

Appendix 10A Wildlife Species Lists, Special-status Wildlife Table and Non-listed Wildlife Species Accounts

Appendix 10A Wildlife Species Lists, Special-status Wildlife Table and Non-listed Wildlife Species Accounts

This appendix contains the wildlife species lists, special-status wildlife table, and the species accounts for non-listed wildlife species. The study area for wildlife resources consists of the areas of disturbance under Alternatives 1, 2, and 3 plus a 300-foot-wide buffer zone. For operational impacts only, the study area for wildlife resources also includes the Sacramento River between the RBPP and the Delta. This area is referred to as the operations study area. Project components not included in the study area because they would not result in additional impacts on wildlife resources are offsite commercial quarries that would provide aggregate for dam construction and existing public roads that would provide construction access to the Project. The offsite quarries are existing active locations and the construction access routes are on existing paved or graveled roads and would not be altered for the purposes of Project construction.

10A.1 Wildlife Species Lists

Lists of special-status wildlife species that could be affected by the project were obtained from a search of California Department of Fish and Wildlife's California Natural Diversity Database (CNDDDB) and from U.S. Fish and Wildlife Service's Information, Planning, and Consultation (IPaC) website (U.S. Fish and Wildlife Service 2021). The CNDDDB database search area consisted of the study area and a 5-mile radius around the study area. The CNDDDB results are summarized in Table 10A-1 below. The USFWS IPaC species list was generated from the study area boundaries that were uploaded to the website. The USFWS species list follows Table 10A-1.

Table 10A-1. CNDDDB Results for Wildlife Species in the Study Area for Alternatives 1, 2, and 3 and a 5_Mile Radius^a

Common Name	Scientific Name
American badger	<i>Taxidea taxus</i>
Antioch Dunes anthicid beetle	<i>Anthicus antiochensis</i>
bald eagle	<i>Haliaeetus leucocephalus</i>
bank swallow	<i>Riparia riparia</i>
black-crowned night heron	<i>Nycticorax nycticorax</i>
Blennosperma vernal pool andrenid bee	<i>Andrena blennospermatis</i>
burrowing owl	<i>Athene cunicularia</i>
California linderiella	<i>Linderiella occidentalis</i>

Wildlife Species Lists, Special-status Wildlife Table and Non-listed
Wildlife Species Accounts

Common Name	Scientific Name
California tiger salamander	<i>Ambystoma californiense</i>
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>
Crotch bumble bee	<i>Bombus crotchii</i>
foothill yellow-legged frog	<i>Rana boylei</i>
giant gartersnake	<i>Thamnophis gigas</i>
great blue heron	<i>Ardea herodias</i>
great egret	<i>Ardea alba</i>
greater sandhill crane	<i>Antigone canadensis tabida</i>
hoary bat	<i>Lasiurus cinereus</i>
least Bell's vireo	<i>Vireo bellii pusillus</i>
long-eared myotis	<i>Myotis evotis</i>
Marysville California kangaroo rat	<i>Dipodomys californicus eximius</i>
mountain plover	<i>Charadrius montanus</i>
North American porcupine	<i>Erethizon dorsatum</i>
osprey	<i>Pandion haliaetus</i>
pallid bat	<i>Antrozous pallidus</i>
prairie falcon	<i>Falco mexicanus</i>
San Joaquin pocket mouse	<i>Perognathus inornatus</i>
silver-haired bat	<i>Lasionycteris noctivagans</i>
snowy egret	<i>Egretta thula</i>
Swainson's hawk	<i>Buteo swainsoni</i>
tricolored blackbird	<i>Agelaius tricolor</i>
valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>
vernal pool fairy shrimp	<i>Branchinecta lynchi</i>
vernal pool tadpole shrimp	<i>Lepidurus packardii</i>
western mastiff bat	<i>Eumops perotis californicus</i>
western pond turtle	<i>Emys marmorata</i>
western red bat	<i>Lasiurus blossevillei</i>
western spadefoot	<i>Spea hammondi</i>
western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>
white-faced ibis	<i>Plegadis chihi</i>
white-tailed kite	<i>Elanus leucurus</i>
Wilbur Springs minute moss beetle	<i>Ochthebius reticulatus</i>
yellow warbler	<i>Setophaga petechia</i>
yellow-breasted chat	<i>Icteria virens</i>
Yuma myotis	<i>Myotis yumanensis</i>

^a Portions of these quadrangles occur within the 5-mile radius of the study area: Balls Ferry, Bend, Bird Valley, Dunnigan, Eldorado Bend, Foster Island, Gerber, Gilmore Peak, Glenn, Hamilton City, Hough Springs, Kirkville, Knights Landing, Leesville, Lodoga, Logandale, Los Molinos, Manor Slough, Maxwell, Moulton Weir, Nord, Ord Ferry, Panther Spring, Princeton, Rail Canyon, Red Bank, Red Bluff East, Red Bluff West, Sites, Stone Valley, Sutter Causeway, Taylor Monument, Tuscan Springs, West of Gerber, Wildwood School, Williams, Willows, Zamora.

IPaC Information for Planning and Consultation **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 NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

California



Local offices

Red Bluff Fish And Wildlife Office

☎ (530) 527-3043

📠 (530) 529-0292

10950 Tyler Road
Red Bluff, CA 96080-7762

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📠 (916) 414-6713

IPaC: Explore Location resources

Page 2 of 14

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

NOT FOR CONSULTATION

<https://ecos.fws.gov/ipac/location/3L74ZENL4VHAFLKDXN4EGFVXYA/resources>

2/12/2021

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 species

¹ 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).
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 Red Bluff Fish And Wildlife Office has not enabled species list delivery through IPaC. Please contact them directly to determine which endangered species need to be considered as part of your project.

Red Bluff Fish And Wildlife Office

(530) 527-3043

(530) 529-0292

10950 Tyler Road
Red Bluff, CA 96080-7762

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

Birds

NAME	STATUS
Northern Spotted Owl <i>Strix occidentalis caurina</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake <i>Thamnophis gigas</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander <i>Ambystoma californiense</i> There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt <i>Hypomesus transpacificus</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle <i>Desmocerus californicus dimorphus</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp <i>Branchinecta conservatio</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp <i>Lepidurus packardii</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Colusa Grass <i>Neostapfia colusana</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5690	Threatened
Greene's Tuctoria <i>Tuctoria greenei</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/1573	Endangered
Hairy Orcutt Grass <i>Orcuttia pilosa</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2262	Endangered
Hoover's Spurge <i>Chamaesyce hooveri</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3019	Threatened
Keck's Checker-mallow <i>Sidalcea keckii</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5704	Endangered
Palmate-bracted Bird's Beak <i>Cordylanthus palmatus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1616	Endangered
Slender Orcutt Grass <i>Orcuttia tenuis</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/1063	Threatened

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

¹ 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 habitats 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:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

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](#).

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

Wildlife Species Lists, Special-status Wildlife Table and Non-listed
Wildlife Species Accounts

IPaC: Explore Location resources

Page 8 of 14

BREEDING SEASON (IF A BREEDING
SEASON IS INDICATED FOR A BIRD
ON YOUR LIST, THE BIRD MAY
BREED IN YOUR PROJECT AREA
SOMETIME WITHIN THE
TIMEFRAME SPECIFIED, WHICH IS A
VERY LIBERAL ESTIMATE OF THE
DATES INSIDE WHICH THE BIRD
BREEDS ACROSS ITS ENTIRE
RANGE. "BREEDS ELSEWHERE"
INDICATES THAT THE BIRD DOES
NOT LIKELY BREED IN YOUR
PROJECT AREA.)

<p>Bald Eagle <i>Haliaeetus leucocephalus</i></p> <p>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.</p> <p>https://ecos.fws.gov/ecp/species/1626</p>	Breeds Jan 1 to Aug 31
<p>Burrowing Owl <i>Athene cunicularia</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p> <p>https://ecos.fws.gov/ecp/species/9737</p>	Breeds Mar 15 to Aug 31
<p>California Thrasher <i>Toxostoma redivivum</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Jan 1 to Jul 31
<p>Clark's Grebe <i>Aechmophorus clarkii</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Jan 1 to Dec 31
<p>Common Yellowthroat <i>Geothlypis trichas sinuosa</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p> <p>https://ecos.fws.gov/ecp/species/2084</p>	Breeds May 20 to Jul 31
<p>Golden Eagle <i>Aquila chrysaetos</i></p> <p>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.</p> <p>https://ecos.fws.gov/ecp/species/1680</p>	Breeds Jan 1 to Aug 31

<https://ecos.fws.gov/ipac/location/3L74ZENL4VHAFLKDXN4EGFVXYA/resources>

2/12/2021

Wildlife Species Lists, Special-status Wildlife Table and Non-listed Wildlife Species Accounts

IPaC: Explore Location resources

Page 9 of 14

<p>Lawrence's Goldfinch <i>Carduelis lawrencei</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9464</p>	Breeds Mar 20 to Sep 20
<p>Lewis's Woodpecker <i>Melanerpes lewis</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9408</p>	Breeds Apr 20 to Sep 30
<p>Long-billed Curlew <i>Numenius americanus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/5511</p>	Breeds elsewhere
<p>Mountain Plover <i>Charadrius montanus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/3638</p>	Breeds elsewhere
<p>Nuttall's Woodpecker <i>Picoides nuttallii</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p> <p>https://ecos.fws.gov/ecp/species/9410</p>	Breeds Apr 1 to Jul 20
<p>Oak Titmouse <i>Baeolophus inornatus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9656</p>	Breeds Mar 15 to Jul 15
<p>Rufous Hummingbird <i>Selasphorus rufus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/8002</p>	Breeds elsewhere
<p>Short-billed Dowitcher <i>Limnodromus griseus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9480</p>	Breeds elsewhere
<p>Song Sparrow <i>Melospiza melodia</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds Feb 20 to Sep 5

<https://ecos.fws.gov/ipac/location/3L74ZENL4VHAFLKDXN4EGFVXYA/resources>

2/12/2021

<p>Spotted Towhee <i>Pipilo maculatus clementae</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p> <p>https://ecos.fws.gov/ecp/species/4243</p>	Breeds Apr 15 to Jul 20
<p>Tricolored Blackbird <i>Agelaius tricolor</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/3910</p>	Breeds Mar 15 to Aug 10
<p>Whimbrel <i>Numenius phaeopus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9483</p>	Breeds elsewhere
<p>Willet <i>Tringa semipalmata</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds elsewhere
<p>Wrentit <i>Chamaea fasciata</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Mar 15 to Aug 10
<p>Yellow-billed Magpie <i>Pica nuttalli</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9726</p>	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 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.

