with nectar sources.	1–30 feet	December through June; two or three broods.	Clutch incubated for 16–17 days by female; altricial young fledge at 25–26 days.	50	20–50	15–20
Costa's Hummingbird	<i>Calypte costae</i>	Cup nests in trees and shrubs in riparian scrub, urban areas, and other habitats with nectar sources.	4–5 feet	April through July; single or occasionally double brood.	Clutch incubated for 15–18 days by female; altricial young fledge at 20–23 days.	50	20–50	15–20
Calliope Hummingbird	<i>Stellula calliope</i>	Cup nests in montane or riparian woodlands.	2–70 feet	May through August; single brood.	Clutch incubated for 15–16 days by female; altricial young fledge at 21–23 days.	50	20–50	15–20
Allen's Hummingbird	<i>Selasphorus sasin</i>	Cup nests in shrubs, trees, or vines in a variety of forest and woodland types, as well as coastal scrub.	1–10 feet; occasionally as high as 90 feet	February through August; double brood.	Clutch incubated for 16–22 days by female; altricial young fledge at approximately 22 days.	50	20–50	15–20
Belted Kingfisher	<i>Ceryle alcyon</i>	Burrow in banks near fresh water.	Ground	April through July; single brood.	Clutch incubated for 23–24 days by both sexes; altricial young fledge at 30–35 days.	100	50–100	25–50
Lewis's Woodpecker	<i>Melanerpes lewis</i>	Cavities in snags or dead branches in oak woodlands and mixed hardwood forests.	5–80 feet	May through July; single brood.	Clutch incubated for 13–14 days by both sexes; altricial young fledge at 28–34 days.	50	15–50	10–15
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	Cavities in trees or snags in open woodlands, partly wooded areas, or utility poles near a source of acorns.	5–25 feet	April through July; two or three broods.	Clutch incubated for approximately 11 days by both sexes; altricial young fledge at approximately 31 days.	50	15–50	10–15

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Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	Cavities in trees or snags in coniferous or mixed forest.	5–45 feet	May through June; single brood.	Clutch incubated for 12–14 days by both sexes; altricial young fledge at 23–28 days.	50	15–50	10–15
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	Tree cavities in conifer and mixed conifer-deciduous forests.	8–52 feet	Late April through late July; single brood.	Clutch incubated 12–14 days by both sexes; altricial young fledge at 31–32 days.	50	15–50	10–15
Ladder-backed Woodpecker	<i>Picoides scalaris</i>	Cavities in trees and cactus.	4–20 feet	Unknown in CA; single brood.	Clutch incubated 14 days by both sexes; altricial young with unknown fledging period.	50	15–50	10–15
Nuttall's Woodpecker	<i>Picoides nuttallii</i>	Cavities in trees or snags in oak woodlands, or less frequently riparian or other woodlands.	2–60 feet	April through June; single brood.	Clutch incubated for approximately 14 days by both sexes; altricial young fledge at approximately 29 days.	50	15–50	10–15
Downy Woodpecker	<i>Picoides pubescens</i>	Cavities in trees or snags in riparian or other deciduous woodlands, or less frequently in coniferous forests.	3–44 feet	April through May; double brood.	Clutch incubated for approximately 12 days by both sexes; altricial young fledge at 20–22 days.	50	15–50	10–15
Hairy Woodpecker	<i>Picoides villosus</i>	Cavities in snags or dead branches in woodlands and coniferous forests.	3–102 feet	March through August; single brood.	Clutch incubated for 11–15 days by both sexes; altricial young fledge at 28–30 days.	50	15–50	10–15
White-headed Woodpecker	<i>Picoides albolarvatus</i>	Cavities in snags or stumps at least 2 feet in diameter in pine forests.	6–50 feet	April through August; single brood.	Both sexes incubate clutch for 13–15 days; altricial young fledge at approximately 26 days.	50	15–50	10–15

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Northern Flicker	<i>Colaptes auratus</i>	Cavities in tree trunks or snags in open or sparsely wooded areas; more often in live wood.	8–45 feet	April through June; single brood.	Clutch incubated for 11–13 days by both sexes; altricial young fledge at 25–28 days.	50	15–50	10–15
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Cavities in snags or dead branches in mature forests.	15–70 feet	March to July; single brood	Clutch incubated for approximately 18 days by both sexes; altricial young fledge at 26–28 days.	50	15–50	10–15
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Cup nest in trees in open conifer forest or mixed woodland.	5–70 feet	June through July; single brood.	Clutch incubated for 16–17 days by female; altricial young fledge at 15–19 days.	75	30–75	15–30
Western Wood-Pewee	<i>Contopus sordidulus</i>	Cup nests in trees, mainly coniferous but sometimes deciduous woodlands near watercourses.	15–30 feet	May through July; single brood.	Clutch incubated for approximately 12 days by female; altricial young fledge at 14–18 days.	75	30–75	15–30
Willow Flycatcher (Southwestern, Little, adastus)	<i>Empidonax traillii extimus/brewsteri/adastus</i>	Cup nests in densely vegetated riparian associations of cottonwoods and willows.	5–20 feet	May through July; single brood.	Clutch incubated for 12–13 days by female; altricial young fledge at 14 days.	300	CR	CR
Vermilion Flycatcher	<i>Pyrocephalus rubinus</i>	Loosely constructed nest in wooded riparian areas.	8–55 feet	Mid-March through mid-July; single or double brood.	Clutch incubated for 14–15 days by female; altricial young fledge at 14–16 days.	75	30–75	15–30
Hammond's Flycatcher	<i>Empidonax hammondi</i>	Cup nests in trees in forests and woodlands.	6–65 feet	May through July; single brood.	Clutch incubated for 12–15 days by female; altricial young fledge at 17–18 days .	75	30–75	15–30

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Dusky Flycatcher	<i>Empidonax oberholseri</i>	Cup nests in small trees or shrubs pine forests	3–20 feet	May through July; single brood.	Clutch incubated for 12–15 days by female; altricial young fledge at approximately 18 days.	75	30–75	15–30
Western (Pacific-slope and Cordilleran) Flycatcher	<i>Empidonax difficilis/occidentalis</i>	Cup nests in cavities or tree stumps or on ledges or crevices in woodlands and forests often in riparian areas.	0–30 feet	April through July; sometimes double brood.	Clutch incubated for 14–15 days by female; altricial young fledge at 15–18 days.	75	30–75	15–30
Black Phoebe	<i>Sayornis nigricans</i>	Cup nests of mud cemented to vertical structures, often under an overhang.	3–10 feet	March through June; double brood.	Clutch incubated for 15–18 days by female; altricial young fledge at approximately 21 days.	75	30–75	15–30
Say's Phoebe	<i>Sayornis saya</i>	Cup nests on ledges with overhang or under a bridge; nest not made of mud like black phoebe.	0–79 feet	March through June; double brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 14–18 days.	75	30–75	15–30
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	Cavities in trees and other structures in open deciduous woodland.	2–70 feet	May through July; single brood.	Clutch incubated for approximately 15 days by female; altricial young fledge at 16–17 days.	50	15–50	10–15
Cassin's Kingbird	<i>Tyrannus vociferans</i>	Cup nests in trees in savannahs and other open habitats.	25–74 feet	April through June; double brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 14 days.	75	30–75	15–30
Western Kingbird	<i>Tyrannus verticalis</i>	Cup nests in trees and artificial structures (e.g., power poles) in variety of open habitats.	13–55 feet	April through June; double brood.	Clutch incubated for 12–14 days by both sexes; altricial young fledge at 13–19 days.	75	30–75	15–30

