United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
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In Reply Refer to:
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Sent Electronically

Memorandum

To: Assistant Field Supervisor, Carlsbad Fish and Wildlife Office
Carlsbad, California

From: Field Supervisor, Carlsbad Fish and Wildlife Office
Carlsbad, California

Subject: Intra-Service Formal Section 7 Consultation for the Issuance of an Amendment to the San Diego Gas and Electric's Endangered Species Act Section 10(a)(1)(B) Permit (PRT-809637) for the Subregional Habitat Conservation Plan Amendment, San Diego County and Portions of Orange and Riverside Counties, California

This document transmits the U. S. Fish and Wildlife Service's (Service or USFWS) biological opinion (Opinion) in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*), regarding the issuance of an amendment to the incidental take permit (ITP) for the San Diego Gas and Electric (SDG&E) Subregional Natural Community Conservation Plan (Subregional Plan; SDG&E 1995) for the SDG&E Habitat Conservation Plan Amendment 2022 (HCP Amendment; SDG&E 2023) pursuant to section 10(a)(1)(B) of the Act. The Service issued the Section 10(a)(1)(B) permit (PRT-809637) to SDG&E for their Subregional Plan on December 18, 1995. The permit duration is for 55 years. SDG&E is requesting the HCP Amendment to allow additional impacts to covered species and their habitats.

The Subregional Plan is a comprehensive, 55-year habitat conservation plan program that covered 110 wildlife and plant species and their habitats [except when they occur in habitat within the jurisdiction of the U.S. Army Corps of Engineers (Corps) under section 404 of the Clean Water Act] to allow SDG&E to install, maintain, operate, and repair its existing gas and electric system and undertake typical expansion of the electric grid (Covered Activities) within a 2,245,800-acre Plan Area in portions of San Diego, Orange and Riverside Counties (SDG&E 1995). The effects of implementing the Subregional Plan were analyzed in a biological and conference opinion (1-6-96-FW-07; Service 1995a; 1995 biological opinion) dated December 18, 1995.

The 1995 biological opinion addressed potential effects to 110 covered species in the Subregional Plan. The proposed ITP amendment may affect 41 Covered Species in the HCP Amendment (even when they occur in habitat within the jurisdiction of the Corps under section 404 of the Clean Water Act), including 30 wildlife (16) and plant (14) species that are listed as

threatened (T) or endangered (E) under the Act as follows: San Diego fairy shrimp (*Branchinecta sandiegonensis*, E), Riverside fairy shrimp (*Streptocephalus woottoni*, E), Laguna Mountains skipper (*Pyrgus ruralis lagunae*, E), Hermes copper butterfly (*Lycaena hermes*, T), arroyo toad (*Anaxyrus californicus*, E), California red-legged frog (*Rana draytonii*, E), western snowy plover (Pacific Coast Population Distinct Population Segment (DPS) [*Charadrius nivosus nivosus* (*C. alexandrinus n.*), T], western yellow-billed cuckoo (*Coccyzus americanus occidentalis*, E), southwestern willow flycatcher (*Empidonax traillii extimus*, E), coastal California gnatcatcher (*Polioptila californica californica*, T), light-footed Ridgway's (=clapper) rail [*Rallus obsoletus* (=*longirostris*) *levipes*, E], California least tern [*Sternula antillarum browni* (*Sterna a. b.*), E], least Bell's vireo (*Vireo bellii pusillus*, E), Stephens' kangaroo rat (*Dipodomys stephensi*, T), Peninsular bighorn sheep (*Ovis canadensis nelson*, E), Pacific pocket mouse (*Perognathus longimembris pacificus*, E), San Diego thorn-mint (*Acanthomintha ilicifolia*, T), San Diego ambrosia (*Ambrosia pumila*, E), Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*, E) Encinitas baccharis (*Baccharis vanessae*, T), thread-leaved brodiaea *(Brodiaea filifolia*), Salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*, E), Orcutt's spineflower (*Chorizanthe orcuttiana*, E), Otay tarplant (*Deinandra conjugens*, T), San Diego button-celery (*Eryngium aristulatum* var. *parishii*, E), willowy monardella (*Monardella viminea*, E), spreading navarretia (*Navarretia fossalis*, T), California Orcutt grass (*Orcuttia californica*, E), San Diego mesa mint (*Pogogyne abramsii*, E), and Otay Mesa mint (*Pogogyne nudiuscula*, E) (see Table 1).

The proposed ITP amendment may also effect 11 (9 wildlife and 2 plants) unlisted covered species in the HCP Amendment as follows: western spadefoot (*Spea hammondii*), southwestern pond turtle (*Actinemys pallida*), coast horned lizard (*Phrynosoma blainvillii*), tricolored blackbird (*Agelaius tricolor*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*; burrowing owl), coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), bald eagle (*Haliaeetus leucocephalus*), Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), short-leaved dudleya (*Dudleya brevifolia*), and Dehesa beargrass (*Nolina interrata*). All unlisted species will be treated as if they were listed for purposes of this Opinion.

In order to meet issuance criteria under section 10(a)(2)(B) of the Act, take of covered wildlife species will be incidental to otherwise lawful activities, and to the extent Covered Activities will impact unlisted covered bird species protected by the Migratory Bird Treaty Act (MBTA), the Covered Activities must comply with the MBTA throughout the Plan Area. Plant species are "covered" only by the ITP in recognition of the conservation measures incorporated into the Plan for such species.

This Opinion also addresses designated critical habitat for Hermes copper butterfly, arroyo toad, and coastal California gnatcatcher.

The following federally listed species are potentially extirpated from or only have horticulture occurrences in the Plan Area, are not near existing or expected SDG&E facilities, or are not expected to be impacted by Covered Activities: coastal dunes milk-vetch (*Astragalus tener* var. *titi*), Nevin's barberry (*Berberis nevinii*), Laguna Beach liveforever (*Dudleya stolonifera*), Mexican flannelbush (*Fremontodendron mexicanum*), San Bernardino bluegrass (*Poa atropurpurea*), big-leaved crownbeard (*Verbesina dissita*), desert pupfish (*Cyprinodon*

macularius), tidewater goby (*Eucyclogobius newberryi*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), and steelhead southern California DPS (*Oncorhynchus mykiss irideus*). Therefore, any impacts to these species are not covered by the HCP Amendment and would need to be addressed pursuant to section 7 or 10 of the Act.

In addition, the Quino checkerspot butterfly was not covered because the Service has already issued SDG&E an ITP for the species associated with SDG&E's *Low-Effect Habitat Conservation Plan for the Issuance of an Incidental Take Permit Under Section 10(a)(l)(b) of the Endangered Species Act for the Federally Endangered Quino Checkerspot Butterfly for the San Diego Gas and Electric Company* (Quino LEHCP) (SDG&E 2007). The Quino LEHCP minimized and mitigated the effects of Covered Activities on the species over the 50-year term of the Service's permit.

Based on conservation measures (i.e., Operational Protocols (OPs)) committed to by SDG&E, we have determined that the proposed project is not likely to adversely affect the federally endangered California least tern and Peninsular bighorn sheep; federally threatened western snowy plover; and designated critical habitat for the San Diego thorn-mint, San Diego ambrosia, thread-leaved brodiaea, willowy monardella, spreading navarretia, San Diego fairy shrimp, Riverside fairy shrimp, Laguna Mountains skipper, western snowy plover, southwestern willow flycatcher, least Bell's vireo, and Peninsular bighorn sheep (Appendix). Therefore, these species and critical habitats are not addressed in this Opinion.

The HCP Amendment does not alter the obligation of federal agencies to consult with the Service pursuant to section 7 of the Act for federal actions (e.g., permits, funding, approval on federal land) related to the Covered Activities. However, if Covered Activities related to federal actions are consistent with the HCP Amendment, the Service will do a streamlined consultation with the federal action agency.

CONSULTATION HISTORY

In 1995, the Service, in coordination with the California Department of Fish and Wildlife (CDFW) (collectively referred to as the Wildlife Agencies), approved and issued SDG&E a 55-year ITP (No. PRT-809637) for the Subregional Plan.

The following minor amendments and clarification were made to the Subregional Plan since its issuance in 1995:

1. November 7, 2002 – Service and SDG&E settlement agreement regarding Pacific pocket mouse (*Perognathus longimembris pacificus*), which identified additional notification requirements and mapping prior to work within known Pacific pocket mouse areas on federal lands.
2. June 4, 2004 – The Service issued a clarification letter to SDG&E documenting that the Subregional Plan provides incidental take coverage for all Covered Activities occurring in the Subregional Plan Area on both federal and non-federal lands.

3. July 26, 2004 – The Wildlife Agencies granted a minor amendment to SDG&E regarding vernal pool resources located both on and off SDG&E access roads (Vernal Pool Clarification). The Vernal Pool Clarification establishes clear standards for avoidance, minimization, and mitigation of permanent and temporary impacts. Eight additional Operation Protocols, specific to vernal pools, were established with approval of this amendment.

4. January 6, 2006 – The Wildlife Agencies concurred on a request to assign SDG&E's rights, interests, and/or obligation in the Subregional Plan to Southern California Gas (affiliated utility also owned by Sempra Energy) for the joint Southern California Gas and SDG&E operations and maintenance (O&M) of Natural Gas Pipeline 1026.

5. April 9, 2015 – The Wildlife Agencies granted a minor amendment to SDG&E revising the required Annual Report submittal date from November 1 (Section 9.2 of the Implementing Agreement) to March 31.

In August 2007, the Service also issued SDG&E a 50-year ITP (TE162969-0) for the *Low-Effect Habitat Conservation Plan for the Issuance of an Incidental Take Permit Under Section 10(a)(l)(b) of the Endangered Species Act for the Federally Endangered Quino Checkerspot Butterfly for the San Diego Gas and Electric Company* (Quino LEHCP) (SDG&E 2007).

Since 2007, SDG&E has increased its wildfire safety efforts to grid harden its system to reduce the risk of wildfire and enhance grid resilience, which have impacted more habitat than was originally contemplated in the Subregional Plan. As a result of these increased wildfire safety efforts, SDG&E determined that the 400 acres of habitat impacts authorized by the Subregional Plan may be inadequate to continue supporting Covered Activities for the remainder of the 2050 Subregional Plan term.

Accordingly, SDG&E began working with the Wildlife Agencies to amend its Subregional Plan to allow more impacts. To help ensure that it may continue work while developing the HCP Amendment, SDG&E prepared the *Low-Effect Habitat Conservation Plan for Areas Where San Diego Gas & Electric Company Conducts Its Routine Utility Operations & Maintenance Activities* (2017 LEHCP) (SDG&E 2017). In March 2017, the Service issued SDG&E a 5-year ITP (TE26660C-0) for the 2017 LEHCP (SDG&E 2017). The Service's ITP for the 2017 LEHCP authorized an additional 60 acres of impacts to habitat supporting 37 Covered Species.

Since issuance of the ITP for the 2017 LEHCP, the Service was extensively involved with the planning and preparation of the draft and final HCP Amendment. Numerous meetings were held during the planning and development of the HCP Amendment.

As part of the HCP Amendment planning, SDG&E and the Wildlife Agencies evaluated whether any Covered Species should be removed or added based on the following four criteria: (i) whether the species was listed or likely to be listed during the remainder of the permit term; (ii) whether the species was currently known or expected to occur in the Plan Area; (iii) whether the species could be adversely affected by Covered Activities; and (iv) whether there was sufficient data and information available to adequately evaluate effects on the species and develop appropriate protocols for avoiding, minimizing, or mitigating impacts. As a result of this review, many species were removed, and the Hermes copper butterfly, Laguna Mountains

skipper, western yellow-billed cuckoo, and Peninsular bighorn sheep were added, so that a total 41 species of plants (16 species) and wildlife (25 species) would be included as Covered Species in the HCP Amendment (even when they occur in habitat within the jurisdiction of the Corps under section 404 of the Clean Water Act) (Table 1). Species to be covered under the HCP Amendment include primarily those species that are federally listed, and some non-federally or state listed species that are regionally sensitive and/or may become federally listed.

SDG&E and the Wildlife Agencies also worked to review the 61 OPs and 10 mitigation measures in the Subregional Plan. During this review, it was decided to include a total of 98 OPs (see Table 3), 12 of which are existing OPs that were previously adopted under the Subregional Plan. The HCP Amendment also includes 41 OPs from the Subregional Plan that have been updated, as well as 45 new OPs that were developed in coordination with the Wildlife Agencies to improve avoidance and minimization of impacts to and conservation of Covered Species and their habitats. Of the 45 new OPs, 5 are general, 17 are for vernal pools and road ruts, 1 is for narrow endemic plants, and 22 are for specific Covered Species.

SDG&E also coordinated with the Service to prepare an Eagle Conservation Plan (ECP) (Appendix B in the HCP Amendment). The ECP provides the information required by the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668 and 50 C.F.R. 22) and the Service's Final Rule revising the regulations that govern its eagle take permit program (50 C.F.R. 13 and 22 and 81 Fed. Reg. 91,494) (2016 Eagle Rule; Service 2016a, 2016b) to continue to include golden eagles and bald eagles as Covered Species under the HCP Amendment.

Under the Subregional Plan, permanent impacts to all upland habitats are mitigated at the same ratios regardless of covered species occupancy through the use of Mitigation Credits established by SDG&E by providing funds for the purchase of high-quality upland habitat to help meet region-wide conservation goals. The upland Mitigation Credits serve as mitigation for both in-kind and out-of-kind covered species and habitat impacts, without regard to the type and biological value of the habitat impacted. SDG&E also established wetland mitigation credits by providing funds for the purchase of high quality wetland/riparian habitat. The Vernal Pool Clarification also established mitigation requirements/ratios for impacts to vernal pools. However, because impacts to other wetlands within the Corps jurisdiction are not covered under the Subregional Plan, mitigation ratios for wetland impacts other than vernal pools are not included in the Subregional Plan and are determined on a case-by-case basis under the Corps permitting process. For the HCP Amendment, SDG&E worked with the Wildlife Agencies to develop specific mitigation requirements for: 22 species and all narrow endemic plants; vernal pools that differ from the Vernal Pool Clarification; and all other wetlands including under the Corps jurisdiction.

SDG&E also worked with the Wildlife Agencies to clarify and expand the restoration Covered Activities that SDG&E can implement in order to successfully restore temporary impacts. Specifically, temporary impacts that are successfully restored, as defined by the success criteria of Section 5.2 of the HCP Amendment, will not be counted towards the impact cap or require use of Mitigation Credits.

SDG&E also worked with the Wildlife Agencies to develop a Minor Amendment process and replace the limits on New Construction in the Subregional Plan with a requirement that Covered

Activities for New Construction that will impact several Covered Species and/or more than 1.75 acres of a Preserve or Proposed Preserve will require Minor Amendments to the HCP Amendment.

The Plan Area for the Subregional Plan includes 2,245,800 acres in portions of San Diego, Orange, and Riverside Counties, California. After discussions with the Wildlife Agencies, the Plan Area for the HCP Amendment was expanded to include the entire 2,815,930-acre SDG&E service area within all of San Diego County and the same portions of Orange and Riverside Counties covered under the Subregional Plan (see Figure 1).

SDG&E also worked with the Wildlife Agencies to develop a Wildfire Fuels Management program that is now included as a Covered Activity in the HCP Amendment.

On March 3, 2022, SDG&E applied to the Service for an amended ITP for the HCP Amendment. The Service published a Notice of Availability (NOA) in the Federal Register on August 10, 2022, for the HCP Amendment and completed a draft Environmental Assessment (EA) dated August 2022.

The Service then worked with SDG&E to address the comments on the NOA which led to several changes to the HCP Amendment.

On April 10, 2023, SDG&E requested the Service work with them and CDFW on a Fish and Game Code section 2080.1 consistency determination as an alternative to a Natural Communities Conservation Program (NCCP) Amendment. After several meetings it was decided to only do a consistency determination for Stephens' kangaroo rat. CDFW then provided additional measures approved by SDG&E to include in this Opinion for a consistency determination for Stephens' kangaroo rat, which were finalized on August 17, 2023.

DECISIONAL RECORD

This biological opinion was prepared using the following information that is hereby incorporated by reference:

- The HCP Amendment;
- The decision documents completed for issuance of the amended incidental take permit (PRT-809637-1);
- Additional information on project impacts and conservation provided by SDG&E and its consultants;
- The Service's proposed Permit terms and conditions dated October 2023;
- Available scientific literature and interviews with species and area experts; and
- Other information in Service files.

The project file addressing this consultation is located at the Carlsbad Fish and Wildlife Service Office (CFWO).

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed federal action is the issuance of an amendment to SDG&E's Subregional Plan ITP for SDG&E's Covered Activities based on implementation of conservation measures provided in the HCP Amendment. The amended ITP authorize the incidental take of the 22 wildlife Covered Species, subject to compliance with and implementation of the HCP Amendment (Table 1). This Opinion also addresses potential effects to 16 plant Covered Species.

Table 1. HCP Amendment Covered Species List

Scientific Name	Common Name	ESA Listing Status[1]	CESA Listing Status[1]	Species-Specific Protocols (Y/N)	Narrow Endemic Plant Protocols (Y/N)	Vernal Pool and Road Rut Protocols (Y/N)
Plants (16)						
Acanthomintha ilicifolia	San Diego thornmint	T	E	N	Y	N
Ambrosia pumila	San Diego ambrosia	E	-	N	Y	N
Arctostaphylos glandulosa ssp. *crassifolia*	Del Mar manzanita	E	-	N	Y	N
Baccharis vanessae	Encinitas baccharis	T	E	N	Y	N
Brodiaea filifolia	Thread-leaved brodiaea	T	E	N	Y	N
Chloropyron maritimum ssp. *maritimum (Cordylanthus maritimus* ssp. *maritimus)*	Salt marsh bird's-beak	E	E	N	Y	N
Chorizanthe orcuttiana	Orcutt's spineflower	E	E	N	Y	N
Deinandra conjugens (Hemizonia conjugens)	Otay tarplant	T	E	N	Y	N
Dudleya brevifolia	Short-leaved dudleya	-	E	N	Y	N
Eryngium aristulatum var. *parishii*	San Diego button-celery	E	E	N	N	Y
Monardella viminea (Monardella. Linoides subsp. *viminea.)*	Willowy monardella	E	E	N	Y	N
Navarretia fossalis	Spreading navarretia	T	-	N	N	Y
Nolina interrata	Dehesa beargrass	-	E	N	Y	N
Orcuttia californica	California Orcutt grass	E	E	N	N	Y
Pogogyne abramsii	San Diego mesa mint	E	E	N	N	Y
Pogogyne nudiuscula	Otay Mesa mint	E	E	N	N	Y
Invertebrates (4)						
Branchinecta sandiegonensis	San Diego fairy shrimp	E	-	N	N	Y

Scientific Name	Common Name	ESA Listing Status[1]	CESA Listing Status[1]	Species-Specific Protocols (Y/N)	Narrow Endemic Plant Protocols (Y/N)	Vernal Pool and Road Rut Protocols (Y/N)
Streptocephalus woottoni	Riverside fairy shrimp	E	-	N	N	Y
Pyrgus ruralis lagunae	Laguna Mountains skipper	E	-	Y	N	N
Lycaena hermes	Hermes copper butterfly	T	-	Y	N	N
Amphibians (3)						
Anaxyrus californicus (Bufo microscaphus californicus)	Arroyo toad	E	-	Y	N	N
Rana draytonii (Rana aurora draytonii)	California red-legged frog	T	-	Y	N	N
Spea hammondii	Western spadefoot	-	-	Y	N	Y
Reptiles (2)						
Actinemys pallida	Southwestern pond turtle	-	-	Y	N	N
Phrynosoma blainvillii	Coast horned lizard	-	-	N	N	N
Birds (11)						
Agelaius tricolor	Tricolored blackbird	-	T	Y	N	N
Athene cunicularia	Burrowing owl	-	-	Y	N	N
Aquila chrysaetos[2]	Golden eagle[2]	-	-	Y[2]	N	N
Campylorhynchus brunneicapillus sandiegensis	Coastal cactus wren	-	-	Y	N	N
Coccyzus americanus	Western yellow-billed cuckoo (western DPS)	T	E	Y	N	N
Empidonax traillii extimus	Southwestern willow flycatcher	E	E	Y	N	N
Haliaeetus leucocephalus[2]	Bald eagle[2]	-	E	Y[2]	N	N
Passerculus sandwichensis beldingi	Belding's savannah sparrow	-	E	Y	N	N
Polioptila californica californica	Coastal California gnatcatcher	T	-	Y	N	N
Rallus obsoletus levipes (Rallus longirostris levipes)	Light-footed Ridgway's rail (light-footed clapper rail)	E	E	Y	N	N
Vireo bellii pusillus	Least Bell's vireo	E	E	Y	N	N
Mammals (2)						
Dipodomys stephensi	Stephens' kangaroo rat	T	T	Y	N	N
Perognathus longimembris pacificus	Pacific pocket mouse	E	-	Y	N	N

[1] Listing Status: E = Endangered; T = Threatened

[2] Appendix B of the HCP Amendment contains the Eagle Conservation Plan (ECP) that has been developed for golden eagle and bald eagle. The ECP assesses eagle use in the Plan Area, estimates impacts, identifies avoidance and minimization measures, and provides a monitoring and mitigation approach to offset eagle impacts.

The Plan Area for the HCP Amendment encompasses 2,815,930 acres, which includes SDG&E's entire service area within all of San Diego County and portions of Orange and Riverside Counties (Figure 1). Within the Plan Area, SDG&E Facilities and Covered Activities occur within rights-of-way for SDG&E's existing gas and electric transmission and distribution Facilities, lands owned by SDG&E, and/or subject to SDG&E easements to maintain the Facilities, private access routes associated with SDG&E's O&M, and mitigation areas acquired to mitigate impacts resulting from Covered Activities under the HCP Amendment. Approximately 64 percent of SDG&E's service area is in "High Fire Threat Districts" as designated by the California Public Utility Commission (CPUC) (CPUC 2021).

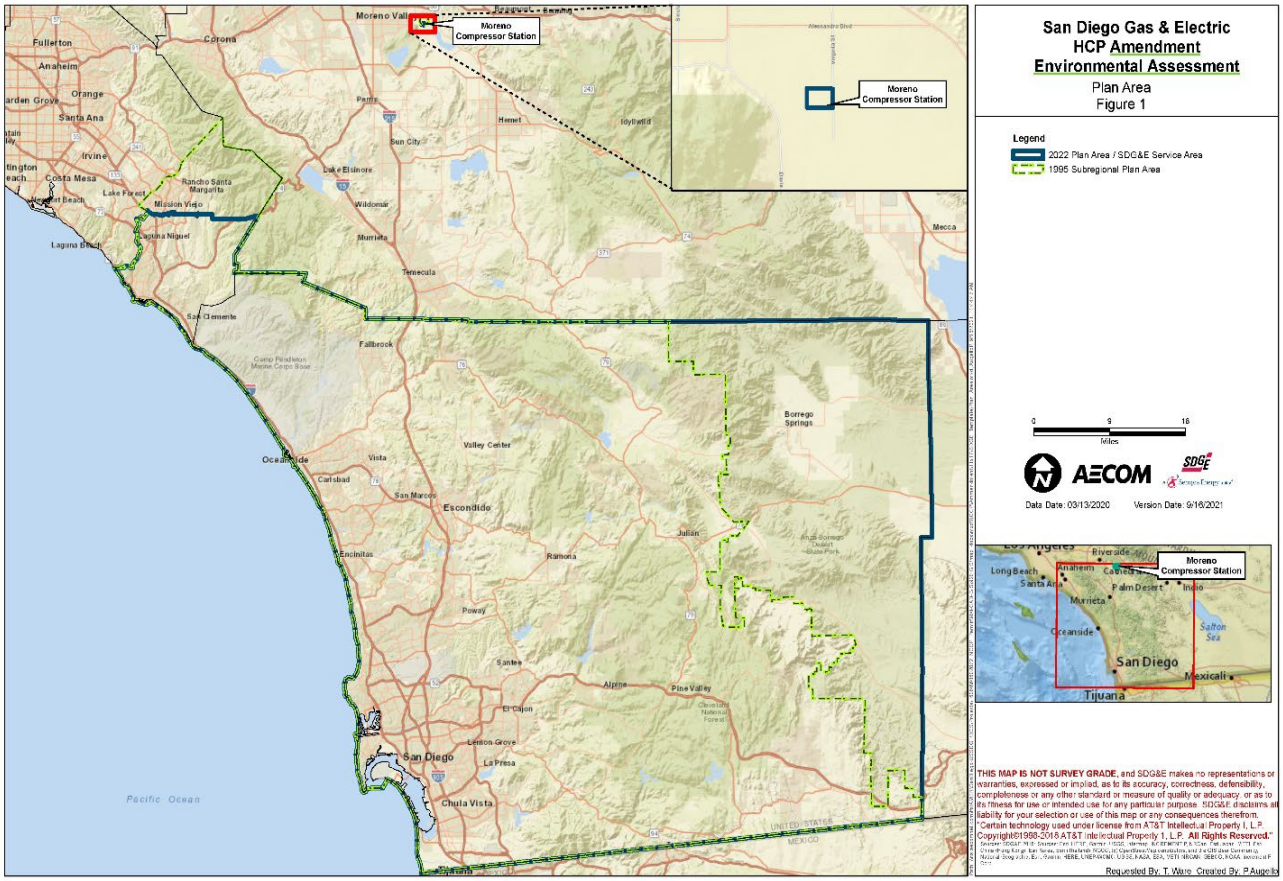

Figure 1. Plan Area

For the HCP Amendment, SDG&E developed the probable impact zone (PIZ) around existing SDG&E Facilities where impacts are reasonably likely to occur. The PIZ widths and corridors identified were measured from the center of infrastructure and represent the maximum area within which Covered Activities (with the possible exception of some New Construction) are expected to occur (Table 2) (Table 4.3 of the HCP Amendment). The PIZ encompasses approximately 352,909 acres, which is about 13 percent of the Plan Area.

Table 2. Assumptions for Establishing the Probable Impact Zone (PIZ)

Facility Type	Total Linear Distance in Plan Area (miles)	PIZ Width (feet)	Total PIZ Corridor Width (feet)[1]
Linear Facilities			
Electric Distribution (Overhead and Underground)	23,325	25	50
Electric Transmission (Overhead and Underground)	2,241	200	400
Gas Distribution and Transmission (Underground)	8,652	150	300
Telecommunication (Overhead and Underground)	478	25	50
Access Roads	1,337	20	40
Non-linear Facilities			
Electric Substations	NA	50	NA
Gas Regulator/Compressor Stations[2]	NA	50	NA

NA = not applicable

[1] Corridor width is two times the PIZ width.

[2] The Moreno Compressor Station was not included in the PIZ because the potential impact footprint for any expansion of this Facility is known. See Section 4.1.3.3 of the HCP Amendment for details.