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 migratory birds potentially occurring 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 [AKN Phenology 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 to 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, migrating or present year-round in my project 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 refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). 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 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

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](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

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.

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 tubercid 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.

10A.2 Special-status Wildlife Table

To develop the special-status wildlife table, biologists used the results of the CNDDDB search for the Project area and the area within 5 miles of the Project (California Department of Fish and Wildlife 2021a) and the IPaC species list (U.S. Fish and Wildlife Service 2021). The table also includes species that would be considered rare under CEQA based on being biologically rare, very restricted in distribution, or declining throughout their range, as determined by the scientific community (such as the Western Bat Working Group) and/or identified on the CDFW Special Animals List (California Department of Fish and Wildlife 2021b). Special-status wildlife that were recommended by CDFW staff to be considered are also in the table. The special-status wildlife table is presented below. The special-status wildlife table provides the status, range, habitat description, and likelihood of occurrence for the species identified as potentially present in the study area.

Table 10A-2. Special-Status Wildlife Species Identified as Having the Potential to Occur in the Study Area

Common Name	Scientific Name	Status^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	E/–	Disjunct occurrences in Tehama, Butte, Glenn, Yolo, Solano, Stanislaus, Merced, and Ventura Counties. Large, deep vernal pools with moderately turbid water in annual grasslands; generally, the pools last until June.	Low to moderate. Large vernal pools may be present in the study area. Known occurrence at Sacramento National Wildlife Refuge, approximately 1.5 miles from the study area (California Department of Fish and Wildlife 2021a).
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T/–	Found in Central Valley and central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County. Common in vernal pools; also found in sandstone rock outcrop pools.	Moderate. Vernal pools and other seasonal wetlands present in the study area. Several known occurrences at Sacramento National Wildlife Refuge, approximately 2.75–3.75 miles from the study area (California Department of Fish and Wildlife 2021a).
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	E/–	Shasta County, south to northwestern Tulare County, and the San Francisco Bay area. Vernal pools and other seasonal pools, ponded clay flats, roadside ditches, and stock ponds.	Moderate. Vernal pools and other seasonal wetlands present in the study area. Several known occurrences at Sacramento National Wildlife Refuge, approximately 1.25–3 miles from the study area (California Department of Fish and Wildlife 2021a).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Antioch Dunes anthicid beetle	<i>Anthicus antiochensis</i>	–/–	Population in Antioch Dunes believed extinct. Present in several localities along the Sacramento River in Glenn, Tehama, Shasta, and Solano Counties, and the Feather River at Nicolas in Sutter County. Loose sand on sand bars and sand dunes (interior), unvegetated sand.	Moderate. Associated with the Sacramento River. Non-specific occurrence from 1989, presumably along the section of the Sacramento River that overlaps the operations study area (California Department of Fish and Wildlife 2021a).
Sacramento anthicid beetle	<i>Anthicus sacramento</i>	–/–	Dune areas at mouth of Sacramento River; western tip of Grand Island, Sacramento County; upper Putah Creek and dunes near Rio Vista, Solano County; Ord Ferry Bridge, Butte County; San Joaquin River from Shasta to San Joaquin Counties; Feather River at Nicolaus. Found in sand slip-faces among willows; associated with riparian and other aquatic habitats, vegetated sand.	Moderate. Associated with the Sacramento River. Several records for occurrences along the Sacramento River in the operations study area (California Department of Fish and Wildlife 2021a).
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T/–	Central Valley from Tehama County south to Fresno County; most beetles have been documented below 500 feet in elevation. Elderberry shrubs (<i>Sambucus</i> spp.) are the host plant and are found in riparian and non-riparian (valley oak and blue oak woodland and annual grassland) habitats.	High. Suitable habitat (elderberry shrubs) present in the study area. Numerous records for occurrences along the Sacramento River within the operations study area (California Department of Fish and Wildlife 2021a).

Special-status Wildlife Table and Non-listed
Wildlife Species Accounts

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Wilbur Springs minute moss beetle	<i>Ochthebius reticulus</i>	–/–	Sulfur Creek, Colusa County Matted vegetation and decaying moss along stream shores and swampy areas.	Low. Study area is outside of species' known range. One geographically non-specific known occurrence (from before 1980) approximately 4.5 miles southeast of the southern extent of the study area (California Department of Fish and Wildlife 2021a).
Monarch butterfly	<i>Danaus plexippus</i>	C/–	Adults breed and migrate throughout California and overwinter along the California coast and in central Mexico. Open habitats including fields, meadows, weedy areas, marshes, and roadsides. Monarch butterflies roost in wind-protected tree groves (such as eucalyptus) with nectar and water sources nearby. Caterpillar host plants are native milkweeds.	Moderate. Adults may breed and migrate through study area. Caterpillar host plants may be present in annual grassland. No known occurrences reported in the CNDDDB (California Department of Fish and Wildlife 2021a).
Blennosperma vernal pool andrenid bee	<i>Andrena blennospermatis</i>	–/–	Tehama, Placer, El Dorado, Sacramento, Yolo, Lake, Sonoma, Solano, San Joaquin, and Contra Costa Counties Upland areas near vernal pools.	Low. Suitable habitat may be present surrounding vernal pools. Most of species' known range is outside of study area. No known occurrences in Colusa or Glenn Counties; only two known occurrences in Tehama County, one of which is approximately 3.75 miles northeast of the RBPP (California Department of Fish and Wildlife 2021a).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Crotch bumble bee	<i>Bombus crotchii</i>	–/CE	<p>Pacific Coast, Western Desert, Great Valley, and adjacent foothills throughout most of southwestern California.</p> <p>Open grassland and scrub; nests underground. Food plants include members of the genera <i>Asclepias</i>, <i>Chaenactis</i>, <i>Lupinus</i>, <i>Medicago</i>, <i>Phacelia</i>, and <i>Salvia</i>.</p>	Low to moderate. Suitable habitat in the study area; presence of food plants unknown. One geographically non-specific historical (1956) occurrence within 2 miles of the RBPP (California Department of Fish and Wildlife 2021a).
Western bumble bee	<i>Bombus occidentalis</i>	–/CE	<p>Historically occurred throughout much of northern California but currently appears to be absent from much of this area.</p> <p>Current known locations are high elevation sites in northern California and a few sites on the northern California coast.</p> <p>Nests underground in squirrel burrows, in mouse nests, and in open west-southwest facing slopes bordered by trees.</p> <p>Visits a wide variety of wildflowers; plant taxa it is most commonly associated with are <i>Asteraceae</i>, <i>Ceanothus</i>, <i>Centaurea</i>, <i>Chrysothamnus</i>, <i>Cirsium</i>, <i>Eriogonum</i>, <i>Geranium</i>, <i>Grindelia</i>, <i>Lupinus</i>, <i>Melilotus</i>, <i>Monardella</i>, <i>Rubus</i>, <i>Penstemon</i>, <i>Solidago</i>, and <i>Trifolium</i>.</p>	Low to moderate. Suitable habitat in the study area; presence of food plants unknown. No known occurrences within 5 miles of the study area (California Department of Fish and Wildlife 2021a).

Special-status Wildlife Table and Non-listed
Wildlife Species Accounts

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
California tiger salamander	<i>Ambystoma californiense</i>	T/T	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to northeastern San Luis Obispo County. Small ponds, lakes, or vernal pools in grasslands and oak woodlands for reproduction and larval development; rodent burrows, rock crevices, or fallen logs for cover for adults and juveniles for summer dormancy.	Low to none. Most of the study area is outside of the species' known range. There are no known occurrences in Glenn or Colusa Counties. While there are known extant locations west of Dunnigan within 3–4 miles of the Dunnigan Pipeline (California Department of Fish and Wildlife 2021a), no suitable aquatic or upland habitat is present in the Dunnigan Pipeline portion of the study area.
Western spadefoot	<i>Spea hammondi</i>	–/SSC	Sierra Nevada foothills, Central Valley, Coast Ranges, coastal counties in southern California to western Baja California. Shallow streams with riffles and seasonal wetlands, such as vernal and seasonal pools in annual grasslands and oak woodlands; spends most of its life in burrows.	Low to moderate. Potentially suitable habitat is present in the inundation area. Five known occurrences that are 3–5 miles from the Dunnigan Pipeline (California Department of Fish and Wildlife 2021a) but no suitable aquatic or upland habitat is present in the Dunnigan Pipeline portion of the study area.

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
California red-legged frog	<i>Rana draytonii</i>	T/SSC	<p>Found along the coast and Coast Ranges of California from Mendocino County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County; elevations from near sea level to about 4,900 feet.</p> <p>Permanent and semi-permanent aquatic habitats, such as slow-moving streams or creeks and cold-water ponds, with emergent and submergent vegetation (shrubby riparian).</p> <p>May aestivate in rodent burrows or cracks during dry periods.</p>	<p>Low to moderate. Suitable aquatic and upland habitats are present generally west of Funks Reservoir. There are no records for occurrences within 5 miles of the study area (California Department of Fish and Wildlife 2021a).</p>
Foothill yellow-legged frog (northwest/North Coast clade)	<i>Rana boylei</i>	–/SSC	<p>Occurs in the Klamath, Cascade, North Coast, South Coast, Transverse, and Sierra Nevada Ranges up to approximately 6,000 feet.</p> <p>Creeks or rivers in woodland, forest, mixed chaparral, and wet meadow habitats with rock and gravel substrate and low overhanging vegetation along the edge.</p> <p>Usually found by riffles with rocks and on sunny banks nearby.</p>	<p>Low. The western portion of the study area is just outside the species' known range. All known occurrences in Glenn and Colusa Counties are at or above 750 feet elevation and the study area is at or below 500 feet elevation. Historical locations along the Sacramento River are extirpated. The nearest known occurrence is 6 miles from the study area (California Department of Fish and Wildlife 2021a).</p>

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Western pond turtle	<i>Actinemys marmorata</i>	–/SSC	Occurs from the Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of Sierra Nevada. Occurs in woodlands, grasslands, and open forests. Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms. Aquatic habitat contains watercress, cattails, water lilies, or other aquatic vegetation. Overwintering habitat consists of mud in stream and pond bottoms or a variety of upland habitats including riparian habitat for basking.	High. Suitable aquatic and upland habitats are present in the study area. Two known occurrences approximately 4 miles northeast of RBPP and 3 miles east at the Sacramento National Wildlife Refuge; several records for occurrences along the Sacramento River in the operations study area (California Department of Fish and Wildlife 2021a).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Giant gartersnake	<i>Thamnophis gigas</i>	T/T	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno and from Stanislaus County. Found at elevations from near sea level to 400 feet. Sloughs, canals, low gradient streams, and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields. Requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.	High. Suitable aquatic and upland habitats are present in the study area. Four records for occurrences within the study area. Numerous records for occurrences at Sacramento National Wildlife Refuge and other areas east of the inundation area, as well as around the east end of the Dunnigan Pipeline (California Department of Fish and Wildlife 2021a).
Northern harrier	<i>Circus hudsonius</i>	–/SSC	Occurs throughout lowland California. Recorded in fall at high elevations ranging from near sea level to at least 9,000 feet in Mono County; largely within coastal lowlands from Lake Earl in Del Norte County to Bodega Head in Sonoma County, but also inland at Lake Berryessa in Napa County. Grasslands, meadows, marshes, and seasonal and agricultural wetlands/fields; prefers open habitats with adequate vegetative cover.	High. Suitable nesting and foraging habitats are present in the study area. There are no CNDDDB occurrences reported within 5 miles of the study area, but there are numerous eBird observations of northern harrier in the study area (Cornell Lab of Ornithology 2021) and northern harrier was observed by an ICF biologist near Funks Reservoir during January 2021 focused bird surveys for geotechnical boring investigation locations.