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Loggerhead Shrike	<i>Lanius ludovicianus</i>	Cup nests in dense shrubs near grasslands and other open habitats.	3–8 feet	February through June; two or three broods.	Clutch incubated for 14–16 days by female while male provisions her; altricial young fledge at 17–21 days.	75	30–75	15–30
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	Cup nests in dense shrubs and small trees in dense riparian areas.	1–3 feet	April through August; double brood.	Clutch incubated for approximately 14 days by both sexes; altricial young fledge at 10–12 days.	500	CR	CR
Arizona Bell's Vireo	<i>Vireo bellii arizonae</i>	Cup nests in dense shrubs and small trees in dense riparian areas.	1–3 feet	April through August; double brood.	Clutch incubated for approximately 14 days by both sexes; altricial young fledge at 10–12 days.	500	CR	CR
Cassin's Vireo	<i>Vireo cassinii</i>	Cup nests in a trees or shrubs in oak or oak-coniferous or mixed riparian woodland.	5–35 feet	April through July; single brood.	Clutch incubated for approximately 15 days by both sexes; altricial young fledge at 13 days.	75	30–75	15–30
Hutton's Vireo	<i>Vireo huttoni</i>	Cup nests on a twig forks in oaks and other trees along streams and canyons.	3–45 feet	March thorough June; single or double brood.	Clutch incubated for 14–16 days by both sexes; altricial young fledge at approximately 14 days.	75	30–75	15–30
Warbling Vireo	<i>Vireo gilvus</i>	Cut nests high in trees in mature oak woodlands and mixed deciduous forests.	20–60 feet	May through July; double brood.	Clutch incubated for 12–13 days by both sexes; altricial young fledge at approximately 14 days.	75	30–75	15–30
Gray Vireo	<i>Vireo vicinior</i>	Nests in thorn scrub or pinyon-juniper woodland, low in thorny or twiggy shrub or tree.	2–8 feet	Mid-April through mid-August	Clutch incubated 13-14 days by both sexes; altricial young fledge at 13-14 days.	75	30–75	15–30

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Gray Jay	<i>Perisoreus canadensis</i>	Cup nests in shrubs or trees in coniferous forests and sometimes oak woodlands.	5–30 feet	March through July; single brood.	Clutch is incubated for 16–18 days; altricial young fledge at approximately 15 days.	75	30–75	15–30
Steller's Jay	<i>Cyanocitta stelleri</i>	Cup nests in trees or shrubs in coniferous or mixed hardwood forests or other woodlands.	7–16 feet	April through June; likely single brood.	Clutch incubated for approximately 16 days by female while male provisions her; altricial young fledge at 18 days.	75	30–75	15–30
Western Scrub-jay	<i>Aphelocoma californica</i>	Platform nests in shrubs, trees, bushes or vine tangles in a wide variety of habitats, including oak woodlands, savannah, agricultural, and suburban.	2–50 feet	March through June; single brood.	Clutch incubated for 15–17 days by female while male provisions her; altricial young fledge at 18 days.	75	30–75	15–30
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	Cup nests in trees in ponderosa-pine forest.	3–115 feet	Mid-March through late June; single brood.	Clutch incubated 17 days by female, male provisions female; altricial young fledge at 21–22 days.	75	30–75	15–30
Clark's Nutcracker	<i>Nucifraga columbiana</i>	Cup nests in pines, junipers, and firs in mountain coniferous forests.	8–45 feet	February through August; single brood.	Clutch incubated for 16–18 days by both sexes; altricial young fledge at approximately 22 days.	75	30–75	15–30
Yellow-billed Magpie	<i>Pica nuttallii</i>	Platform nests in oak trees and occasionally other trees in savannah.	30–80 feet	February through July; single brood.	Clutch incubated for 16–18 days by female while male provisions her; altricial young fledge at approximately 30 days.	75	30–75	15–30

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American Crow	<i>Corvus brachyrhynchos</i>	Platform nests in variety of large trees, usually near the trunk, and artificial structures in a wide variety of habitats.	10–70 feet	February through July; single brood.	Clutch incubated for approximately 18 days by female and possibly helpers; altricial young fledge at 35 days.	50	30–50	15–30
Common Raven	<i>Corvus corax</i>	Platform nests on sheltered rock ledges or in forks of large trees and artificial structures in a wide variety of habitats.	45–80 feet	February through July; single brood.	Clutch incubated for 20–21 days by female while male provisions her; altricial young fledge at 35–42 days.	50	30–50	15–30
Western Bluebird	<i>Sialia mexicana</i>	Cavities in woodland clearings, savannahs, and other open habitats.	4–48 feet	April through June; double brood.	Clutch incubated for 13–14 days by female; altricial young fledge at approximately 20 days.	50	15–50	10–15
Townsend's Solitaire	<i>Myadestes townsendi</i>	Cup nests on ground usually on cutbanks and other slopes in mountain coniferous forests.	0–12 feet	April through June; single or double brood.	Clutch incubated for 11–14 days by female; altricial young fledge at 10–14 days.	75	30–75	15–30
Swainson's Thrush	<i>Catharus ustulatus</i>	Cup nests in dense shrubs, often in riparian woodlands and mixed coniferous forests.	2–20 feet	April through August; single or (rarely) double brood.	Clutch incubated for 10–13 days by female; altricial young fledge after 10–12 days.	75	30–75	15–30
Hermit Thrush	<i>Catharus guttatus</i>	Cup nests in dense shrubs variety of forests and woodlands.	2–10 feet	June through July; single or double brood.	Clutch incubated for 12–13 days by female; altricial young fledge at 12–13 days.	75	30–75	15–30
American Robin	<i>Turdus migratorius</i>	Cup nests in trees or shrubs, ledges of buildings, or in a tree forks in variety of open habitats.	3–25 feet	May through July; two or three broods.	Clutch incubated for 11–14 days by female; altricial young fledge at 14–16 days.	75	30–75	15–30