Covered Activities

As detailed in the Chapter 2 of HCP Amendment, Covered Activities include two broad categories of work conducted by SDG&E on its natural gas and electric transmission and distribution systems that may result in impacts to/take of Covered Species and their habitats in the Plan Area: O&M and New Construction. Covered Activities also include biological surveys and handling of Covered Species as required to implement the HCP Amendment, as well as management activities on mitigation lands. Except for the addition of Wildfire Fuels Management and drones, Covered Activities proposed in the HCP Amendment are the same as those in the Subregional Plan.

O&M

Typical O&M includes inspecting, monitoring, and testing existing equipment; operating valves and switches; repairing and replacing existing Facilities, structures, wires, pipelines, and access roads; increasing the height above ground or the depth below ground of Facilities; replacing overhead lines with buried underground lines; and vegetation management, including tree removal and pruning. O&M for existing Facilities is anticipated to occur within the PIZ.

O&M — Wildfire Fuels Management

As detailed in the HCP Amendment, Chapter 2, SDG&E recently instituted a Wildfire Fuels Management program to reduce fire fuel load around distribution and transmission lines, which may in turn reduce the intensity of wildfires that traverse facility easements and rights-of-way. This program includes (1) removing nonnative vegetation, especially fire-promoting species,

(2) removing dead woody vegetation, and (3) thinning select native vegetation with a focus on preserving habitat value and native species diversity. To ensure that native plant diversity at treatment sites does not change when thinning vegetation, the program targets commonly occurring or dominant native species within a given vegetation community for thinning. Wildfire Fuels Management for existing Facilities is anticipated to occur within the PIZ.

Acreage impacts from Wildfire Fuels Management will be calculated based on the net percent reduction of native canopy (Section 4.4.1 of the HCP Amendment) and will be separately accounted for. Using this approach, SDG&E will determine the final acres of impact per year that require mitigation as follows:

> Conduct field surveys for a Treatment Area to document the pre- and post-activity native and nonnative vegetation cover and mitigate for the actual net difference, if any, at a 1:1 ratio. Under this approach, if, for example, the Treatment Area was 100 acres and SDG&E reduced the cover of native species by 10 acres and the cover of nonnative species by 10 acres, SDG&E would document these results and no mitigation would be required. Alternatively, if the Treatment Area was 100 acres and SDG&E reduced the cover of native species by 10 acres and the cover of nonnative species by 8 acres, SDG&E would document these results and 2 acres of mitigation (i.e., the 2-acre net difference between native and nonnative vegetation mitigated at a 1:1 ratio) would be required. Further, if the Treatment Area was 100 acres and SDG&E reduced the cover of native species by 8 acres and the cover of nonnative species by 10 acres, SDG&E would document these results and may use the excess 2 acres as mitigation for future Wildfire Fuels Management.
>
> If Wildfire Fuels Management is no longer needed at a Treatment Area, SDG&E may choose to restore and/or allow the Treatment Area to return to pre-treatment conditions. Mitigation Credits that were debited for those areas will be credited based on the percent native vegetation restored, per the temporary impact approach described in Section 5.2 of the HCP Amendment.

New Construction

Unlike in 1995, major SDG&E infrastructure is now in place and SDG&E anticipates building new Facilities at a far lower rate than prior decades. Therefore, SDG&E does not anticipate any new, large-scale construction in the near term or in future years requiring coverage under the HCP Amendment. Nonetheless, New Construction is considered, with limits discussed below, because it is possible that construction of new electric, gas, or other power generation or storage Facilities may be planned, sited, or routed in the Plan Area. New construction may occur in or outside of the PIZ.

The HCP Amendment would allow up to 400 acres of permanent habitat modification impacts, 210 acres of temporary habitat impacts, and 210 acres of habitat impacts from Wildfire Fuels Management across SDG&E's 2,815,930-acre Plan Area through 2050.

Preserve Management and Monitoring

SDG&E personnel or its contractors may perform habitat management as mitigation per Sections 5.2, 5.3, and 5.5 of the HCP Amendment. Management may include a range of stewardship

Covered Activities, such as fencing, signage, and litter removal, and Covered Activities related to biological management such as restoration, enhancement, species salvage/translocation, and weed removal for the betterment of Covered Species and their habitat. Management plans would be prepared for any additional preserves that will identify the management and monitoring activities, restrictions, and avoidance and minimization measures that will be undertaken to maintain or enhance Covered Species habitat.

Emergencies

In general, emergencies are those conditions that potentially or immediately threaten the integrity of the SDG&E system, including broken/leaking pipes, downed lines/poles, slumps, slides, surface fault ruptures, erosion, major subsidence, or other natural disaster. Emergencies, including fire, flood, accident, or other serious, unexpected situations requiring an immediate response, are not considered Covered Activities covered by the HCP Amendment.

It is recognized that SDG&E may need to conduct Covered Activities described above during or in response to emergencies, including as an emergency response to a Facility failure or urgent repair to prevent a Facility failure. Emergency response work requires immediate repairs and thus may necessitate an abbreviated environmental review process, or the environmental review process would occur after the emergency work. If not pre-screened, emergency work would require post-project assessments to determine impacts and associated mitigation. As a result, in considering potential impacts to Covered Species or their habitat, adjustments for time of day or seasonal constraints that may otherwise be applicable for Covered Activities may not be possible in the interest of system integrity and public health and safety.

During an emergency, SDG&E will immediately conduct the necessary Covered Activities to alleviate the situation. Covered Activities conducted in response to an emergency will be performed by SDG&E crews and/or contract crews under the direction of SDG&E and in accordance with the OPs and mitigation contained in Section 5 of the HCP Amendment, whenever possible. Typically, Pre-activity Surveys (see Section 5.1.3, OP 14) cannot be conducted prior to the repair Covered Activity. If the emergency is within or adjacent to habitat areas, the Biologist will conduct an assessment during the event, if possible, or after the event is complete. Once the emergency is stabilized, temporary and permanent habitat impacts will be assessed and recommendations made for revegetation Covered Activities and/or mitigation, as applicable, per Section 5 of the HCP Amendment.

Conservation Strategy

Unlike local jurisdictions that have completed regional HCPs, SDG&E does not control land use where it can plan development and a landscape-scale conservation strategy. Therefore, the conservation strategy of the HCP Amendment, as a continuation of the Subregional Plan strategy, first focuses on avoidance and minimization of impacts and then on mitigation for unavoidable impacts that will contribute to the conservation strategy of other regional HCPs. For this, the HCP Amendment includes OPs (as identified in Table 3 of this Opinion and detailed in Section 5.1 of the HCP Amendment), minimization of New Construction in Preserve areas, and implementation of eagle-specific avoidance and minimization measures per the ECP. When effects to Covered Species are unavoidable, SDG&E will offset or mitigate impacts via habitat

restoration, Mitigation Credits that contribute to the conservation strategy of other regional HCPs, and mitigation specific to eagles per the ECP.

Operational Protocols

The HCP Amendment includes a total of total of 98 OPs (Table 3), 12 of which are existing OPs that were previously adopted under the Subregional Plan. The HCP Amendment also includes 41 OPs from the Subregional Plan that have been updated, as well as 45 new OPs that were developed in coordination with the Wildlife Agencies to improve avoidance and minimization of impacts to and conservation of Covered Species and their habitats. Of the 45 new OPs, 5 are general, 17 are for vernal pools and road ruts, 1 is for narrow endemic plants, and 22 are for specific Covered Species.

Table 3. HCP Amendment Operational Protocols: Revision Status and General Topic(s)

Protocol Number[1]	Status[2]	Topic[3]
1	New	Environmentally-sensitive area avoidance
2	Updated	Speed limit enforcement; designated turnaround areas
3	Existing	Wildlife harm prohibition
4	Updated	Firearm prohibition
5	Existing	Wildlife feeding prohibition
6	Updated	Personnel pet prohibition in SDG&E right-of-way
7	Existing	Parking/driving under oak trees prohibition
8	Existing	Plant/wildlife species collection prohibition
9	Updated	Littering prohibition
10	Updated	Wildfire prevention/minimization
11	Updated	Biologist consultation for environmental issues, invasive weed control
12	Updated	Employee training program participation
13	Updated	Operations review and protocol modification coordination with the Service
14	New	Biologist Pre-activity Surveys for Covered Activities
15	Updated	Biologist habitat boundary and construction area demarcation
16	Updated	Erosion and sedimentation minimization
17	Updated	Visual inspections best practices
18	Existing	Gas transmission line marker replacement best practices
19	Existing	Erosion minimization using water bars
20	Updated	Flooding, ponding, and erosion/siltation avoidance/minimization
21	Updated	Perpendicular wetland habitat crossing, new Facility siting requirements
22	Updated	Temporary stream diversion and erosion control
23	Updated	Wetland impact minimization via pollutant runoff prevention, soil/brush relocation
24	Updated	Limiting construction/maintenance equipment, vehicles, and insulator washing to access roads/cleared areas

Protocol Number[1]	Status[2]	Topic[3]
25	New	Minimization of night lighting effects
26	New	Exclusion of exotic plants from landscaping, use of drought-tolerant plants, and pest inspection
27	Updated	Biologist approval of non-emergency brush clearing
28	Updated	Biologist Pre-activity Surveys and recommendations for impact minimization from wire stringing
29	Existing	Erosion control on cut and fill slopes
30	Updated	Spoils disposal/re-use and cleared vegetation disposal
31	Updated	Environmentally sensitive tree trimming location identification; Biologist Pre-activity tree trimming surveys
32	Updated	Biologist consultation for previously unidentified den, burrow, and plant avoidance/impact minimization
33	Updated	Biologist approval of unavoidable habitat disturbance and biological monitoring to verify compliance with Pre-activity Survey Report (PSR)
34	Updated	Biologist enforcement of mowing limitations
35	Updated	Supplies/equipment inspection/capping for wildlife entrapment/harm avoidance
36	Updated	Trench/excavation inspection for wildlife entrapment avoidance
37	Updated	Fugitive dust control via watering and speed limits
38	New	Pest control limitations
39	Updated	Access road erosion repair best practices
40	Updated	Access road vegetation control limitations
41	Existing	Access road mowing best practices
42	Updated	Roadbed expansion avoidance during access road maintenance
43	Updated	Biologist approval of road rut filling material
44	Updated	Access road design and construction standards
45	Existing	Access road availability for regional preserve managers
46	Updated	Disturbance minimization from new access roads
47	Existing	Access control on access roads within preserves
48	Updated	Nesting season avoidance and impact minimization during new access road construction
49	Updated	Streambed, marsh, soft sand, and open water avoidance during access road construction
50	Existing	Waterway filling restrictions for maintenance/construction vehicle access
51	Updated	Avoidance of staging/storage in riparian areas
52	Updated	Footpaths/line-of-sight brush clearing limitations
53	Updated	Panel point placement brush clearing limitations
54	Existing	Allowance of hiking off roads or paths for surveys
55	Updated	Operational protocol compliance to fullest extent possible during emergency repairs
56	Updated	Unavoidable environmental damage reporting to Biologist and subsequent mitigation
57	Updated	Fee owner action exclusion from HCP Amendment coverage

Protocol Number[1]	Status[2]	Topic[3]
58	Updated	SDG&E lack of opposition to underlying fee owner dedication of property for conservation purposes
Vernal Pool and Road Rut Protocols		
59	New	Vernal pool/vernal pool watershed avoidance; mitigation exception for vehicular traffic through dry vernal pools
60	New	Surveys or conference with the Service for potential unavoidable vernal pool habitat impacts
61	New	Mitigation for unavoidable permanent impacts to occupied vernal pools
62	New	Mitigation for unavoidable permanent impacts to unoccupied vernal pools
63	New	Soil (inoculum) and plant seed salvage in impacted vernal pools
64	New	Biological monitoring and best management practices for construction next to vernal pools
65	New	Wet weather avoidance for grading next to vernal pools
66	New	Avoidance of vehicular traffic and foot traffic in vernal pools/complexes
67	New	Work area minimization in vernal pools located above gas lines
68	New	Construction fueling, staging, and maintenance precautions near vernal pools
69	New	Minor Amendment coverage for vernal pool and vernal pool Covered Species new project impacts
70	New	Road rut/man-made depression avoidance
71	New	Surveys/occupation assumption for unavoidable impacts to road ruts/man-made depressions
72	New	Mitigation for permanent impacts to occupied road ruts/man-made depressions
73	New	No mitigation for impacts to unoccupied road ruts/man-made depressions
74	New	Soil (inoculum) collection in occupied road ruts
75	New	Grading precautions and biological monitoring in wet soils
Narrow Endemic Plant Protocols		
76	New	Narrow endemic plant avoidance/impact minimization and mitigation
Species-Specific Protocols		
77	New	Laguna Mountains skipper avoidance/impact minimization and mitigation
78	New	Hermes copper butterfly avoidance/impact minimization and mitigation
79	New	Arroyo toad avoidance/impact minimization and mitigation
80	New	California red-legged frog avoidance/impact minimization and mitigation
81	New	Southwestern pond turtle avoidance/impact minimization and mitigation
82	New	Tricolored blackbird avoidance/impact minimization and mitigation
83	New	Burrowing owl avoidance/impact minimization and mitigation
84	New	ECP golden eagle protocols
85	New	Coastal cactus wren avoidance/impact minimization and mitigation
86	New	Western snowy plover avoidance/impact minimization
87	New	Western yellow-billed cuckoo avoidance/impact minimization and mitigation
88	New	Southwestern willow flycatcher avoidance/impact minimization and mitigation
89	New	ECP bald eagle protocols
90	New	Belding's Savannah Sparrow avoidance/impact minimization and mitigation

Protocol Number[1]	Status[2]	Topic[3]
91	New	Coastal California gnatcatcher avoidance/impact minimization
92	New	Light-footed Ridgway's rail avoidance/impact minimization and mitigation
93	New	California least tern avoidance/impact minimization
94	New	Least Bell's vireo avoidance/impact minimization and mitigation
95	New	Stephens' kangaroo rat avoidance/impact minimization and mitigation
96	New	Peninsular bighorn sheep avoidance/impact minimization and mitigation
97	New	Pacific pocket mouse avoidance/impact minimization and mitigation
98	New	Western spadefoot avoidance/impact minimization and mitigation

[1]Protocols are numbered and detailed in Section 5.1 of the HCP Amendment.
[2]"Existing" = protocol carried forward from 1995 Subregional Plan with no changes; "updated" = protocol carried forward from 1995 Subregional Plan with changes; "new" = protocol not present in the 1995 Subregional Plan.
[3]General topic(s) of protocol provided. More detail is included in Section 5.1 of the HCP Amendment.

OPs represent an environmentally sensitive approach to traditional utility construction, maintenance, and repair. The appropriate OPs for each individual project shall be determined and documented by a project biologist. Methods for reducing and minimizing impacts may change over time, and these measures were developed with the best available information. Where new or improved measures provide more efficient or effective conservation, changes to OPs may be mutually agreed to by SDG&E and the Service via a Minor Amendment.

SDG&E will implement the following 58 general OPs to avoid and minimize potential impacts to Covered Species and their habitats:

General Behavior for All Field Personnel

1. When environmentally sensitive areas/limits have been established, employees and contract workers shall strictly limit their activities, vehicles, equipment, and construction materials to avoid impacts beyond the delineated limits.

2. Vehicles must be kept on access roads. A 15 miles-per-hour speed limit shall be observed on dirt access roads to allow species to disperse. Vehicles must be turned around in established or designated areas only.

3. No wildlife, including rattlesnakes, may be harmed, except to protect life and limb.

4. Firearms shall be prohibited on the ROW except for firearms used by security personnel.

5. Feeding of wildlife is not allowed.

6. SDG&E personnel are not allowed to bring pets on the ROW in order to minimize harassment or killing of wildlife and to prevent the introduction of destructive domestic animal diseases to native wildlife populations.

7. Parking or driving underneath oak trees is not allowed except in established traffic areas in order to protect root structures.

8. Plant or wildlife species may not be collected as pets or any other reason.

9. Littering is not allowed. SDG&E personnel shall not deposit or leave any food or waste on the ROW or adjacent property.

10. Wildfires shall be prevented or minimized by exercising care when driving and by not parking vehicles where catalytic converters can ignite dry vegetation. SDG&E vehicles shall carry all required fire tools such as water backpack pumps, shovels, and/or fire extinguishers while operating in the field in accordance with SDG&E's Wildland Fire Prevention Plan (SDG&E 2020b). Shields, protective mats, or other fire prevention methods shall be used during grinding and welding to prevent or minimize the potential for fire. Smoking may only occur in designated smoking areas or in a 10-foot clearing void of all grass or other vegetation as in accordance with SDG&E's Wildland Fire Prevention Plan (SDG&E 2020b) or as discussed in the most current internal fire prevention standard and practices.

11. Field crews shall refer environmental issues, including wildlife relocation, dead or sick wildlife; hazardous waste; the presence of highly invasive nonnative species that are not known to be established in California, especially perennial species rated as high or moderate threat by the California Invasive Plant Council (Cal-IPC); or questions about avoiding environmental impacts, to the Biologist. Biologists or experts in wildlife handling may need to be brought in for assistance with wildlife relocations.

    Field crews shall coordinate with the Biologist to implement preventative invasive weed control best management practices found in Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council (Cal-IPC. 2012) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species. Best management practices may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities.

Training

12. All SDG&E personnel and contractors working within the project area shall participate in SDG&E's employee training program, which includes annual training, project-specific training, and as-needed training. The scope of each type of training is included in Section 6.3.1.

13. Designated SDG&E staff shall conduct selected reviews of SDG&E operations. Any proposed modifications to Operational Protocols, procedures, or conditions shall be in coordination with USFWS as prescribed in Section 6.5.

Pre-activity Surveys

14. The Biologist shall conduct Pre-activity Surveys for all Covered Activities as outlined in Section 6.3.2 occurring within or adjacent to habitat with potential to support Covered Species. The Biologist shall complete a PSR to document the environmental review of the potential impacts to Covered Species as a result of implementing a Covered Activity.

15. To ensure that habitats are not inadvertently impacted, the Biologist shall determine the extent of habitat and flag boundaries of habitats that must be avoided. When necessary, the Biologist should also demarcate appropriate equipment laydown areas; vehicle turnaround areas; and pads for placement of large construction equipment such as cranes, bucket trucks, augers, etc. When appropriate, the Biologist shall make office and/or field presentations to field staff to review and become familiar with natural resources to be protected on a project-specific basis.

Maintenance, Repair, and Construction of Facilities

16. Maintenance, repair, and construction of Facilities shall be designed and implemented to minimize new disturbance, erosion on manufactured and other slopes, and offsite degradation from accelerated sedimentation, and to reduce maintenance and repair costs.

17. Routine maintenance of all Facilities includes visual inspections on a regular basis, conducted from vehicles driven on the access roads where possible. If it is necessary to inspect areas that cannot be seen from the roads, the inspection shall be done on foot, or from the air.

18. When the view of a gas transmission line marker becomes obscured by vegetation on a regular basis requiring repeated habitat removal, consideration shall be given to the replacement of markers with taller versions.

19. Erosion shall be minimized on access roads and other locations primarily with water bars. The water bars are mounds of soil shaped to direct flow and prevent erosion.

20. Hydrologic impacts shall be minimized through the use of state-of-the-art technical design and construction techniques to minimize ponding; eliminate flood hazards; and avoid erosion and siltation into any creeks, streams, rivers, or bodies of water by use of best management practices.

21. When siting new Facilities, every effort shall be made to cross the wetland habitat perpendicular to the watercourse, spanning the watercourse to minimize the amount of disturbance to riparian areas (see Figure 4). To the extent feasible and practicable, new Facilities shall be sited to provide a minimum 100-foot buffer from wetlands, vernal pools and their watersheds, and narrow endemic populations. To the extent feasible and practicable, new Facilities shall also be

sited to avoid habitat in order to minimize fragmentation and disruption of wildlife movement and breeding areas. When habitat must be disturbed, new Facilities shall, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they shall, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

22. Gas and other Facilities cross streambeds and require maintenance and repair. During such times, water may be temporarily diverted as long as sensitive fish are not stranded and, after disturbance, natural drainage patterns are restored to minimize the impact of the disturbance and help to reestablish or enhance the habitat. Erosion control during construction in the form of intermittent check dams and culverts should also be considered to prevent alteration to natural drainage patterns and prevent siltation.

23. All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities shall occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas shall be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment shall be checked for leaks prior to operation and repaired as necessary. Impacts to wetlands shall be minimized by avoiding pushing soil or brush into washes or ravines.

24. During work on Facilities, all trucks, tools, and equipment should be kept on existing access roads or cleared areas, to the extent possible. Insulator washing is allowed from access roads if other applicable protocols are followed.

25. If night work is necessary, night lighting shall be of the lowest illumination necessary for operational safety, selectively placed, shielded, and directed away from natural habitats. Any permanent lighting adjacent to all on- or off-site habitat shall be directed away from and/or shielded so as not to illuminate native habitats.

26. Landscaping for new Facilities within 300 feet of native habitat shall not include exotic plant species that are listed on Cal-IPC's "Invasive Plant Inventory" list. This list includes such species as pepper tree (*Schinus molle*), pampas grass (*Cortaderia selloana*), fountain grass (*Pennisetum setaceum*), iceplant (*Carpobrotus edulis*), myoporum (*Myoporum laetum*), black locust (*Robinia pseudoacacia*), capeweed (*Arctotheca calendula*), tree-of-heaven (Ailanthus altissima), periwinkle (*Vinca major*), sweet alyssum (*Lobularia maritima*), English ivy (*Hedera helix*), French broom (*Genista monspessulana*), Scotch broom (*Cytisus scoparius*), and Spanish broom (*Spartium junceum*). A copy of the complete list can be obtained from Cal-IPC's website at http://www.cal-ipc.org. In addition, landscaping plans should encourage the adoption of drought-tolerant plants and native vegetation appropriate to the adjacent habitat and should discourage the use of plants that require intensive

irrigation, fertilizers, or pesticides adjacent to native habitat. Water runoff from landscaped areas should be directed away from native habitats and contained and/or treated within the development footprint.

SDG&E shall confirm that any planting stock for landscaping shall be or has been inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats, including but not limited to, Argentine ants (*Linepithema humile*), fire ants (*Solenopsis invicta*) and other insect pests. Any planting stock found to be infested with such pests shall not be allowed on the project site or within 300 feet of native habitats unless these pests already occur around the project site. The stock shall be quarantined, treated, or disposed of according to best management practices by qualified experts in a manner that precludes invasions into native habitats. Temporary irrigation shall be for the shortest duration possible, and permanent irrigation shall only be used if needed.

27. Brush clearing around Facilities for non-emergency fire protection shall not be conducted from March through August without prior approval by the Biologist. The Biologist shall make sure that the habitat contains no active nests, burrows, or dens prior to clearing.

28. Wire stringing is allowed year-round in sensitive habitat if conductor is not allowed to drag on the ground or in brush, and vehicles remain on access roads. Pre-activity Surveys shall be conducted in accordance with the HCP Amendment and shall determine if nesting will be potentially impacted from all Covered Activities including stringing. Recommendations shall be made to avoid impacts to nesting birds.

29. Maintenance of cut and fill slopes shall consist primarily of erosion repair. In situations where revegetation would improve the success of erosion control, planting or seeding with native hydroseed mix may be done on slopes.

30. Spoils created during maintenance operations shall be disposed of only on previously disturbed areas designated by the Biologist or used immediately to fill eroded areas. Cleared vegetation shall be hauled off the ROW to a permitted disposal location.

31. Environmentally sensitive tree trimming locations shall be identified in the tree trim computer database system utilized by tree trim contractors. (This database also tracks the date of each tree trim, type of tree, where threatening dogs reside, etc.) The Biologist shall be contacted to perform a Pre-activity Survey when trimming is planned in environmentally sensitive areas from March through August. Whenever possible, trees in environmentally sensitive areas (determined by USFWS and SDG&E) shall be scheduled for trimming in the non-sensitive times. If additional environmentally sensitive tree trimming locations are identified, USFWS shall coordinate with SDG&E on the potential inclusion into the database.

32. If any previously unidentified dens, burrows, or plants are located on any project site after the Pre-activity Survey, the Biologist shall be contacted. The Biologist shall determine how to best avoid or minimize impacting the resource by considering such methods as project or work plan redevelopment, equipment placement or construction method modification, seasonal/time of day limitations, etc.

33. The Biologist shall review and approve new ground-disturbing activities prior to working in sensitive areas where disturbance to habitat may be unavoidable and previously not reviewed. The Biologist shall conduct biological monitoring as recommended in the PSR. At completion of work, the Biologist shall check to verify compliance, including observing that flagged areas have been avoided and that reclamation, including site stabilization and/or erosion control, has been properly implemented. Also, at completion of work, the Biologist is responsible for removing all habitat flagging from the construction site.

34. The Biologist shall conduct checks on mowing procedures, to ensure that mowing is limited to a 12-foot-wide area on straight portions of the road (slightly wider on radius turns), and that the mowing height is no less than 4 inches.

35. Supplies and equipment where wildlife could hide (e.g., pipes, culverts, pole holes) shall be inspected prior to moving or working on them to reduce the potential for injury to wildlife. Supplies or equipment that cannot be inspected or from which animals could not be removed shall be capped or otherwise covered at the end of each workday. Old piping or other supplies that have been left open shall not be capped until inspected and any species found within allowed to escape. Ramping shall be provided in open trenches when necessary. If an animal is found entrapped in supplies or equipment, such as a pipe section, the supplies or equipment shall be avoided and the animal(s) left to leave on its own accord, except as otherwise authorized by USFWS.

36. All steep-walled trenches or excavations used during construction shall be inspected twice daily (early morning and evening) to protect against wildlife entrapment. If wildlife are located in the trench or excavation, the Biologist shall be called immediately to remove them if they cannot escape unimpeded.

37. Large amounts of fugitive dust could interfere with photosynthesis. Fugitive dust created during clearing, grading, earth-moving, excavation, or other construction shall be controlled by regular watering. At all times, fugitive dust emissions shall be controlled by limiting vehicle speed to 15 miles per hour.

38. Pest control Covered Activities as described in Section 2.2.3.4 shall conform to existing laws and in accordance with underlying property owner restrictions. In areas adjacent to Preserves and/or known locations of Covered Species, SDG&E shall employ limited use of pest control management and avoid effects to non-targeted species to the extent practical.

Maintenance of Access Roads

39. In each case of repair of erosion by grading, addition of fill, and compacting, the total area of disturbance shall be minimized by careful access and use of appropriately sized equipment. Repairs shall be done after Pre-activity Surveys conducted by the Biologist and in accordance with the recommendations regarding biological monitoring and relevant protocols. Consideration should be given to source of erosion problem, when source is within control of SDG&E.

40. Vegetation control through grading should be used only where the vegetation obscures the inspection of Facilities, access may be entirely lost, or the threat of Facility failure or fire hazard exists. The graded access road area should not exceed 12 feet wide on straight portions (radius turns may be slightly wider). New access roads shall be designed to current width standards, as appropriate.

41. Mowing habitat can be an effective method for protecting the vegetative understory while at the same time creating access to a work area. Mowing should be used when permanent access is not required because, with time, total revegetation is expected. If mowing is in response to a permanent access need, but the alternative of grading is undesirable because of downstream siltation potential, it should be recognized that periodic mowing shall be necessary to maintain permanent access.