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Golden eagle	<i>Aquila chrysaetos</i>	–/FP	<p>Occurs in foothills and mountains throughout California; uncommon nonbreeding visitor to lowlands such as the Central Valley; ranges from sea level to around 11,500 feet.</p> <p>Rolling foothills, mountain ranges, sage-juniper flats, and desert. Nests on cliffs and escarpments or in tall trees overlooking open country. Forages in annual grassland, chaparral, and oak woodland with plentiful medium- and large-sized mammals.</p>	<p>High. Suitable nesting and foraging habitats are present in the study area. There are no CNDDDB occurrences reported within 5 miles of the study area but there are numerous eBird observations of individuals in the study area (Cornell Lab of Ornithology 2021).</p>
Bald eagle	<i>Haliaeetus leucocephalus</i>	–/E	<p>Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin.</p> <p>Reintroduced into central coast. Winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, east of the Sierra Nevada south of Mono County, and some rangelands and coastal wetlands.</p>	<p>High. Suitable nesting and foraging habitats are present in the study area. One known occurrence at Sacramento National Wildlife Refuge, approximately 1.5 miles from the study area (California Department of Fish and Wildlife 2021a). Several bald eagles observed by an ICF biologist at Funks Reservoir during January 2021 focused bird surveys for geotechnical boring investigation locations.</p>

Special-status Wildlife Table and Non-listed
Wildlife Species Accounts

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Swainson's hawk	<i>Buteo swainsoni</i>	–/E	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County. Requires large, open grasslands with suitable nest trees; nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, lightly grazed pastures, irrigated pastures, and grain fields.	High. Suitable nesting and foraging habitats are present in the study area. Numerous records for nest sites along the Sacramento River in the operations study area and other locations within the study area (California Department of Fish and Wildlife 2021a).
White-tailed kite	<i>Elanus leucurus</i>	–/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills, to western San Diego County at the Mexico border. Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands or cropland for foraging.	High. Suitable nesting and foraging habitats are present in the study area. One record for a nest site approximately 2.5 miles south of the RBPP and one record for a nest site approximately 3 miles east of the southern end of the inundation area (California Department of Fish and Wildlife 2021a).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Mountain plover	<i>Charadrius montanus</i>	–/SSC	Does not breed in California; in winter, found in the Central Valley from Colusa County south, along the coast in parts of San Luis Obispo, Santa Barbara, Ventura, and San Diego Counties; parts of Imperial, Riverside, Kern, and Los Angeles Counties. Occupies open plains or rolling hills with short grasses or very sparse vegetation; nearby bodies of water are not needed; may use newly plowed or sprouting grain fields.	Moderate. Suitable winter foraging habitat in the study area. Three records for occurrences of flocks observed during the winter within 5 miles of the Dunnigan Pipeline portion of the study area (California Department of Fish and Wildlife 2021a).
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	T/E	Nests along the upper Sacramento, lower Feather, south fork of the Kern, Amargosa, Santa Ana, and Colorado Rivers. Requires wide, dense riparian forests or woodlands with a thick understory of willows for nesting; sites with a dominant cottonwood overstory are preferred for foraging; may avoid valley oak riparian habitats where scrub jays are abundant; utilizes orchards adjacent to streams.	Moderate to high. Portions of the Sacramento River in the operations study area provide suitable habitat. Numerous records for occurrences along the Sacramento River within the operations study area (California Department of Fish and Wildlife 2021a).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Burrowing owl	<i>Athene cunicularia</i>	–/SSC	Lowlands throughout south, central, and east California, including the Central Valley, northeastern plateau, southeastern deserts, and some coastal areas; rare along the south coast. Level, open, dry, heavily grazed or low-stature grassland, or desert vegetation with available burrows; also found in coastal terrace prairies and sagebrush habitats.	High. Suitable nesting and foraging habitats are present in the study area. Twelve records for occurrences within 5 miles of the study area and one reported occurrence in the study area (California Department of Fish and Wildlife 2021a).
Northern spotted owl	<i>Strix occidentalis caurina</i>	T/T	A permanent resident throughout its range; found in the North Coast, Klamath, and western Cascade Range from Del Norte County to Marin County. Dense old-growth or mature forests dominated by conifers with topped trees or oaks available for nesting crevices.	Low to none. Study area is outside of species' known range. No dense old growth or mature conifer forest in study area.

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Bank swallow	<i>Riparia riparia</i>	–/T	<p>Occurs along the Sacramento River from Tehama County to Sacramento County; along the Feather and lower American Rivers; in the Owens Valley in Inyo and Mono Counties; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou Counties.</p> <p>Small populations near the coast from San Francisco County to Monterey County. Altitudinal range extends from sea level to approximately 7,000 feet.</p> <p>Breeds primarily in lowland areas along ocean coasts, rivers, streams, lakes, reservoirs, and wetlands. Nests in vertical banks, cliffs, and bluffs in alluvial, friable soils. Also nests in artificial sites such as sand and gravel quarries and road cuts. Foraging habitats surrounding nesting colony include wetlands, open water, grasslands, riparian woodlands, agricultural areas, shrublands, and occasionally upland woodlands.</p>	<p>High. Portions of the Sacramento River in the operations study area provide suitable habitat.</p> <p>Numerous records for occurrences along the Sacramento River in the operations study area (California Department of Fish and Wildlife 2021a).</p>

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Least Bell's vireo	<i>Vireo bellii pusillus</i>	E/E	<p>Small populations remain in southern Inyo, southern San Bernardino, Riverside, San Diego, Orange, Los Angeles, Ventura, and Santa Barbara Counties. Found at the San Joaquin River National Wildlife Refuge (San Joaquin and Stanislaus Counties) in 2005.</p> <p>Riparian thickets/dense willows with a well-developed understory either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons.</p>	Low. Portions of the Sacramento River in the operations study area provide suitable habitat, but the study area is outside of the species' known range and the historical occurrence along the Sacramento River is considered extirpated (California Department of Fish and Wildlife 2021a).
Yellow-breasted chat	<i>Icteria virens</i>	–/SSC	<p>Summer resident and migrant in coastal California and Sierra Nevada foothills, east of the Cascade Range in northern California, along the Colorado River, and very locally inland in southern California; numerous in northwestern region of the state.</p> <p>Nests in dense riparian habitats with a well-developed shrub layer and an open canopy, dominated by willows, alders, Oregon ash, tall weeds, blackberry vines, and grapevines.</p>	Moderate. Suitable nesting habitat in the study area. One known occurrence from 1977 that is approximately 4.75 miles southeast of RBPP (California Department of Fish and Wildlife 2021a). Several observations recorded in eBird at Sacramento National Wildlife Refuge and in the vicinity of Lodoga Stonyford Road (Cornell Lab of Ornithology 2021).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Tricolored blackbird	<i>Agelaius tricolor</i>	–/T	<p>Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties. Most extensively concentrated in and around the Delta and coastal areas, including Monterey and Marin Counties.</p> <p>Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields; habitat must be large enough to support 50 pairs; requires water at or near the nesting colony; colonies found in silage and grain fields near dairies in the San Joaquin Valley; winters in grasslands and agricultural fields with low-growing vegetation.</p>	<p>High. Suitable nesting and foraging habitat present in the study area. More than 20 known occurrences within 5 miles of the study area, and two reported occurrences in the study area east of the GCID system improvements area and east of the inundation area (California Department of Fish and Wildlife 2021a).</p>