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Varied Thrush	<i>Ixoreus naevius</i>	Cup nests on horizontal branches of trees in moist coniferous forests.	5–20 feet	April through August; double brood.	Clutch incubated for approximately 14 days by female; altricial young fledge at 13–15 days.	75	30–75	15–30
Horned Lark	<i>Eremophila alpestris</i>	Scrapes in a small hollow usually sheltered by plant tufts in grasslands and other open habitats.	Ground	February through August; two or three broods.	Clutch incubated for 10–14 days by female; altricial young fledge at 9–12 days.	75	30–75	15–30
Purple Martin	<i>Progne subis</i>	Cavities in trees in mountain forests, particularly burned areas with snags.	10–34 feet	April through August; single brood	Clutch incubated for 15–18 days by the female; altricial young fledge at 24–31 days.	75	30–75	15–30
Tree Swallow	<i>Tachycineta bicolor</i>	Cavities in open habitats, such as grasslands or wetlands with dead standing trees; usually near water.	10–16 feet	April through August; double brood.	Clutch is incubated for 13–16 days; altricial young fledge at 16–20 days.	50	30–50	15–30
Violet-green Swallow	<i>Tachycineta thalassina</i>	Cavities or occasionally on cliffs or banks in deciduous, coniferous, and mixed woodlands.	9–17 feet	April through August; single brood.	Clutch is incubated for 13–15 days; altricial young fledge at 16–24 days.	50	30–50	15–30
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	Cavities on a steep slope or use crevices and holes in bridges and buildings.	Ground/cliff	April through June; single brood.	Clutch incubated for 15–16 days by female; altricial young fledge at 18–21 days.	75	30–75	15–30
Bank Swallow	<i>Riparia riparia</i>	Cavities in sandy banks or cliffs along rivers.	Ground/cliff	May through July; single brood.	Clutch incubated for 12–16 days by both sexes; altricial young fledge at 18–24 days.	100	CR	CR

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Barn Swallow	<i>Hirundo rustica</i>	Cup nests often on buildings and bridges in open habitats near water.	6–40 feet	April through July; double brood.	Clutch incubated for 14–16 days by both sexes; altricial young fledge at 17–24 days.	50	30–50	15–30
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Closed mud nests often on cliff faces, buildings, or bridges in open habitats near water.	5 feet and higher	April through June; double brood.	Clutch incubated for 12–14 days by both sexes; altricial young fledge at approximately 23 days.	50	30–50	15–30
Mountain Chickadee	<i>Poecile gambeli</i>	Cavities in trees in coniferous mountain forests.	16–50 feet	April through August; single or double brood.	Clutch is incubated for 14 days; altricial young fledge at 20 days.	50	15–50	10–15
Chestnut-backed Chickadee	<i>Poecile rufescens</i>	Cavities trees in coniferous forests and deciduous woodlands.	0–80 feet	March through July; single or (rarely) double brood.	Clutch is incubated for 12–14 days by female; altricial young fledge at 18–21 days.	50	15–50	10–15
Oak Titmouse	<i>Baeolophus inornatus</i>	Cavities in trees in oak woodlands.	2–40 feet	March through June; single brood.	Clutch incubated for 14–16 days by female; altricial young fledge at 17 days.	50	15–50	10–15
Bushtit	<i>Psaltiriparus minimus</i>	Pendulous nests in trees and shrubs in a variety of habitats.	3–98 feet	February through June; double brood.	Clutch incubated for 12–13 days by both sexes; altricial young fledge at 14–15 days.	50	30–50	15–30
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Cavities in trees in coniferous forests and mixed woodlands.	5–40 feet	April through July; single or (rarely) double brood.	Clutch incubated for approximately 12 days by female while male provisions her; altricial young fledge at 18–21 days.	75	30–75	15–30
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Cavities in trees in deciduous woodlands and mixed coniferous forests.	1–50 feet	March through June; single brood.	Clutch incubated for 12–14 days by female while male provisions her; altricial young fledge at 14–16 days.	50	15–50	10–15

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Pygmy Nuthatch	<i>Sitta pygmaea</i>	Cavities in dead trees or dead portions of trees in long-needled pine forests.	20–70 feet	May through July; single or double brood.	Clutch incubated for 15–16 days by female while male provisions her; altricial young fledge at 20–21 days.	75	30–75	15–30
Brown Creeper	<i>Certhia americana</i>	Cup nests concealed behind loose bark, in crevices on a trees in coniferous forests and mixed coniferous forests..	5–15 feet	May through July; single brood.	Clutch incubated for 15–18 days by female while male provisions her; altricial young fledge at 21 days.	75	30–75	15–30
Rock Wren	<i>Salpinctes obsoletus</i>	Cavities on rocky slopes	Ground/cliff	March through June; double or triple brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 14–16 days.	75	30–75	15–30
Canyon Wren	<i>Catherpes mexicanus</i>	Cup nests in rock crevices or ledges in rocky habitats.	Ground/cliff	March through July; double brood.	Clutch incubated for 12–18 days by female; altricial young fledge at approximately 15 days.	75	30–75	15–30
Bewick's Wren	<i>Thryomanes bewickii</i>	Cavities in trees, brush, or between rocks in open woodlands and shrubby areas.	0–20 feet	March through July; double or triple brood.	Clutch incubated for approximately 14 days by female while male provisions her; altricial young fledge at approximately 14 days.	75	30–75	15–30
House Wren	<i>Troglodytes aedon</i>	Cavities in shrubby cover and thickets in open woodlands and hedgerows.	0–20 feet	April through July; double brood.	Clutch incubated for 13–15 days by female; altricial young fledge at 12–18 days.	50	30–50	15–30
Pacific Wren	<i>Troglodytes pacificus</i>	Cavities or crevices in logs, stumps, root balls, or trees in variety of forests.	0–10 feet	March through August; single or double brood.	Clutch is incubated for 14–17 days by female; altricial young fledge at approximately 19 days.	75	30–75	15–30

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Marsh Wren	<i>Cistothorus palustris</i>	Domed nests over the water in tall rushes and marsh grasses in wetland habitats.	1–5 feet	March through July; double or triple brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 13–15 days.	75	30–75	15–30
American Dipper	<i>Cinclus mexicanus</i>	Domed nests in crevices in rocks, logs, bridges, or other protected areas immediately adjacent to water.	0–30 feet	March through August; single or double brood.	Clutch is incubated for approximately 16 days by female; altricial young fledge at 18–25 days.	75	30–75	15–30
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Hanging nests woven onto conifer twigs in coniferous forests and mixed woodlands.	6–50 feet	May through August; single or double brood.	Clutch is incubated for 14–15 days by female; altricial young fledge at 16–19 days.	75	30–75	15–30
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Cup nests in trees in coniferous woodlands.	4–100 feet	May through July; single brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 16 days.	75	30–75	15–30
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	Cup nests in trees or shrubs in a variety of habitats from shrublands to mature forests.	3–80 feet	April through July; double brood.	Clutch incubated for approximately 15 days by both sexes; altricial young fledge at 12–13 days.	75	30–75	15–30
Coastal California Gnatcatcher	<i>Poliophtila californica californica</i>	Cup nests in coastal sage scrub and chaparral.	2–3 feet	February through August; double brood.	Clutch incubated for approximately 14 days by both sexes; altricial young fledge at 15–16 days.	500	CR	CR
Wrentit	<i>Chamaea fasciata</i>	Cup nests in coastal sage scrub and chaparral.	1–4 feet	March through July; double brood.	Clutch incubated for 15–16 days by both sexes; altricial young fledge at 15–16 days.	75	30–75	15–30