42. Maintenance work on access roads should not expand the existing roadbed.

43. Material for filling in road ruts should never be obtained from the sides of the road that contain habitat without approval from the Biologist.

Construction of New Access Roads

44. SDG&E access roads shall be designed and constructed according to the Standards Regarding SDG&E Transmission Corridors (SDG&E 2020c) or as discussed in the most current guidance.

45. Access roads shall be made available to managers of the regional preserve system subject to coordination with SDG&E.

46. New access roads shall be designed to be placed in previously disturbed areas and areas that require the least amount of grading in sensitive areas during construction whenever possible. Preference shall be given to the use of stub roads rather than linking Facilities tangentially.

47. SDG&E shall consider providing access control on access roads leading into the regional preserve system where such control provides benefit to sensitive resources.

48. Every effort shall be made to avoid constructing new roads during the nesting season. If construction of new roads is necessary during the nesting season, the

presence or absence of nesting species shall be determined by a Biologist and appropriate avoidance and minimization recommendations followed.

Construction and Maintenance of Access Roads through Streambeds

49. Construction of new access roads through streambeds requires a Streambed Alteration Agreement from CDFW and/or consultation with the U.S. Army Corps of Engineers. Construction in marsh areas, soft sand, or open water in most cases shall be accomplished through the use of helicopters for the delivery of materials, poles, personnel, and platforms. Roads should be avoided to the extent feasible.

50. Maintenance or construction vehicle access through shallow creeks or streams is allowed. However, no filling for access purposes in waterways is allowed without the installation of appropriately sized culverts. The use of geotextile matting should be considered when it would protect wetland species.

51. Staging/storage areas for equipment and materials shall be located outside of riparian areas.

Survey Work

52. Brush clearing for footpaths or line-of-sight cutting is not allowed from March through August in sensitive habitat without prior approval from the Biologist, who shall ensure that activity does not adversely affect a Covered Species.

53. SDG&E survey personnel must keep vehicles on existing access roads. No clearing of brush for panel point placement is allowed from March through August without prior approval from the Biologist.

54. Hiking off roads or paths for survey data collection is allowed year-round so long as other protocols are met.

Emergency Repairs

55. Emergency repair of Facilities is required in situations that potentially or immediately threaten the integrity of the SDG&E system, such as pipe leaks, or downed lines, slumps, slides, major subsidence, etc. Repairs conducted in response to an emergency situation would follow the Operational Protocols contained herein to fullest extent possible.

56. Once the emergency has stabilized, any unavoidable environmental damage shall be reported to the Biologist by the foreman. The Biologist shall develop a mitigation plan and ensure its implementation is consistent with the HCP Amendment.

Activities of Underlying Fee Owners

57. Most SDG&E Facilities are owned, operated, and maintained on public and private land through easements where access is granted through ROW; SDG&E does own land in fee for various Facilities. The actions of underlying fee owners cannot be controlled by SDG&E and are not covered by the HCP Amendment.

58. When sensitive habitat exists on either side of a ROW, SDG&E shall not oppose underlying fee owners dedicating said property to conservation purposes. Underlying fee owners are expected to comply with applicable federal, state, and local regulations.

The HCP Amendment also includes OPs for vernal pools and road ruts, narrow endemic plants, and specific Covered Species which are included in species-specific analyses below.

New Construction Impacts to Covered Species or within Preserves and Planned Preserves

New Construction cannot permanently impact western snowy plover or California least tern habitat. In addition, New Construction cannot impact vernal pool species, narrow endemic plant species, Laguna Mountains skipper, Hermes copper butterfly, arroyo toad, California red-legged frog; Southwestern pond turtle, tricolored blackbird, western yellow-billed cuckoo, southwestern willow flycatcher, light-footed Ridgway's rail, SKR, Peninsular bighorn sheep, or Pacific pocket mouse habitat; or more than 1.75 acres within a Preserve or Proposed Preserve without a Minor Amendment (Section 6.5.1.2 of the HCP Amendment).

Habitat Restoration and Enhancement

The HCP Amendment includes a Restoration and Enhancement (R/E) Program that SDG&E may use primarily to mitigate temporary habitat impacts from Covered Activities and for mitigating permanent impacts (HCP Amendment Section 5.2). The R/E Program would be conducted under the direction of a habitat restoration specialist using one of three approaches: onsite restoration, onsite enhancement, or offsite restoration. Onsite restoration or enhancement would be done to restore areas temporarily impacted by Covered Activities to their pre-activity condition. Enhancement is less involved than restoration as it does not involve installing native plants via seeding or planting. Offsite restoration would be conducted on a case-by-case basis in coordination with the Service. This option would be considered when restoration/enhancement might be more beneficial at an offsite location, such as restoring a large contiguous site versus many small disjunct temporary impact areas. Should SDG&E choose not to restore temporary impact areas or should restored areas not achieve success standards, then these areas would be treated as permanent impacts, and mitigated as such, consistent with the HCP Amendment.

SDG&E Access Road Removals

Within the Plan Area, SDG&E uses and maintains a system of roads to access Facilities. The HCP Amendment acknowledges that certain access roads could potentially be realigned or removed entirely to improve local biological resources without sacrificing safe and reliable access to SDG&E Facilities. Accordingly, the HCP Amendment provides a process for SDG&E to work in coordination with the Service and the landowner (if applicable) to review the

continuing functionality of access roads, address concerns regarding existing access roads, and remove and restore certain roads to native vegetation where appropriate (HCP Amendment Section 5.3).

Mitigation Credits

Under the Subregional Plan, Mitigation Credits were to be established by SDG&E providing funds for the procurement of high-quality habitat to help meet region-wide conservation goals. As such, the Mitigation Credits served as mitigation for both in-kind and out-of-kind covered species and habitat impacts, without regard to the type and biological value of the habitat impacted. At the outset of the Subregional Plan, SDG&E provided the Wildlife Agencies with funds for purchase of 180 acres of high-quality upland habitat at the Greg Smith property (Otay Lakes) that is now part of the San Diego National Wildlife Refuge; and 100 acres of high-quality habitat at the Willow Glen property that is owned and managed by CDFW. Then, in April 2015, SDG&E provided funds for purchase of an additional 114 acres of high-value upland habitat from the Cielo B property that is owned and managed by The Escondido Creek Conservancy.

As of the effective date of the HCP Amendment, SDG&E anticipates having upland Mitigation Credits from the Cielo B and Willow Glen properties that have not been used. Except for wetlands, vernal pool, narrow endemic, and species-specific mitigation (Table 5.4 of the HCP Amendment), SDG&E may use these credits to mitigate impacts associated with Covered Activities for Covered Species and their associated habitats.

Mitigation Credits associated with the HCP Amendment will be debited from SDG&E's mitigation account to compensate for permanent impacts associated with Covered Activities (Section 5.5.1 of the HCP Amendment). Temporary impacts associated with sites that meet success standards of the R/E Program or are otherwise determined by the Service to have been successfully restored through the R/E program would not be debited from SDG&E's mitigation account (Section 5.2 of the HCP Amendment).

During the remaining term of the HCP Amendment, SDG&E will ensure that available habitat-based Mitigation Credits will be sufficient to provide mitigation for at least 2 years of projected impacts. If available Mitigation Credits are anticipated to be insufficient to offset those projected impacts, SDG&E will acquire additional Mitigation Credits in coordination with the Service through (1) land acquisition (Section 5.5.2 of the HCP Amendment), or (2) alternative means (Section 5.5.3 of the HCP Amendment). Species-specific mitigation as required by Table 5.4 of the HCP Amendment must be agreed upon prior to impact.

Mitigation for vernal pools may be satisfied through onsite restoration of vernal pools or the use of areas pre-approved by the Service. Mitigation Credits, as approved by the Service, may be accumulated and used through advance creation, restoration, and enhancement of vernal pool basin area (Section 5.5.4 of the HCP Amendment). Mitigation properties would be protected and managed for species conservation in perpetuity (HCP Amendment Section 9.1.3). SDG&E would debit Mitigation Credits from its mitigation account to compensate for permanent impacts from Covered Activities at the ratios given in Section 5.5.1 of the HCP Amendment.

Mitigation (Section 5.5 of the HCP Amendment)

O&M and New Construction

Permanent impacts to sensitive upland or wetland vegetation communities will be mitigated at the ratios required in Tables 4 and 5 (Tables 5.3a and 5.3b of the HCP Amendment) in-kind or with habitat of equivalent or greater value (e.g., coastal sage scrub mitigation for non-native grassland impacts) as approved by the Service. In addition, permanent impacts to habitat confirmed or assumed occupied by Covered Species will be mitigated in-kind at existing or acquired mitigation lands that are occupied or through the R/E Program per the mitigation ratios required in Table 6 (Table 5.4 of the HCP Amendment), or with measures that will benefit the species as directed in the Species-Specific Protocols in Section 5.1.13 of the HCP Amendment. Species-Specific mitigation requirements will also satisfy habitat mitigation requirements where applicable (i.e., impacts will not be double mitigated).

Table 4. Non-Species-Specific Mitigation Ratios for Permanent Impacts to Upland Habitat

Location*	Ratio
Inside Preserve or Proposed Preserve	2:1
Outside Preserve or Proposed Preserve	1:1

* Preserve and Proposed Preserve are further defined in the Glossary of Defined Terms. Temporary impacts will be addressed consistent with Section 5.2 of the HCP Amendment.

Table 5. Non-Species-Specific Mitigation Ratios for Permanent Impacts to Wetland and Riparian [1,2]

Habitat	Ratio
Tidal Salt Marsh/Salt Panne	4:1
Non Tidal Salt Marsh/Freshwater Marsh	2:1
Riparian Oak/Forest/Woodland/Scrub	3:1
Disturbed Wetland	2:1

[1] Mitigation required by more than one agency will not be additive to the mitigation ratios included here.
[2] Temporary impacts will be addressed consistent with Section 5.2 of the HCP Amendment

Table 6. Species-Specific Mitigation Ratios for Permanent Impacts to Occupied[1] Habitat that Require In-Kind[2] Habitat[3]

Species	Inside Preserve	Outside Preserve
Narrow Endemic Plants	Upland – 2:1 Riparian – 3:1 Tidal Salt Marsh/Salt Panne – 4:1 Non Tidal Salt Marsh/Freshwater Marsh – 2:1 Disturbed Wetland – 2:1	Upland – 1:1 Riparian – 3:1 Tidal Salt Marsh/Salt Panne – 4:1 Non Tidal Salt Marsh/Freshwater Marsh – 2:1 Disturbed Wetland – 2:1
Laguna Mountains skipper	2:1	1:1

Species	Inside Preserve	Outside Preserve
Hermes copper butterfly	2:1	1:1
Arroyo toad	Upland – 2:1 Riparian – 3:1	Upland – 1:1 Riparian – 3:1
California red-legged frog	Upland – 2:1 Riparian – 3:1 Freshwater Marsh – 2:1 Disturbed Wetland – 2:1	Upland – 1:1 Riparian – 3:1 Freshwater Marsh – 2:1 Disturbed Wetland – 2:1
Southwestern pond turtle	Upland – 2:1 Riparian – 3:1 Non Tidal Salt Marsh/Freshwater Marsh – 2:1 Disturbed Wetland – 2:1	Upland – 1:1 Riparian – 3:1 Non Tidal Salt Marsh/Freshwater Marsh – 2:1 Disturbed Wetland – 2:1
Western spadefoot	Upland – 2:1 See Table 5.5 for vernal pool mitigation	Upland – 1:1 See Table 5.5 for vernal pool mitigation
Tricolored blackbird	Upland – 2:1 Non Tidal Salt Marsh/Freshwater Marsh – 2:1 Disturbed Wetland – 2:1	Upland – 1:1 Non Tidal Salt Marsh/Freshwater Marsh – 2:1 Disturbed Wetland – 2:1
Burrowing owl	2:1	1:1
Coastal cactus wren	2:1	1:1
Western yellow-billed cuckoo	Riparian – 3:1	Riparian – 3:1
Southwestern willow flycatcher	Riparian – 3:1	Riparian – 3:1
Belding's savannah sparrow	Tidal Salt Marsh/Salt Panne – 4:1 Non Tidal Salt Marsh/Freshwater Marsh – 2:1	Tidal Salt Marsh/Salt Panne – 4:1 Non Tidal Salt Marsh/Freshwater Marsh – 2:1
Coastal California gnatcatcher	2:1	1:1
Light-footed Ridgway's rail	Tidal Salt Marsh/Salt Panne – 4:1 Non Tidal Salt Marsh/Freshwater Marsh – 2:1 Disturbed Wetland – 2:1	Tidal Salt Marsh/Salt Panne – 4:1 Non Tidal Salt Marsh/Freshwater Marsh – 2:1 Disturbed Wetland – 2:1
Least Bell's vireo	Riparian – 3:1	Riparian – 3:1
Stephens' kangaroo rat	3:1	3:1

[1] Occupied has been defined for each species in Section 5.1.13, Species-Specific Protocols of the HCP Amendment.
[2] In-kind mitigation acquired will be occupied by or benefit specific Covered Species or group of Covered Species with similar habitat types. All temporary, permanent and Wildlife Fuels Management impacts to Stephens' kangaroo rat occupied habitat must be mitigated at the ratio in this table.
[3] Species-Specific Mitigation requirements will also satisfy habitat mitigation requirements where applicable (i.e., impacts will not be double mitigated).

Other cover types, including agriculture, disturbed habitat, urban/developed, and eucalyptus woodland, will not require habitat mitigation.

It is recognized that Covered Activities may possibly impact habitat, only a portion of which is confirmed as occupied by a Covered Species included in Table 6 (Table 5.4 of the HCP

Amendment). If project timing does not allow for surveys, it will be assumed that all habitat to be impacted is occupied (see Species-Specific Protocols in Section 5.1.13 of the HCP Amendment for more guidance on survey requirements and when/where to assume occupancy). When surveys are conducted to determine occupancy status, those surveys will also determine the extent of habitat occupied by a species and mitigation as listed in Table 6 (Table 5.4 of the HCP Amendment).

Vernal pool mitigation required for permanent impacts to vernal pools will be conducted per the mitigation ratios outlined in Table 7 (Table 5.5 of the HCP Amendment). Restoration/ enhancement for permanent impacts to vernal pools shall be accomplished by a qualified Biologist and managed and monitored for a minimum of 5 years, with at least 1 year in which the pool completely fills. Mitigation may be satisfied through onsite restoration/enhancement of vernal pools or the use of areas pre-approved by the Service. Mitigation Credits, as approved by the Service, may be accumulated and used through advance creation, restoration, and enhancement. Restoration/enhancement will be of high quality (e.g., Carmel Mesa and Otay Mesa) and will support Covered Species. Pre-approved vernal pool mitigation areas must be managed and monitored pursuant to a Management Plan approved by the Service.

Table 7. Vernal Pool Mitigation Ratios

Species	Ratio
No plant Covered Species present, but fairy shrimp, western spadefoot and/or vernal pool indicator plant species are present[1]	2:1
Fairy shrimp and/or western spadefoot (no vernal pool plant Covered Species or indicator species present)[1]	1:1
Vernal Pool Plant Covered Species	3:1

[1] Impacts to unoccupied road ruts and other man-made depressions will not be mitigated.

If SDG&E does not mitigate at a pre-approved vernal pool mitigation area, the Service concurrence on an acceptable mitigation site is required prior to any impacts to vernal pools. Mitigation may also occur onsite provided that a sufficient number of degraded pools exist in the vicinity and have been approved by the Service for restoration/enhancement.

Alternative Mitigation Proposal

The HCP Amendment is intended to provide flexibility in achieving conservation goals. To that end, the HCP Amendment allows for various methods to obtain additional Mitigation Credits. Specifically, rather than acquire additional land, SDG&E may submit a proposal to the Service for a Mitigation Credit that may include, but is not limited to, any of the following:

1. Restoring and/or enhancing habitat.

2. Contributing funds to other regional conservation efforts, species-specific management programs, or efforts to enhance/preserve critical habitat areas.

3. Where Species-Specific Protocols in Section 5.1.13 are determined impracticable or where the costs of avoidance and minimization are excessive for the duration of a Covered Activity, SDG&E may propose alternative mitigation approaches that provide greater, long-term conservation benefits than would be achieved by the Operational Protocols. For example, SDG&E could propose a one-time, higher mitigation ratio than those identified in Table 5.4 or may propose other alternatives.

4. Propagating species for reintroduction and/or introduction into biologically suitable habitat within the Plan Area in accordance with Service-approved restoration and monitoring program.

5. Salvaging and relocating species into suitable, occupiable habitat in accordance with a Service-approved restoration and monitoring program.

6. SDG&E and the Service may identify areas of restoration opportunities that are degraded or are being degraded by anthropogenic factors (e.g., nonnative species) or activities (e.g., habitat degradation by OHVs) not associated with Covered Activities. SDG&E may conduct offsite restoration Covered Activities within these areas, in coordination with the Service, to credit impacts back to the permanent impact cap and restore Mitigation Credits.

Any of these mitigation approaches would require case-by-case Service approval. The following information must be included in the alternative mitigation approach proposal:

1. Definition of the project area.

2. A written description of the project.

3. A written description of biological information available for the project site, including the results of all focused surveys for Covered Species.

4. Quantification of impacts to Covered Species associated with the project, including direct and indirect effects.

5. A written description of project design features that reduce indirect effects, such as edge treatments and landscaping, minimization, and/or compensation through restoration or enhancement.

6. Description of measures proposed to compensate for identified impacts in a manner that demonstrates that the proposed design, including compensation, would result in a long-term benefit to the species of concern that is equivalent to or better than what would occur by conforming to the standard mitigation approach. The equivalency analysis will be based on the particular requirements of the species of concern.

In the Annual Report that will be prepared as a condition of the HCP Amendment, the general condition of the habitat associated with the Mitigation Credits will be discussed, with special attention paid to changes in the habitat such as from stochastic events like wildfires and drought. The Annual Report will also include a table showing how many credits were used from the Mitigation Credits (expressed in acres) and how many are left.

Wildfire Fuels Management

Acreage impacts from Wildfire Fuels Management will be calculated based on the net percent reduction of native canopy and will be separately accounted for. Using this approach, SDG&E will determine the final acres of impact per year that require mitigation as follows:

Conduct field surveys for a Treatment Area to document the pre- and post-activity native and nonnative vegetation cover and mitigate for the actual net difference, if any, at a 1:1 ratio. Under this approach, if, for example, the Treatment Area was 100 acres and SDG&E reduced the cover of native species by 10 acres and the cover of nonnative species by 10 acres, SDG&E would document these results and no mitigation would be required. Alternatively, if the Treatment Area was 100 acres and SDG&E reduced the cover of native species by 10 acres and the cover of nonnative species by 8 acres, SDG&E would document these results and 2 acres of mitigation (i.e., the 2-acre net difference between native and nonnative vegetation mitigated at a 1:1 ratio) would be required. Further, if the Treatment Area was 100 acres and SDG&E reduced the cover of native species by 8 acres and the cover of nonnative species by 10 acres, SDG&E would document these results and may use the excess 2 acres as mitigation for future Wildfire Fuels Management.

If Wildfire Fuels Management is no longer needed at a Treatment Area, SDG&E may choose to restore and/or allow the Treatment Area to return to pre-treatment conditions. Mitigation Credits that were debited for those areas will be credited based on the percent native vegetation restored, per the temporary impact approach described in Section 5.2 of the HCP Amendment.

Stephens' Kangaroo Rat Mitigation

SDG&E shall mitigate in-kind for all temporary, permanent and Wildfire Fuels Management impacts to Stephens' kangaroo rat through acquiring and conserving land that supports high density occupancy of Stephens' kangaroo rat (Section 5.5.2.1 of the HCP Amendment). SDG&E shall, for all land acquisitions mitigating impacts to Stephens' kangaroo rat, prepare a land management plan that outlines all management activities for Stephens' kangaroo rat. The management plan shall further include a Property Analysis Record (PAR) or similar analysis to establish the annual monitoring and maintenance costs, including a contingency of a minimum of 10 percent, adaptive management costs, and changed circumstances costs. The land management plan shall be reviewed and approved by the Service and CDFW.

SDG&E shall establish an endowment to ensure that the land management activities will be fully carried out in-perpetuity by a land management entity approved by the Service and CDFW. A conservation easement, approved in advance by the Service and CDFW, shall be recorded over all mitigation properties naming an entity authorized to hold conservation easements pursuant to Civil Code section 815.3 as grantee. The Service and CDFW shall be named third-party

beneficiaries to the conservation easement(s). The proposed grantee and land manager shall be approved through CDFW's due diligence process.

SDG&E shall provide performance security for full implementation of the HCP Amendment as it pertains to Stephens' kangaroo rat. The performance security shall be a form determined and approved by the Service and CDFW, in the amount of $1,253,280.00. SDG&E shall fully complete all compensatory mitigation obligations for anticipated impacts to Stephens' kangaroo rat habitat outlined in the HCP Amendment (i.e., fully mitigate for 14.92 acres of impacts to Stephens' kangaroo rat habitat as described above) within 18 months of issuance of this HCP or otherwise risk forfeiture of the principal performance security sum.

Pacific Pocket Mouse Mitigation

To mitigate for impacts to the Pacific pocket mouse, SDG&E will provide funds to an in-lieu-fee sponsor, acting on behalf of the SDG&E and approved by the Service, for the conservation and recovery of Pacific pocket mouse (Section 5.5.6 of the HCP Amendment). This in-lieu fee shall be calculated as follows and paid as described below:

Over the remaining duration of the permit (i.e., next 30 years), implementation of the HCP Amendment is anticipated to permanently impact 1.5 acres of PPM-Habitat within the Plan Area. In addition, a 100-foot buffer in both directions along a hypothetical 1.5-acre road segment was used to estimate potential impacts to an additional 8.55 acres due to construction noise and vibration, for a total impact of about 10.05 acres.

To mitigate impacts to 10.05 acres of PPM-Habitat from Covered Activities, SDG&E will contribute an in-lieu fee of $592,950 which is equal to the total impacts paid at a cost of $59,000/acre ((i.e., 1.5 + 8.55, or 10.05 acres, multiplied by $59,000, for a total of $592,950).

An in-lieu fee program instrument (similar to a conservation banking instrument) will govern the use and operation of the in-lieu fee program. SDG&E will use its best efforts to establish a program instrument and provide its in-lieu-fee sponsor the fee in advance of or contemporaneously with any impact to PPM-Habitat. If an in-lieu-fee sponsor or funding instrument has not yet been approved or established at that time, SDG&E will deposit its in-lieu fee into an escrow account (or prepare a letter of credit, if requested) or similar appropriate account to create a PPM-mitigation fund, which will be disbursed to the in-lieu-fee sponsor as soon as practicable after that sponsor is approved.

Golden and Bald Eagle Mitigation

Impacts to golden and bald eagles will be mitigated consistent with the ECP (Appendix B). Mitigation to offset impacts to golden eagles will be accomplished by retrofitting utility poles to avoid future loss through electrocution. USFWS Resource Equivalency Analysis worksheets were used to calculate the number of short-term or long-term retrofits required to offset estimated impacts (Table 8) (Table 5.6 of the HCP Amendment). All calculations in this section assume a mitigation ratio of 1.2:1, per the ECP Guidance, and are in accordance with the 2016 Eagle Rule. Short-term retrofits (i.e., plastic covers) provide 10 years of avoided eagle loss, while long-term retrofits (reframing) provide up to 30 years of avoided loss.

Table 8. Summary of Estimated Mitigation for Golden Eagles Over the Permit Period (through 2050)[1]

Form of Take	Estimated Take	Mitigation Ratio Multiplier	Short-Term Retrofits		Long-Term Retrofits	
			Per Instance of Take	Eagle Permit Term	Per Instance of Take	Eagle Permit Term
Nest Disturbance	72	1.2	23.50	1692	10.25	738
Electrocution	26	1.2	35.79	931	15.58	406
Collision	13	1.2	35.79	466	15.58	203
Nest Removal	12	1.2	NA	NA	NA	NA

NA = not applicable

[1] Mitigation for nest disturbance will stay ahead of forecasted impact estimates and will typically be completed within the first year of each 5-year permit period. Mitigation for collisions will be completed throughout each 5-year period and will be based on actual fatalities.

Mitigation in the form of short-term or long-term retrofits as well as compensatory mitigation for impacts to bald eagles is required when all authorized and permitted take exceeds the annual allotment for the flyway. The ECP Area is within the Pacific Flyway South Eagle Management Unit, which has a bald eagle annual take allotment of 15. As of 2020, the authorized take in the Pacific Flyway South Eagle Management Unit is 2.85 out of the 15 allotted eagles per year. The estimated bald eagle take associated with SDG&E activities (fewer than two individuals per year; Section 4.3 of ECP) will not increase annual take above this threshold. Because SDG&E's estimated take of bald eagles is extremely small and will not exceed the annual allotment for this Eagle Management Unit, mitigation is not required. In the event of direct fatality of a bald eagle caused by contact with SDG&E facilities, SDG&E will conduct reactive pole retrofitting at the incident pole where the take occurred to ensure no further electrocutions could occur on the pole in question.

In coordination with the Service, SDG&E may contribute compensatory mitigation to San Diego golden eagle conservation by reducing the overall number of short-term retrofits and redirecting a portion of the unit costs of those retrofits to local eagle conservation efforts. All retrofits in the previous sections assume a mitigation ratio of 1.2:1. Of this 1.2:1, up to 0.2:1 of the typical unit cost of a single, short-term retrofit may be proposed in lieu of installing some short-term retrofits by directly supporting San Diego golden eagle conservation.

With the proposed mitigation, the SDG&E HCP Amendment will result in a net increase in golden eagle survival and reproduction within the Plan Area by reducing the risk of electrocution or implementing other Service-approved measures to benefit golden eagle conservation and recovery. Although compensatory mitigation measures specific to bald eagle are not required under the SDG&E HCP Amendment, electrocution risks will also be reduced for bald eagles as a result of the extensive pole retrofits that will be conducted pursuant to the SDG&E HCP Amendment. Further, the level of impacts to bald eagle as a result of the SDG&E HCP Amendment are well below the level at which it would negatively impact the Pacific Flyway South Eagle Management Unit, which includes all of the bald eagles in the Plan Area. Therefore, the impacts from nest disturbance, electrocutions, collisions, and nest removal will not result in

an appreciable reduction in the numbers, reproduction, or distribution of bald eagles or golden eagles within the Plan Area or rangewide.

Impact Accounting (Section 6.3.6 of the HCP Amendment)

To conservatively estimate future impacts to Covered Species from Covered Activities, the HCP Amendment used Modeled Habitat, as described in Section 4.1.3 of the HCP Amendment. The HCP Amendment further recognizes, however, that Modeled Habitat may be both under and over-inclusive, meaning it may not include all areas of suitable habitat or Covered Species occurrences and include areas that are not suitable habitat for or occupied by a Covered Species. Therefore, SDG&E will use Tracked Habitat to track Covered Species habitat impacts in its PSRs. Tracked Habitat is defined as Modeled or unmodeled habitat that is known or assumed to be occupied by a Covered Species and will be used to track Covered Species habitat impacts.