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Yellow warbler	<i>Setophaga petechia brewsteri</i>	–/SSC	Breeds throughout California except the Central Valley, the Mojave Desert region, and high altitudes in the Sierra Nevada; winters along the Colorado River and in parts of Imperial and Riverside Counties. Nests in riparian areas with willows, cottonwoods, Oregon ash, or alders; also nests in montane shrubs in open ponderosa pine and mixed conifer forest, and in montane chaparral.	Moderate. Suitable nesting habitat in the study area. One known occurrence from 1977 that is approximately 3.7 miles southeast of RBPP (California Department of Fish and Wildlife 2021a); several observations recorded in eBird within the last few years (Cornell Lab of Ornithology 2021).
Song sparrow (Modesto population)	<i>Melospiza melodia mailliardi</i>	–/SSC	Resides in the north-central portion of the Central Valley, with the highest densities in the Butte Sink area of the Sacramento Valley and in the Sacramento–San Joaquin River Delta. Associated with freshwater marshes dominated by tules and cattails and riparian willow thickets. Also nests in riparian forests with blackberry understory and along vegetated irrigation canals and levees.	Moderate. Suitable nesting habitat in the study area. Records for occurrences along the Sacramento River in the operations study area (California Department of Fish and Wildlife 2021a).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Western mastiff bat	<i>Eumops perotis californicus</i>	–/SSC	<p>Occurs along the western Sierra Nevada primarily at low-to mid-elevations and widely distributed throughout the southern coast ranges; has been detected north to the Oregon border.</p> <p>Broadly distributed in southern California, from the Colorado River to the coast; found along many of the Sierra Nevada river drainages, particularly in the central and southern Sierra Nevada.</p> <p>Uses a wide variety of habitats from desert scrub to montane conifer; roosts and breeds in deep, narrow rock crevices; may also use crevices in trees, buildings, and tunnels Forages in a variety of habitats.</p>	Low. Could migrate through or occasionally occur in the study area but is not anticipated to reside in the study area. One known occurrence from 1994 is approximately 4 miles east of the RBPP (California Department of Fish and Wildlife 2021a).
Pallid bat	<i>Antrozous pallidus</i>	–/SSC	<p>Occurs throughout California; associated with deserts, grasslands, shrublands, woodlands, and forests. Most common at elevations below 6,000 feet, although it has been observed at higher elevations. Occurs in open, dry habitats and is a year-round resident through most of the range; roosts in crevices in rocky outcrops and cliffs, caves, mines, trees, and various human-made structures; tends to day roost and night roost in alternate structures.</p>	Moderate to high. Could roost in a variety of land cover types in the study area; most of study area provides suitable foraging habitat. One known occurrence from 1999 within 0.25 mile of RBPP and two occurrences that are approximately 3.5 miles east 4 miles north of the RBPP (California Department of Fish and Wildlife 2021a).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	–/SSC	Occurs throughout California, with the exception of the highest elevations in the Sierra Nevada range. Associated with inland deserts; cool, moist coastal redwood forests; oak woodlands of the coastal ranges and Sierra Nevada foothills; and lower to mid-elevation mixed coniferous-deciduous forests. Roosts primarily in abandoned mines and natural caves, but also roosts in human-made structures and hollow trees.	Moderate. There are no known occurrences reported within 5 miles of the study area, but the species could roost in buildings and other structures in the study area.
Silver-haired bat	<i>Lasionycteris noctivagans</i>	–/–	Occurs throughout portions of California, primarily in the coastal and montane forests from the Oregon border south along the coast to San Francisco Bay, and along the Sierra Nevada and Great Basin region to Inyo County. Has also been recorded in Monterey, Sacramento, Stanislaus, Ventura, and Yolo Counties and during migration may be found throughout the state. Associated with coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark and occasionally under wood piles, in leaf litter, under foundations, and in buildings and mines.	Low to moderate. Could migrate through or occasionally occur in the study area but is not anticipated to reside in the study area. One known occurrence from 1999 within 0.25 mile of RBPP (California Department of Fish and Wildlife 2021a).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Western red bat	<i>Lasiurus blossevillii</i>	–/SSC	Occurs throughout most of California; associated with forests and woodlands and appears to prefer open habitats or habitat mosaics. Roosts in tree foliage and prefers roost sites that are protected from above and open below, and may choose roost sites based on higher foliage density. Associated with intact riparian habitat (particularly willows, cottonwoods, and sycamores) but also has been found in orchard trees.	Moderate to high. Could roost in a variety of land cover types in the study area; most of study area provides suitable foraging habitat. One known occurrence from 1999 within 0.25 mile of RBPP and one occurrence from 1999 that is approximately 3.5 miles east of RBPP (California Department of Fish and Wildlife 2021a).
Hoary bat	<i>Lasiurus cinereus</i>	–/–	Occurs throughout California. Associated with woodlands and forests, thought to prefer open habitats or habitat mosaics, with access to trees for roosting and open areas or habitat edges for foraging. Roosts primarily in the foliage of medium to large deciduous or coniferous trees.	Moderate to high. Could roost in a variety of land cover types in the study area; most of study area provides suitable foraging habitat. Two known occurrences from 1999 that are approximately 0.25 mile and 3.5 miles from the RBPP (California Department of Fish and Wildlife 2021a).
Long-eared myotis	<i>Myotis evotis</i>	–/–	Occurs throughout most of California but is thought to avoid the Central Valley and hot deserts. Associated with woodland, forest, and brush habitats, coniferous woodlands and forests seem to be preferred. Roosts under exfoliating tree bark, on the ground, and in hollow trees, tree snags, buildings, bridges, caves, mines, cliff crevices, sinkholes, and rocky outcrops.	Low to moderate. Could migrate through or occasionally occur in the study area but is not anticipated to reside in the study area. One known occurrence from 1999 that is approximately 3.5 miles east of the RBPP (California Department of Fish and Wildlife 2021a).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
San Joaquin pocket mouse	<i>Perognathus inornatus inornatus</i>	–/–	Occurs throughout the San Joaquin Valley and part of the Sacramento Valley. Favors grasslands, savanna, and desert scrub habitats with fine textured soils.	Low. Suitable habitat is present, but study area is on the edge of the subspecies' known range. Two historical (1912 and 1929) occurrences within the inundation area (California Department of Fish and Wildlife 2021a).
American badger	<i>Taxidea taxus</i>	–/SSC	Throughout California, except for the humid coastal forests of northwestern California in Del Norte and northwestern Humboldt Counties. Occurs in a wide variety of open, arid habitats but are most commonly associated with grasslands, savannas, and mountain meadows near timberline. Requires sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground.	Low to moderate. Suitable habitat in the study area. No known occurrences within 5 miles of the study area (California Department of Fish and Wildlife 2021a).

Common Name	Scientific Name	Status ^a Federal/State	Range and General Habitat Description	Potential for Occurrence
Ringtail	<i>Bassariscus astutus</i>	–/FP	Little information on distribution and abundance. Apparently occurs throughout the state; usually found at elevations from sea level to about 500 feet. Occurs primarily in riparian habitats but may also be found in chaparral, chaparral interspersed with evergreen woodland, oak woodland, and other scrub types with scattered boulder and/or rock outcrops. In the Central Valley, has been found in remnant stands of riparian forests bordering waterways and not associated with valley oak woodland.	Low. No known occurrences within 5 miles of the study area (California Department of Fish and Wildlife 2021a). May occur along the Sacramento River but is not anticipated to be present in other portions of the study area.

Table sources: California Department of Fish and Wildlife 2021a, U.S. Fish and Wildlife Service 2021, Cornell Lab of Ornithology 2021.

^a Status Explanations:

Federal:

– = not listed under the federal Endangered Species Act

E = listed as endangered under the federal Endangered Species Act

T = listed as threatened under the federal Endangered Species Act

C = candidate for listing under the federal Endangered Species Act

State:

– = not listed under the California Endangered Species Act

E = listed as endangered under the California Endangered Species Act

T = listed as threatened under the California Endangered Species Act

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

FP = California fully protected species

SSC = California species of special concern

10A.3 Non-listed Wildlife Species Accounts

This section provides information about non-listed and non-fully protected special-status wildlife species (including species that are candidates for state or federal listing) identified as having moderate to high potential to occur in the study area. The listed and fully protected wildlife species are described in Chapter 10, *Wildlife Resources*.

10A.3.1. Antioch Dunes Anthicid Beetle and Sacramento Anthicid Beetle

10A.3.1.1. *Status and Distribution*

Antioch Dunes anthicid beetle (*Anthicus antiochensis*) and Sacramento anthicid beetle (*Anthicus sacramento*) are not federally or state-listed (California Department of Fish and Wildlife 2021b) but are considered rare due to their limited distributions. Antioch Dunes anthicid beetle is thought to be extirpated from Antioch Dunes but has been observed in several locations along the Sacramento and Feather Rivers (California Department of Fish and Wildlife 2021c). Sacramento anthicid beetle has been found at several locations along the Sacramento and San Joaquin Rivers from Shasta County to San Joaquin County and at one location along the Feather River at Nicolaus (California Department of Fish and Wildlife 2021d).

10A.3.1.2. *Habitat Requirements and Biology*

Antioch Dunes anthicid and Sacramento anthicid beetles are associated with interior sand dunes and sand bars (California Department of Fish and Wildlife 2021c and 2021d). Sacramento anthicid beetle has also been found in dredge spoil heaps (California Department of Fish and Wildlife 2021d). The most recent observations of Antioch Dunes anthicid beetle were at the top of a sandy bank and on a sand bar (California Department of Fish and Wildlife 2021c).

Adults of *Anthicus* species are known to be micro-scavengers that feed on dead insects; the larvae are thought to feed on dead insects and soil fungi. Antioch Dunes anthicid beetle scavenges at night and burrows into the sand during the day. Sacramento anthicid beetle also scavenges dead insects. Adults of both species overwinter and emerge in the spring to lay eggs from which the larvae hatch, and the next generation of adults emerges in summer. Adults of Antioch Dunes and Sacramento anthicid beetles are most commonly collected from June through July and from June through August, respectively (California Department of Fish and Wildlife 2021c, 2021d).

10A.3.1.3. *Occurrence in the Study Area*

There is one recorded non-specific occurrence of Antioch Dunes anthicid beetle, presumably along the Sacramento River in the operations study area (California Department of Fish and Wildlife 2021a). Antioch Dunes anthicid beetle has not previously been reported from Colusa and Yolo Counties. There are several records for occurrences of Sacramento anthicid beetle along the Sacramento River (California Department of Fish and Wildlife 2021a). There is potentially suitable habitat for Antioch Dunes anthicid beetle and Sacramento anthicid beetle at the Sacramento River discharge site and along the Sacramento River in the operations study area.

10A.3.2. Monarch Butterfly

10A.3.2.1. Status and Distribution

Monarch butterfly (*Danaus plexippus*) is a candidate for listing under the Endangered Species Act. The number of overwintering monarchs in California is believed to have declined as much as 74% since the late 1990s (Western Association of Wildlife Agencies 2019:2). The geographic range for monarch butterfly in California is throughout the state and includes spring and summer breeding areas and overwintering areas; the overwintering areas are almost entirely along the coast. Coastal California is considered critical for overwintering populations, and the Central Valley is considered a critical breeding area for this species (Western Association of Wildlife Agencies 2019:34).

10A.3.2.2. Habitat Requirements and Biology

Generally, the migratory and breeding habitat for this species consists of all areas with the required habitat, including milkweeds (*Asclepias* spp.), nectar sources, and roosting structures. Overwintering habitat consists of groves of trees that produce the necessary microclimate for survival. Most overwintering sites in California are within 1.5 miles of the Pacific Ocean or San Francisco Bay (Western Association of Wildlife Agencies 2019:8).

Monarch butterfly requires milkweed for breeding, as it lays eggs on the milkweed plant, and milkweed is an obligate species for the monarch caterpillar (Western Association of Wildlife Agencies 2019:8, U.S. Fish and Wildlife Service 2020:8). There are multiple native and nonnative milkweed species in that grow in California (Calflora 2021).