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Northern Mockingbird	<i>Mimus polyglottos</i>	Cup nests in shrubs and trees in variety of habitats, including woodlands and in developed areas.	3–10 feet	March through July; double or triple brood.	Clutch incubated for 11–14 days by female; altricial young fledge at 12–14 days.	75	30–75	15–30
Sage Thrasher	<i>Oreoscoptes montanus</i>	Cup nests in low shrubs in sagebrush habitat.	2–3 feet	April through August; single or double brood.	Clutch is incubated for 13–17 days; altricial young fledge at approximately 11 days.	75	30–75	15–30
Le Conte's Thrasher	<i>Toxostoma lecontei</i>	Cup nests in cholla or a low tree, in desert areas with shrubby growth.	2–8 feet	February through June; double or triple brood.	Clutch incubated for 14–20 days by both sexes; altricial young fledge at 14–17 days.	75	30–75	15–30
California Thrasher	<i>Toxostoma redivivum</i>	Cup nests in low trees or shrubs in sage scrub and chaparral.	2–4 feet	February through July; double brood.	Clutch incubated for approximately 14 days by both sexes; altricial young fledge at 12–14 days.	75	30–75	15–30
Bendire's Thrasher	<i>Toxostoma bendirei</i>	Cup nests in shrubs, cacti, or trees.	2–5 feet	Late February through April; single, double, or triple brood.	Clutch incubated 12–14 days by both parents; altricial young fledge at 12–13 days.	75	30–75	15–30
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Cup nests in forks of trees in riparian or redwood forests.	5–50 feet	June through August; single or double brood.	Clutch is incubated for 12–14 days; altricial young fledge at 16–18 days	75	30–75	15–30
Phainopepla	<i>Phainopepla nitens</i>	Cup nests in trees in desert scrub and coastal chaparral.	6–11 feet	Late February—desert; April through June—coastal; double brood.	Clutch incubated for 14–15 days by both sexes; altricial young fledge at 18–19 days.	75	30–75	15–30

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Orange-crowned Warbler	<i>Oreothlypis celata</i>	Cup nests on the ground or in crevices near ground in a variety of habitats, often where woodland and chaparral habitats meet.	Ground	April through July; single or double brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 12–13 days.	75	30–75	15–30
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	Cup nests on ground concealed in bushes or small trees in woodland edges or shrubby areas.	Ground	May through July; single brood.	Clutch incubated for 11–12 days by female; altricial young fledge at 11 days.	75	30–75	15–30
Yellow Warbler	<i>Setophaga petechia</i>	Cup nests in trees or shrubs in shrubby growth in riparian areas.	2–12 feet	April through July; single brood.	Clutch incubated for 11–12 days by female; altricial young fledge at days.	75	30–75	15–30
Yellow-rumped Warbler	<i>Setophaga coronata</i>	Cup nests in trees in coniferous woodlands.	4–50 feet	April through July; single or (rarely) double brood.	Clutch incubated for 12–13 days by female; altricial young fledge at 12–14 days.	75	30–75	15–30
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	Cup nests in trees or shrubs in open woodlands in mountainous areas.	8–35 feet	May through July; single or double brood.	Clutch incubated by female; young are altricial. Length of incubation period and age at fledging undocumented.	75	30–75	15–30
Hermit Warbler	<i>Setophaga occidentalis</i>	Cup nests high in trees in coniferous forests	20–40 feet	May through July; single brood.	Clutch incubated for approximately 12 days by both sexes; altricial young fledge at 8–10 days.	75	30–75	15–30

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	Cup nests in low thick shrub in riparian woodlands and coniferous or mixed forests.	1–5 feet	May through July; single brood.	Clutch incubated for 11–13 days by female; altricial young fledge at 8–10 days.	75	30–75	15–30
Common Yellowthroat	<i>Geothlypis trichas</i>	Cup nests in reeds and other wetland vegetation over water or near water.	1–3 feet	April through July; single brood.	Clutch incubated for approximately 12 days by female; altricial young fledge at 9–10 days.	75	30–75	15–30
Wilson's Warbler	<i>Cardellina pusilla</i>	Cup nests on ground, hidden by vegetation in shrub habitats in forests and chaparral.	Ground	April through June; single or (rarely) double brood.	Clutch incubated for 11–13 days by female; altricial young fledge at 10–11 days.	75	30–75	15–30
Yellow-breasted Chat	<i>Icteria virens</i>	Cup nests in a dense shrub or tangle in thick riparian vegetation.	1–8 feet	April through July; single or (rarely) brood.	Clutch incubated for 11–12 days by female; altricial young fledge at 8–11 days.	75	30–75	15–30
Western Tanager	<i>Piranga ludoviciana</i>	Cup nests high in trees on outer branches in coniferous and mixed hardwood forests.	8–75 feet	May through July; single brood.	Clutch incubated for approximately 13 days by female; altricial young fledge at 10–11 days.	75	30–75	15–30
Green-tailed Towhee	<i>Pipilo chlorulus</i>	Cup nests in or at base of low shrubs in chaparral and disturbed (low growth) forest habitats.	0–2 feet	April through August; single or double brood.	Clutch incubated for 11–13 days by female; altricial young fledge at 11–14 days.	75	30–75	15–30
Spotted Towhee	<i>Pipilo maculatus</i>	Cup nests usually on the ground or very low in bushes shrubby habitats.	2–12 feet	April through July; single or double brood.	Clutch incubated for 12–13 days by female; altricial young fledge at approximately 9 days.	75	30–75	15–30

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
California Towhee	<i>Melospiza crissalis</i>	Cup nests in shrubs or small trees in brushy habitats.	4–12 feet	March through July; double or triple brood.	Clutch incubated for approximately 14 days by female; altricial young fledge at approximately 10 days.	75	30–75	15–30
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	Cup nests at the base of a grass clumps, in dry rocky areas with sparse undergrowth.	0–2 feet	April through June; single or double brood.	Clutch incubated for 11–13 days by female; altricial young fledge at 9 days.	75	30–75	15–30
Chipping Sparrow	<i>Spizella passerina</i>	Cup nests in trees or shrubs in open woodlands.	3–20 feet	April through July; double brood.	Clutch incubated for 11–14 days by female; altricial young fledge at 9–12 days.	75	30–75	15–30
Black-chinned Sparrow	<i>Spizella atrogularis</i>	Cup nests in shrubs in chaparral habitat.	1–3 feet	April through August; single brood.	Clutch incubated for 12–13 days by female; altricial young fledge at approximately 10 days.	75	30–75	15–30
Lark Sparrow	<i>Chondestes grammacus</i>	Cup nests usually in scrapes on ground in open grasslands, or cup nests in herbaceous or woody shrubs.	0–9 feet	April through July; double brood.	Clutch incubated for 11–13 days by female; altricial young fledge at 9–10 days.	75	30–75	15–30
Black-throated Sparrow	<i>Amphispiza bilineata</i>	Cup nests in thorny shrubs or cactus in chaparral or desert habitats.	1 foot	April through June; single or double brood.	Clutch incubated for 12–13 days by female; altricial young fledge at approximately 9.5 days.	75	30–75	15–30
Sage Sparrow	<i>Artemisiospiza belli</i>	Cup nests in thick bushes in chaparral and desert habitats.	1 foot	March through June; double brood.	Clutch incubated for 10–16 days by female; altricial young fledge at 9–10 days.	75	30–75	15–30