Mitigation Accounting (Section 6.3.7 of the HCP Amendment)

The HCP Amendment team will calculate the mitigation required to offset the prior year's impacts (as described in Section 6.3.6 of the HCP Amendment). Temporary and permanent impacts for the reporting year will be mitigated using (1) the extent of Covered Species habitat and (2) the ratio of compensation based on whether the impacts are (a) temporary or permanent and (b) whether the impacts occurred inside or outside an existing or Proposed Preserve.

Reporting (Section 6.4 of the HCP Amendment)

Each year, the HCP Amendment team will prepare an Annual Report to document permit compliance and implementation of the conservation strategy. Each Annual Report will summarize the previous calendar year's Covered Activities and will be completed by May 1 following the reporting year. The report delivery date may be changed with mutual agreement of SDG&E and the Service. The Annual Report will be submitted to designated representatives of the Service.

A separate annual report will be prepared and submitted to the Service for golden and bald eagles consistent with Section 7 of the ECP.

Changes to the HCP Amendment (Section 6.5 of the HCP Amendment)

The HCP Amendment addresses potential impacts to Covered Species and their habitat that are associated with Covered Activities for the remaining permit period. Changes may be required during the remaining permit period. Potential changes range from clerical (i.e., administrative, non-substantive) changes with no effect on the implementation of the HCP Amendment's commitments to Minor or Major Amendments, which involve varying degrees of change to the HCP Amendment's implementation obligations.

Funding (Section 9 of the HCP Amendment)

The HCP Amendment will be funded through SDG&E's gas and electricity rates as authorized and regulated by the CPUC and Federal Energy Regulatory Commission (FERC) for the ongoing operation, maintenance, and construction of Facilities. The costs of implementing all aspects of

the HCP Amendment, such as administrative costs for reporting and tracking to costs associated with the R/E Program, are typically included as a part of a capital or O&M project. All appropriate avoidance, minimization, or mitigation measures as prescribed in the HCP Amendment will be integrated within each project's design and budget.

Action Area

Regulations implementing the Act [50 Code of Federal Regulations (CFR) § 402.02] describe the action area as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. We are defining the action area as the 2,815,930-acre HCP Amendment Plan Area.

ANALYTICAL FRAMEWORK FOR THE SECTION 7(A)(2) DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which are all consequences to listed species caused by the proposed action that are reasonably certain to occur; and (4) the Cumulative Effects, which evaluate the effects of future, non-federal activities in the action area on the species.

For the section 7(a)(2) determination regarding jeopardizing the continued existence of the species, the Service begins by evaluating the effects of the proposed federal action and the cumulative effects. The Service then examines those effects against the current status of the species to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the species in the wild.

Adverse Modification Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to destroy or to adversely modify designated critical habitat. "Destruction or adverse modification" of critical habitat means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species (50 CFR § 402.02).

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the status of critical habitat, which describes the condition

of all designated critical habitat in terms of its physical and biological features, the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the environmental baseline, which analyzes the condition of the designated critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the effects of the action, which analyze all consequences to critical habitat caused by the proposed action that are reasonably certain to occur and their influence on the recovery role of the affected designated critical habitat units; and (4) cumulative effects, which evaluate the effects of future non-federal activities in the action area on the physical and biological features of critical habitat and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed federal action on the designated critical habitat are evaluated in the context of the condition of all designated critical habitat, taking into account any cumulative effects, to determine if the consequences of the proposed action are likely to appreciably reduce the value of critical habitat as a whole for the conservation of the species.

ENVIRONMENTAL BASELINE

The regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR § 402.02).

General

The 2,815,930-acre Plan Area contains a vast array of vegetation communities and other land cover types (Table 9) (Table 3 of the HCP Amendment). The predominant vegetation community in the Plan Area is uplands (approximately 68 percent of the Plan Area). Approximately 28 percent of the Plan Area consists of "Other Land Cover Types" (e.g., agriculture, disturbed habitat, eucalyptus woodland, and urban/developed), and the remaining 4 percent of the Plan Area is composed of riparian and wetlands vegetation communities. Within uplands, chapparal is the most common land cover type and represents 29 percent of the total Plan Area acreage. Urban/developed land is the most common "other land cover type" and is 23 percent of the total Plan Area acreage. Riparian and wetlands represent only 4 percent of the Plan Area, of which riparian forest/woodland is the most common but only represents 2 percent of the total Plan Area. Figure 6 of the HCP Amendment shows the distribution of vegetation communities within the Plan Area.

Table 9. Vegetation Communities and Other Land Cover Types within the Plan Area and PIZ

Vegetation Communities and Other Land Cover Types	Plan Area Acres	Percent of Total Plan Area	PIZ Acres	Percent of Total PIZ
Riparian and Wetlands	***119,154***	**4.231**	***4,093***	***1.160***
Alkali Playa	2,007	0.071	-	-
Beach/Coastal Dunes/Saltpan/Mudflats	1,319	0.047	94	0.027
Disturbed Wetland	191	0.007	24	0.007
Marsh	5,946	0.211	317	0.090
Meadows and Seeps	10,635	0.378	122	0.035
Non-Vegetated Channel	2,718	0.097	51	0.014
Open Water	26,418	0.938	438	0.124
Riparian Forest/Woodland	58,972	2.094	2,365	0.670
Riparian Scrub	10,875	0.386	670	0.190
Vernal Pools	72	0.003	13	0.004
Uplands	***1,902,591***	**67.565**	***41,881***	***11.867***
Badlands	46,075	1.636	-	-
Chaparral	822,591	29.212	15,592	4.418
Coastal Scrub	230,825	8.197	13,571	3.845
Desert Dunes	895	0.032	-	-
Desert Scrub	456,690	16.218	2,024	0.574
Forest/Woodland	203,954	7.243	2,461	0.697
Grasslands	130,350	4.629	7,917	2.243
Great Basin Scrub	11,212	0.398	315	0.089
Other Land Cover Types	***794,185***	**28.203**	***306,935***	***86.973***
Agriculture	139,636	4.959	10,594	3.002
Disturbed Habitat	13,719	0.487	2,370	0.672
Eucalyptus Woodland	2,348	0.083	650	0.184
Urban/Developed	638,482	22.674	293,321	83.115
Total[1]	**2,815,930**	**100.000**	**352,909**	**100.000**

[1] Values may not total due to rounding after summation.

EFFECTS OF THE ACTION

Regulations implementing the Act (50 CFR § 402.02) define the effects of the action as all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR § 402.17).

The regulations for section 7(a)(2) note that "a conclusion of reasonably certain to occur must be based on clear and substantial information, using the best scientific and commercial data available" [50 CFR § 402.17(a)]. When considering whether activities caused by the proposed action (but not part of the proposed action) or activities reviewed under cumulative effects are reasonably certain to occur, we consider factors such as (1) past experiences with activities that

have resulted from actions that are similar in scope, nature, and magnitude to the proposed action; (2) existing plans for the activity; and (3) any remaining economic, administrative, and legal requirements necessary for the activity to go forward.

General Effects

Direct Effects

Expect for larger New Construction projects, impacts associated with SDG&E's Covered Activities are typically less than commercial, industrial, and residential development which can permanently impact or fragment large areas of habitat, change the topography, and cover much of the developed area with impervious surfaces. In contrast, most of SDG&E's O&M Covered Activities impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation, changes in topography or adding impervious surfaces. In addition, many of SDG&E's ROWs include narrow and unpaved access roads or habitat.

The HCP Amendment would allow no more than 820 acres of habitat impacts, including up to 400 acres of permanent impacts, 210 acres of temporary impacts, and 210 acres of impacts from Wildfire Fuels Management, from Covered Activities as discussed in further detail below. The distribution of these impacts is anticipated to occur primarily within the PIZ since these areas encompass the network of existing SDG&E facilities and infrastructure that need to be maintained and to which future new projects are likely to be connected. Moreover, historical average annual impacts likely overestimate impacts from New Construction as compared to future Covered Activities, which are expected to be overwhelmingly O&M on the existing system.

Temporary impacts to habitat consist of impacts on habitat that recover within 1 to 5 years and/or do not result in the installation or expansion of a new Facility footprint. Permanent impacts are typically the result of the loss of habitat because of constructing new facilities or expanding existing facilities in natural areas. Additionally, permanent impacts can result when restoration and enhancement of temporary impact sites fail to meet success criteria. Specific examples where permanent impacts could result from Covered Activities include permanent conversion of habitat for a substation expansion or permanent conversion of habitat to non-habitat for vegetation management. Covered Activities that require blading, scraping, or excavation could result in the replacement of pervious surfaces with impervious surfaces. Impacts to habitat may reduce prey base, increase the likelihood of exposure to injury or death, and potentially restrict access to resources for Covered Species survival, thereby increasing the possibility of individual loss.

SDG&E analyzed nearly three decades of historical permanent and temporary impact data that detailed acreages of habitat impacts that have occurred under the Subregional Plan. These records included 23 years of SDG&E data that reported permanent and temporary impacts resulting from both O&M and New Construction from 1996 through 2018. SDG&E assumed that impacts from future O&M and New Construction would be consistent with historical averages. Using this approach, SDG&E estimated that annual O&M and New Construction habitat impacts through 2050 would average approximately 4.81 acres of permanent impacts and 6.73 acres of

temporary impacts annually because of Covered Activities, for a combined average of 11.54 acres of impacts per year.

To estimate the proportion of permanent impacts that could arise from New Construction versus O&M impacts, SDG&E analyzed historical data for New Construction impacts from 1996 through 2018 (HCP Amendment Section 4.1.3.2). Those data showed that the average permanent impacts from New Construction totaled approximately 2.21 acres per year. Going forward, SDG&E assumed all New Construction would occur outside the PIZ. Even though future New Construction is not expected to occur at the same rate as in the past, to be conservative it multiplied the 2.21 acres by 30 years, yielding a total 66.3 acres of permanent impacts. These impacts were estimated to occur to habitat from New Construction outside the PIZ, which represents approximately 16.6% of the overall 400 acres of permanent impacts to habitat.

Estimated permanent habitat impacts associated with O&M and New Construction total close to 400 acres through 2050, which represents 0.02 percent of the total Plan Area (Table 10). Given the habitat types in the Plan Area, most of these impacts are expected to occur to upland vegetation communities, especially grassland, coastal scrub, and chaparral. Permanent impacts to habitats relative to the amount of total habitat within the Plan Area are very small for all vegetation communities: less than 1 percent for all habitats and 0.01 percent or less for 12 of the 18 habitat types.

Estimated temporary habitat impacts could total approximately 232 acres but would be capped at 210 acres (Table 11). These impacts are anticipated to occur in similar habitat types as permanent impacts. The acreage of temporary impacts for each habitat type represents a very small fraction of the total acreage within the plan area; less than 1 percent for all habitats, and 0.01 percent or less for 13 of the 18 habitat types.

Table 10. Estimated Permanent Habitat Impacts Associated with Operation and Maintenance and New Construction (acres)

Habitat Type	Total acres within Plan Area[1]	Total Impacts 1996–2018	Average Annual Impacts 1996–2018	Anticipated Impacts through 2050[2]	Unanticipated Impacts (15% buffer)	O&M Impacts through 2050	New Construction Impacts through 2050	Total O&M and New Construction Impacts through 2050[3, 4]	% of Habitat in Plan Area Impacted by O&M and New Construction
Riparian and Wetlands	***119,154***	**5.18**	***0.23***	***6.75***	***1.01***	***6.48***	***1.29***	**7.77**	***0.01***
Alkali Playa[5]	2,007	-	-	-	-	-	-	-	-
Beach/Coastal Dunes/Saltpan/Mudflats[5]	1,319	-	-	-	-	-	-	-	-
Disturbed Wetlands	191	0.36	0.02	0.47	0.07	0.45	0.09	0.54	0.28
Marsh	5,946	0.39	0.02	0.51	0.08	0.49	0.1	0.59	0.01
Meadow/Seep	10,635	0.43	0.02	0.56	0.08	0.54	0.11	0.65	0.01
Non-Vegetated Flood Channel	2,718	0.01	0.00	0.01	0.00	0.01	0	0.01	<0.01
Open Water	26,418	0.02	0.00	0.02	0.00	0.03	0	0.03	<0.01
Riparian Forest/Woodland	58,972	1.36	0.06	1.78	0.27	1.7	0.34	2.04	<0.01
Riparian Scrub	10,875	2.18	0.09	2.85	0.43	2.73	0.54	3.27	0.03
Vernal Pools	72	0.43	0.02	0.55	0.08	0.53	0.11	0.64	0.89
Uplands	***1,902,591***	**260.28**	**11.32**	**339.49**	**50.92**	**325.61**	**64.8**	**390.41**	**0.02**
Badlands[5]	46,075	-	-	-	-	-	-	-	-
Chaparral	822,591	53.70	2.33	70.05	10.51	67.18	13.37	80.55	0.01
Coastal Scrub	230,825	72.11	3.14	94.05	14.11	90.21	17.95	108.16	0.05
Desert Dunes[5]	895	-	-	-	-	-	-	-	-
Desert Scrub	456,690	6.02	0.26	7.85	1.18	7.53	1.5	9.03	<0.01
Forest/Woodland	203,954	5.51	0.24	7.19	1.08	6.9	1.37	8.27	<0.01
Grasslands	130,350	121.15	5.27	158.03	23.70	151.56	30.17	181.73	0.14
Great Basin Scrub	11,212	1.78	0.08	2.32	0.35	2.23	0.44	2.67	0.02
Grand Total[6]	**2,021,745**	**265.45**	**11.54**	**346.24**	**51.94**	**332.09**	**66.09**	**398.18**	**0.02**

[1] Does not include non-sensitive cover types such as agriculture, disturbed, or developed areas.
[2] To be conservative, annual average multiplied by 30.
[3] Sum of anticipated and potential unanticipated impacts.
[4] The 5 acres of anticipated impacts to the agricultural and/or disturbed land cover types associated with the expansion of the Moreno Compressor Station are not included; SDG&E does not mitigate for either of these land cover types.
[5] Impacts to these vegetation communities are not anticipated to occur.
[6] Numbers may not total due to rounding.

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Table 11. Estimated Temporary Habitat Impacts Associated with Operation and Maintenance and New Construction (acres)

Habitat Type	Total acres within Plan Area[1]	Total Impacts 1996–2018	Average Annual Impacts 1996–2018	Anticipated Impacts through 2050[2]	Unanticipated Impacts from Future Covered Activities (15% of Anticipated Average)	Total Impacts through 2050[3]	% of Habitat in Plan Area Impacted by O&M and New Construction
Riparian and Wetlands	***119,154***	**4.08**	**0.18**	**5.33**	**0.80**	**6.13**	**0.01**
Alkali Playa[4]	2,007	-	-	-	-	-	-
Beach/Coastal Dunes/Saltpan/ Mudflats[4]	1,319	-	-	-	-	-	-
Disturbed Wetlands	191	0.33	0.01	0.42	0.06	0.49	0.26
Marsh	5,946	0.35	0.02	0.46	0.07	0.53	0.01
Meadow/Seep	10,635	0.43	0.02	0.56	0.08	0.64	0.01
Non-Vegetated Flood Channel	2,718	0.01	0.00	0.01	0.00	0.01	<0.01
Open Water	26,418	0.02	0.00	0.02	0.00	0.03	<0.01
Riparian Forest/ Woodland	58,972	1.08	0.05	1.41	0.21	1.63	<0.01
Riparian Scrub	10,875	1.86	0.08	2.43	0.36	2.80	0.03
Vernal Pools	72	0.00	0.00	0.01	0.00	0.01	0.01
Uplands	***1,902,591***	**150.79**	**6.56**	**196.68**	**29.50**	**226.18**	0.01
Badlands[4]	46,075	-	-	-	-	-	-
Chaparral	822,591	22.03	0.96	28.73	4.31	33.04	<0.01
Coastal Scrub	230,825	37.77	1.64	49.26	7.39	56.65	0.02
Desert Dunes[4]	895	-	-	-	-	-	-
Desert Scrub	456,690	2.30	0.10	3.01	0.45	3.46	<0.01
Forest/Woodland	203,954	4.52	0.20	5.89	0.88	6.78	<0.01
Grasslands	130,350	82.64	3.59	107.79	16.17	123.96	0.10
Great Basin Scrub	11,212	1.53	0.07	2.00	0.30	2.30	0.02
Grand Total[5]	**2,021,745**	**154.87**	**6.73**	**202.01**	**30.30**	**232.31[6]**	**0.01**

[1] Does not include non-sensitive cover types such as agriculture, disturbed, or developed areas.
[2] To be conservative, annual average multiplied by 30.
[3] Sum of anticipated and potential unanticipated impacts.
[4] Impacts to these vegetation communities are not anticipated to occur.
[5] Numbers may not total due to rounding.
[6] As noted above, SDG&E's request for incidental take for temporary impacts would be reduced to 210 acres, which is a more conservative approach that is in line with historical averages (i.e., approximately 7 acres/year x 30 years).

To estimate impacts from Wildfire Fuels Management, SDG&E considered data from its 2019 pilot program. Those data showed that on average, for every 100 acres treated, 9 acres of native vegetation cover was removed, and 2 acres of nonnative vegetation cover was removed. Because removal of nonnative vegetation benefits Covered Species and their habitat and promotes the establishment of native vegetation, the average acreage of nonnative vegetation cover loss was subtracted from the acreage of native vegetation cover loss, yielding a net vegetation cover loss of 7 acres per 100 acres treated. Assuming up to 100 acres of land would undergo Wildfire Fuels Management annually over the next 30 years and applying a rate of habitat impacts consistent with 2019 data, 7 acres of habitat impacts would occur annually. Therefore, approximately 210 acres of Wildfire Fuels Management impacts are expected through 2050. Most impacts are expected to occur within upland habitats, primarily chaparral. Even assuming all impacts were to occur within upland habitats, the percentage of habitat impacted would be very small relative to the total acreage of upland habitats in the Plan Area. For example, impacts to 210 acres of chaparral would amount to less than 0.03 percent of the total acreage of chaparral within the Plan Area impacted through 2050. Some minor impacts may occur within riparian or wetland habitat. But these habitat areas are outside High Fire Threat Districts and Wildfire Fuels Management would be limited to specific instances where vegetation was causing a high ignition risk. Impacts to these vegetation communities within the Plan Area are expected to be negligible.

To generate species-specific habitat impact estimates, SDG&E used habitat models to estimate the approximate acreage of Covered Species habitat (i.e., suitable habitat) in the Plan Area.[1] It then established the PIZ and used geographic information system (GIS) software to overlay the undeveloped portion of the PIZ (48,665 acres) on Covered Species habitat models. This quantified the proportion of the PIZ that consisted of potentially suitable habitat for each Covered Species. SDG&E multiplied this percentage by the total permanent (11.54 acres per year[2]), temporary (6.73 acres per year), and Wildfire Fuels Management Impacts (7 acres per year) impact acreage estimates to generate species-specific habitat impact estimates. To account for unanticipated impacts, SDG&E added a 15 percent buffer to the anticipated annual permanent and temporary impact estimates for each species. For each species, SDG&E calculated permanent impacts from New Construction by multiplying the annual impacts from Covered Activities by the proportion of impacts expected to occur from New Construction that SDG&E assumed would occur outside the PIZ (i.e., 16.6 percent) (HCP Amendment Section 4.1.3.2). SDG&E used this methodology for all Covered Species except eagles.

The Moreno Compressor Station, located in western Riverside County, encompasses approximately 180 acres of the Plan Area. The Moreno Compressor Station is a stand-alone parcel that is not contiguous with the remainder of the Plan Area. Approximately 14 acres of the property is developed, and the remaining portion of the property consists of sparse, disturbed vegetation and flat, bare terrain that has been disturbed by agricultural activity for more than 25 years. Given the defined nature of the property and the known habitat impacts from expansion of the Facility, it was not necessary to implement the Covered Species habitat modeling effort and associated impact methodology at this location. The potential presence of each Covered Species in this portion of the Plan Area was instead evaluated based on a desktop analysis of each

[1] Acreages of modeled habitat for Peninsular bighorn sheep are based on essential habitat (Service 2000) as described in Appendix C in the HCP Amendment.
[2] It was assumed that all historical impacts were permanent impacts.

Covered Species' habitat requirements, an evaluation of current vegetation community and land cover conditions, and historical data collected by SDG&E over the last several years. Habitat impacts of 5 acres were assumed for each Covered Species identified as having suitable habitat in this portion of the Plan Area. Actual habitat impacts in this portion of the Plan Area will be quantified and documented through individual review of each Covered Activity.

Indirect Effects

As stated above, construction impacts associated with SDG&E's energy development are expected to be less than those of typical developments because (1) energy development projects are completed over a period of days rather than months or years as with other development projects, and (2) construction has less impact; for example, equipment and materials are often delivered by air, thereby minimizing ground disturbances. In addition, energy Facilities (except for generators) are unoccupied and cause little or no edge effects to preserves.

Indirect effects to Covered Species and their habitats from Covered Activities include elevated noise, dust, and lighting levels; changes in hydrology, runoff, and sedimentation; decreased water quality; soil compaction; increased human activity; the introduction of invasive plants; habitat fragmentation; and disruption of wildlife movement. Noise, nighttime lighting, dust, sedimentation, and erosion from nearby construction and equipment operation or new permanent Facilities may degrade the surrounding habitat and could negatively alter breeding behavior and movement patterns. The severity of these effects will depend on the distance and source of the disturbance to suitable habitat and the affected species.

Construction, operations of facilities, and maintenance activities may introduce noise, dust, and lighting into adjacent habitat areas. The impact of noise on wildlife is likely to differ from species to species and is not only dependent on the decibel level of the noise, but also on the duration and frequency. For example, birds rely on auditory signals in the form of songs and alarm or scolding calls to establish and defend territories, attract a mate, feed and care for young at the nest, and to locate and evade a potential predator. Noise may alter these time-consuming and energetically expensive behaviors of birds. Increased noise levels have the potential to lower reproductive fitness by affecting territorial defense, mate acquisition, the ability to detect conspecific encroachments, foraging, and predator avoidance. Noise may also be detrimental to birds by causing nest neglect or abandonment due to startle effects, cause sleep interference, or otherwise elicit physiological responses or annoyance that have energetic costs (Ward and Stehn 1989). Construction and the use of heavy equipment can result in noise and vibration impacts that are thought to be potentially harmful to a variety of bird species (Gunn and Livingston 1974; RECON 1989; Pike and Hays 1992).

Dust on plants may result in physical effects such as cell destruction and blocked stomata that can lead to reduced photosynthesis, respiration, and transpiration. The use of night lighting during construction and operations can attract predators and/or increase their effectiveness, thereby potentially increasing the risk of predation on sensitive nocturnal species. Roads created for construction or O&M may inadvertently provide access into previously undisturbed habitats, thereby increasing the potential for anthropogenic disturbances such as off-road vehicle use, vegetation trampling, etc. that may degrade native habitats.

Non-native species invasion and increased predation along the edge of natural areas are some of the potential consequences of land disturbance. Habitat edges are particularly vulnerable to introduction of non-native species. Potentially harmful non-native invasive plant species include giant reed (*Arundo donax*), pampas grass (*Cortaderia selloana*), castor bean (*Ricinus communis*), and tamarisk (*Tamarix ramosissima*). Many of these species are known to displace native species. Invasion by non-native plant species may also alter microhabitats and disrupt natural ecological processes that in turn may negatively affect native animal and plant species. Numerous predators such as opossums (*Didelphis virginiana*), raccoons (*Procyon lotor*), skunk (*Mephitis mephitis*), and ground squirrels (*Spermophilus spp.*) thrive on edges that can then result in increased predation on other sensitive and declining species.

Although less common due to the linear nature and permeability of many of SDG&E's Facilities and the restoration efforts following post-construction, Covered Activities may also cause habitat fragmentation or disrupt movement of covered wildlife species.

Other Regional NCCP/HCPs

Although these NCCP/HCPs overlap the Plan Area for the HCP Amendment and address impacts to many species covered under the HCP Amendment, we anticipate that impacts from SDG&E's covered activities will be addressed consistent with the HCP Amendment. In addition, the Plan Area for the HCP Amendment overlaps with reserve areas established pursuant to these plans. The HCP Amendment provides for limited impacts to habitat within existing reserve areas, primarily within existing SDG&E rights-of-way. Any impact greater than 1.75 acres within an existing or planned preserve will require a minor amendment that includes an evaluation of potential effects to the existing preserve. Finally, conservation of habitat pursuant to the HCP Amendment will expand on and connect existing preserves. Therefore, implementation of the HCP Amendment is anticipated to be consistent with the regional HCPs.

Climate Change

Global climate change is an ongoing threat to all of the Covered Species and is well documented (IPCC 2007). Current climate change predictions for terrestrial areas in the Northern Hemisphere indicate warmer air temperatures, more intense precipitation events, and increased summer continental drying (Field et al. 1999; Cayan et al. 2005; IPCC 2007). For example, the climate change model simulations indicate that San Diego will retain its strong Mediterranean climate with relatively wet winters and dry summers. Projections of future precipitation have mixed results: three of the simulations become drier (12 percent to 35 percent drier than historical annual average), and three are wetter (12 percent to 17 percent wetter than historical annual average) overall (Messner et al. 2011). This reflects the reality that precipitation cannot yet be modeled with the same degree of consistency as other climate change parameters. The models vary in their projections of storminess, but none show a significant change from past patterns. One important aspect of all of the climate model projected simulations is that the high degree of variability of annual precipitation that the region has historically experienced will prevail during the next 5 decades. Climate change can also influence fire frequency within the preserves. Fire occurrence in California has been correlated with drought, moisture availability, and biomass (fuel) accumulation (Lenihan et al. 2003). Although climate change models predict different climate scenarios, many predict a dryer and warmer climate, which would result in more frequent

or longer drought periods. An increase in drought frequency or longevity has the potential to increase fire frequency. The HCP Amendment includes both drought and increased fire frequency as potential changed circumstances. Conservation measures in the HCP Amendment are not sufficient and comprehensive enough on their own to prevent the effects of climate change on Covered Species. However, certain risks associated with climate change can be minimized with preventative measures. Preventative measures are provided for fire in Section 7.1.1. of the HCP Amendment. There are no preventative measures identified for drought. For all Covered Species, the effects of climate change are best addressed through the adaptive management and monitoring of the preserves. Climate change is not addressed further as a threat for the covered species, except for Quino checkerspot butterfly and San Diego fairy shrimp. .

SPECIES-SPECIFIC AND CRITICAL HABITAT EVALUATIONS

Introduction

As stated above, SDG&E does not anticipate any new large-scale construction in the near term and estimates of species-specific impacts based on past impact rates likely overestimate future impacts. Nor is it likely that there will be any large, localized impact footprints associated with the creation of new Facilities that could significantly impact a localized population of a Covered Species. In addition, impacts to Preserves and some Covered Species from New Construction may require a Minor Amendment consistent with Section 6.5.1.2 of the HCP Amendment, to ensure impacts to Preserves and these species are avoided and/or minimized. Also, because impacts associated with O&M are likely to be small and occur along long, linear lines, they are unlikely to significantly impact highly localized Covered Species.