Monarch butterfly requires nectar-producing plants for foraging and roosting sites (particularly during fall migration) (Western Association of Wildlife Agencies 2019:8; U.S. Fish and Wildlife Service 2020:9–10). Native and nonnative deciduous and evergreen trees, and narrow-leaved trees such as willows (*Salix* spp.), Russian olive (*Elaeagnus angustifolia*), locusts (*Robinia* spp.), pines (*Pinus* spp.), and eucalyptus (*Eucalyptus* spp.) are used as roosting sites (U.S. Fish and Wildlife Service 2019).

Monarch butterfly goes through four life stages, including egg, larva (caterpillar), pupa (chrysalis), and adult, which are typically completed within a month during the breeding and migration season. During the spring and summer up to seven cycles of mating and breeding are completed as the butterflies migrate, then they typically reach overwintering areas in September or October. Most overwintering individuals are in reproductive diapause, and these individuals may live up to 9 months, but in some warmer areas such as southern coastal California, overwintering may not be needed (Western Association of Wildlife Agencies 2019:6).

10A.3.2.3. Occurrence in the Study Area

There are no recorded CNDDDB occurrences of monarch butterfly within 5 miles of the study area (California Department of Fish and Wildlife 2021a), but this species is considered present in most of California. Potentially suitable monarch butterfly habitat consists of annual grassland, blue oak woodland, chamise chaparral, ditch, ephemeral stream, foothill pine, forested wetland, freshwater marsh, hayfield (includes alfalfa), intermittent stream, managed wetland, mixed chaparral, oak savanna, ornamental woodland, perennial stream, pond, reservoir, ruderal, scrub-

shrub wetland, seasonal wetland, and upland riparian land cover types.

10A.3.3. Crotch Bumble Bee and Western Bumble Bee

10A.3.3.1. Status and Distribution

Crotch bumble bee (*Bombus crotchii*) and western bumble bee (*Bombus occidentalis occidentalis*) are candidates for state listing as endangered. In California, Crotch bumble bee historically occurred on the Pacific Coast and in the western desert, Central Valley, and adjacent foothills (Williams et al. 2014:114–116, 132). Crotch bumble bee now appears to be absent from much of its historical range in the southern two-thirds of California, including the Central Valley (The Xerces Society for Invertebrate Conservation 2018:17, 32–35, 43; Hatfield et al. 2015a). The known range of western bumble bee extends throughout California, although populations from Central California to the southern British Columbia border have declined sharply since the late 1990s, particularly from lower elevation sites (Williams et al. 2014:116, Hatfield et al. 2015b). Western bumble bee populations are currently largely restricted to high elevation sites in the Sierra Nevada (The Xerces Society for Invertebrate Conservation 2018:6).

10A.3.3.2. Habitat Requirements and Biology

Crotch bumble bee forages and nests in open grasslands and scrub habitats in California (The Xerces Society for Invertebrate Conservation 2018:32). Crotch bumble bee is a generalist forager that feeds on a variety of widely distributed plant genera including *Antirrhinum*, *Asclepias*, *Phacelia*, *Chaenactis*, *Clarkia*, *Dendromecon*, *Eriogonum*, *Eschscholzia*, *Lupinus*, *Medicago*, and *Salvia* (Koch et al. 2012:82, Williams et al. 2014:132).

Western bumble bee habitat varies widely and includes open grassy areas, urban parks and gardens, chaparral and scrub lands, and mountain meadows (Williams et al. 2014:116). The western bumblebee is a generalist forager that is most commonly associated with taxa such as *Asteraceae*, *Ceanothus*, *Centaurea*, *Chrysothamnus*, *Cirsium*, *Eriogonum*, *Geranium*, *Grindelia*, *Lupinus*, *Melilotus*, *Monardella*, *Rubus*, *Penstemon*, *Solidago*, and *Trifolium* (Williams et al. 2014:116, The Xerces Society for Invertebrate Conservation 2018:34).

Bumble bee queens emerge from hibernation in the early spring and start foraging for pollen and nectar (The Xerces Society for Invertebrate Conservation 2018:30). The flight period for Crotch bumble bee queens in California is from late February to late October, peaking in early April, with a second pulse in July. The flight period for workers and males in California is from late March through September (The Xerces Society for Invertebrate Conservation 2018:33). The flight period for western bumble bee queens is from early February to late November, peaking in late June and late September. The flight period for workers and males in California is from early April to early November (The Xerces Society for Invertebrate Conservation 2018:35).

Nest sites vary by species and available habitat. Nests may be located underground in abandoned holes made by ground squirrels, mice, and rats; abandoned bird nests; in tufts of grass; or in empty cavities. Woody cover, or other sheltered areas also provide sites for bumble bees to build nests (e.g., downed wood, rock walls, brush piles) (The Xerces Society for Invertebrate Conservation 2018:30). Crotch bumble bees are known to nest underground (The Xerces Society for Invertebrate Conservation 2018:32), and western bumble bees are known to nest mostly

underground but have been documented nesting above ground (The Xerces Society for Invertebrate Conservation 2018:34).

Information is lacking for overwintering habitats of most bumble bee species, but generally bumble bees are thought to overwinter in soft, disturbed soil or under leaf litter or other debris (The Xerces Society for Invertebrate Conservation 2018:33,34).

10A.3.3.3. Occurrence in the Study Area

There is one geographically non-specific historical (1956) occurrence for Crotch bumble bee within 2 miles of RBPP (California Department of Fish and Wildlife 2021a). There are no CNDDDB records for occurrences of western bumble bee within 5 miles of the study area. Potentially suitable Crotch bumble bee and western bumble bee habitat consists of annual grassland, chamise chaparral, mixed chaparral, oak savanna, seasonal wetland, and ruderal areas when they are adjacent to these land cover types.

10A.3.4. Western Spadefoot

10A.3.4.1. Status and Distribution

Western spadefoot (*Spea hammondi*) is a California species of special concern (California Department of Fish and Wildlife 2021b). The species' range is the Central Valley and adjacent foothills and the Coast Ranges from south of Monterey County to western Baja California (Thomson et al. 2016:131). Western spadefoot can be found at elevations over 4,000 feet but most individuals are found below 3,000 feet (Stebbins 2003:203).

10A.3.4.2. Habitat Requirements and Biology

Western spadefoot is a lowland toad that occurs in washes, river floodplains, alluvial fans, playas, and alkali flats within valley and foothill grasslands, open chaparral, and pine-oak woodlands. It breeds in temporary rain pools, quiet streams (Stebbins 2003:203), and stock tanks (Morey 2005:515). Western spadefoot prefers habitats with open vegetation and short grasses where the soil is sandy or gravelly (Stebbins 2003:203). Loose, sandy, or gravelly soil is likely required for western spadefoot to dig their own burrows (U.S. Fish and Wildlife 2005:II-208, Jennings and Hayes 1994:96).

Depending on temperature and rainfall, egg laying occurs between late February and late May. Eggs hatch within 6 days, and larval development can be completed within 3 to 11 weeks (Jennings and Hayes 1994:94). Breeding habitats must retain water long enough for larvae to transform into toads (at least 30 days). Substantial larval mortality results from desiccation when pools last fewer than 30 days after eggs are laid (Morey 2005:515).

There is limited information about western spadefoot terrestrial activity (Thomson et al. 2016:133). Metamorphs (toads that have recently transformed from tadpoles) leave breeding pools in April through June (Thomson et al. 2016:133). Recently metamorphosed toads disperse after spending a few hours or days at the pool margin (Zeiner et al. 1988:56). Little is known about how far juveniles travel from breeding pools or the distance adults travel between breeding pools and summer burrows (Morey 2005:515–516). Seasonal movements by adults are typically made at night when it is raining (Morey 2005:516). Adults and juveniles move into burrows by

late summer (Thomson et al. 2016:133) where they spend most of the year aestivating and feeding (Zeiner et al. 1988:2). Western spadefoot will dig its own burrows or use mammal burrows for refugia (Thomson et al. 2016:133; Morey 2005:516) and is rarely found above ground (Zeiner et al. 1988:1).

10A.3.4.3. Occurrence in the Study Area

There are five known occurrences of western spadefoot within 3–5 miles of the Dunnigan Pipeline (California Department of Fish and Wildlife 2021a) but no suitable aquatic or upland habitat is present in the Dunnigan Pipeline portion of the study area. Potentially suitable aquatic habitat consists of intermittent stream and seasonal wetland land cover types. Potentially suitable upland habitat is composed of annual grassland, blue oak woodland, chamise chaparral, foothill pine woodland, mixed chaparral, and oak savanna land cover types within 1,200 feet of intermittent streams and seasonal wetlands.

10A.3.5. Western Pond Turtle

10A.3.5.1. Status and Distribution

Western pond turtle (*Actinemys marmorata*) is a California species of special concern (California Department of Fish and Wildlife 2021b). In California, the species' range is discontinuously distributed through the state west of the Cascade–Sierra Nevada crest (Jennings and Hayes 1994:99).

10A.3.5.2. Habitat Requirements and Biology

Aquatic habitats used by western pond turtle include ponds, lakes, marshes, rivers, streams, and irrigation ditches with a muddy or rocky bottom in grassland, woodland, and open forest areas (Stebbins 2003:250). Western pond turtle spends a relatively large amount of time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris (Jennings et al. 1992:11). Western pond turtles move to upland areas adjacent to watercourses to deposit eggs and overwinter (Jennings and Hayes 1994:98). The distance between the nest site and to aquatic habitat depends on the availability of suitable nesting habitat adjacent to the occupied aquatic habitat (Jennings and Hayes 1994:101). Females usually select nest sites within 328 feet of aquatic habitat, although nests have been found 1,640 feet from a water body (Thomson et al. 2016:299). Lovich and Meyer (2002**Error! Bookmark not defined.**:540) reported nesting sites up to 1,919 feet from aquatic habitats, and Holland (1994:2-10) reported nesting sites up to 1,312 feet away from aquatic habitats. Nests may be much farther than typical nesting sites in flatter areas where appropriate soil moisture gradients and soil types extend further from the aquatic habitat (Jennings and Hayes 1994:101).

In the southern portion of the range and along the central coast, western pond turtle is active year-round. In the remainder of its range, western pond turtle typically becomes active in March and returns to overwintering sites by October or November (Jennings et al. 1992:11).