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
Bryant's Savannah Sparrow	<i>Passerculus sandwichensis alaudinus</i>	Cup nests on ground in dense, moist grasslands, ruderal vegetation, or saltmarsh vegetation.	Ground	April through July; single or double brood.	Clutch incubated for 10–13 days; altricial young fledge at 7–14 days.	75	30–75	15–30
Belding's Savannah Sparrow	<i>Passerculus sandwichensis beldingi</i>	Cup nests on ground in dense, moist grasslands, ruderal vegetation, or saltmarsh vegetation.	Ground	April through July; single or double brood.	Clutch incubated for 10–13 days; altricial young fledge at 7–14 days.	75	CR	CR
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Ground nest at the base of bunchgrass or other vegetation in grasslands.	Ground	April through July; double or triple brood.	Clutch incubated for 11–12 days by female; altricial young fledge after 9 days.	75	30–75	15–30
Song Sparrow	<i>Melospiza melodia</i>	Cup nests in low grass and shrubs or thickets in a variety of forest, shrub, grassland, marsh, and riparian habitats.	1–3 feet	March through July; double, triple, or quadruple brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 10 days.	75	30–75	15–30
Suisun Song Sparrow	<i>Melospiza melodia maxillaris</i>	Cup nests in low grass and shrubs or thickets in a variety of forest, shrub, grassland, marsh, and riparian habitats.	1–3 feet	March through July; double, triple, or quadruple brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 10 days.	75	30–75	15–30
Alameda Song Sparrow	<i>Melospiza melodia pusillula</i>	Cup nests in low grass and shrubs or thickets in a variety of forest, shrub, grassland, marsh, and riparian habitats.	1–3 feet	March through July; double, triple, or quadruple brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 10 days.	75	30–75	15–30

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
San Pablo Song Sparrow	<i>Melospiza melodia samuelis</i>	Cup nests in low grass and shrubs or thickets in a variety of forest, shrub, grassland, marsh, and riparian habitats.	1–3 feet	March through July; double, triple, or quadruple brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 10 days.	75	30–75	15–30
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	Cup nests in depressions on the ground in shrubby growth at forest edges, clearings; often near wet areas	Ground	May through July; double brood.	Clutch incubated for 13–14 days by female; altricial young fledge at 10–12 days.	75	30–75	15–30
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	Cup nests on ground or in shrubs or small trees in coastal or mountain chaparral and mountain forests.	0–5 feet	May through September; double or triple brood.	Clutch incubated for 9–15 days; altricial young fledge at 9–11 days	50	30–50	15–30
Dark-eyed Junco	<i>Junco hyemalis</i>	Cup nests in depressions on the ground among tree roots or brush in variety of woodland habitats; also on building ledges or in trees.	Ground, but up to 8 feet on ledges or trees	April through July; double or triple brood.	Clutch incubated for 12–13 days by female; altricial young fledge at 10–13 days.	50	30–50	15–30
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	Cup nests in trees or shrubs in thickets, under trees along streams in riparian woodlands or coniferous or mixed forests near edges.	6–12 feet	April through July; single brood.	Clutch incubated for 12–13 days by both sexes; altricial young fledge at 12 days.	75	30–75	15–30

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
Blue Grosbeak	<i>Guiraca caerulea</i>	Cup nests small trees, shrubs, or other low vegetation, usually near open areas in desert, chaparral, savannah, and forest edge habitats.	<1–16 feet	April through August; single or double brood.	Clutch incubated for 11–12 days by female; altricial young fledge at 9–13 days.	75	30–75	15–30
Lazuli Bunting	<i>Passerina amoena</i>	Cup nests in low thick shrubby riparian or chaparral habitat.	1–10 feet	May through July; double brood.	Clutch incubated for approximately 12 days by female; altricial young fledge at 10–15 days.	75	30–75	15–30
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Cup nests in cattails, bulrushes, and other marsh vegetation or in shrubs in grasslands and shrubby habitats.	1–13 feet	March through June; double brood.	Clutch incubated for 10–12 days by female; altricial young fledge at 10–11 days.	75 350 (Kern Red-winged Blackbird)	30–75 200–350 (Kern Red-winged Blackbird)	15–30 100–200 (Kern Red-winged Blackbird)
Tricolored Blackbird	<i>Agelaius tricolor</i>	Cup nests in cattails and bulrushes in marshes and shrubby areas in uplands and agricultural areas. Colonial nester.	1–5 feet	April through June; double brood.	Clutch incubated for approximately 11 days by female; altricial young fledge at 13 days.	350	CR	CR
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	Cup nests cattails or other emergent vegetation over water in marshes with thick vegetative growth. Colonial nester.	2–3 feet	May through June; single brood.	Clutch incubated for 10–13 days by female; altricial young fledge at 9–12 days old	350	200–350	100–200
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	Cup nests high in trees or shrubs near water in agricultural or suburban/urban areas.	8–43 feet	March through July; single or double brood.	Clutch incubated for 12–13 days by female; altricial young fledge at approximately 13 days.	50	30–50	15–30

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
Western Meadowlark	<i>Sturnella neglecta</i>	Domed nests on ground in open grasslands.	Ground	March through June; double brood.	Clutch incubated for 13–15 days by female; altricial young fledge at 10–12 days.	75	30–75	15–30
Hooded Oriole	<i>Icterus cucullatus</i>	Closed cup nests high in trees (often palm trees) or shrubs, often in riparian habitat and in suburban areas.	10–45 feet	April through August; double or triple brood.	Clutch incubated for 12–14 days by female; altricial young fledge at approximately 14 days.	75	30–75	15–30
Bullock's Oriole	<i>Icterus bullockii</i>	Pensile cup nests in twig fork of trees in riparian and oak woodlands.	6–15 feet	April through July; single brood.	Clutch incubated for approximately 14 days by female; altricial young fledge at approximately 14 days.	75	30–75	15–30
Pine Grosbeak	<i>Pinicola enucleator</i>	Cup nests near the end of horizontal tree branches in coniferous forests.	16–35 feet	May through August; single brood.	Clutch incubated for 13–14 days by female; altricial young fledge at approximately 14 days.	75	30–75	15–30
Purple Finch	<i>Haemorhous purpureus</i>	Cup nests high in trees well hidden by foliage, in coniferous forests and woodlands.	5–60 feet	April through June; double brood.	Clutch incubated for approximately 13 days by female; altricial young fledge at approximately 14 days.	75	30–75	15–30
House Finch	<i>Haemorhous mexicanus</i>	Cup nests in trees, building ledges, and other locations in urban/suburban, agriculture, woodlands, desert, and chaparral habitats.	5–7 feet	March through July; double or triple brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 14–16 days.	50	15–30	10–15
Red Crossbill	<i>Loxia curvirostra</i>	Loose cup constructed near the end of horizontal branch in coniferous forests.	6–60 feet	February through June; single brood.	Clutch incubated for 12–16 days by female; altricial young fledge at 17–22 days.	75	30–75	15–30