A total of 41 species of plants (16 species) and wildlife (25 species) are proposed as the Covered Species in the HCP Amendment (Table 1, HCP Amendment Table 3-1). Covered Species Analysis is included as Appendix A of the HCP Amendment and details specific information and analysis (e.g., background, presence, potential impacts, etc.) for each of the Covered Species under the HCP Amendment except for golden eagle, bald eagle, and Peninsular bighorn sheep. The analysis estimated approximate acreage of suitable habitat for Covered Species in the Plan Area using habitat models as discussed in Section 4.1.3.1 of the HCP Amendment. This habitat model generates outputs based on the habitat requirements for each species. Specifically, the habitat model considers six key environmental factors: vegetation, soil type, soil texture, elevation, slope, and ecoregion. The geographic information system (GIS) software was them used to overlay the undeveloped portion of the PIZ (48,665 acres) on Covered Species habitat models. This quantified the proportion of the PIZ that consisted of potentially suitable habitat for each Covered Species. SDG&E multiplied this percentage by the total permanent (11.54 acres per year[3]), temporary (6.73 acres per year), and Wildfire Fuels Management Impacts (7 acres per year) impact acreage estimates to generate species-specific habitat impact estimates. To account for unanticipated impacts, SDG&E added a 15 percent buffer to the anticipated annual permanent and temporary impact estimates for each species. The following is an example of this calculation for both permanent and temporary impacts, using the coastal California gnatcatcher:

[3] It was assumed that all historical impacts were permanent impacts.

Example Calculation of Species-Specific Habitat Impacts:

1. Average Annual Impacts:

   - Permanent = 11.54 acres per year (see HCP Amendment Table 4.1)[4]

   - Temporary = 6.73 acres per year (see HCP Amendment Table 4.1)

2. Coastal California Gnatcatcher Modeled Habitat within PIZ: 7,365 acres

3. Percentage of Undeveloped Portion of PIZ Supporting Modeled Habitat[5]:

$$\frac{\text{7,365 acres (Modeled Habitat within the PIZ)}}{\text{48,665 acres (Undeveloped Portion of the PIZ)}} = 15.13\%$$

4. Average Annual Impacts to Coastal California Gnatcatcher Habitat:

   - Permanent: 11.54 acres (Average Annual Impacts) x 15.13% (% of undeveloped portion of PIZ Supporting Modeled Habitat) = 1.75 acres/year x 15% (Unanticipated Impacts Buffer) = 2.01 acres/year [HCP Amendment Table 4.4; Appendix A (Covered Species Analysis), Attachment B]

   - Temporary: 6.73 acres (Average Annual Impacts) x 15.13% (% of undeveloped portion of PIZ Supporting Modeled Habitat) = 1.02 acres/year
     x 15% (Unanticipated Impacts Buffer) = 1.17 acres/year [HCP Amendment Table 4.4; Appendix A (Covered Species Analysis), Attachment C]

5. Total Impacts to Coastal California Gnatcatcher Habitat:

   - Permanent: 2.01 acres/year x 30 years = 60.26 acres [HCP Amendment Table 4.4; Appendix A (Covered Species Analysis), Attachment B]

   - Temporary: 1.17 acres/year x 30 years = 35.14 acres [HCP Amendment Table 4.4; Appendix A (Covered Species Analysis), Attachment C]

This approach is based on two underlying concepts. First, it assumed that impacts and suitable habitat are distributed uniformly in the PIZ. Actual impacts and suitable habitat are not uniformly distributed in the PIZ, and therefore species impacts each year may differ from the annual estimates calculated by this analysis, depending on the actual location of Covered Activities.

[4] To be conservative, it was assumed that all historical impacts were permanent impacts.

[5] Removing developed and agricultural cover types from the PIZ for quantification of impacts allows for a more conservative estimate of impacts because, ultimately, impact acres are based on the proportion of Modeled Habitat within the PIZ. If the acres of Modeled Habitat within the PIZ were divided by the total 352,909 acres within the PIZ, then the percentage of Modeled Habitat within the PIZ would be reduced. This would consequently reduce the impact acreages calculated in step number 4.

Second, the majority of historical impacts from O&M have occurred within the PIZ and it is reasonable to conclude the PIZ represents the area where the Covered Activities (i.e., O&M) are expected to take place over the remaining duration of the permit term. While most O&M would occur within the PIZ, New Construction may occur both within and outside the PIZ. The methodology described herein utilizes historical data for both O&M and New Construction impacts to habitat from 1996 through 2018 in the PIZ to estimate future habitat impacts.

To estimate the proportion of permanent impacts that could arise from New Construction versus O&M impacts, SDG&E analyzed historical data for New Construction impacts from 1996 through 2018. The data showed that average permanent impacts from New Construction was approximately 2.21 acres per year. Going forward, SDG&E assumed all New Construction would occur outside the PIZ. Even though future New Construction is not expected to occur at the same rate as in the past, to be conservative it multiplied the 2.21 acres by 30 years (which is the remaining term of the Subregional Plan to the nearest decade), yielding a total 66.3 acres of permanent impacts. These impacts were estimated to occur to habitat from New Construction outside the PIZ, which represents approximately 16.6 percent of the overall 400 acres of permanent impacts to habitat. For each species, SDG&E calculated permanent impacts from New Construction by multiplying the annual impacts from Covered Activities by the proportion of impacts expected to occur from New Construction that SDG&E assumed would occur outside the PIZ (i.e., 16.6 percent).

The same impact analysis used for O&M and New Construction was applied to Wildfire Fuels Management for upland and riparian scrub/forest Covered Species (Section 4.1.3 of the HCP Amendment). Wildfire Fuels Management would not impact vernal pool species, marsh species, desert species, or species inhabiting beach habitat.

The percentage of the undeveloped portion of PIZ that consisted of potentially suitable habitat for each Covered Species was quantified (HCP Amendment Section 4.1.3.2), and this percentage was multiplied by the Wildfire Fuels Management annual impact estimate of 7 acres per year (HCP Amendment Section 4.4.1), to generate species-specific habitat impacts. The following is an example of this calculation, using the coastal California gnatcatcher:

Example Calculation of Species-Specific Habitat Impacts:

1. Average Annual Wildfire Fuels Management Impacts:

   For every 100 acres of Wildfire Fuels Management, 7 acres of habitat impacts per year (see HCP Amendment Section 4.4.1)

2. Coastal California Gnatcatcher Modeled Habitat within PIZ:

   7,365 acres

3. Percentage of Undeveloped Portion of PIZ Supporting Modeled Habitat:

$$\frac{\text{7,365 acres (Modeled Habitat within the PIZ)}}{\text{48,665 acres (Undeveloped Portion of the PIZ)}} = 15.70\%$$

4. Average Annual Wildfire Fuels Management Impacts to Coastal California Gnatcatcher Habitat:

> 7 acres (Average Annual Impacts) x 15.70% (% of undeveloped portion of PIZ Supporting Modeled Habitat) = 1.1 acres/year

SDG&E estimated impacts as described above for all Covered Species except eagles and the entire Plan Area except the Moreno Compressor Station.

The ECP (Appendix B of the HCP Amendment) assessed potential eagle impacts from potential nest disturbance, fatality from electrocution, collision with existing Facilities, and nest removal. The Service analyzed impacts to eagles based on an independent review and evaluation of that information and found the approach to be acceptable. The methodology detailed in Section 4 of the ECP is summarized below.

To estimate fatalities from electrocution and collision, SDG&E considered decades of historical eagle fatality data and extrapolated anticipated impacts through 2050. Given SDG&E's ongoing efforts to make its system more avian safe over time—by proactively retrofitting poles and rebuilding or building Facilities to avian-safe standards—this approach was conservative, as eagle fatalities are likely to decrease over time compared to historical rates.

Potential nest disturbance was estimated using the following approach. SDG&E reviewed nesting records for golden and bald eagles presented in various sources and overlaid a 1-mile polygon around each golden and bald eagle nest site record, which it described as Eagle Awareness Areas (EAAs).[6] SDG&E reviewed EAAs to identify and evaluate in-use nests that were in proximity to Facilities. It used the combination of proximity and occupancy to estimate the number of nest disturbances that could occur through 2050. SDG&E estimated potential nest removals based on experience and a qualitative review of nesting data.

The Moreno Compressor Station, located in western Riverside County, encompasses approximately 180 acres of the Plan Area. The Moreno Compressor Station is a stand-alone parcel that is not contiguous with the remainder of the Plan Area. Approximately 14 acres of the property is developed, and the remaining portion of the property consists of sparse, disturbed vegetation and flat, bare terrain that has been disturbed by agricultural activity for more than 25 years. Given the defined nature of the property and the known habitat impacts from expansion of the Facility, it was not necessary to implement the Covered Species habitat modeling effort and associated impact methodology at this location. The potential presence of each Covered Species in this portion of the Plan Area was instead evaluated based on a desktop analysis of each Covered Species' habitat requirements, an evaluation of current vegetation community and land cover conditions, and historical data collected by SDG&E over the last several years. Habitat impacts of 5 acres were assumed for each Covered Species identified as having suitable habitat in this portion of the Plan Area. Actual habitat impacts in this portion of the Plan Area will be quantified and documented through individual review of each Covered Activity.

[6] EAAs are an existing SDG&E screening tool used by SDG&E for Covered Activities submitted to its Environmental Services group for internal environmental review and release.

Appendix C of the HCP Amendment contains an evaluation for Peninsular bighorn sheep that details specific information and analysis (e.g., background, presence, potential impacts, etc.) for this species. The evaluation estimated approximate acreage of suitable habitat for Peninsular bighorn sheep in the Plan Area using essential habitat as defined and shown in the Recovery Plan for Bighorn Sheep in the Peninsular Ranges, California (Service 2000).

Table 12 summarizes anticipated impacts for each Covered Species, except for golden eagle and bald eagle.

Critical Habitat

Covered Activities may also adversely affect designated critical habitat for the Otay tarplant, arroyo toad and coastal California gnatcatcher (Table 13).

SPECIES BY SPECIES EVALUATIONS AND CONCLUSIONS

Listed Invertebrates

San Diego Fairy Shrimp (Branchinecta sandiegonensis)

Status of the Species

Listing Status

The Service listed the San Diego fairy shrimp as endangered on February 3, 1997, (62 FR 4925). The *Recovery Plan for Vernal Pools of Southern California* (recovery plan, Service 1998a) addresses the San Diego fairy shrimp, and the *Recovery Plan Clarification for the Vernal Pools of Southern California* (clarification, Service 2019a) includes recover criteria clarification. A 5-year review for San Diego fairy shrimp was completed September 1, 2021 (Service 2021a) that recommended no change in the status of the San Diego fairy shrimp. Critical habitat for the San Diego fairy shrimp was designated on December 12, 2007 (72 FR 70648).

Species Description

The San Diego fairy shrimp is a small, freshwater crustacean in the family Branchinectidae of the order Anostraca. The species was originally described by Fugate (1993) from samples collected on Del Mar Mesa, San Diego County. Male San Diego fairy shrimp are distinguished from males of other *Branchinecta* species by differences found at the distal (located far from the point of attachment) tip of the second antennae. Females are distinguishable from females of other species of *Branchinecta* by the shape and length of the brood sac, the length of the ovary, and by the presence of paired dorsolateral (located on the sides, toward the back) spines on five of the abdominal segments (Fugate 1993). Adult male San Diego fairy shrimp range in size from 0.35 to 0.63 inch long and adult females are 0.31 to 0.55 inch long. A genetic study based on mtDNA sequencing of San Diego fairy shrimp across its range found two evolutionary significant units (genetic clades A and B) (Bohonak 2005).

Habitat Affinities

San Diego fairy shrimp are restricted to vernal pools and vernal pool-like depressions (e.g., ruts in dirt roads). Vernal pools are ephemeral wetlands that occur from southern Oregon through California into northern Baja California, Mexico (Service 1998a). They require a unique combination of climatic, topographic, geologic, and evolutionary factors for their formation and persistence. They form in regions with Mediterranean climates where shallow depressions fill with water during fall and winter rains and then dry up when the water evaporates in the spring (Collie and Lathrop 1976; Holland 1976; Holland and Jain 1977, 1988; Thorne 1984).

Downward percolation of water within the pools is prevented by an impervious subsurface layer consisting of claypan, hardpan, or volcanic stratum (Holland 1976, 1988a). Seasonal inundation makes vernal pools too wet for adjacent upland plant species adapted to drier soil conditions, while rapid drying during late spring makes pool basins unsuitable for typical marsh or aquatic species that require a more persistent source of water. For convenience of reference, groups of vernal pools are sometimes referred to as vernal pool complexes that may include two to several hundred individual vernal pools (Keeler-Wolf *et. al.* 1998). Vernal pool complexes are defined as a series of vernal pool groups that are hydrologically connected with similar soil types and species compositions. Within San Diego County, they were first described and surveyed by Beauchamp and Cass (1979) and subsequently updated in 1986 (Bauder) and 2004 (City of San Diego). Local upland vegetation communities associated with vernal pools include needlegrass grassland, annual grassland, coastal sage scrub, maritime succulent scrub, and chaparral (Service 1998a).

San Diego fairy shrimp tend to inhabit shallow, small vernal pools and vernal pool-like depressions that range in temperature from 50 to 79 degrees Fahrenheit. They are ecologically dependent on seasonal fluctuations in their habitat, such as absence or presence of water during specific times of the year, duration of inundation, and other environmental factors that likely include specific salinity, conductivity, dissolved solids, and pH levels (Gonzalez et al. 1996, Hathaway and Simovich 1996, Holtz 2003).

San Diego fairy shrimp may also be found in disturbed vernal pool habitats where basins have been compacted or artificially deepened. Although basins supporting populations often appear to be artificially created or enhanced, such basins are located within soils that are capable of seasonal ponding and are often surrounded by naturally occurring vernal pool complexes. These “artificial basins” (sometimes referred to as road pools) function in the same manner as naturally occurring vernal pools by filling with late fall, winter and/or spring rains that gradually dry up during the spring and/or summer (Service 1998a).

Table 12. Anticipated Permanent, Temporary, and Wildfire Fuels Management Modeled Species Habitat Impacts in the Plan Area (acres)

Common Name	Modeled Habitat in Plan Area	Modeled Habitat in PIZ	Percentage of PIZ Supporting Modeled Habitat[1]	Permanent Impacts					Temporary Impact			Wildfire Fuels Management			Impacts through 2050[7, 5]	
				Annual Impacts[2,3]	Total O&M and New Construction Impacts through 2050[3,5]	O&M Impacts through 2050	New Construction Impacts through 2050	Percentage of Modeled Habitat Impacted through 2050[,6]	Annual Impacts[2,3]	Impacts through 2050[3,5]	Percentage of Modeled Habitat Impacted through 2050[3,6]	Annual Impacts[4]	Impacts through 2050[3,5]	Percentage of Modeled Habitat Impacted through 2050[6]	Total[3]	Percentage of Modeled Habitat Impacted through 2050[3,6]
Plants																
San Diego thorn-mint	43,598.13	4,959.73	10.19%	1.35	40.58	33.84	6.74	0.09%	0.79	23.66	0.05%	0.71	21.40	0.05%	85.64	0.20%
San Diego ambrosia	9,687.10	676.83	1.39%	0.18	5.54	4.62	0.92	0.06%	0.11	3.23	0.03%	0.10	2.92	0.03%	11.69	0.12%
Del Mar manzanita	4,435.99	858.52	1.76%	0.23	7.02	5.85	1.17	0.16%	0.14	4.10	0.09%	0.12	3.70	0.08%	14.82	0.33%
Encinitas baccharis	46,669.96	1,599.70	3.29%	0.44	13.09	10.92	2.17	0.03%	0.25	7.63	0.02%	0.23	6.90	0.01%	27.62	0.06%
Thread-leaved brodiaea	8,424.05	1,090.49	2.24%	0.30	8.92	7.44	1.48	0.11%	0.17	5.20	0.06%	0.16	4.71	0.06%	18.83	0.22%
Salt marsh bird's-beak	659.38	29.13	0.06%	0.01	0.24	0.2	0.04	0.04%	<0.01	0.14	0.02%	-	-	-	0.38	0.06%
Orcutt's spineflower	1,847.97	320.70	0.66%	0.09	2.62	2.19	0.43	0.14%	0.05	1.53	0.08%	0.05	1.38	0.07%	5.53	0.30%
Otay tarplant	2,074.93	369.66	0.76%	0.10	3.02	2.52	0.5	0.15%	0.06	1.76	0.08%	0.05	1.60	0.08%	6.38	0.31%
Short-leaved dudleya	2,007.85	346.59	0.71%	0.09	2.84	2.37	0.47	0.14%	0.06	1.65	0.08%	0.05	1.50	0.07%	5.99	0.30%
San Diego button-celery	6,411.79	603.68	1.24%	0.16	4.94	4.12	0.82	0.08%	0.10	2.88	0.04%	-	-	-	7.82	0.12%
Willowy monardella	14,891.11	1,464.11	3.01%	0.40	11.98	9.99	1.99	0.08%	0.23	6.99	0.05%	0.21	6.32	0.04%	25.29	0.17%
Spreading navarretia	6,411.79	603.68	1.24%	0.16	4.94	4.12	0.82	0.08%	0.10	2.88	0.04%	-	-	-	7.82	0.12%
Dehesa beargrass	2,295.68	123.82	0.25%	0.03	1.01	0.84	0.17	0.04%	0.02	0.59	0.03%	0.02	0.53	0.02%	2.13	0.09%
California Orcutt grass	4,559.70	831.83	1.71%	0.23	6.81	5.68	1.13	0.15%	0.13	3.97	0.09%	-	-	-	10.78	0.24%
San Diego mesa mint	2,536.16	341.16	0.70%	0.09	2.79	2.33	0.46	0.11%	0.05	1.63	0.06%	-	-	-	4.42	0.17%
Otay Mesa mint	691.32	115.89	0.24%	0.03	0.95	0.79	0.16	0.14%	0.02	0.55	0.08%	-	-	-	1.5	0.22%
Invertebrates																
San Diego fairy shrimp	7,153.19	785.41	1.61%	0.21	6.43	5.36	1.07	0.09%	0.12	3.75	0.05%	-	-	-	10.18	0.14%
Riverside fairy shrimp	8,075.11	1,153.42	2.37%	0.31	9.44	7.87	1.57	0.12%	0.18	5.50	0.07%	-	-	-	14.94	0.19%
Laguna Mountains Skipper	1,172.46	13.50	0.03%	<0.01	0.11	0.09	0.02	0.01%	<0.01	0.06	0.01%	<0.01	0.06	0.01%	0.23	0.02%
Hermes copper butterfly	503,764.71	18,195.00	37.39%	4.91	148.85	124.14	24.71	0.03%	2.89	86.81	0.02%	2.61	78.52	0.02%	314.18	0.06%
Amphibians																
Arroyo toad - breeding and nonbreeding riparian habitat[8]	26,702.02	1,176.17	2.42%	0.32	9.62	8.02	1.6	0.04%	0.19	5.61	0.02%	0.17	5.08	0.02%	20.31	0.08%
Arroyo toad - nonbreeding upland habitat[8]	1,323,401.31	47,674.56	97.69%	1227.463.00	390.03	325.29	64.74		0.03%	7.58		227.46	6.86	0.02%	823.2	0.01%
California red-legged frog	61,071.29	2,620.41	5.38%	0.71	21.44	17.88	3.56	0.04%	0.42	12.50	0.02%	0.38	11.31	0.02%	45.25	0.07%
Western spadefoot – breeding habitat	39,348.14	2,159.64	4.44%	0.59	17.67	14.74	2.93	0.04%	0.34	10.30	0.03%	-	-	-	27.97	0.06%
Western spadefoot – upland habitat[9]	1,183,765.51	37,080.81	76.20%	10.11	303.36	253.00	50.36	0.03%	5.90	176.92	0.01%	5.33	160.01	0.01%	640.29	0.05%
Reptiles																
Southwestern pond turtle	48,245.92	2,366.10	4.86%	0.65	19.36	16.15	3.21	0.04%	0.38	11.29	0.02%	0.34	10.21	0.02%	40.86	0.08%
Coast horned lizard	933,391.29	26,019.18	53.47%	7.10	212.86	177.53	35.33	0.02%	4.14	124.14	0.01%	3.74	112.28	0.01%	449.28	0.05%

Common Name	Modeled Habitat in Plan Area	Modeled Habitat in PIZ	Percentage of PIZ Supporting Modeled Habitat[1]	Permanent Impacts					Temporary Impact			Wildfire Fuels Management			Impacts through 2050[7, 5]	
				Annual Impacts[2,3]	Total O&M and New Construction Impacts through 2050[3,5]	O&M Impacts through 2050	New Construction Impacts through 2050	Percentage of Modeled Habitat Impacted through 2050[,6]	Annual Impacts[2,3]	Impacts through 2050[3,5]	Percentage of Modeled Habitat Impacted through 2050[3,6]	Annual Impacts[4]	Impacts through 2050[3,5]	Percentage of Modeled Habitat Impacted through 2050[6]	Total[3]	Percentage of Modeled Habitat Impacted through 2050[3,6]
Birds																
Tricolored blackbird	21,116.41	692.87	1.42%	0.16	5.67	4.73	0.94	0.03%	0.11	3.31	0.02%	-	-	-	8.98	0.04%
Burrowing owl	218,361.64	6,519.36	13.40%	1.78	53.34	44.49	8.85	0.02%	1.04	31.10	0.01%	0.93	28.13	0.01%	117.57[11]	0.05%
Coastal cactus wren	133,326.07	10,895.07	22.39%	2.97	89.13	74.33	14.8	0.07%	1.73	51.98	0.04%	1.57	47.01	0.04%	188.12	0.14%
Western yellow-billed cuckoo	13,110.66	963.16	1.98%	0.26	7.88	6.57	1.31	0.06%	0.15	4.60	0.04%	0.14	4.16	0.03%	16.64	0.13%
Southwestern willow flycatcher	46,030.28	2,228.06	4.58%	0.61	18.23	15.2	3.03	0.04%	0.35	10.63	0.02%	0.32	9.61	0.02%	38.47	0.08%
Belding's savannah sparrow	1,292.30	108.28	0.22%	0.03	0.89	0.74	0.15	0.07%	0.02	0.52	0.04%	-	-	-	1.41	0.11%
Coastal California gnatcatcher	95,162.97	7,365.30	15.13%	2.01	60.26	50.26	10	0.06%	1.17	35.14	0.04%	1.06	31.78	0.03%	127.18	0.13%
Light-footed Ridgway's rail	3,661.38	307.80	0.63%	0.08	2.52	2.1	0.42	0.07%	0.05	1.47	0.04%	-	-	-	3.99	0.11%
Least Bell's vireo	36,832.29	1,798.65	3.70%	0.49	14.71	12.27	2.44	0.04%	0.29	8.58	0.02%	0.26	7.76	0.02%	31.05	0.08%
Mammals																
Stephens' kangaroo rat	52,039.43	574.04	1.18%	0.16	4.70	3.92	0.78	0.01%	0.09	2.74	0.01%	0.08	2.48	0.01%	14.92[11]	0.02%
Pacific pocket mouse	2,557.00	183.00	0.38%	0.05	1.50	1.25	0.25	0.06%	0.03	0.87	0.03%	-	-	-	2.37	0.09%

[1] The portion of the PIZ with undeveloped habitat totals 48,665 acres. The percentage represents modeled habitat within the PIZ divided by 48,665 acres. Note that anticipated impacts to modeled habitat have been calculated to provide an approximation of the potential impacts on Modeled Habitat for each Covered Species. Actual impacts on Covered Species habitat would be assessed, avoided, and minimized through the existing Pre-activity Survey Report [PSR] process.

[2] The sum of anticipated and potential unanticipated impacts in Appendix A of the HCP (Covered Species Analysis), Attachments B and C.

[3] Numbers rounded after calculations completed.

[4] Species with no impacts within the table would not be impacted by Wildfire Fuels Management because Wildfire Fuels Management would not have direct habitat impacts on vernal pool, marsh, or beach species. Wildfire Fuels Management would also not be conducted within Pacific pocket mouse habitat.

[5] To be conservative, annual average multiplied by 30 years.

[6] Total impacts divided by all modeled habitat within the Plan Area.

[7] Note that anticipated impacts to modeled habitat have been calculated to provide an approximation of the potential impacts on modeled habitat for each Covered Species. Actual impacts on Covered Species habitat would be assessed, avoided, and minimized through the existing PSR process.

[8] The County of San Diego Species Habitat Model for arroyo toad consist of riparian breeding habitat along the banks of a stream and non-breeding riparian habitat (i.e., riparian habitat outside the banks of a stream channel would not be considered breeding habitat). In order to estimate nonbreeding upland habitat for arroyo toad, all grassland, agriculture, coastal sage scrub, and chaparral within the Plan Area and PIZ was considered suitable nonbreeding upland habitat.

[9] The overall extent of suitable upland habitat within the Plan Area for spadefoot is overestimated as it includes all grassland, coastal sage scrub, and chaparral within the Plan Area and PIZ regardless if it is adjacent to breeding habitat.

[10] Impacts to bald and golden eagles are discussed separately in the Eagle Conservation Plan in Appendix B of the HCP Amendment.

[11] Five acres were added to total to account for permanent impacts at Moreno Compressor Station.

Table 13. Anticipated Permanent, Temporary, and Wildfire Fuels Management Modeled Species Habitat Impacts in the Plan Area (acres)

Common Name	Total Designated Critical Habitat	Plan Area	PIZ	Undeveloped PIZ[2]	Percentage of Undeveloped PIZ Where There Is Critical Habitat[3]	Permanent Impacts[1]					Temporary Impacts[1]			Wildfire Fuels Management [1]			Total Impacts through 2050 (%)[10]
						Annual Impacts[4]	Total O&M and New Construction Impacts through 2050[5]	O&M Impacts through 2050[6]	New Construction Impacts through 2050[6]	Percentage of Total Designated Critical Habitat Impacted through 2050[7]	Annual Impacts[8]	Impacts through 2050[5]	Percentage of Total Designated Critical Habitat Impacted through 2050[7]	Annual Impacts[9]	Impacts through 2050[5]	Percentage of Total Designated Critical Habitat Impacted through 2050[7]	
Plants																	
Otay tarplant	6,333	6,333	770	671.57	1.38%	0.18	5.49	4.58	0.91	0.09%	0.11	3.20	0.05%	0.10	2.90	0.05%	11.60 (0.19)
Wildlife																	
Arroyo toad	98,428	64,133	3,613	2,243.69	4.61%	0.61	18.36	15.31	3.05	0.02%	0.36	10.70	0.01%	0.32	9.68	0.01%	38.7 (0.04)
Coastal California gnatcatcher	197,427	80,372	6,313	3,389.15	6.96%	0.92	27.73	23.12	4.60	0.01%	0.54	16.17	0.01%	0.49	14.62	0.01%	58.52 (0.03)

[1] Note that anticipated impacts to Critical Habitat have been calculated to provide an approximation of the potential impacts on Critical Habitat for each Covered Species. Actual impacts on Critical Habitat would be assessed, avoided, and minimized through the existing Pre-activity Survey Report [PSR] process. Note all numbers rounded after calculations completed.