10A.3.5.3. Occurrence in the Study Area

There are two recorded western pond turtle occurrences within 5 miles of the study area (California Department of Fish and Wildlife 2021a). One occurrence (from 2016) is approximately 4 miles northeast of RBPP and the other (from 2017) is from Sacramento National

Wildlife Refuge, approximately 3 miles from the study area. There are also several records for occurrences along the Sacramento River in the operations study area (California Department of Fish and Wildlife 2021a). Potentially suitable western pond turtle aquatic habitat in the study area consists of ditch, canal, perennial stream, intermittent stream, forested wetland, freshwater marsh, managed wetland, pond, reservoir, rice, scrub-shrub wetland, and seasonal wetland land cover types. Potentially suitable western pond turtle upland habitat consists of annual grassland, blue oak woodland, chamise chaparral, disturbed, foothill pine, mixed chaparral, oak savanna, ruderal, and upland riparian that is within 1,640 feet of suitable aquatic habitat.

10A.3.6. Northern Harrier

10A.3.6.1. Status and Distribution

Northern harrier (*Circus hudsonius*) is a California species of special concern (California Department of Fish and Wildlife 2021b). Northern harrier occurs throughout lowland California, including the Central Valley, coastal areas, and the northeastern corner of the state. The species is present year-round within its breeding range in California and at least portions of breeding populations may be resident. Northern harrier is more wide-ranging and in much greater numbers in California during migration and winter than during the breeding season (Shuford and Gardali 2008:149–150).

10A.3.6.2. Habitat Requirements and Biology

Suitable habitat for northern harrier consists of open wetlands (e.g., marshy meadows, lightly grazed pastures, old fields, freshwater and brackish marshes, and tundra) and dry uplands (e.g., upland prairies, mesic grasslands, drained marshlands, croplands, and cold desert shrub-steppe). Populations breed predominantly in dry habitats in the United States and the densest populations are typically associated with large tracts of undisturbed habitats with thick ground vegetation. Northern harrier constructs nests on the ground in treeless but vegetated habitats (e.g., drained and nondrained wetlands, dry uplands). Nests are frequently built within patches of dense, often tall, vegetation in undisturbed areas and are often adjacent to stock ponds, creeks, and other wet areas. (Smith et al. 2020).

Northern harrier nests from April to September, with peak activity in June and July. Females have one brood per season, with clutches averaging five eggs, but ranging from three to 12 eggs (Zeiner et al. 1990a:124). The incubation period ranges from 28 to 36 days, and the nestlings fledge in approximately 14 days (Cornell Lab of Ornithology 2019).

Northern harriers forage over open habitats such as prairies, shrub-steppe uplands, and marshes. Northern harriers tend to forage over idle and abandoned (often wet) fields with vegetative cover more often than areas with short vegetation (e.g., heavily grazed pastures, harvested fields) (Smith et al. 2020). Northern harrier feeds on a broad variety of small- to medium-sized vertebrates, primarily rodents and passerines, which can be in a variety of natural and managed areas. Wet habitats, including irrigated agriculture, tend to support large numbers of voles, which is a key prey species for northern harrier in California (Shuford and Gardali 2008:152).

10A.3.6.3. Occurrence in the Study Area

Northern harrier was observed by an ICF biologist near Funks Reservoir during January 2021

focused bird surveys for geotechnical boring investigation locations. There are no CNDDDB records for occurrences of northern harrier in the study area (California Department of Fish and Wildlife 2021a), but there have been numerous observations of this species within the last several years by individuals recorded in eBird within the study area (Cornell Lab of Ornithology 2021). Potentially suitable northern harrier habitat in the study area consists of annual grassland, disturbed, ephemeral stream, freshwater marsh, hayfield (includes alfalfa), managed wetland, rice, row crops, ruderal, and seasonal wetland land cover types.

10A.3.7. Mountain Plover

10A.3.7.1. Status and Distribution

Mountain plover (*Charadrius montanus*) is a California species of special concern (California Department of Fish and Wildlife 2021b). The geographic range of mountain plover in California consists of the Central Valley from Sutter and Yuba Counties southward, San Joaquin Valley, Imperial Valley, Los Angeles and western San Bernardino Counties, and the central Colorado River valley. There have also been more recent records for occurrences of the species along the northern coast of California (California Department of Fish and Game 2008). California is thought to be the main wintering area for mountain plover, but they do not breed within the state (Andres and Stone 2009).

10A.3.7.2. Habitat Requirements and Biology

Nonbreeding, winter habitat for mountain plover consists of grasslands, agricultural pastures and fields, and open sagebrush areas (California Department of Fish and Game 2008, Andres and Stone 2009:12). In the Central Valley, the species is found on short grasslands and plowed fields. Mountain plover often roosts in depressions such as ungulate hoof prints and plow furrows. The diet of mountain plover includes large insects, especially grasshoppers, which are eaten from the ground (California Department of Fish and Game 2008).

Mountain plover nests outside of California in dry grasslands and shrub-steppe tablelands (Andres and Stone 2009:10). The breeding season is from late April through June, with a peak in late May (California Department of Fish and Game 2008).

10A.3.7.3. Occurrence in the Study Area

There are three CNDDDB records for occurrences of wintering flocks within 5 miles of the Dunnigan Pipeline portion of the study area (California Department of Fish and Wildlife 2021a). Potentially suitable mountain plover wintering habitat consists of annual grassland, hayfield (includes alfalfa), row crops, and seasonal wetland land cover types.

10A.3.8. Burrowing Owl

10A.3.8.1. Status and Distribution

Burrowing owl (*Athene cunicularia*) is a California species of special concern (California Department of Fish and Wildlife 2021b). Burrowing owl is a year-round resident in the Central Valley, San Francisco Bay region, Carrizo Plain, and Imperial Valley (Shuford and Gardali 2008:219).

10A.3.8.2. Habitat Requirements and Biology

Burrowing owl occurs primarily in grassland habitats but may also occur in landscapes that are highly altered by human activity. Suitable habitat must contain burrows and relatively short vegetation with minimal amounts of shrubs or taller vegetation. Burrowing owl may also occur in agricultural areas along roads, canals, ditches, and drains. The species most commonly nests and roosts in California ground squirrel (*Otospermophilus beecheyi*) burrows, but may also use burrows dug by other species, as well as culverts, piles of concrete rubble, and pipes. The breeding season is March to August but can begin as early as February. During the breeding season, burrowing owls forage near their burrows but have been recorded hunting up to 1.7 miles away. Rodent populations, particularly California vole (*Microtus californicus*) populations, may greatly influence survival and reproductive success of burrowing owls (Shuford and Gardali 2008:219, 221).

10A.3.8.3. Occurrence in the Study Area

There are 12 CNDDDB records for occurrences within 5 miles of the study area and one record for an occurrence that is in the study area near the inundation area (California Department of Fish and Wildlife 2021a). Potentially suitable burrowing owl habitat in the study area consists of annual grassland, hayfields, ruderal, disturbed, and developed land cover types.

10A.3.9. Yellow-breasted Chat

10A.3.9.1. Status and Distribution

Yellow-breasted chat is a California species of special concern (California Department of Fish and Wildlife 2021b). Yellow-breasted chat occurs in the northern Sacramento Valley in scattered areas, the Cascade Range, low- to mid-elevations in the Sierra Nevada, northwestern California, most of the central and southern coasts, and scattered locations in the southern deserts of California. Yellow-breasted chat nests regularly along low- and mid-elevation streams in the Sierra Nevada (Shuford and Gardali 2008:351–354).

10A.3.9.2. Habitat Requirements and Biology

Yellow-breasted chat occurs in early successional riparian habitats with well-developed shrub layers and open canopies. Nesting habitat is usually restricted to the narrow border of streams, creeks, sloughs, and rivers. Nests are built in Himalayan blackberry (*Rubus armeniacus*), wild grape (*Vitis* spp.), willow, and other plants that form dense thickets and tangles. Breeding occurs from late April through early August. (Shuford and Gardali 2008:355).

Yellow-breasted chat is known to forage in the foliage of low, dense shrubs; thickets; and short trees (Eckerle and Thompson 2020:14, California Department of Fish and Game 2005a). The species may also forage on the ground (Eckerle and Thompson 2020:8). Adults feed on insects, spiders, and wild fruit; soft-bodied insects are fed to nestlings (Shuford and Gardali 2008:355).

10A.3.9.3. Occurrence in the Study Area

There is one CNDDDB record for a historical (1977) occurrence of yellow-breasted chat along the Sacramento River that is approximately 4.75 miles southeast of the RBPP and within the operations study area (California Department of Fish and Wildlife 2021a). Potentially suitable

yellow-breasted chat habitat in the study area consists of forested wetland, scrub-shrub wetland, and upland riparian land cover types.

10A.3.10. Yellow Warbler

10A.3.10.1. Status and Distribution

Yellow warbler (*Setophaga petechia*) is a California species of special concern (California Department of Fish and Wildlife 2021b) and is primarily a migrant and summer resident in California (Shuford and Gardali 2008:333). The breeding range of yellow warbler in California consists of the coast range in Del Norte County, east to the Modoc Plateau, south along the coast range to Santa Barbara and Ventura Counties, and along the western slope of the Sierra Nevada south to Kern County. The breeding range also includes the eastern side of California from the Lake Tahoe area south through Inyo County, several southern California mountain ranges, and most of San Diego County (California Department of Fish and Game 2005b). The current breeding range is similar to the historical breeding range, with the exception of the Central Valley, where this species is thought to be largely extirpated (Shuford and Gardali 2008:333). Yellow warbler winters in the Imperial and Colorado River valleys (California Department of Fish and Game 2005b).

10A.3.10.2. Habitat Requirements and Biology

Yellow warbler generally occupies riparian vegetation near water along streams and in wet meadows. The species is often found in willows and cottonwoods (*Populus* spp.), and various other riparian shrubs and trees. In northern California, presence of willows and Oregon ash (*Fraxinus latifolia*) are thought to be important predictors of yellow warbler abundance (Shuford and Gardali 2008:335). As a migrant, yellow warbler occupies scrub-shrub and semi-open, second-growth forest, often associated with wetlands (Lowther et al. 2020).

The diet of yellow warbler in California consists mostly of insects, including ants, bees, wasps, caterpillars, beetles, true bugs, flies; and spiders; and a small amount of plant matter (California Department of Fish and Game 2005b; Shuford and Gardali 2008:336). Yellow warbler primarily gleans prey from leaves but utilizes various foraging techniques (Petit et al. 1990:257, 259).

Yellow warbler breeds from mid-April into early August with peak activity in June (California Department of Fish and Game 2005b). The species usually has one brood per season but has been documented to have two (Shuford and Gardali 2008:336). Females typically lay four to five eggs, which are incubated for 11 days, and young fledge in nine to 12 days (California Department of Fish and Game 2005b).