Common Name	Scientific Name	Nest Location, Substrate, and Habitat	Vertical Height	Peak Breeding Season/Number of Broods per Season	Incubation Duration/Chick-rearing Duration	Standard Buffer* (feet)	Medium to High Disturbance Category Buffer (feet)	Low to Medium Disturbance Category Buffer (feet)
Pine Siskin	<i>Spinus pinus</i>	Cup nest constructed on conifer or hardwood in coniferous or mixed hardwood forests.	3–50 feet	April through July; single or double brood.	Clutch incubated for approximately 13 days; altricial young fledge at 14–15 days.	75	30–75	15–30
Lesser Goldfinch	<i>Spinus psaltria</i>	Cup nests in trees and shrubs in a variety of open habitats including oak woodlands, mixed coniferous forests, riparian woodlands, chaparral, agricultural and suburban habitats.	3–36 feet	April through July; single or double brood.	Clutch incubated for approximately 12 days by female; altricial young fledge at 11 days.	75	30–75	15–30
Lawrence's Goldfinch	<i>Spinus lawrencei</i>	Cup nests in scattered trees in oak woodlands and savannahs.	3–40 feet	April through July; single or (rarely) double brood	Clutch incubated for 12–13 days by female; altricial young fledge at approximately 11 days.	75	30–75	15–30
American Goldfinch	<i>Spinus tristis</i>	Cup nests in a variety of shrubs in variety of open habitats including ruderal fields and grasslands with shrub component nearby.	3–10 feet	April through August; single or double brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 11–17 days.	75	30–75	15–30
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Cup nests in fir or other conifers in coniferous forests.	30–60 feet	June through August; single or (rarely) double brood.	Clutch incubated for 12–14 days by female; altricial young fledge at 13–14 days.	75	30–75	15–30

^a Consultation recommended to perform work within the standard buffer. Confer internally on avoidance and minimization approach.

^b The 1,320-foot (0.25-mile) buffer applies to the highest noise level category (90 dB or greater measured at 50 feet). Smaller buffers may be appropriate based on the noise levels of the project. Biologists should follow the methodology found in *Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California* (U.S. Fish and Wildlife Service 2006) to determine the noise level and appropriate buffer for their specific project.

ATTACHMENT D

SAN FRANCISCO DUSKY-FOOTED WOODRAT NEST RELOCATION PLAN

FINAL
San Francisco Dusky-Footed Woodrat Relocation Plan
for the East Bay Regional Park District
Routine Maintenance Activities
Routine Maintenance Agreement No. 1600-2016-0269-R3 and
Minor Amendment

September 2020

Introduction

Within various waterbodies and adjacent upland habitats, the District performs routine maintenance activities designed to maintain existing facilities and structures and improve watersheds and coastal shoreline conditions. Routine maintenance activities are defined in Routine Maintenance Agreement (RMA) (No. 1600-2016-0269-R3) and include activities such as replacement of culverts, repairing or constructing new head and tail walls, installation of energy dissipaters, installation or maintenance of articulated fords, bank stabilization, and dredging of silt basins, ponds and lakes. Although these activities consist of minor construction and maintenance of existing structures or facilities that are mostly small in scale, they have the potential to adversely affect natural resources (Bobzien and Wilson 2017). In September 2016, the California Department of Fish and Wildlife (CDFW) reissued the RMA with the District to perform routine maintenance activities with specific terms and conditions to protect natural resources. This includes the implementation of avoidance and minimization measures to address potential adverse effects that the project(s) could have on fish and wildlife including San Francisco dusky-footed wood rat (*Neotoma fuscipes annectens*).

San Francisco dusky-footed woodrat nests or nest complexes are occasionally located directly in work zones of routine maintenance activities. In most instances, nests can be avoided during work activities through establishment of an adequate work buffer around the nests and associated habitat. However, instances will occur where impacts to nests are unavoidable to complete routine maintenance project work. In light of this, in August 2020 the District was issued a Minor Amendment to the RMA allowing woodrat nest relocation that includes the following condition:

For projects occurring within suitable habitat for San Francisco dusky-footed woodrat (Neotoma fuscipes annectens), a qualified biologist or biological monitor shall survey the worksite for nests within two weeks of the proposed activities. If nests of the dusky-footed woodrat are found, the biological monitor, in consultation with the qualified biologist, shall determine an appropriate buffer distance based on the type of work being conducted.

Prior to the initiation of any projects that may disturb woodrat nests, Permittee shall submit a Woodrat Relocation Plan for CDFW review and written approval. At a minimum, the plan shall include: (1) Pre-construction nest monitoring protocols to determine occupancy of nests; (2) methods of nest dismantlement, including timing, duration, and any variances in procedures between occupied and unoccupied houses; (3) placement of artificial shelters for occupied nests; and (4) post-construction monitoring and reporting methods.

If avoidance of woodrat nest(s) is not possible on a project site, Permittee shall request written permission from CDFW to conduct a phased removal of the nest(s) according to the approved Woodrat Relocation Plan. No woodrat nests may be removed without written authorization from CDFW and the qualified biologist removing a nest must be approved for the task by CDFW. If any San Francisco dusky-footed woodrats are detected within the vicinity of the work site during construction, all work shall cease in the vicinity of the individuals until they move out of the area of active construction.

This document serves as the Woodrat Relocation Plan and was approved by CDFW on September 30, 2020.

San Francisco Dusky-Footed Woodrat

The San Francisco dusky-footed woodrat is a California Species of Special Concern that occurs in many District parks and in the San Francisco Bay Area. It is one of 11 subspecies of the dusky-footed woodrat (*Neotoma fuscipes*), a species that range from Oregon to Baja California (Carraway and Verts 1991).

Dusky-footed woodrats are mostly nocturnal and primarily found in closed canopy, wooded habitats with a dense understory (Vestal 1938, Linsdale and Tevis 1951, Carraway and Verts 1991). These rodents are known for their often large and complex nest structures built into the base of trees, shrubs, hills, and rocks, or occasionally elevated in tree limbs. These nests structures are constructed with sticks, leaves, shredded grass, and other vegetation which may include different compartments for food storage, reproduction, and shelter. Dusky-footed woodrats feed on a wide variety of vegetation, including oaks (*Quercus* spp.), willows (*Salix* spp.), California blackberry (*Rubus ursinus*), and poison oak (*Toxicodendron diversilobum*) (Vestal 1938, Linsdale and Tevis 1951, Carraway and Verts, 1991). Woodrats are prey for snakes, owls, bobcats (*Lynx rufus*), coyotes (*Canis latrans*) and near homes, domestic cats and dogs. Research using remote trail cameras revealed that bobcats and especially gray fox (*Urocyon cinereoargenteus*) frequently prey on San Francisco dusky-footed woodrats and the majority of predation events were nocturnal (Bobzien unpubl. data 2018).

Estimates of territory sizes and home ranges differ between subspecies of woodrats and habitats. Based on radio-telemetry of dusky-footed woodrats along a riparian area of the Santa Ynez Valley in southern California, Gerber et al. (2003) measured an average territory radius around a nest as 30m (roughly 100ft), with a core area radius of 15m

(roughly 50ft). Innes et al. (2009) measured home ranges (minimum convex polygon, MCP) of between 0.17-7.38 hectare (ha, 0.42-18.23 acres [ac]) in mixed-conifer forests of the Sierra Nevada, while Cranford (1977) measured home ranges of 0.23ha (0.58ac) and 0.17ha (0.48ac) for male and female woodrats, respectively. Innes et al. (2009) found that home ranges of woodrats overlapped those of multiple, neighboring woodrats of both sexes, whereas “core areas” showed little overlap between same-sex neighbors.