[2] Critical Habitat with agriculture and developed areas removed per the process described in HCP Amendment Section 4.1.3.

[3] The portion of the PIZ with undeveloped habitat totals 48,665 acres. The percentage represents Critical Habitat within the undeveloped PIZ divided by 48,665 acres.

[4] Based on SDG&E historical impact trends under the Subregional Plan for the period of 1996 through 2018, an average of approximately 11.54 acres of total impacts is expected on an annual basis with implementation of O&M and New Construction. The average annual total impacts (11.54 acres) was multiplied by the percentage of PIZ supporting Critical Habitat for a given species to estimate the permanent impacts on Critical Habitat on an annual basis. This total was increased by 15% to accommodate unanticipated impacts. For example, to estimate the impact to Otay tarplant, 11.54 acres was multiplied by 1.38% (i.e., percent within PIZ). This equals approximately 0.16 acre. This amount was increased by 0.02 acre (i.e., 15% of 0.16 acre) for a total of 0.18 acre of permanent impacts.

[5] To be conservative, annual average multiplied by 30 years.

[6] Based on historical data, New Construction was assumed to represent 16.6% of the total O&M and New Construction impact estimate. O&M represents the difference between the total impacts and New Construction impacts.

[7] To be conservative, total impacts over 30 years divided by all designated Critical Habitat.

[8] Based on SDG&E historical impact trends under the Subregional Plan for the period of 1996 through 2018, an average of approximately 6.73 acres of temporary impacts is expected on an annual basis with implementation of O&M and New Construction. The average annual temporary impacts (6.73 acres) was multiplied by the percentage of PIZ supporting Critical Habitat for a given species to estimate the temporary impacts on Critical Habitat on an annual basis. This total was increased by 15% to accommodate unanticipated impacts.

[9] Based on SDG&E's 2019 Pilot Study (see HCP Amendment Section 4.4), SDG&E assumed that up to 100 acres per year will undergo Wildfire Fuels Management through 2050, and that a 7% net percent reduction of native canopy cover will be consistent, on average, over the remaining permit term; resulting in 7 acres of habitat impacts per year. The percentage of the undeveloped portion of PIZ that consisted of Critical Habitat for applicable Covered Species was quantified, and this percentage was multiplied by Wildfire Fuels Management annual impact estimate of 7 acres per year, to estimate the impacts on Critical Habitat on an annual basis. Species with no impacts within the table will not be impacted by Wildfire Fuels Management because Wildfire Fuels Management would not have direct habitat impacts on Peninsular bighorn sheep, vernal pool species, or beach species.

[10] Total permanent, temporary, and Wildfire Fuels Management impacts.

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Life History

San Diego fairy shrimp are non-selective particle feeding filter-feeders, or omnivores. Detritus, bacteria, algal cells, and other items between 0.3 to 100 microns may be filtered and ingested (Eriksen and Belk 1999). Adult fairy shrimp are usually observed from January to March; however, in years with early or late rainfall, the hatching period may be extended (65 FR 63438). Like most vernal pool fairy shrimp, San Diego fairy shrimp have a two-stage life cycle and spend the majority of their life cycle in the cyst stage (Templeton and Levin 1979, Schaal and Leverich 1981, Herzig 1985, Hairston and De Stasio 1988, Venable 1989). After hatching, San Diego fairy shrimp reach sexual maturity in about 7 to 17 days, depending on water temperature, and persist for about 4 to 6 weeks (Hathaway and Simovich 1996). Fairy shrimp mate upon reaching maturity, and female San Diego fairy shrimp produce between 164 and 479 cysts (eggs) over their lifetime (Simovich and Hathaway 1997). The cysts are either dropped by the females to settle into the mud at the bottom of the pool, or they remain in the brood sac until the female dies and sinks to the bottom (Eriksen and Belk 1999). Fairy shrimp cysts may persist in the soil for several years until conditions are favorable for successful reproduction (Simovich and Hathaway 1997). The cysts will hatch in 3 to 5 days when water temperatures are between 50 to 68 degrees Fahrenheit (Hathaway and Simovich 1996). Not all cysts are likely to hatch in a season, thus providing a mechanism for survival if water quality and ponding conditions are not favorable in a given year (Simovich and Hathaway 1997, Ripley et al. 2004).

Status and Distribution

The current range of the San Diego fairy shrimp includes Orange and San Diego counties in southern California and northwestern Baja California, Mexico (Brown et al. 1993, Service 1998a, Service 2008a), and more recently Riverside County (Service 2021a). In Baja California, San Diego fairy shrimp have been recorded at two localities: Valle de Palmas, south of Tecate and Baja Mar, north of Ensenada. A single isolated female was previously reported from vernal pools in Isla Vista, Santa Barbara County, California; however, directed surveys have not located any additional individuals (62 FR 4925).

In Orange County, San Diego fairy shrimp has been documented at Fairview Park, Newport Banning Ranch, Irvine Ranch Lands Reserve (within an area formerly known as the North Ranch Policy Plan Area), and within the San Juan Creek watershed at Chiquita Ridge and Radio Tower Road.

In San Diego County, the species occurs in vernal pools from Camp Pendleton inland to Ramona and south through Del Mar Mesa, Proctor Valley, and Otay Mesa. A minimum of 246 pools on Camp Pendleton are known to be occupied by San Diego fairy shrimp. Based on surveys of the 2,856 vernal pool basins currently mapped on Marine Corps Air Station Miramar (MCAS Miramar), 1,303 are occupied by San Diego fairy shrimp (MCAS Miramar 2006). Of the 62 vernal pool complexes mapped by the City of San Diego in 2004, 29 were found to be occupied by San Diego fairy shrimp and occur at the following localities: Del Mar Mesa (1), Carmel Mountain (1), Mira Mesa (6), Nobel Drive (3), Kearny Mesa (3), Mission Trails Regional Park (1), and Otay Mesa (14) (City of San Diego 2004). The City of San Diego conducted non-protocol surveys for San Diego fairy shrimp. Therefore, this inventory may under-represent the true number of vernal pools with occurrences of San Diego fairy shrimp. In the 2021 5-year

review for San Diego fairy shrimp, the Service estimates that the number of locations known to be occupied by San Diego fairy shrimp has increased since 2008, despite some losses of previously known locations (Service 2021a).

In 2017, the first detection of San Diego Fairy Shrimp in Riverside County was at the Clayton Ranch mitigation site (also known as the Schleuniger pool) (Service 2021a). Prior to the Clayton Ranch development project, soil was collected from the development site and placed at the Clayton Ranch mitigation site in 2012, inoculating the mitigation pools. San Diego Fairy Shrimp was subsequently documented at the mitigation site in 2017 (Service 2021a) and again confirmed in 2020 (Livergood 2020). San Diego Fairy Shrimp was not known to occur at the development site or the mitigation site prior to either development project or restoration work, so it's unclear exactly how the species came to occupy the mitigation site, but the species appears to be surviving onsite.

Additional vernal pool complexes with occurrences of San Diego fairy shrimp located in San Diego County but not included in the City of San Diego's Inventory include: Carlsbad, San Marcos, Ramona, Poway, Santee, Rancho Santa Fe, Murphy Canyon, Otay Lakes, Imperial Beach, East Otay Mesa, Marron Valley, and Proctor Valley.

The most recent summary of occupied vernal pool complexes is provided in the 2021 San Diego fairy shrimp 5-year review (Service 2021a).

Threats and Conservation Needs

Threats to vernal pools and San Diego fairy shrimp can be divided into three major categories: 1) direct destruction of vernal pools from construction, traffic, grazing, dumping, and deep plowing; 2) indirect threats that degrade or destroy vernal pools (e.g., altered hydrology, draining, competition by introduced species, and habitat fragmentation); and 3) potential long-term, cumulative impacts such as the effects of isolation on genetic diversity and locally adapted genotypes, hybridization, disease, air and water pollution, drastic climatic variations, and changes in nutrient availability (Service 2021a).

The loss and modification of vernal pool habitat continues to be a significant threat to the San Diego fairy shrimp, especially in areas where urbanization is expected to expand.

The magnitude of the threat of development and its associated indirect effects has been reduced through conservation. Conserved lands are areas designated for conservation or are unlikely to be developed due to their inclusion in regional conservation plans, lands conserved by non-profits and public or quasi-public land. Within the City of San Diego, considerable conservation and management has been achieved through the recent adoption of the Vernal Pool Habitat Conservation Plan (VPHCP) and other conservation actions. There are approximately 517 vernal pools occupied by San Diego fairy shrimp within the City of San Diego; an estimated 55 are permitted to be developed, and an estimated 462 will be protected with management actions implemented across 33 vernal pool sites through the VPHCP and the City's Multiple Habitat Planning Area (City of San Diego 2020). Acquisition of land and conservation easements have resulted in the preservation of vernal pool habitat for the species, but the trend of habitat loss, fragmentation, and degradation continues, particularly on private lands. Additionally, even

preserved lands are often subject to impacts, such as invasion by non-native plants, off-highway vehicle use, trespassing, and other conditions that contribute to lower-quality habitat for San Diego fairy shrimp (Service 2008a).

San Diego fairy shrimp habitat is also threatened to some degree by indirect impacts resulting from the proximity of San Diego fairy shrimp habitat to development, including human access and disturbance impacts, runoff, dumping of trash and litter, and water and air pollution. Off-highway vehicle use for recreation, law enforcement (including Border Patrol), and by the military is a threat to the species throughout much of its range. Non-native plants also threaten San Diego fairy shrimp habitat throughout its range. San Diego fairy shrimp habitat is naturally fragmented, but development projects continue to further fragment and isolate vernal pools within and between complexes, which may disrupt the population dynamics of the species. Conservation measures beyond habitat preservation, such as habitat and species management and monitoring, are necessary to ensure the long-term sustainability and persistence of this species throughout its range (Service 2008a).

Hybridization and competition from the versatile fairy shrimp (*Branchinecta lindahli*) may affect San Diego fairy shrimp locations throughout the range of the species. The magnitude of the threat of hybridization and competition with *Branchinecta lindahli*, and the ability of our conservation partners to manage it, remains to be seen (Service 2021a). If the threat becomes increasingly widespread, conservation actions beyond simple habitat protection for San Diego fairy shrimp may be needed (Simovich et al 2013). Because we understand that *Branchinecta lindahli* and hybrids dominate highly disturbed pools (e.g., road ruts), conservation actions should be focused on these degraded habitats, and considerations should be made about whether landowners should remove such features, those near intact coastal vernal pools supporting San Diego fairy shrimp. These pools have the potential to act as stepping stones for invasion of *Branchinecta lindahli* (Service 2021a). The conservation action of removing road rut pools occupied by *Branchinecta lindahli* or hybrids adjacent to intact coastal pools is already being attempted at MCAS Miramar (Charles Black, pers. comm. 2021) to slow the invasion. In addition, conservation partners throughout the range of San Diego fairy shrimp should continue to take all necessary precautions to prevent the spread of *Branchinecta lindahli* through contaminated equipment and movement of soil containing *Branchinecta lindahli*.

Disease has been identified as a potential threat for San Diego fairy shrimp (Service 2021a). *Wolbachia* or similar bacteria can induce cytoplasmic incompatibility (Simovich et al 2013). These types of bacteria can also lead to biased sex ratios, parthenogenesis (female asexual reproduction), feminization of males, and a high juvenile male mortality (City of San Diego 2019a). Because *Branchinecta lindahli* can harbor feminizing endoparasitic bacteria, hybridization with San Diego fairy shrimp may lead to genetic and reproduction issues for the listed entity. Additional information regarding this potential threat is needed.

Impacts to vernal pools from development have been offset through the restoration, enhancement, and management of habitat. In some cases, due to security of the site and the active management of the vernal pools, the species status has improved because of such mitigation. In addition, grants have been awarded to restore habitat in several areas including Otay Mesa, the San Diego NWR, and Sweetwater Authority lands. Sites that have been restored

benefit from fencing and management, which further removes threats from the site that were occurring prior to the restoration efforts (Service 2008a).

Conservation needs for San Diego fairy shrimp include conservation of remaining habitat and management of the threats identified above (i.e., non-native species, altered hydrology, human disturbance, disease, and hybridization with *Branchinecta lindahli*). Specific actions recommended in the most recent 5-year review include implementing and studying the effectiveness of management actions to reduce the spread of *Branchinecta lindahli* in areas where their distribution overlaps with San Diego fairy shrimp; continued research on the genetic structure of San Diego fairy shrimp to identify management units to guide recovery and management efforts; developing protocols to estimate abundance of San Diego fairy shrimp within occupied pools; and studying the use of environmental DNA as a potential means of surveying for San Diego fairy shrimp (Service 2021a).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following Vernal Pool and Road-Rut OPs (59-75) in the HCP Amendment will be implemented to avoid and/or minimize impacts to the San Diego fairy shrimp:

Vernal Pools (naturally occurring, non-man-made)

59. Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable. Vehicular traffic through dry vernal pools shall not be considered an impact that requires mitigation.

60. If impacts to vernal pool habitat cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for vernal pool Covered Species. If project timing does not allow for surveys, SDG&E shall confer with USFWS to determine if any vernal pool Covered Species should be assumed present.

61. If surveys determine a vernal pool is occupied (or is assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the occupied vernal pool mitigation ratios in Table 5.5, or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

62. If surveys determine vernal pools are not occupied, permanent impacts that cannot be avoided shall be mitigated per the unoccupied vernal pool mitigation ratios in Table 5.5, or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

63. Prior to permanent and temporary impacts, SDG&E shall confer with USFWS on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools. Seed from vernal pool indicator plants shall be collected from the pools that will be impacted when the plants have dried and before the seed disperses. Seed collection may not be possible when precluded by weather or physical constraints, such as the Covered Activity occurring at a

time of year when no seed is present. However, it is assumed that salvaged soil would contain a seed bank for these species, and they would be allowed to recover once the soil was reinstalled.

Inoculum shall be collected only from vernal pools that are free of versatile fairy shrimp (*Branchinecta lindahli*), and when it is dry to avoid damaging or destroying fairy shrimp cysts. Hand tools (i.e., shovels and trowels) shall be used to remove the first 2 inches of soil from the pools. Whenever possible, the trowel shall be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool shall be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessive heating of the soil and stored offsite at an appropriate facility for vernal pool inoculum. Inoculum from different source pools shall not be mixed for seeding any restored pools, unless otherwise approved by USFWS.

64. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools. The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist.

65. Grading Covered Activities immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools shall comply with the following:

a. Grading shall occur only when the soil is dry to the touch both at the surface and 1 inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and 1 inch below indicates whether the soil is dry.

b. After rainfall of greater than 0.2 inch, grading shall occur only after the soil surface has dried sufficiently as described above, and no sooner than 2 days (48 hours) after the rain event ends.

c. If rain occurs during grading, work shall stop and resume only after soils are dry, as described above.

d. Grading shall be done in a manner to prevent runoff from entering preserved vernal pools.

e. If necessary, water spraying shall be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

f. If mechanized grading is necessary, grading shall be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

66. If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools. If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. A qualified Biologist shall be present to oversee implementation of minimization measures.

67. When vernal pools are located above gas lines and repair work is necessary, work areas shall be minimized and soil shall be stockpiled for replacement after repairs.

68. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills.

69. For new projects, impacts to vernal pools and vernal pool Covered Species would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Road Ruts and Other Seasonal, Man-Made Depressions

70. Impacts from Covered Activities to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp to occur shall be avoided through project design considerations, to the extent feasible. Vehicular traffic through dry road ruts and other seasonal, man-made depressions shall not be considered an impact that requires mitigation.

71. If impacts to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for fairy shrimp to determine species presence. If project timing does not allow for surveys, it shall be assumed that the road ruts and other seasonal, man-made depressions are occupied.

72. If surveys determine that road ruts and other seasonal, man-made depressions are occupied (or assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the vernal pool mitigation ratios in Table 5.5. or through other alternatives outlined in Section 5.5 as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring to the road ruts and other seasonal, man-made depressions.

73. If surveys determine road ruts and other man-made depressions are not occupied by Covered fairy shrimp species, Covered Activities and impacts shall be allowed without mitigation.

74. Prior to permanent and temporary impacts to occupied road ruts, soil (inoculum) shall be collected as described in Section 5.1.11.1, Protocol 63 for vernal pools.

75. Grading Covered Activities on existing access roads shall not take place when the soils are wet, as described in Section 5.1.11.1, Protocol 65 for vernal pools, to minimize indirect impacts from erosion and sedimentation. Prior to grading Covered Activities, a Biologist shall demarcate a road rut proposed for grading and a Biologist shall be present during grading Covered Activities. Direct impacts when grading existing access roads shall be avoided by lifting the blade of the grader over the demarcated road rut within the road. Any windrows resulting from grading in the vicinity of vernal pools or complexes shall be flattened with equipment tires to avoid affecting hydrology in the area.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied San Diego fairy shrimp habitat. However, not all Modeled Habitat is expected to support San Diego fairy shrimp occurrences (i.e., Occupied Habitat) and Occupied Habitat may occur outside of Modeled Habitat. Based on the San Diego fairy shrimp Modeled Habitat, there are approximately 7,153 acres in the Plan Area and approximately 785 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the central coast, southern coast, and central valley ecoregions have the highest acreages of San Diego fairy shrimp Modeled Habitat. In the Plan Area in Orange County, the only San Diego fairy shrimp Modeled Habitat is in the foothill and valley ecoregion. This species is not known or expected to occur on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 112 and 75 San Diego fairy shrimp occurrences within the Plan Area and PIZ, respectively, based on data collected from the California Natural Diversity Database (CNDDB) species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2008 and 2021 5-year reviews for San Diego fairy shrimp included an analysis of the status of San Diego fairy shrimp at different locations throughout its range. The 2021 5-year review stated that the distribution of San Diego fairy shrimp in the Plan Area has not changed since 2008. Each of the records included in the 2008 and 2021 5-year reviews may represent one or more occurrences from the CNDDB.

The 2008 5-year review identified a total of 134 vernal pool complexes that contained San Diego fairy shrimp in the Plan Area, including 132 in San Diego County at Marine Corps Base Camp Pendleton (MCBCP), San Marcos, Carlsbad, Ramona, Santa Fe Valley, Poway, Del Mar Mesa, Lopez Ridge, Mira Mesa, Santee, Mission Trails Regional Park, Kearny Mesa, Chollas Heights, Sweetwater Reservoir, Marron Valley, Otay Mesa, Tijuana Slough, and Imperial Beach. The remaining two San Diego fairy shrimp records were Orange County at Chiquita Ridge and Radio Tower Road.

The San Diego fairy shrimp is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- San Diego MHCP Subregional NCCP/HCP
- Orange County Southern Subregion HCP
- SDCWA Subregional NCCP/HCP
- City of San Diego VPHCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 987 acres of Modeled Habitat occur within Preserves and 120 acres of Modeled Habitat occur within Proposed Preserves (collectively, 15 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 41 occurrences of San Diego fairy shrimp recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

The Plan Area overlaps with the Los Angeles Basin-Orange and San Diego Management Areas of the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 10.18 acres of San Diego fairy shrimp Modeled Habitat, which is a fraction of the 7,153 acres of San Diego fairy shrimp Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 6.43 acres (or 0.09 percent of Modeled Habitat in the Plan Area) of permanent impacts; and
- Approximately 3.75 acres (or 0.05 percent of Modeled Habitat in the Plan Area) of temporary impacts.

Wildfire Fuels Management is not expected to occur in areas of San Diego fairy shrimp Modeled Habitat.

This impact represents about 0.14 percent of San Diego fairy shrimp Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for San Diego fairy shrimp. However, because San Diego fairy shrimp are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[7] However, because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a San Diego fairy shrimp occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[8]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact San Diego fairy shrimp and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to San Diego fairy shrimp will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of San Diego fairy shrimp within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of San Diego fairy shrimp. Therefore, it is likely that substantially less than 10.18 acres of occupied San Diego fairy shrimp habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

The 10.18-acre estimate of impact to San Diego fairy shrimp Modeled Habitat includes both vernal pool watershed and basin areas. In San Diego County, a watershed analysis of several mound and basin vernal pool complexes from Kearny Mesa and Otay Mesa found watershed to pool surface area ratios as low as 4:1, and commonly 6:1 or 7:1 (RECON 1997). Therefore, we expect most of the impacts to occur to the watershed and not to individual basins. Assuming an average watershed to pool surface area of 6:1, we anticipate within the overall 10.18 acres of impact, about 1.7 acres of the impacts will be to vernal pool basins, and the other 8.48 acres will be to vernal pool watersheds.

We anticipate that some San Diego fairy shrimp adults or cysts could be killed or injured within up to 10.18 acres (1.7 acres and 8.48 acres of vernal pool basin and watershed, respectively) of

[7] Up to 0.14 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 112 San Diego fairy shrimp occurrences in the Plan Area. The product of 0.14 percent and 112 is less than one.
[8] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

San Diego fairy shrimp Tracked Habitat as a result of habitat loss/degradation from (including grading, excavating, and filling occupied basins and project-related changes to basin hydrology that preclude San Diego fairy shrimp survival and reproduction) from Covered Activities.

The most likely impacts to San Diego fairy shrimp will occur in unvegetated road pools along the access roads for SDG&E facilities. Maintenance and use of these roads can harm individual San Diego fairy shrimp, either by crushing the cysts that are in the soil or the adults if the pools are ponding.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) are anticipated to avoid, minimize, and mitigate the direct impacts to San Diego fairy shrimp associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 33). Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable (OP 59). Prior to permanent and temporary impacts, SDG&E shall confer with USFWS on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools. Grading adjacent to vernal pools would be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). In addition, SDG&E would use biological monitors and protective fencing if necessary (OP 64); maintain avoidance buffers when working adjacent to vernal pools; fuel, stage, and maintain construction equipment at least 100 feet from the nearest vernal pools where feasible; and use protective measures to prevent spills where 100-foot buffers from the nearest vernal pools are not feasible (OP 68).

Unavoidable temporary impacts to San Diego fairy shrimp occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to San Diego fairy shrimp occupied habitat will be mitigated at a 3:1 ratio if also occupied by covered plant species; a 2:1 ratio if also occupied by vernal pool indicator plant species, and a 1:1 ratio if no vernal pool plant Covered Species or indicator species were present (e.g., occupied road rut) (Table 5.5 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or other measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of San Diego fairy shrimp habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual San Diego fairy shrimp within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of San Diego fairy shrimp within these mitigation lands.

Restoration will include grading of new pools, inoculating the new pools with San Diego fairy shrimp cysts/soil collected from donor pools, and the planting of vernal pool indicator plant

species within the pools and native vegetation in the pool watersheds and surrounding uplands. Enhancement and monitoring may include weeding or other activities in existing vernal pools.

Inoculum will be collected when dry to avoid damaging or destroying San Diego fairy shrimp cysts. Hand tools (i.e., shovels and trowels) will be used to remove the first 2 inches of soil from the pools. Whenever possible, the tools will be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool will be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight to prevent the occurrence of fungus or excessive heating of the soil and stored off site at an appropriate facility for vernal pool inoculum (OP 63). With the above measures, while a small number of San Diego fairy shrimp cysts could be killed or injured, the majority of salvaged cysts from the impacted or donor pools are expected to survive the inoculum collection and transplant process and these actions will mini and these actions will minimize the likelihood that Riverside fairy shrimp cysts will be killed or injured in impacted pools.

Overall, the benefits to San Diego fairy shrimp associated with the restoration, enhancement and monitoring are anticipated to be substantially greater than the killing or injury of a small number of cysts caused by these activities. The primary benefit of the restoration will be to provide new habitat for the San Diego fairy shrimp.

The removal and restoration of existing access roads that are not needed for Covered Activities may also help offset impacts to the San Diego fairy shrimp.

Because Covered Activities will impact a small fraction of the San Diego fairy shrimp habitat and occurrences in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of San Diego fairy shrimp within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation and Non-Native Plants

The San Diego fairy shrimp could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to occupied San Diego fairy shrimp vernal pools include the degradation of habitat outside the footprint of Covered Activities as a result changes to hydrology and water quality, erosion, sedimentation, and non-native plants.

Changes to the hydrology of vernal pools can alter the distribution of other vernal pool flora and fauna that are influenced by the length and frequency of water inundation (Bauder 1987a, 2000a). For instance, non-native plant species can become more prevalent in disturbed vernal pools when the periods of water inundation are reduced, while freshwater marsh species can expand into disturbed vernal pools when the periods of inundation are increased. Water born pollutants, erosion and sedimentation can also impact vernal pools.

Implementation of the HCP Amendment's general OPs summarized in the *Description of the Proposed Action* section of this Opinion, and the Vernal Pool and Road Rut Protocols (OPs 59 to

75) stated above are anticipated to minimize changes to hydrology and water quality, erosion, sedimentation of the vernal pool basins associated with the Covered Activities. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools (OP 64). The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist. Grading immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools (OP 66). If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills (OP 68).

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation and non-native plants due to Covered Activities are not likely to result in a decrease in San Diego fairy shrimp survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area is in the Los Angeles Basin-Orange and San Diego Management Areas identified in the recovery plan. The recovery plan and clarification identify the need to preserve,

reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused. The vernal pool habitat included in the Plan Area is part of a system that provides important breeding, feeding, and sheltering habitat for the San Diego fairy shrimp.

The HCP Amendment does not conflict with the goals and objectives of the recovery plan. Although the Covered Activities will impact vernal pool habitat that is used by the San Diego fairy shrimp for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation, restoration/enhancement and in-perpetuity management of occupied San Diego fairy shrimp habitat. These mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the San Diego fairy shrimp.

The proposed conservation, restoration/enhancement, and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with recovery plan Task 1 (i.e., to establish a vernal pool habitat preserve system), Task 2 (i.e., to reestablish vernal pool habitat to historic structure and composition), and Task 3 (i.e., to rehabilitate and enhance secured vernal pool habitats and their constituent species). The recovery plan also emphasizes the need to manage and monitor protected habitat (Recovery Tasks 4 and 5). Consistent with these tasks, the restoration and enhancement areas will be preserved and managed in perpetuity by a natural lands manager. Therefore, the breeding, feeding, and sheltering functions degraded or destroyed due to unavoidable impacts to San Diego fairy shrimp habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan and clarification.

We expect no more than 10.18 acres (1.7 acres and 8.48 acres of vernal pool basin and watershed, respectively) of San Diego fairy shrimp Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the San Diego fairy shrimp habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any San Diego fairy shrimp population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of San Diego fairy shrimp. We base this conclusion on the following:

1. The current range of the San Diego fairy shrimp includes Orange and San Diego counties in southern California and northwestern Baja California,

Mexico; thus, the action area for HCP Amendment represents a portion of the species' rangewide distribution.

2. Impacts will be limited to no more than 10.18 acres (1.7 acres and 8.48 acres of vernal pool basin and watershed, respectively) of San Diego fairy shrimp Tracked Habitat, which represents about 0.14 percent of the Modeled Habitat for San Diego fairy shrimp in the Plan Area.