10A.3.10.3. Occurrence in the Study Area

There is one CNDDDB record for a historical (1977) occurrence of yellow warbler approximately 3.7 miles southeast of the RBPP (California Department of Fish and Wildlife 2021a). In addition, several observations of this species within the study area have been recorded in eBird within the last several years (Cornell Lab of Ornithology 2021). Potentially suitable yellow warbler habitat in the study area consists of forested wetland, scrub-shrub wetland, and upland riparian land cover types.

10A.3.11. Song Sparrow (Modesto Population)

10A.3.11.1. Status and Distribution

The Modesto population of song sparrow (*Melospiza melodia mailliardi*) is a California species of special concern (California Department of Fish and Wildlife 2021b). This population of song sparrow occurs primarily at elevations up to 200 feet above mean sea level from Colusa County south through the Delta (except for Suisun Marsh) to Stanislaus County (Shuford and Gardali 2008:401).

10A.3.11.2. Habitat Requirements and Biology

Song sparrow is associated with freshwater marsh that is dominated by tules and cattails, as well as riparian willow thickets. The species may also nest in valley oak riparian forests with blackberry understory, along vegetated irrigation canals and levees, and in recently planted oak restoration sites. Song sparrow requires moderately dense vegetation that provides cover for nest sites, a source of standing or running water, semi-open canopies to allow light penetration, and exposed ground or leaf litter for foraging (Shuford and Gardali 2008:402). The breeding season for the Modesto population of song sparrow is late March to early August (Gardali *n.d.*:1).

10A.3.11.3. Occurrence in the Study Area

There are several records for occurrences of Modesto song sparrow along the Sacramento River in the operations study area (California Department of Fish and Wildlife 2021a). Potentially suitable Modesto song sparrow habitat in the study area consists of forested wetland, freshwater marsh, managed wetland, scrub-shrub wetland, and upland riparian land cover types.

10A.3.12. Pallid Bat

10A.3.12.1. Status and Distribution

Pallid bat (*Antrozous pallidus*) is a California species of special concern (California Department of Fish and Wildlife 2021b) and is considered a species of high concern by the Western Bat Working Group (WBWG) (California Department of Fish and Wildlife 2021b, Western Bat Working Group 2017a). The geographic range for pallid bat extends throughout California (Zeiner et al. 1990b:70). The species is believed to be most prevalent at elevations below 6,000 feet, although it has been observed at higher elevations (Baker et al. 2008, Western Bat Working Group 2017b).

10A.3.12.2. Habitat Requirements and Biology

Generally, the habitat for pallid bat includes deserts, grasslands, shrublands, woodlands, and forests from sea level up level to 6,000 feet, although it has been observed at higher elevations (Baker et al. 2008, Western Bat Working Group 2017b). The species is most common in open, dry habitats and is a year-long resident in most of its range (Zeiner et al. 1990b:70).

Pallid bat is known to roost in crevices in rocky outcrops and cliffs, caves, mines, trees, and various human-made structures. Roosts generally have unobstructed entrances/exits, and are high above the ground, warm, and inaccessible to terrestrial predators. The species also tends to day roost and night roost in alternate structures (Baker et al. 2008:269). Overwintering roosts have

relatively cool, stable temperatures in protected structures beneath the forest canopy or on the ground, out of direct sunlight (Western Bat Working Group 2017b). This species is sensitive to disturbance of its roosting sites (Western Bat Working Group 2017b, Zeiner et al. 1990b:70).

Pallid bat forages over a variety of landscapes, including open shrub-steppe grasslands, oak savanna grasslands, open ponderosa pine forests, talus slopes, gravel roads, lava flows, orchards, and vineyards (Western Bat Working Group 2017b). Pallid bat catches a variety of prey, including arthropods on plant surfaces and insects in midair, and has been observed eating lizards and small rodents (Western Bat Working Group 2017b).

This species may roost alone but often roosts in groups and will roost with other species of bats (Zeiner et al. 1990b:70). The mating season is typically between October and February. Females give birth to one to two pups between April and July, pups are weaned by August, and maternity colonies disperse between August and October (Western Bat Working Group 2017b). Pallid bat travels short distances to hibernate in winter alone or in small groups (Western Bat Working Group 2017b, Zeiner et al. 1990b:70).

10A.3.12.3. Occurrence in the Study Area

There are three CNDDDB records for occurrences within 4 miles of the study area. The closest occurrence (from 1999) is approximately 0.25 mile from RBPP (California Department of Fish and Wildlife 2021a). Potentially suitable pallid bat roosting and foraging habitat in the study area consists of blue oak woodland, canal, chamise chaparral, developed, ditch, foothill pine, forested wetland, mixed chaparral, oak savanna, orchard, ornamental woodland, and upland riparian land cover types. Suitable pallid bat foraging habitat consists of annual grassland, barren, ephemeral stream, freshwater marsh, intermittent stream, perennial stream, scrub-shrub wetland, seasonal wetlands, pond, disturbed, hayfield (includes alfalfa), managed wetland, reservoir, rice, row crops, ruderal, and vineyard land cover types.

10A.3.13. Townsend's Big-eared Bat

10A.3.13.1. Status and Distribution

Townsend's big-eared bat (*Corynorhinus townsendii*) is a California species of special concern (California Department of Fish and Wildlife 2021b) and is considered a species of high concern by the WBWG (California Department of Fish and Wildlife 2021b, Western Bat Working Group 2017a). The geographic range of Townsend's big eared bat extends throughout California except for the highest elevations in the Sierra Nevada range (California Department of Fish and Wildlife 2016:14; Szewczak et al. 2018:7, 15).

10A.3.13.2. Habitat Requirements and Biology

The habitat for this species generally includes inland deserts; cool, moist coastal redwood forests; oak woodlands of the Coast Range and Sierra Nevada foothills; and lower to mid-elevation mixed coniferous-deciduous forests (California Department of Fish and Wildlife 2016:22). Townsend's big-eared bat roosts primarily in abandoned mines and natural caves, but also roosts in human-made structures and hollow trees (Pierson and Rainey 1998:3; California Department of Fish and Wildlife 2016:22–23; Szewczak et al. 2018:12).

Townsend's big-eared bat typically forages in forested habitat, in oak canopies, and along heavily vegetated stream corridors and habitat edges (California Department of Fish and Wildlife 2016:23–24; California Department of Fish and Game 2000) but may also forage in open areas. This species is thought to eat primarily medium-sized moths, supplemented with occasional captures of other insects, including flies, beetles, and aquatic insects (California Department of Fish and Game 2000; California Department of Fish and Wildlife 2016:18).

Townsend's big-eared bat is a colonial species that forms maternity colonies that typically range from a few dozen to several hundred individuals, although colonies of over 1,000 have been documented. Maternity colonies form between March and June and females give birth to a single pup between May and July. Nursery colonies typically begin to disperse in August when the pups are weaned, and the colonies completely disband in September and October (California Department of Fish and Wildlife 2016).

10A.3.13.3. Occurrence in the Study Area

There are no CNDDDB records for occurrences of Townsend's big-eared bat within 5 miles of the study area (California Department of Fish and Wildlife 2021a). Potentially suitable Townsend's big-eared bat roosting habitat in the study area consists of blue oak woodland, canal, chamise chaparral, developed, ditch, foothill pine, forested wetland, mixed chaparral, oak savanna, orchard, ornamental woodland, and upland riparian land cover types. Potentially suitable Townsend's big-eared bat foraging habitat in the study area consists of annual grassland, barren, blue oak woodland, chamise chaparral, ephemeral stream, foothill pine, forested wetland, freshwater marsh, intermittent stream, mixed chaparral, oak savanna, perennial stream, pond, scrub-shrub wetland, seasonal wetland, upland riparian, canal, developed, disturbed, ditch, hayfield (includes alfalfa), managed wetland, orchard, ornamental woodland, reservoir, rice, row crops, ruderal, and vineyard land cover types.

10A.3.14. Silver-haired Bat

10A.3.14.1. Status and Distribution

Silver-haired bat (*Lasionycteris noctivagans*) is a California species of special concern (California Department of Fish and Wildlife 2021b) and is considered a species of moderate concern by the WBWG (California Department of Fish and Wildlife 2021b; Western Bat Working Group 2017a). The geographic range of silver-haired bat extends through portions of California from the Oregon border south along the coast to San Francisco Bay, and along the Sierra Nevada and Great Basin region to Inyo County. The species has also been recorded in Monterey, Sacramento, Stanislaus, Ventura, and Yolo Counties and during migration may be found throughout the state (California Department of Fish and Game 2005c).

10A.3.14.2. Habitat Requirements and Biology

Habitat for silver-haired bat consists of coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats (California Department of Fish and Game 2005c). Silver-haired bat roosts in hollow trees, snags, rock crevices, caves, and under bark (California Department of Fish and Game 2005c; Western Bat Working Group 2017b) and occasionally under wood piles, in leaf litter, under foundations, and in buildings and mines (Western Bat Working Group 2017b).

This species forages in riparian zones along waterways and over meadows, ponds, and open brushy areas (California Department of Fish and Game 2005c; Western Bat Working Group 2017b). Silver-haired bat feeds mainly on moths and other soft-bodied insects, but also eats beetles and hard-shelled insects (California Department of Fish and Game 2005c).

Silver-haired bats mate in the fall and females give birth to one or two pups typically in June or July. The pups are thought to require more than 36 days to become volant (able to fly). This species is thought to migrate to warmer areas in winter (California Department of Fish and Game 2005c).

10A.3.14.3. Occurrence in the Study Area

There is one CNDDB record for an occurrence (from 1999) of silver-haired bat within 0.25 mile of RBPP (California Department of Fish and Wildlife 2021a). Potentially suitable silver-haired bat roosting habitat in the study area consists of blue oak woodland, canal, chamise chaparral, developed, ditch, foothill pine, forested wetland, mixed chaparral, oak savanna, orchard, ornamental woodland, and upland riparian land cover types. Potentially suitable silver-haired bat foraging habitat in the study area consists of annual grassland, barren, blue oak woodland, chamise chaparral, ephemeral stream, foothill pine, forested wetland, freshwater marsh, intermittent stream, mixed chaparral, oak savanna, perennial stream, pond, scrub-shrub wetland, seasonal wetland, upland riparian, canal, developed, disturbed, ditch, hayfield (includes alfalfa), managed wetland, orchard, ornamental woodland, reservoir, rice, row crops, ruderal, and vineyard land cover types.