Dusky-footed woodrats have two reproductive periods each year with pups appearing primarily in April and to a lesser extent in August. Woodrats typically bear one litter per year (Vestal 1938, Gerber et al. 2003). Their mating system is considered to be polygynous (Innes et al. 2009). Woodrats may occupy multiple nests or houses within a home range concurrently and frequently move among structures. Innes et al. (2009) found that individual woodrats occupied from two to 11 different nests within a home range for a duration of one to 107 days per occupancy. A woodrat nest is typically occupied by one individual at a time (Fargo and Laudenslayer 1999), unless a female is mating with a male or rearing pups. Generally, once a female is pregnant she will exclude the male from her nest (Lindsdale and Tevis 1951). Gestation period ranges from 23 to 38 days and the pup’s eyes remain closed for 15 days (Ingles 1965). Males may share a nest with other females and tend to move greater distances than females (Innes et al. 2009). In any given woodrat population, not all woodrat nests are occupied at the same time; some nests remain vacant for longer periods while some retain occupancy through multiple generations (Lindsdale and Tevis 1951, Laudenslayer and Fargo 1997, Kelly 1989). For example, in a trapping study at 49 woodrat nests, only 19 of the nests met criteria for having a resident animal (Gerber et al. 2003). Dusky-footed woodrats are semi-territorial and their nests are subject to shifting occupancies and vacancies depending on predation, food supply and breeding status of the inhabitants. Mirroring the life history traits noted above, McEachern et al. (2007) showed that genetic differentiation among neighborhoods of dusky-footed woodrats reflected nonrandom patterns consistent with female philopatry and male-biased dispersal. In essence, matrilineal genetic structure characterizes woodrat neighborhoods.

San Francisco Dusky-Footed Woodrat Nest Relocation Plan

Any and all dismantling and relocation efforts would comply with the San Francisco Dusky-Footed Woodrat Relocation Plan detailed below and will be monitored and directed by a qualified biologist. A qualified biologist will be a professional biologist with working knowledge of San Francisco dusky-footed woodrat ecology and habitat requirements, and with demonstrated experience in implementing nest dismantling and relocations on comparable projects. The qualified biologist removing a nest must be approved for the task by CDFW.

Pre-Construction Monitoring

A qualified biologist will survey the work area and a 100-foot buffer for San Francisco dusky-footed woodrat nests within two (2) weeks of the proposed work activities. Nests observed within and/or immediately adjacent to the project work area will have their location mapped via GPS and will be visually inspected by a qualified biologist and classified as one of the following:

- 1) Occupied – nest or nest structure is currently occupied by woodrats (including pups) as determined by direct visual or audible observation of woodrats within or entering/exiting nest during inspection, or observation of sign of current occupation during inspection including any of the following: deliberate placement of new woody material and/or green vegetation on exterior and in interstices between building material, fresh scat, sign of recent feeding (e.g. fresh acorn shells or seed husks), sculpted entrances, or heavily used ‘patios’ outside of main entrances;
- 2) Active – nest or nest structure that may be periodically used but is not currently occupied during inspection as determined by observation of nearby tracks, fresh scat, or older sign (e.g. placement of woody debris) to a lesser degree than an Occupied nest, but lacking evidence of current occupation;
- 3) Inactive – intact nest or nest structure lacking evidence of recent occupation and available to be colonized in the future as determined by lack of maintenance on entrances and ‘patios’, no sign of recent feeding, scat not observed, among other determinations based on inspection of nest or nest structure;
- 4) Degraded – nest or nest structure is in a state of disrepair, is deteriorated, or is otherwise obviously abandoned and no longer maintained.

The qualified biologist will determine if impacts to any nests within the work area are unavoidable and if dismantling and relocation is required. Nests within the work zone classified as either occupied or active that are unavoidable will be dismantled as described below (see Methods of Phased Nest Dismantlement). Nests classified as inactive or degraded that are unavoidable may be removed by the qualified biologist in a single day; however, if evidence of woodrat activity or occupancy is observed at any time during dismantling, dismantling efforts will cease for the day and resumed using phased dismantling. The use of wildlife camera traps and/or fiber optic cameras to verify woodrat activity at specific nests may be used.

Regardless of nest status determination, the following will be implemented:

- Evidence of occupation (or lack thereof) will be documented and photographed by the qualified biologist prior to initiation of dismantling activities or work activities for reporting purposes.
- If nest dismantling and relocation are required, the District will request written permission from CDFW via email to conduct removal and relocation of the nests in accordance with the San Francisco Dusky-Footed Woodrat Nest Relocation Plan described herein.

Methods of Phased Nest Dismantlement

Only as necessary, and to the minimal extent possible, project site vegetation will be removed to provide access to San Francisco dusky-footed woodrat nests. Small amounts of vegetation may be removed by a qualified biologist using hand tools. If significant amounts of vegetation must be removed to access a nest (e.g. dense poison oak, scrub, tree limbs),

contractors with hand tools will remove vegetation with a qualified biologist monitoring the activity. Gas-powered tools will be used as little as possible to reduce disturbance to nests. If contractors are required to remove vegetation, a qualified biologist will provide them with environmental training pertaining to woodrat life history, biology, and general behavior, how they may be encountered, as well as protection measures to follow if they are encountered. Environmental training will be provided prior to any vegetation removal.

Prior to initiation of nest dismantling activities, at least two temporary photo point locations will be established in the work area which provide clear and informative views of nests to be dismantled following vegetation removal. Color photographs will be taken from photo points during each site visit to provide visual documentation of dismantling process.

Over a two-week period, and prior to any construction activities, occupied and/or active nests will be slowly and progressively dismantled in a manner allowing individuals of an occupied nest to gradually move away from the exposed section of the nest. Following removal of vegetation as discussed above, dismantling will take place in a gradual manner with sections of nests being removed every other day until the nest is completely dismantled. This gradual dismantling will ensure that woodrats are allowed ample time to disperse between site visits. Duration of the dismantling and relocation process will be determined by the size of nests and any reconstruction activity of nests that occurs during the dismantling process. There will be no variation in the dismantling and relocation process of nests classified as occupied or active, as occupancy may not be immediately detectable when dismantling begins.

Dismantling will be done using hand tools and, when necessary, by hand. Sufficient personal protective equipment will be used during dismantling activities (Tyvek suits, gloves, N95 masks, etc.). All dismantling activities will be undertaken by a qualified biologist and will occur during daylight hours between 0700 and 1000 hours to reduce the likelihood of predation and to minimize sunlight exposure. Where feasible, nest material, food caches, and/or woody debris removed from existing nests will be salvaged and used to create artificial nest structures in adjacent habitats for dispersing San Francisco dusky-footed woodrats (see below).

Following complete dismantling of the nest, a minimum of two additional surveys will be done to ensure no new nests have been constructed within the work area and no reconstruction activity has taken place at dismantled nest locations, as well as to continue disturbance of prior nest location to discourage reconstruction. The first of these visits will occur within 24 hours of completion of nest dismantling and will continue until no evidence of new construction or reconstruction are observed.

If a San Francisco dusky-footed woodrat individual is observed during any phase described above, the removal of vegetation and/or dismantling of nest will immediately cease until the individual has dispersed on its own to an area where nest dismantling may continue without causing harm to the individual.