3. Based on the known distribution of San Diego fairy shrimp within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of San Diego fairy shrimp. Therefore, it is likely that substantially less than 10.18 acres of occupied San Diego fairy shrimp habitat will be impacted.

4. General and species-specific OPs will further reduce the likelihood that San Diego fairy shrimp will be harmed by Covered Activities.

5. Impacts to San Diego fairy shrimp will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan.

6. Because Covered Activities will affect a small proportion of the San Diego fairy shrimp habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by San Diego fairy shrimp, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of San Diego fairy shrimp in the Plan Area or rangewide.

7. Long-term management and monitoring of mitigation lands will help sustain San Diego fairy shrimp in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Riverside Fairy Shrimp (Streptocephalus woottoni)

Status of the Species

Listing Status

The Service listed the Riverside fairy shrimp as endangered on August 3, 1993 (58 FR 41391). The *Recovery Plan for Vernal Pools of Southern California* (recovery plan, Service 1998a) addresses the Riverside fairy shrimp, and the *Recovery Plan Clarification for the Vernal Pools of Southern California* (clarification, Service 2019a) includes recover criteria clarification. The Service completed a 5-year review which recommended no change in the status of the Riverside

fairy shrimp in 2008 and 2021 (Service 2008b and 2021b). The most recent critical habitat designation for this species was finalized on December 4, 2012 (77 FR 72070).

Species Description

The Riverside fairy shrimp is a small freshwater crustacean in the family Streptocephalidae of the order Anostraca. The species was first collected in 1979 by Clyde Eriksen and formally described as a new species in 1990 (Eng et al. 1990). The Riverside fairy shrimp is distinguished from similar species by its red-colored cercopods (anterior appendages), which occur on all of the ninth and 30 to 40 percent of the eighth abdominal segments (Eng et al. 1990). Adult Riverside fairy shrimp may grow to a length of 0.5 to 1.0 inch (Eng et al. 1990).

Habitat Affinities

Riverside fairy shrimp are restricted to vernal pools and vernal pool-like ephemeral basins (e.g., ruts in dirt roads and stockponds). Vernal pools are ephemeral wetlands that occur from southern Oregon through California into northern Baja California, Mexico (Service 1998a). They require a unique combination of climatic, topographic, geologic, and evolutionary factors for their formation and persistence. They form in regions with Mediterranean climates where shallow depressions fill with water during fall and winter rains and then dry up when the water evaporates in the spring (Collie and Lathrop 1976; Holland 1976; Holland and Jain 1977, 1988; Thorne 1984).

Downward percolation of water within the pools is prevented by an impervious subsurface layer consisting of claypan, hardpan, or volcanic stratum (Holland 1976, 1988a). Seasonal inundation makes vernal pools too wet for adjacent upland plant species adapted to drier soil conditions, while rapid drying during late spring makes pool basins unsuitable for typical marsh or aquatic species that require a more persistent source of water. For convenience of reference, groups of vernal pools are sometimes referred to as vernal pool complexes that may include two to several hundred individual vernal pools (Keeler-Wolf et al. 1998). Vernal pool complexes are defined as a series of vernal pool groups that are hydrologically connected with similar soil types and species compositions. Within San Diego County, they were first described and surveyed by Beauchamp and Cass in 1979 and subsequently updated in 1986 (Bauder) and 2004 (City of San Diego). Local upland vegetation communities associated with vernal pools include needlegrass grassland, annual grassland, coastal sage scrub, maritime succulent scrub, and chaparral (Service 1998a).

In contrast to San Diego fairy shrimp, Riverside fairy shrimp prefer deep, greater than 9 inches in depth, vernal pools that range in temperature from 50 to 77 degrees Fahrenheit and remain filled for extended periods of time (Eng et al. 1990, Service 1993a, Eriksen and Belk 1999). Water within pools supporting Riverside fairy shrimp may be clear, but more commonly it is moderately turbid (Eriksen and Belk 1999). Typically, pools supporting this species have low total dissolved solids and alkalinity (means of 77 and 65 parts per million, respectively), in association with pH at neutral or just below (7.1 to 6.4) (Eng et al. 1990, Gonzalez et al. 1996, Eriksen and Belk 1999).

Riverside fairy shrimp may also be found in disturbed vernal pool habitats where basins have been compacted or artificially deepened and therefore hold water for longer periods of time. Although basins supporting populations often appear to be artificially created or enhanced, such basins are located within soils that are capable of seasonal ponding and are often surrounded by naturally occurring vernal pool complexes. These "artificial basins" function in the same manner as naturally occurring vernal pools by filling with late fall, winter and/or spring rains that gradually dry up during the spring and/or summer (Service 1998a).

Life History

Riverside fairy shrimp are non-selective filter-feeders that filter suspended solids from the water column. Detritus, bacteria, algal cells, and other items between 0.3 to 100 microns may be filtered and ingested. Riverside fairy shrimp are preyed upon by a wide variety of wildlife, including beetles, dragonfly larvae, other arthropods, frogs, salamanders, toad tadpoles, shorebirds, ducks and other migratory birds, and even other fairy shrimp (Eriksen and Belk 1999).

Freshwater crustaceans, including Riverside fairy shrimp, have a two-stage life cycle and spend the majority of their life cycle in the cyst stage (Templeton and Levin 1979, Schaal and Leverich 1981). After hatching, Riverside fairy shrimp require 48 to 56 days to reach sexual maturity in contrast with other fairy shrimp that can reach maturity in less than 2 weeks (Hathaway and Simovich 1996). Fairy shrimp mate upon reaching maturity, and female Riverside fairy shrimp produce between 17 and 427 cysts (eggs) over their lifetime (Simovich and Hathaway 1997). The cysts are either dropped by the females to settle into the mud at the bottom of the pool, or they remain in the brood sac until the female dies and sinks to the bottom (Eriksen and Belk 1999). The cysts will hatch in 7 to 12 days when water temperatures are between 50 to 77 degrees Fahrenheit (Hathaway and Simovich 1996). A small percentage of cysts are likely to hatch in a season, thus providing a mechanism for survival if the inundation period is too short in a given year (Simovich and Hathaway 1997). Fairy shrimp cysts may persist in the soil for several years until conditions are favorable for successful reproduction (Simovich and Hathaway 1997).

Status and Distribution

The range of the Riverside fairy shrimp includes Ventura, Los Angeles, Orange, San Diego, and Riverside counties in southern California, and Bajamar in Baja California, Mexico (Brown et al. 1993, Service 1998a). With the exception of populations in Riverside and Ramona, all populations are within 10 miles of the coast over a north-south distance of approximately 125 miles.

At the time of listing, Riverside fairy shrimp were known to inhabit nine vernal pool complexes within Riverside, Orange, and San Diego counties, and Baja Mexico, including four vernal pools in Riverside County, a population in Orange County, two areas in San Diego County, and two locations in Baja California, Mexico (58 FR 41384). However, we now believe the type locality (Murrieta Golf Course) for this species was likely already lost to development prior to listing (Eriksen and Belk 1999). In addition, the one population in Orange County referenced in the listing rule has never been confirmed. Thus, at listing, it is likely that there were only three extant

occurrences of Riverside fairy shrimp known from Riverside County, two occurrences known from San Diego County, and two occurrences known from Mexico (i.e., five in the United States and two in Mexico) (Service 2008b).

In the 2008 5-year review, we estimated that as many as 52 additional occupied complexes have been identified. Some complexes have been extirpated, and we are unsure whether Riverside fairy shrimp persists in three complexes. Hence, currently 45 known occupied vernal pool complexes (approximately 200 occupied pools) exist, which includes a man-made complex at Johnson Ranch in western Riverside County. More than half of all extant complexes known to contain Riverside fairy shrimp are in San Diego County, including eight complexes on Camp Pendleton. These eight complexes are of particular interest as they support approximately 56 percent of all identified individual vernal pools known to be occupied by the Riverside fairy shrimp (RECON 2001, 2007; MCBCP 2007). Approximately 24 percent of extant known occupied complexes are in Riverside County, and approximately 17 percent are in Orange County. For the 2008 5-year review, we had no information on the current status of the two occurrences known in Mexico at the time of listing.

In the 2021 5-year review, we estimated that approximately 40 vernal pool complexes were occupied by Riverside fairy shrimp (Service 2021b). The updated estimate should not be interpreted as a decrease in the total number of vernal pools or complexes occupied by Riverside fairy shrimp from 2008 to 2021 because of differences in the way pool complexes and occupied habitat were mapped and tabulated for this summary. In fact, we estimated that there were up to nine newly occupied locations for Riverside fairy shrimp in 2021 (known as: Tierra Rejada, Fairview Park, Wickerd Road, Lake Skinner Investor, Lake Skinner Multi-Species Reserve, Santa Rosa Plateau, French Valley Donation, Southwest Village Development, and Dennery West). Information was not available for a status determination to be made for 12 pools, and as such, some of these pools may no longer support Riverside fairy shrimp (known as: Madrona Marsh, Whiting Ranch/SCE Viejo, El Toro, Live Oak Plaza, O'Neill Park, March Air Force Base, Scott Pool, Rainbow Canyon Pool, Upham, Brownfield Airport, and two locations in Mexico). In Ventura County, Riverside fairy shrimp were previously known from a single large pool in a grassland area within the Tierra Rejada Vernal Pool Preserve. However, wet season surveys conducted each season between 2002 and 2006 failed to locate any adults (Mountains Recreation and Conservation Authority 2006). For the 2021 5-year review, we still had no information on the current status of the two occurrences known in Mexico at the time of listing.

Threats and Conservation Needs

At the time of listing in 1993, we considered Riverside fairy shrimp to be threatened by urban, road, and agricultural development; off-road vehicle use; trash dumping; cattle trampling; human trampling; military activities; water management activities; and habitat isolation (Service 2008b). In the 2008 and 2021 5-year reviews, we identified the following threats: habitat loss and indirect effects of development/habitat fragmentation, nonnative plants, inadequacy of existing regulatory mechanisms, climate change, and fire (Service 2008b and 2021b). Habitat loss and indirect effects from development and fragmentation are ongoing threats to Riverside fairy shrimp but impacts to the species have been reduced in part by the conservation implemented at many locations through regional HCPs (e.g., City of San Diego VPHCP and Western Riverside MSHCP). Nonnative plants continue to threaten Riverside fairy shrimp by degrading habitat

such that the environmental conditions at some locations may no longer support Riverside fairy shrimp (e.g., expansion of nonnative plants may cause pools to dry more quickly and no longer support the inundation duration needed for Riverside fairy shrimp). Implementation of some HCPs, Integrated Natural Resource Management Plans on military bases, and consultations through Section 7(a)(2) of the Act lend support to habitat management and control of invasive species, but the threat of invasive species remains. While Riverside fairy shrimp are protected by the Act, alteration of hydrology remains a threat to the species that was formerly ameliorated to some degree through the implementation of Section 404 of the Clean Water Act. Since the last 5-year review, there has been a change in the regulatory definition of what is considered a jurisdictional water or wetland subject to the regulatory protections of the Clean Water Act (Department of Defense and Environmental Protection Agency 2023). However, it is unclear how these regulatory changes will affect U.S. Army Corps of Engineers oversight of vernal pools and other ephemeral water bodies. Therefore, the level of protection that the Clean Water Act provides to Riverside fairy shrimp by regulating alterations in the hydrology of vernal pools and ephemeral water bodies is also unclear.

Since its listing, impacts to Riverside fairy shrimp habitat from development have been offset through the creation, restoration, enhancement, and management of habitat. In some cases, due to security of the site and the active management of the vernal pools, the species status has improved. In addition, grants have been awarded to restore habitat in several areas including Otay Mesa, the San Diego NWR, and Sweetwater Authority lands. Sites that have been created, restored, or enhanced benefit from fencing and management, which further removes threats from the site that were previously occurring at these sites (Service 2008b).

Conservation needs of the species include managing, monitoring, and restoring existing conserved sites, conserving and managing sites that are not currently protected, assessing the status of and threats to extant Riverside fairy shrimp populations, and developing a population viability analysis that includes standardized methodologies for monitoring Riverside fairy shrimp populations (Service 2021b).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following Vernal Pool and Road-Rut OPs (59-75) in the HCP Amendment will be implemented to avoid and/or minimize impacts to the Riverside fairy shrimp:

Vernal Pools (naturally occurring, non-man-made)

59. Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable. Vehicular traffic through dry vernal pools shall not be considered an impact that requires mitigation.

60. If impacts to vernal pool habitat cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for vernal pool Covered Species. If project timing does not allow for surveys, SDG&E shall confer with USFWS to determine if any vernal pool Covered Species should be assumed present.

61. If surveys determine a vernal pool is occupied (or is assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the occupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

62. If surveys determine vernal pools are not occupied, permanent impacts that cannot be avoided shall be mitigated per the unoccupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

63. Prior to permanent and temporary impacts, SDG&E shall confer with USFWS on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools. Seed from vernal pool indicator plants shall be collected from the pools that will be impacted when the plants have dried and before the seed disperses. Seed collection may not be possible when precluded by weather or physical constraints, such as the Covered Activity occurring at a time of year when no seed is present. However, it is assumed that salvaged soil would contain a seed bank for these species, and they would be allowed to recover once the soil was reinstalled.

Inoculum shall be collected only from vernal pools that are free of versatile fairy shrimp (*Branchinecta lindahli*), and when it is dry to avoid damaging or destroying fairy shrimp cysts. Hand tools (i.e., shovels and trowels) shall be used to remove the first 2 inches of soil from the pools. Whenever possible, the trowel shall be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool shall be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessive heating of the soil and stored offsite at an appropriate facility for vernal pool inoculum. Inoculum from different source pools shall not be mixed for seeding any restored pools, unless otherwise approved by USFWS.

64. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools. The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist.

65. Grading Covered Activities immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to

be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools shall comply with the following:

a. Grading shall occur only when the soil is dry to the touch both at the surface and 1 inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and 1 inch below indicates whether the soil is dry.

b. After rainfall of greater than 0.2 inch, grading shall occur only after the soil surface has dried sufficiently as described above, and no sooner than 2 days (48 hours) after the rain event ends.

c. If rain occurs during grading, work shall stop and resume only after soils are dry, as described above.

d. Grading shall be done in a manner to prevent runoff from entering preserved vernal pools.

e. If necessary, water spraying shall be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

f. If mechanized grading is necessary, grading shall be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

66. If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools. If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. A qualified Biologist shall be present to oversee implementation of minimization measures.

67. When vernal pools are located above gas lines and repair work is necessary, work areas shall be minimized and soil shall be stockpiled for replacement after repairs.

68. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills.

69. For new projects, impacts to vernal pools and vernal pool Covered Species would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Road Ruts and Other Seasonal, Man-Made Depressions

70. Impacts from Covered Activities to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp to occur shall be avoided through project design considerations, to the extent feasible. Vehicular traffic through dry road ruts and other seasonal, man-made depressions shall not be considered an impact that requires mitigation.

71. If impacts to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for fairy shrimp to determine species presence. If project timing does not allow for surveys, it shall be assumed that the road ruts and other seasonal, man-made depressions are occupied.

72. If surveys determine that road ruts and other seasonal, man-made depressions are occupied (or assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the vernal pool mitigation ratios in Table 5.5. or through other alternatives outlined in Section 5.5 as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring to the road ruts and other seasonal, man-made depressions.

73. If surveys determine road ruts and other man-made depressions are not occupied by Covered fairy shrimp species, Covered Activities and impacts shall be allowed without mitigation.

74. Prior to permanent and temporary impacts to occupied road ruts, soil (inoculum) shall be collected as described in Section 5.1.11.1, Protocol 63 for vernal pools.

75. Grading Covered Activities on existing access roads shall not take place when the soils are wet, as described in Section 5.1.11.1, Protocol 65 for vernal pools, to minimize indirect impacts from erosion and sedimentation. Prior to grading Covered Activities, a Biologist shall demarcate a road rut proposed for grading and a Biologist shall be present during grading Covered Activities. Direct impacts when grading existing access roads shall be avoided by lifting the blade of the grader over the demarcated road rut within the road. Any windrows resulting from grading in the vicinity of vernal pools or complexes shall be flattened with equipment tires to avoid affecting hydrology in the area.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Riverside fairy shrimp habitat. However, not all Modeled Habitat is expected to support Riverside fairy shrimp occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the Riverside fairy shrimp Modeled Habitat, there are approximately 8,705 acres in the Plan Area and approximately 1,153 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the north coast, central coast, and valley ecoregions have the highest acreages of Riverside fairy shrimp Modeled Habitat. In the Plan Area in Orange County, the only Riverside fairy shrimp Modeled Habitat is in the foothill and valley ecoregion. This species is not known or expected to occur on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 41 and 19 Riverside fairy shrimp occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2021 5-year review for Riverside fairy shrimp included an analysis of the status of Riverside fairy shrimp at different locations throughout its range. Each of the records included in

the 2021 5-year review may represent one or more occurrences from the CNDDB. The 2021 5-year review identified a total of 25 Riverside fairy shrimp records in San Diego County of which 20 are extant, 3 are considered extirpated, and 2 are of unknown status. Large populations occur on MCBCP within vernal pools near San Onofre Beach, east and west of I-5 near Las Flores Creek, both sides of Macs Road just north of the Santa Margarita River, south of the Santa Margarita River near Wire Mountain, and in east MCBCP near Roblar Creek and De Luz Road. A large number of occurrences are located within the vernal pool complexes spread throughout MCAS Miramar with the most occurrences west of I-15. In the City of San Diego, the species is present throughout vernal pool complexes in Del Mar Mesa, Carmel Mountain, Mira Mesa, Nobel Drive, Kearny Mesa, Murphy Canyon, Montgomery Field, Mission Trails Regional Park, and Otay Mesa. Other vernal pool complexes with large occurrences of Riverside fairy shrimp located in San Diego County are found within Carlsbad, San Marcos, Rancho Santa Fe, Ramona (within the city, near Ramona Airport, and along Santa Maria Creek), Santee (Sycamore Canyon northeast of Santee Lakes), Otay Lakes, Imperial Beach, East Otay Mesa, and Proctor Valley.

The 2021 5-year review identified a total of 8 Riverside fairy shrimp records in the Plan Area in Orange County of which 4 are extant, 1 is considered extirpated, and 3 are of unknown status (Service 2021b). Populations in Orange County are located in the vernal pool complexes on Chiquita Ridge site, Saddleback Meadows, Tijeras Creek, adjacent to O'Neill Regional Park, and southeast of Avenida La Pata and Ortega Highway in San Juan Capistrano.

The Riverside fairy shrimp is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- San Diego MHCP Subregional NCCP/HCP
- Orange County Southern Subregional HCP
- Western Riverside County MSHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP
- City of San Diego VPHCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 731 acres of Modeled Habitat occur within Preserves, and 91 acres of Modeled Habitat occur within Proposed Preserves (collectively, 10 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 11 occurrences of Riverside fairy shrimp recorded in the CNDDB database are located within

Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

The Plan Area overlaps with the Los Angeles Basin-Orange and San Diego Management Areas of the recovery plan. The recovery plan identifies the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 14.94 acres of Riverside fairy shrimp Modeled Habitat, which is a fraction of the 8,075 acres of Riverside fairy shrimp Modeled Habitat within the Plan Area. These impacts will include:

- Approximately 9.44 acres of permanent impacts (0.12 percent of Modeled Habitat in the Plan Area); and

- Approximately 5.50 acres of temporary impacts (0.07 percent of Modeled Habitat in the Plan Area).

Wildfire Fuels Management is not expected to occur in areas of Riverside fairy shrimp Modeled Habitat.

This impact represents about 0.19 percent of Riverside fairy shrimp Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for Riverside fairy shrimp. However, because Riverside fairy shrimp are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[9] However, because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within an occupied Riverside fairy shrimp pool or its watershed but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[10]

[9] Up to 0.19 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 41 Riverside fairy shrimp occurrences in the Plan Area. The product of 0.19 percent and 41 is less than one.
[10] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact Riverside fairy shrimp and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Riverside fairy shrimp will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of Riverside fairy shrimp within the Plan Area and its specific habitat requirements (i.e., deep clay soils), we anticipate that only limited areas within Modeled Habitat support occurrences of Riverside fairy shrimp. Therefore, it is likely that substantially less than 14.94 acres of occupied Riverside fairy shrimp habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

The 14.94-acre estimate of impact to Riverside fairy shrimp Modeled Habitat includes both vernal pool watershed and basin areas. In San Diego County, a watershed analysis of several mound and basin vernal pool complexes from Kearny Mesa and Otay Mesa found watershed to pool surface area ratios as low as 4:1, and commonly 6:1 or 7:1 (RECON 1997). Therefore, we expect most of the impacts to occur to the watershed and not to individual basins. Assuming an average watershed to pool surface area of 6:1, we anticipate within the overall 14.94 acres of impact, about 2.5 acres of the impacts will be to vernal pool basins, and the other 12.44 acres will be to vernal pool watersheds.

We anticipate that some Riverside fairy shrimp adults or cysts could be killed or injured within up to 14.94 acres (2.5 acres and 12.44 acres of vernal pool basin and watershed, respectively) of Riverside fairy shrimp Tracked Habitat due to loss or substantial degradation (including grading, excavating, and filling occupied basins and project-related changes to basin hydrology that preclude Riverside fairy shrimp survival and reproduction) from Covered Activities.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) are anticipated to avoid, minimize, and mitigate the direct impacts to Riverside fairy shrimp associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 33). Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable (OP 59). Prior to permanent and temporary impacts, SDG&E shall confer with USFWS on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools (OP 63). Grading adjacent to vernal pools will be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). In addition, SDG&E will use biological monitors and protective fencing if necessary (OP 64); maintain avoidance buffers when working adjacent to vernal pools; fuel, stage, and maintain construction equipment at least 100 feet from the nearest vernal pools where

feasible; and use protective measures to prevent spills where 100-foot buffers from the nearest vernal pools are not feasible (OP 68).

Unavoidable temporary impacts to Riverside fairy shrimp occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to Riverside fairy shrimp occupied habitat will be mitigated at a 3:1 ratio if also occupied by covered plant species; a 2:1 ratio if also occupied by vernal pool indicator plant species, and a 1:1 ratio if no vernal pool plant Covered Species or indicator species were present (e.g., occupied road rut) (Table 5.5 of the HCP Amendment) at acquired mitigation lands that are occupied and through the R/E Program or measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Riverside fairy shrimp habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Riverside fairy shrimp within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Riverside fairy shrimp within these mitigation lands.

Restoration will include grading of new pools, inoculating the new pools with Riverside fairy shrimp cysts/soil collected from donor pools, and the planting of vernal pool indicator plant species within the pools and native vegetation in the pool watersheds and surrounding uplands. Enhancement and monitoring may include weeding or other activities in existing vernal pools.

Inoculum will be collected when dry to avoid damaging or destroying Riverside fairy shrimp cysts. Hand tools (i.e., shovels and trowels) will be used to remove the first 2 inches of soil from the pools. Whenever possible, the tools will be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool will be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight to prevent the occurrence of fungus or excessive heating of the soil and stored off site at an appropriate facility for vernal pool inoculum (OP 63). With the above measures, while a small number of Riverside fairy shrimp cysts could be killed or injured, the majority of salvaged cysts from the impacted or donor pools are expected to survive the inoculum collection and transplant process, and these actions will minimize the likelihood that Riverside fairy shrimp cysts will be killed or injured in impacted pools.

Overall, the benefits to Riverside fairy shrimp associated with the restoration, enhancement and monitoring are anticipated to be substantially greater than the killing or injury of a small number of cysts caused by these activities. The primary benefit of the restoration will be to provide new habitat for the Riverside fairy shrimp.

The removal and restoration of existing access roads that are not needed for Covered Activities may also help offset impacts to the Riverside fairy shrimp.

Because Covered Activities will impact a small fraction of the Riverside fairy shrimp habitat and occurrences in the Plan Area and measures will be implemented to avoid, minimize, and mitigate

anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Riverside fairy shrimp within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, and Non-Native Plants

The Riverside fairy shrimp could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to occupied Riverside fairy shrimp vernal pools include the degradation of habitat outside the footprint of Covered Activities as a result changes to hydrology and water quality, erosion, sedimentation, and non-native plants.

Changes to the hydrology of vernal pools can alter the distribution of other vernal pool flora and fauna that are influenced by the length and frequency of water inundation (Bauder 1987a, 2000a). For instance, non-native plant species can become more prevalent in disturbed vernal pools when the periods of water inundation are reduced, while freshwater marsh species can expand into disturbed vernal pools when the periods of inundation are increased. Water born pollutants, erosion and sedimentation can also impact vernal pools.

Implementation of the HCP Amendment's general OPs 16, 19, 20, 22, 28, 39, and 50 summarized in the *Description of the Proposed Action* section of this Opinion, and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) stated above are anticipated to minimize changes to hydrology and water quality, erosion, sedimentation of the vernal pool basins associated with the Covered Activities. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools (OP 64). The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist. Grading immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools (OP 66). If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills (OP 68).

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, and non-native plants due to Covered Activities are not likely to result in a decrease in Riverside fairy shrimp survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area is in the Los Angeles Basin-Orange and San Diego Management Areas identified in the recovery plan. The recovery plan identifies the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused. The vernal pool habitat included in the Plan Area is part of a system that provides important breeding, feeding, and sheltering habitat for the Riverside fairy shrimp.

The HCP Amendment does not conflict with the goals and objectives of the recovery plan. Although the proposed project will impact vernal pool habitat that is used by the Riverside fairy shrimp for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation, restoration/enhancement of occupied Riverside fairy shrimp habitat. These mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the Riverside fairy shrimp.

The proposed conservation, restoration/enhancement, and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with recovery plan Task 1 (i.e., to establish a vernal pool habitat preserve system), Task 2 (i.e., to reestablish vernal pool habitat to historic structure and composition), and Task 3 (i.e., to rehabilitate and enhance secured vernal pool habitats and their constituent species). The recovery plan also emphasizes the need to manage and monitor protected habitat (Recovery Tasks 4 and 5). Consistent with these tasks, the restoration and enhancement areas will be preserved and managed in perpetuity by a natural lands manager. Therefore, the breeding, feeding, and sheltering functions degraded or destroyed due to unavoidable impacts to Riverside fairy shrimp habitat will be replaced and improved, and overall

HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan and clarification.

We expect no more than 14.94 acres (2.5 acres and 12.44 acres of vernal pool basin and watershed, respectively) of Riverside fairy shrimp Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the Riverside fairy shrimp occupied habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any Riverside fairy shrimp population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of Riverside fairy shrimp. We base this conclusion on the following:

1. The current range of the Riverside fairy shrimp includes southern California to northwest Baja California in Mexico; thus, the action area for HCP Amendment represents a portion of the species' rangewide distribution.

2. Impacts will be limited to no more than 14.94 acres (2.5 acres and 12.44 acres of vernal pool basin and watershed, respectively) of Riverside fairy shrimp Tracked Habitat, which represents about 0.19 percent of the Modeled Habitat for Riverside fairy shrimp in the Plan Area.