10A.3.15. Western Red Bat

10A.3.15.1. Status and Distribution

Western red bat (*Lasiurus blossevillei*) is a California species of special concern (California Department of Fish and Wildlife 2021b) and is considered a species of high concern by the WBWG (California Department of Fish and Wildlife 2021b; Western Bat Working Group 2017a). The geographic range of western red bat extends throughout most of California (Zeiner et al. 1990b:60).

10A.3.15.2. Habitat Requirements and Biology

Generally, the habitat for this species consists of forests and woodlands, and this species is thought to prefer open habitats or habitat mosaics with access to trees for cover and open areas or habitat edges for foraging (Zeiner et al. 1990b:60).

Western red bat is commonly associated with forests and woodlands and appears to prefer open habitats or habitat mosaics with access to trees for roosting. Western red bat typically roosts in tree foliage and prefers roost sites that are protected from above and open below (Zeiner et al. 1990b:60). A study from New Mexico also suggests that this species may choose roost sites based on higher foliage density (Andersen and Geluso 2018:177–179). This species appears to be associated with intact riparian habitat (particularly willows, cottonwoods, and sycamores [*Platanus* spp.]) (Pierson et al. 2006:14, Western Bat Working Group 2017b), but has been observed in a variety of trees, including orchard trees (Pierson et al. 2006:15).

Western red bat forages over a wide variety of habitats, including riparian habitats (Pierson et al. 2006:14), grasslands, shrublands, open woodlands and forests, and croplands (Zeiner et al. 1990b:60). This species eats a variety of insects (Zeiner et al. 1990b:60; Western Bat Working Group 2017b).

Western red bats typically mate in August and September and females give birth to two or three pups between May and July. The pups are volant within 3 to 6 weeks. It is thought that western red bat is highly migratory (Western Bat Working Group 2017b) and migrates short distances between seasonal roosts (Zeiner et al. 1990b:60). The winter behavior of this species is not well understood, but some winter foraging has been observed on warmer days (Western Bat Working Group 2017b).

10A.3.15.3. Occurrence in the Study Area

There are two CNDDDB records (from 1999) for western red bat occurrences approximately 0.25 mile and 3.5 miles from RBPP (California Department of Fish and Wildlife 2021a). Potentially suitable western red bat roosting habitat in the study area consists of blue oak woodland, chamise chaparral, foothill pine, forested wetland, mixed chaparral, oak savanna, orchard, ornamental woodland, and upland riparian land cover types. Potentially suitable western red bat foraging habitat in the study area consists of annual grassland, barren, blue oak woodland, chamise chaparral, ephemeral stream, foothill pine, forested wetland, freshwater marsh, intermittent stream, mixed chaparral, oak savanna, perennial stream, pond, scrub-shrub wetland, seasonal wetland, upland riparian, canal, developed, disturbed, ditch, hayfield, managed wetland, orchard, ornamental woodland, reservoir, rice, row crops, ruderal, and vineyard land cover types.

10A.3.16. Hoary Bat

10A.3.16.1. Status and Distribution

Hoary bat (*Lasiurus cinereus*) is considered a species of moderate concern by the WBWG (California Department of Fish and Wildlife 2021b, Western Bat Working Group 2017a). The geographic range of hoary bat extends throughout California (Zeiner et al. 1990b).

10A.3.16.2. Habitat Requirements and Biology

Hoary bat habitat consists of woodlands and forests (Zeiner et al. 1990b). Hoary bat is thought to prefer open habitats or habitat mosaics, with access to trees for roosting and open areas or habitat edges for foraging (Western Bat Working Group 2017b, Salganek 2019:47, Zeiner et al. 1990b).

Hoary bats are known to roost primarily in the foliage of medium to large trees (Western Bat Working Group 2017b, Zeiner et al. 1990b), and while this species is typically associated with natural woodland and forest land cover types, it has also been observed in suburban trees (Quirk pers. comm.). This species is also thought to prefer roost locations that are protected above and open below (Salganek 2019:6–7; Zeiner et al. 1990b). Hoary bats typically roost in foliage of medium to large deciduous or coniferous trees (Western Bat Working Group 2017b; Zeiner et al. 1990b) and are thought to prefer roosting at the ends of branches (Western Bat Working Group 2017b). In addition, other species of foliage-roosting bats (e.g., western red bat) are known to use orchard trees (Pierson et al. 2006:15, Western Bat Working Group 2017b); therefore, there is potential for hoary bat to roost in similar types of trees.

Hoary bats forages primarily in open areas or along habitat edges (Western Bat Working Group 2017b, Zeiner et al. 1990b), but this species may forage in smaller openings between trees within woodland areas. This species is thought to prefer moths but eats a variety of insects (Western Bat Working Group 2017b, Zeiner et al. 1990b). Hoary bats typically mate in the fall and females give birth to one to four pups the following May through July.

10A.3.16.3. Occurrence in the Study Area

There are two CNDDDB records (from 1999) for hoary bat occurrences approximately 0.25 mile and 3.5 miles from RBPP (California Department of Fish and Wildlife 2021a). Potentially suitable hoary bat roosting habitat in the study area consists of blue oak woodland, chamise chaparral, foothill pine, forested wetland, mixed chaparral, oak savanna, orchard, ornamental woodland, and upland riparian land cover types. Potentially suitable hoary bat foraging habitat in the study area consists of annual grassland, barren, blue oak woodland, chamise chaparral, ephemeral stream, foothill pine, forested wetland, freshwater marsh, intermittent stream, mixed chaparral, oak savanna, perennial stream, pond, scrub-shrub wetland, seasonal wetland, upland riparian, canal, developed, disturbed, ditch, hayfield, managed wetland, orchard, ornamental woodland, reservoir, rice, row crops, ruderal, and vineyard land cover types.

10A.3.17. Long-eared Myotis

10A.3.17.1. Status and Distribution

Long-eared myotis (*Myotis evotis*) is considered a species of moderate concern by the WBWG (California Department of Fish and Wildlife 2021b, Western Bat Working Group 2017a). The geographic range of long-eared myotis extends through most of California but excludes the Central Valley and hot deserts (Zeiner et al. 1990b).

10A.3.17.2. Habitat Requirements and Biology

Long-eared myotis habitat consists of all woodland, forest, and brush habitats, but the species seems to prefer coniferous woodlands and forests (Zeiner et al. 1990b). Long-eared myotis roosts under exfoliating tree bark, on the ground, and in hollow trees, tree snags, buildings, bridges, caves, mines, cliff crevices, sinkholes, and rocky outcrops (Western Bat Working Group 2017b, Zeiner et al. 1990b).

Long-eared myotis forages among trees, over water, and over shrubs, and catches insects in flight, from foliage, or from the ground (Zeiner et al. 1990b). This species eats moths and small beetles, as well as flies, lacewings, wasps, and true bugs (Western Bat Working Group 2017b; Zeiner et al. 1990b).

During the summer, females form small maternity colonies and males and non-reproductive females roost alone or in small groups nearby. Females give birth to one pup in late spring to early summer. (Western Bat Working Group 2017b). Little is known about winter habits, but this species is thought to migrate seasonally and hibernate (Western Bat Working Group 2017b, Zeiner et al. 1990b).

10A.3.17.3. Occurrence in the Study Area

There is one CNDDDB record for an occurrence of long-eared myotis from 1999 that is

approximately 3.5 miles east of RBPP (California Department of Fish and Wildlife 2021a). Potentially suitable long-eared myotis roosting and foraging habitat in the study area consists of blue oak woodland, canal, chamise chaparral, developed, ditch, foothill pine, forested wetland, mixed chaparral, oak savanna, orchard, ornamental woodland, and upland riparian land cover types. Suitable long-eared myotis foraging habitat consists of annual grassland, barren, ephemeral stream, freshwater marsh, intermittent stream, perennial stream, scrub-shrub wetland, seasonal wetlands, pond, disturbed, hayfield (includes alfalfa), managed wetland, reservoir, rice, row crops, ruderal, and vineyard land cover types.

10A.3.18.American Badger

10A.3.18.1. Status and Distribution

American badger (*Taxidea taxus*) is a California species of special concern (California Department of Fish and Wildlife 2021b). The geographic range of American badger extends throughout California (Zeiner et al. 1990b). Although this species is still thought to be widespread in California, the population appears to be declining, primarily because of urbanization and habitat fragmentation (Lay 2008:1–2).

10A.3.18.2. Habitat Requirements and Biology

American badger occurs in a variety of open, arid habitats but most commonly is associated with grasslands, savannas, and mountain meadows. The species requires relatively open, uncultivated ground (Williams 1986:66–67). While American badger prefers grassland and scrub habitats, it has also been found in hardwood and conifer woodlands, in conifer forests, and on the boundaries of its preferred habitat types (Quinn 2008:31, 131–132). American badgers do not survive in cultivated areas, and agricultural practices and urban development have caused mortalities that have resulted in the limited presence of the species in these areas (Williams 1986:66, Lay 2008:4).

American badger requires friable soils in which it can dig burrows for cover and bear young. American badger is known to reuse old burrows, but may also dig a new den each night, particularly in summer. (Zeiner et al. 1990b). Within its home range, American badger avoids flat terrain for denning, possibly because of poor drainage or the additional energy required to dig a den in flat ground as opposed to into a hillside (Quinn 2008:132). The distribution of this species is correlated with population and distribution of fossorial rodents, which are American badger's preferred prey (Lay 2008:4). American badger is a carnivore that eats mostly small mammals (Quinn 2008:10) but will also prey on birds, reptiles, insects, invertebrates, and plants (Quinn 2008:10, Zeiner et al. 1990b).

American badger mates in summer and early fall, and females give birth to an average of two to three kits, usually in March and April. This species is not known to be migratory and their home ranges are smaller in the winter than in summer. American badgers are active year-round but may have variable periods of torpor (a state of decreased physiological activity, usually by a reduced body temperature and metabolic rate) in the winter (Zeiner et al. 1990b).

10A.3.18.3. Occurrence in the Study Area

There are no CNDDB records for occurrences of American badger within 5 miles of the study

area, but there is one record for an occurrence south of Stoney Creek and northwest of Orland (California Department of Fish and Wildlife 2021a). Potentially suitable American badger habitat consists of annual grassland, blue oak woodland, chamise chaparral, ephemeral stream, foothill pine, mixed chaparral, and oak savanna land cover types, as well as disturbed and ruderal land cover types that abut potentially suitable habitat.

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10A.4.1.2. Personal Communications

Quirk, Corky. Executive Director. NorCal Bats. January 21, 2021—Email to Marieka Schrader, Senior Biologist, ICF, Sacramento, California.