If San Francisco dusky-footed woodrat pups are observed during any phase described above, the removal of vegetation and/or dismantling of nest will immediately cease and all activities will be suspended for a period of two to four weeks in order to allow the pups to develop eyesight and become mobile. Any nest material removed that day will be returned to the nest to re-cover the exposed section of nest with pups. After a two- to four-week period, based on the development of the pups, and in agreement with CDFW, the above described procedure will resume.

Establishment of Artificial Shelters

On the same day that nest dismantling begins, a qualified biologist will begin installation of artificial shelters at a ratio of 1:1 per dismantled nest to provide readily accessible refugia for dispersing individuals and to provide alternatives to reconstruction of dismantled nests within the work area. Artificial shelters will be handmade, vented, pine boxes measuring approximately 12-inches square with two internal chambers and an offset entrance. They will be installed slightly below grade and secured using wooden stakes and wire.

Artificial shelters will be installed approximately 50 to 200 feet from the location of the dismantled nest in appropriate habitat that is sufficiently clear of the work area, as similar to that of the dismantled nest as possible, and which contains biologically suitable habitat features (e.g. stands of poison oak, coast live oaks, dense native brush). The location of each artificial shelter will be mapped, photographed, and will be no closer than 20 feet to existing nests. Where feasible, artificial shelters should not be clearly visible from recreational trails or roads.

Prior to initiation of installation of artificial shelters, at least one temporary photo point location will be established which provides clear and informative views of the artificial shelter location. Color photographs will be taken from the photo point during each site visit to provide visual documentation of installation process.

To encourage occupancy of artificial shelters by dispersing individuals, nest material, food caches, and/or woody debris salvaged from dismantled nests will be placed inside of the shelter, along with supplemental food (e.g. rolled oats, wild bird seed, and/or peanut butter). Woody debris from the dismantled nest as well as vegetation removed to gain access to nests will be placed over and around the artificial shelter in a manner such that there is only a single entrance and which encourages occupancy of artificial shelters. The placement of salvaged nest material, food caches, and/or woody debris over the artificial shelter will take place in a phased process, so that material that is incrementally removed from dismantled nests in the work area is placed incrementally at artificial shelters.

Installed artificial shelters will be inspected during each site visit for signs of occupancy as indicated by observation of woodrat individuals, maintenance of a 'patio' or entrance to nest, presence of fresh scat, sign of recent feeding, or tracks in the immediate vicinity of the artificial shelter. Any evidence of occupancy will be documented and photographed for reporting to CDFW.

Post-Construction Monitoring and Reporting

Following completion of routine maintenance projects, a qualified biologist will conduct two post-construction surveys, one within 72 hours and one approximately 4 weeks following project completion, to determine and document San Francisco dusky-footed woodrat activity at the project site and vicinity. Any signs of nest rebuilding or construction of new nests either at dismantled nest locations or elsewhere in the work area and surrounding 100 feet buffer will be documented and photographed for reporting purposes. Installed artificial shelters will also be visited and assessed for occupancy and/or signs of use by woodrats. Any observed sign of occupancy at artificial shelters will be documented and photographed for reporting purposes.

The District will monitor, document, and report the effects on San Francisco dusky-footed woodrats from the vegetation removal, dismantling and relocation of nest structures, placement of artificial shelters, and construction activities associated with routine maintenance projects. This information will be conveyed to CDFW in electronic format via email within two (2) months of completion of routine maintenance project and will include at least the following information:

- Description of routine maintenance project and work boundaries;
- Description of project location habitat and dominant vegetative and hydrologic features;
- Description of dismantled nests, nests left intact, and installed artificial shelters including associated attributes (e.g. individual nest or nest complex, occupancy/use status, habitat type, ground or arboreal, elevation above ground, tree, shrub, or rock nest, etc.) and any reconstruction noted following completion of the routine maintenance project, and photographs clearly showing sign used to determine occupied, active, inactive, or degraded status of each nest;
- Timeline and details of nest efforts and installation of artificial shelter;
- Map of project location showing work dismantling areas, dismantled nests, nests left intact, and installed artificial shelters;
- Photo appendix showing progressive dismantling of nests and installation of artificial shelters.

Information included in reporting documents, along with input from CDFW, will be used by the District to guide and improve the efficacy of future nest dismantling and relocation efforts.

Documenting the Effects to San Francisco Dusky-Footed Woodrat

If at any time during nest dismantling/relocation or work activities an individual is injured or killed or found to be injured or killed, all activities at the work site will immediately cease and CDFW will be notified within two (2) hours. In addition, if any woodrats are detected within the vicinity of the work site during construction, all work will cease in the vicinity until the individual has dispersed out of the vicinity. The District will submit this report to the Department in electronic format via email. A California Natural Diversity

Database field form also will be prepared and submitted to CDFW, documenting each San Francisco dusky-footed woodrat observation.

References

- Bobzien, S. and C. Wilson. 2017. East Bay Regional Park District Biological Assessment on the Effects of Routine Maintenance Activities on Fifteen Federally Listed Species. 544 pp. California Department of Fish and Wildlife. 2016. Streambed Alteration Agreement, Notification No. 1600-2016-0269-R3. Permittee: East Bay Regional Park District.
- Carraway, L.N. and B.J. Verts. 1991. *Neotoma fuscipes*. Mammalian Species 43: 1-10.
- Cranford, J.A. 1977. Home Range and Habitat Utilization by *Neotoma fuscipes* as Determined by Radiotelemetry. Journal of Mammalogy 58(2): 165.
- East Bay Regional Park District (EBRPD). 2013. 2013 Master Plan. Located at <http://www.ebparks.org/about/planning/mp/default.htm>
- _____. 2018. Technical Memorandum – San Francisco Dusky-Footed Woodrat Nest Phased Removal for East Bay Regional Park District’s RT_UC_002 Project, Contra Costa County, California.
- Fargo, R. and W.F. Laudenslayer. 1999. Are House Counts Reliable Estimators of Dusky-footed Woodrat Population Size? 1999 Transactions of the Western Section of the Wildlife Society 35: 71-75.
- Fischer, J. and D.B. Lindenmayer. 2000. An assessment of the published results of animal relocations. Biological Conservation 96 (2000) 1 -11.
- Gerber, L.R., E.W. Seabloom, R.S. Burton, and O.J. Reichman. 2003. Translocation of an imperiled woodrat population: integrating spatial and habitat patterns. Animal Conservation 6: 309-316.
- Ingles, L. 1965. Mammals of the Pacific States: California, Oregon, Washington. Stanford University Press.
- Innes, R.J., D.H. Van Vuren, D.A. Kelt, J.A. Wilson, and M.L. Johnson. 2009. Spatial Organization of Dusky-footed Woodrats (*Neotoma fuscipes*). Journal of Mammalogy, 90(4): 811-818.
- Laudenslayer, W.F. and R.J. Fargo. 1997. Small Nocturnal Mammals in Oak Woodlands: Some Considerations for Assessing Presence and Abundance. USDA Forest Service Gen. Tech. Rep. PSW-GTR-160.
- Linsdale, J.M. and L.P. Tevis. 1951. The dusky-footed woodrat. Berkeley, University of California Press.
- Vestal, E.H. 1938. Biotic relations of the wood rat (*Neotoma fuscipes*) in the Berkeley Hills. J. Mammalogy 19: 1-36.