3. Based on the known distribution of Riverside fairy shrimp within the Plan Area and their specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of Riverside fairy shrimp. Therefore, it is likely that substantially less than 14.94 acres of occupied Riverside fairy shrimp habitat will be impacted.

4. General and species-specific OPs will further reduce the likelihood that Riverside fairy shrimp will be harmed by Covered Activities.

5. Impacts to Riverside fairy shrimp will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan and clarification.

6. Because Covered Activities will affect a small proportion of the Riverside fairy shrimp habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Riverside fairy shrimp, and the implementation of measures to avoid, minimize, and mitigate

anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of Riverside fairy shrimp in the Plan Area or rangewide.

7. Long-term management and monitoring of mitigation lands will help sustain Riverside fairy shrimp in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Hermes Copper Butterfly (Lycaena [Hermelycaena] hermes)

Status of the Species

Listing Status

The Hermes copper butterfly (*Lycaena* [*Hermelycaena*] *hermes*) was listed as threatened under the Act on December 21, 2021 (86 FR 72394), and critical habitat was designated at the time of listing. A species status assessment (SSA) was completed in July 2021 (Service 2021c), and a recovery outline was published on January 20, 2022 (Service 2022a).

Species and Critical Habitat Description

The Hermes copper butterfly is currently classified within the genus *Lycaena*, a widespread genus with approximately 60 species, but some researchers argue that the species should be placed in the monotypic genus, *Hermelycaena*, based on morphological, ecological, and genetic data (Miller and Brown 1979, Ballmer and Pratt 1988, Pratt and Wright 2002). Adults are brown and yellow with wingspans of 1 to 1.25 inches. Dorsal forewings are brown with a yellow center and small brown spots, and dorsal hindwings are also brown with a yellowish tail. Ventral forewings and hindwings are yellow with brownish spots. The last instar larvae are bright, light green without strongly contrasting markings (Ballmer and Pratt 1988).

Critical habitat for the Hermes copper butterfly encompasses approximately 35,027 acres, all within San Diego County. Critical habitat is separated into 3 units: Lopez Canyon, Miramar/Santee, and Southeast San Diego. Physical and biological features (PBFs) of designated critical habitat for Hermes copper butterfly include: 1) spiny redberry host plants and 2) nectar sources for adult butterflies.

Habitat Affinities

The only known larval food source for the Hermes copper butterfly is spiny redberry (*Rhamnus crocea*). Hermes copper butterflies primarily nectar on flat-top buckwheat (*Eriogonum fasciculatum*), and there is a strong association between Hermes copper butterfly and flat-top buckwheat presence (Marschalek and Deutschman 2008). Marschalek and Deutschman (2008) also observed an affinity for openings (trails and roads) that are exposed to morning sun. The Hermes copper butterfly is typically found within patches of mature spiny redberry (Faulkner and Klein 2005). As noted by Thorne (1963), Hermes copper butterfly distribution is restricted by something other than its host plant and nectar source as both spiny redberry and flat-top buckwheat are more widely distributed than Hermes copper butterfly. A 2020 study by Malter (2020) suggests that the larvae are influenced by the spiny redberry's secondary compounds,

some of which are variable with climatic conditions and significantly higher within the Hermes copper butterfly range (Service 2021c).

Life History

Hermes copper butterfly is univoltine (one generation per year), and adults are found from mid-May to mid-July (Thorne 1963, Marschalek 2004). Males emerge first and the flight period lasts approximately 30 days in any given location. Eggs are laid singly on spiny redberry stems, where they overwinter. Larvae appear to emerge between mid-March and late May and take about 14 days to mature and pupate (Thorne 1963). Hermes copper butterfly movement is thought to be limited; however, observation of marked individuals shows that some individuals can travel at least 0.6 mile (Marschalek and Klein 2010).

Status and Distribution

Historical data indicate Hermes copper butterflies ranged from near the community of Pala, California, in northern San Diego County to approximately 18 miles south of Santo Tomas in Baja California, Mexico, and from Pine Valley in eastern San Diego County to Mira Mesa, Kearny Mesa, and Otay Mesa in western San Diego County (Thorne 1963). Hermes copper butterflies have never been recorded at extreme coastal sites or east of the western slopes of the Cuyamaca Mountains above approximately 4,264 feet (Marschalek and Klein 2010).

The Service's 2021 SSA for Hermes copper butterfly included an analysis of the status of Hermes copper butterfly at different locations throughout its range. Each of the records included in the 2021 SSA may represent one or more occurrences from the CNDDB**.** The 2021 SSA identified a total of 98 known historical or extant Hermes copper butterfly occurrences in southern California, United States and northwestern Baja California, Mexico; 26 are extant or presumed extant (all in the United States), 53 are presumed extirpated, and 16 are permanently extirpated (Service 2021c). Wildfires caused or contributed to 34 of the 53 presumed extirpations, and drought is the primary cause of extirpation after the 2007 megafires (caused or contributed to 16 of 53 presumed extirpations). All long-term monitored sites have been declining in abundance since 2014 (mid-drought), and occupancy was not detected in six out of seven of these sites in 2020. Only one monitored site (within the Descanso core occurrence) discovered in 2018 has relatively high abundance, but this abundance dropped by half from 2019 to 2020 (Service 2021c).

The MSCP Subregional HCP did not include the Hermes copper butterfly as a Covered Species at the time it was developed. The City of Carlsbad MHCP included Hermes copper butterfly as a Covered Species and committed to preserving Hermes copper butterfly habitat, but the species is not known to be present within the Plan Area of this HCP.

Threats and Conservation Needs

The Hermes copper butterfly is threatened primarily by urban development, wildfires, climate change, and habitat fragmentation (Service 2021c). Urban development eliminates all habitat features necessary for Hermes copper butterfly survival and reproduction and is known to have eliminated several populations. Because Hermes copper butterfly is not included in regional habitat conservation planning efforts throughout its known distribution, the threat of urban

development is ongoing. Although wildfires are a natural part of the ecosystem that Hermes copper butterfly inhabits, wildfire frequency, intensity, and magnitude have increased in recent years (Keeley and Fotheringham 2003), and fires in 2003 and 2007 burned large tracts of occupied Hermes copper butterfly habitat (Marschalek and Klein 2010). Because Hermes copper butterfly is considered a poor disperser and urban development has permanently fragmented its habitat, occupied areas that were burned by fires may not be recolonized naturally.

Climate change and drought are stressors that are believed to have had a significant impact on the species over the last 30 years (Service 2021c). Systematic monitoring of adult abundance at sites with occurrences since 2010 indicates the past 10 years of mostly drought conditions negatively affected habitat suitability and suppressed adult abundance. Shorter flight seasons are observed during years of higher-than-average temperatures, as a higher metabolism in these exothermic short-lived invertebrates typically results in faster growth and earlier death. In southern California, the maritime influence of the Pacific Ocean combined with the coastal and inland mountain ranges creates an inversion layer typical of Mediterranean-like climates. These conditions create microclimates, where the weather can be highly variable within small geographic areas at the same time. While considering Malter's (2020) results on secondary compounds of the host plants, combined with apparent drought sensitivity, there is a narrow climatic envelope for the species within the range of its host plant that would shift with climate change. Therefore, Hermes copper butterfly's ability to adapt to a changing climate may depend on species' representation in a variety of habitats throughout the species' range and connectivity between these habitats (Service 2021c).

Conservation needs identified in the recovery outline include protecting core occurrences from habitat loss and fragmentation due to fire, drought, and land use change; implementing actions to support occupancy and redundancy in core occurrences; continued and expanded monitoring of the species; modeling of potential habitat to identify new areas to survey; conducting surveys of potential habitat; and collecting, rearing, and translocating individuals from source populations into populations where they have declined or become extirpated (Service 2022a).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 78 in the HCP Amendment will be implemented to avoid and/or minimize impacts to Hermes copper butterfly:

78. Hermes Copper Butterfly (*Lycaena hermes*)

    a. Impacts from Covered Activities where there is known/historical Hermes copper butterfly occurrences and/or habitat with PBFs (HCB-Habitat) shall be avoided through project design considerations, to the extent feasible. PBFs include spiny redberry (*Rhamnus crocea*) and nectar sources (e.g., California buckwheat [*Eriogonum fasciculatum*]). HCB-Habitat shall be updated annually as new Hermes copper butterfly sightings are documented. A 1-kilometer radius (or approximately 0.6 mile) circle shall be placed around each new Hermes copper butterfly sighting and included in HCB-Habitat. USFWS shall be responsible for updating HCB-Habitat and

providing the updated information to SDG&E by December 1 of each year, for use the following year.

b. If impacts to HCB-Habitat cannot be avoided, a survey of HCB-Habitat with potential to be impacted shall be conducted by a Biologist during the adult flight season using appropriate survey techniques to determine presence of Hermes copper butterfly. If project timing does not allow for adult flight season surveys, it shall be assumed that all HCB-Habitat to be impacted is occupied.

c. If surveys determine that HCB-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within HCB-Habitat.

d. If surveys determine HCB-Habitat is not occupied, Covered Activities and impacts shall be allowed. Permanent impacts to unoccupied HCB-Habitat shall be mitigated per Section 5.5, Table 5.3a.

e. When work shall occur within or adjacent to HCB-Habitat, timing of Covered Activities shall be evaluated to ensure minimization of impacts to Hermes copper butterfly. A qualified Biologist shall provide recommendations to avoid and minimize impacts to this species. Depending on the Covered Activity and construction methods required, minimization of impacts may be increased by conducting work within the diapause phase, or in the flight season for this species. Recommendations shall be included as part of the PSR for USFWS review. Measures that may be implemented include, but are not limited to, the following:

    i. Flag spiny redberry and California buckwheat for avoidance. The host plants shall be avoided to the extent feasible.

    ii. Pole replacement may be conducted by helicopter, where feasible, to reduce impacts on the ground from vehicle and equipment travel and staging.

    iii. Incorporate larval host plant species (i.e., spiny redberry) and California buckwheat) into native habitat restoration plans, where appropriate.

    iv. When SDG&E routine road maintenance shall be conducted in HCB-Habitat, individual shrubs along the road edge and the edges of established work pads shall be flagged by the Biologist and avoided to the maximum extent practicable. Trimming of spiny redberry individuals shall be limited to those encroaching into access road and established work pads. Removal of habitat encroaching within the roads and work pads is anticipated to be minimal as cyclical, routine maintenance is conducted to maintain 24/7 access to Facilities. Vegetation trimming as described is not anticipated to incur measurable impacts.

f. For new projects, impacts to Hermes copper butterfly and HCB-Habitat shall only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Hermes copper butterfly habitat. However, not all Modeled Habitat is expected to support Hermes copper butterfly occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the Hermes copper butterfly Modeled Habitat, there are approximately 503,765 acres present within the Plan Area and approximately 18,195 acres located within the PIZ associated with existing SDG&E Facilities. In San Diego County, the highest acreages of Hermes copper butterfly Modeled Habitat occur in the central foothills, northern mountains, and northern valley ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 18 and 10 Hermes copper butterfly occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2021 SSA for Hermes copper butterfly included an analysis of the status of Hermes copper butterfly at different locations throughout its range. Each of the records included in the 2021 SSA may represent one or more occurrences from the CNDDB**.** The 2021 SSA identified a total of 95 known historical or extant Hermes copper butterfly occurrences in San Diego County; 26 extant or presumed extant, 50 presumed extirpated, and 16 permanently extirpated. Major populations of Hermes copper butterfly in San Diego County include those on MCBCP, Fallbrook Naval Weapons Station, Lake Henshaw and Warner Springs area, Rancho Guejito, and west of Ramona in the Santa Maria Valley.

The Hermes copper butterfly is covered by the one existing regional HCP that overlaps the Plan Area:

- SDCWA Subregional NCCP/HCP

Although Hermes copper butterfly is not covered, the following existing regional HCP also overlaps the Plan Area:

- San Diego MSCP Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 301,356 acres of Modeled Habitat occur within Preserves and 43,963 acres of Modeled Habitat occur within Proposed Preserves (collectively, 68 percent of all

Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 14 occurrences of Hermes copper butterfly recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species has a high potential to occur at SDG&E's Willow Glen and Cielo mitigation lands, and a moderate potential to occur at the Otay Lakes mitigation lands.

The Plan Area and PIZ include a total of approximately 35,052 acres and 2,436 acres (1,833 acres with PBFs) in Units 1, 2, and 3 of designated critical habitat for the Hermes copper butterfly. Unit 1 encompasses the core Lopez Canyon occurrence, the only known extant occurrence that falls within the Coastal Terraces Ecological Unit, and is, therefore, required to maintain species representation. Unit 2 encompasses the core Sycamore Canyon, North Santee, and Mission Trails occurrences, as well as non-core occurrences connected to core occurrences also required for metapopulation resilience and continued species representation in two California Ecological Units (Coastal Hills and Western Granitic Foothills). Unit 3 includes half of the extant/presumed extant core occurrences in the Coastal Hills California Ecological Unit (the other half is in Unit 2), and all of the extant/presumed extant core occurrences in the Western Granitic Foothills and Palomar-Cuyamaca Peak California Ecological Units. Critical habitat within the Plan Area includes all PBFs needed for the Hermes copper butterfly. The PBFs may require special management considerations to protect them from wildfire and land use change.

The Plan Area overlaps with all of the Hermes copper butterfly occurrences and habitat described in the recovery outline. The action plan in the recovery outline identifies the need to: protect Hermes copper butterfly core occurrences and habitat; provide fire prevention and protection of all occupied sites; conserve dispersal corridor connectivity between core occurrences; model and survey potential habitat; and collect, rear, and translocate Hermes copper butterflies.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 314.18 acres of Hermes copper butterfly Modeled Habitat, which is a fraction of the 48,265 acres of Hermes copper butterfly Modeled Habitat within the Plan Area. These impacts will include:

- Approximately 148.85 acres of permanent impacts (0.03 percent of Modeled Habitat in the Plan Area);

- Approximately 86.81 acres of temporary impacts (0.02 percent of Modeled Habitat in the Plan Area); and

- Approximately 78.52 acres of Wildfire Fuels Management impacts (0.02 percent of Modeled Habitat in the Plan Area).

The impact represents about 0.07 percent of Hermes copper butterfly Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general,

provides suitable habitat for Hermes copper butterfly. However, because Hermes copper butterflies are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of modeled habitat impacted, implementation of Covered Activities would impact less than one occurrence.[11] However, because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a Hermes copper butterfly occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[12]

Impacts to Hermes copper butterfly habitat from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected and New Construction projects that impact Hermes copper butterfly and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Hermes copper butterfly will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of Hermes copper butterfly within the Plan Area and its specific habitat requirements (i.e., habitat with spiny redberry host plant and flat-top buckwheat nectar source and some unknown factor other than its host plant and nectar source), we anticipate that only limited areas within Modeled Habitat support occurrences of Hermes copper butterfly. Therefore, it is likely that substantially less than 313.98 acres of occupied Hermes copper butterfly habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some Hermes copper butterfly adults, eggs, larvae, and pupae will be killed or injured from collision, crushing, trampling, or removal of host plants within up to 313.98 acres of Hermes copper butterfly Tracked Habitat that is impacted in association with the Covered Activities.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of Hermes copper butterfly habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

[11] Up to 0.07 percent of modeled habitat within the Plan Area will be impacted, and there are an estimated 18 Hermes copper butterfly occurrences in the Plan Area. The product of 0.09 percent and 18 is less than one.
[12] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 78 for Hermes copper butterfly are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a 15 miles-per-hour speed limit shall be observed on dirt access roads (OP 2), a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to Hermes copper butterfly, as specified in OP 78 include the following restrictions while in Hermes copper butterfly habitat: avoid ground-disturbing activities and stay on roads to the maximum extent practicable; flag spiny redberry and California buckwheat for avoidance and avoid the host plants to the extent feasible; avoid work during the diapause or flight season; use of helicopters for pole replacement, where feasible, to reduce impacts on the ground from vehicle and equipment travel and staging; flag individual shrubs along the road edge and the edges of established work pads to the maximum extent practicable; and limit trimming of spiny redberry individuals to those encroaching into access roads and established work areas. In addition, spiny redberry and California buckwheat will be incorporated into native habitat restoration plans, where appropriate.

Unavoidable temporary impacts to Hermes copper butterfly occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to Hermes copper butterfly occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Hermes copper butterfly habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Hermes copper butterfly within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Hermes copper butterflies within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities, and incorporation of spiny redberry and California buckwheat into native habitat restoration are also expected to help offset impacts to Hermes copper butterfly.

Because Covered Activities will impact a small fraction of the Hermes copper butterfly habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Hermes copper butterfly within the Plan Area or rangewide.

Effects from Fire and Habitat Fragmentation

The Hermes copper butterfly could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other

than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to Hermes copper butterfly include the degradation of habitat outside the footprint of Covered Activities as a result of fire and habitat fragmentation.

Frequent intense fires may burn habitat and kill adults and larvae, and because Hermes copper butterfly is considered a poor disperser and urban development has permanently fragmented its habitat, occupied areas that were burned by fires may not be recolonized naturally.

Approximately 64 percent of the Plan Area is in "High Fire Threat Districts" (HFTDs). The HFTD consists of Tier 2 areas, "where there is an elevated risk for destructive utility associated wildfires," and Tier 3 areas, "where there is an extreme risk for destructive utility associated wildfires." The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds, coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing facilities (e.g., electric lines) and O&M of these facilities are potential wildlife ignition sources, and wildfire ignition sources may increase with construction of new facilities. In addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. However, patchy low intensity wildfires can also remove dense vegetation, increasing habitat suitability for Hermes copper butterfly (Service 2011a).

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007 after San Diego experienced some of the most destructive wildfires in the county's history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have developed and implemented programs to enhance situational awareness, which has increased SDG&E's ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment) and Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities (Section 8.5, pages 8 to16). For example, SDG&E will regularly maintain fire protection areas around facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas and equipping vehicles with shovels and fire extinguishers. Based on SDG&E's increased ability to monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP

10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Hermes copper butterfly dispersal/movement corridors that contribute to long-term population viability for Hermes copper butterfly. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from fire and habitat fragmentation due to Covered Activities are not likely to result in a decrease in Hermes copper butterfly survival or reproduction beyond baseline conditions.

Effects to Critical Habitat

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to a total of 31.66 acres of Hermes copper butterfly critical habitat with PBFs within Units 1, 2, and 3, which represents a small fraction of the 35,236 acres of Hermes copper butterfly critical habitat within the Plan Area These impacts will include:

- Approximately 15 acres of permanent impacts (0.04 percent of critical habitat in the Plan Area);
- Approximately 8.75 acres of temporary impacts (0.02 percent of critical habitat in the Plan Area); and
- Approximately 7.91 acres of Wildfire Fuels Management impacts (0.02 percent of critical habitat in the Plan Area).

This impact represents about 0.08 percent of the overall Hermes copper butterfly critical habitat designation. Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ. Therefore, impacts to each critical habitat unit are also expected to be minor. Potential adverse effects fire and habitat fragmentation due to Covered Activities could also impact Hermes copper butterfly critical habitat.

Impacts to Hermes copper butterfly critical habitat will be avoided, if possible, during the planning process. If permanent impacts to critical habitat cannot be avoided, then SDG&E will first attempt to mitigate with credits in the existing mitigation lands that have critical habitat for the same species or acquire other lands that are designated as critical habitat. If no critical habitat

is available from the existing or additional acquired mitigation lands, SDG&E will acquire, restore, and/or enhance mitigation land that will benefit the Hermes copper butterfly and/or its critical habitat, with the concurrence of the Service (Section 5.4.2 of the HCP Amendment). In addition, any new Facility that would impacts more than 1.75 acres of critical habitat would require a Minor Amendment. The removal and restoration of existing access roads is also expected to improve the functioning of critical habitat.

For the same reasons discussed in the species-specific analysis above, potential adverse effects from fire and habitat fragmentation due to Covered Activities are not likely to result in a decrease in functioning of Hermes copper butterfly critical habitat beyond baseline conditions.

Based on the above, we do not anticipate Covered Activities to impair the functions of Units 1, 2, 3 and the overall Hermes copper butterfly critical habitat designation, as sufficient areas will remain within the Plan Area to support core populations and all dispersal/movement corridors that contribute to long-term population viability for the Hermes copper butterfly.

Effect on Recovery

The Plan Area overlaps with all of the Hermes copper butterfly occurrences and habitat described in the recovery outline. The action plan in the recovery outline identifies the need to protect core occurrences and habitat; provide fire prevention and protection of all occupied sites; and conserve dispersal corridor connectivity between core occurrences. The habitats included in the Plan Area are part of a system that provides important breeding, feeding, and sheltering habitat for the Hermes copper butterfly.

The proposed HCP Amendment does not conflict with the action plan in the recovery outline. Although the proposed Covered Activities will impact habitat that is used by Hermes copper butterflies for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation, restoration/enhancement, and in-perpetuity management of Hermes copper butterfly habitat. This mitigation is expected to result in a no “net loss” of habitat and support recovery of the Hermes copper butterflies. As discussed above, SDG&E will also implement significant measures to prevent and reduce the risk of fires.

The proposed conservation and restoration/enhancement of suitable Hermes copper butterfly habitat, and the associated in-perpetuity management of all conservation/restoration/ enhancement areas, and measures to prevent and reduce the risk of fires provided by the Plan will be consistent with the action plan in the recovery outline to protect core occurrences and habitat; provide fire prevention and protection of all occupied sites; and conserve dispersal corridor connectivity between core occurrences. Therefore, the breeding, feeding, and sheltering functions degraded or destroyed due to unavoidable impacts to Hermes copper butterfly habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection goals outlined in action plan of the recovery outline.

We expect no more than 313.98 acres of Hermes copper butterfly Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the Hermes copper butterfly

habitat and the population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any Hermes copper butterfly population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the Hermes copper butterfly and will not result in the destruction or adverse modification of its critical habitat. We base these conclusions on the following:

1. Impacts will be limited to no more a total of 314.18 acres of Hermes copper butterfly Tracked Habitat, which represents about 0.07 percent of Modeled Habitat for the Hermes copper butterfly in the Plan Area/rangewide.

2. Based on the known distribution of the Hermes copper butterfly within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of Hermes copper butterflies. Therefore, it is likely that substantially less than 314.18 acres of occupied Hermes copper butterfly habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual Hermes copper butterflies will be harmed by Covered Activities.

4. Covered Activities could result in the loss of PBFs within up to 31.66 acres of Hermes copper butterfly critical habitat, which represents 0.08 percent of the overall designation.

5. Loss of PBFs from Covered Activities within small project footprints distributed throughout the Plan Area are not expected to impair the function of the overall critical habitat designation, as sufficient areas will remain within the Plan Area to support core populations that contribute to long-term population viability for the Hermes copper butterfly.

6. Impacts to the Hermes copper butterfly or its critical habitat will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at existing or acquired mitigation lands that have occupied habitat or critical habitat, or through the R/E Program or measures that will benefit this species or its critical habitat. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals in the recovery outline.

7. Because Covered Activities will affect a small proportion of the Hermes copper butterfly habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Hermes

copper butterfly and the implementation of measures to avoid, minimize, and offset potential impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of Hermes copper butterfly in the Plan Area/rangewide.

8. Long-term management and monitoring of mitigation lands will help Hermes copper butterfly in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Laguna Mountains Skipper (Pyrgus ruralis lagunae)

Status of the Species

Listing Status

The Laguna Mountains skipper (*Pyrgus ruralis lagunae*) was listed as endangered under the Act on January 16, 1997 (62 FR 2313). A recovery plan for Laguna Mountains skipper was completed on May 5, 2019 (Service 2019b). The latest 5-year review for Laguna Mountains skipper was completed in 2019 (Service 2019c) and recommended no change in its listing status.

Species Description

The Laguna Mountains skipper is one of two subspecies of the two-banded checkered skipper (*Pyrgus ruralis*), a small butterfly in the skipper family (Hesperiidae). The Laguna Mountains skipper was first described by Scott (1981) based on population isolation and color differentiation. The genus Pyrgus has three other species in San Diego County, including the common checkered skipper (*P. communis*), small checkered skipper (*P. scriptura*), and western checkered skipper (*P. albescens*). The taxonomic classification of the Laguna Mountains skipper has not changed since it was listed.

Adult Laguna Mountains skippers have a wingspan of about 1 inch (in) and are distinguished from the northern, more common two-banded checkered skipper subspecies (*Pyrgus ruralis ruralis*; rural skipper) by extensive white wing markings that give adults, particularly males, an overall appearance of more white than black and by the banding patterns on the hind wings (Scott 1981, Levy 1994). They are further distinguished from the co-occurring common checkered skipper by the forewing pattern that resembles an “x”.

Habitat Affinities

Laguna Mountains skipper inhabit large wet mountain meadows and associated forest openings at elevations above 3,900 feet. Adult occupancy is associated with surface water such as streams and wet seeps, and population growth appears positively correlated with rainfall levels. Laguna Mountains skipper’s primary host plant is Cleveland’s horkelia (*Horkelia clevelandii*).

Life History

The Laguna Mountains skipper’s life cycle is considered partially bivoltine, resulting in two overlapping generations; individuals of this species undergo diapause in the pupal stage,

typically from fall through winter, hatching in the early spring through summer (Service 2004a, 2019a). Many Laguna Mountains skipper larvae will undergo diapause through the summer, fall, and winter, joining the spring brood for the first flight (Service 2019b). During their adult stage, females lay eggs exclusively on or near Cleveland's horkelia, which is often associated with meadows and forest openings (Calflora 2020, Service 2019b). Since listing, Laguna Mountains skippers have also been documented using sticky cinquefoil (*Drymocallis* [*Potentilla*] *glandulosa*) as a host in the wild (Pratt 1999, 2006; Osborne 2008). However, *D. glandulosa* is not believed to independently support any populations (Osborne 2002). Adults feed on diverse sources of nectar during the spring but become limited in nectar sources during the summer, relying heavily on summer blooming perennials and annuals, including Cleveland's horkelia.

Status and Distribution

The Laguna Mountains skipper was historically found in meadow habitats within the Peninsular Range on Palomar Mountain and in the Laguna Mountains in San Diego County, California, but is currently restricted to Palomar Mountain. The two mountain areas where the subspecies was historically recorded are geographically too distant for natural Laguna Mountains skipper movement between them. Relative to the Plan Area in San Diego County, extant populations are known to occur on Palomar Mountain within Upper Doane Valley, Lower Doane Valley, Upper French Valley, Mendenhall Valley, and upstream of Fry Creek (Service 2019b). Historically, Laguna Mountains skipper also occupied Mount Laguna throughout suitable habitat within 1 mile of Laguna Meadow, including Laguna Meadow, El Prado Meadow, Horse Heaven Group Campground, Boiling Spring Ravine, and along Sunrise Highway (Service 2019b). The species was last seen in the Laguna Mountains in 1999 and is considered extirpated from that area (Service 2019b). Reintroduction efforts at Laguna Mountain began in 2021, with limited signs of success.

Threats and Conservation Needs

Major cumulative threats to Laguna Mountains skipper include direct mortality and habitat loss, degradation, and fragmentation caused by wildfire events, urban development, grazing, and fire management practices (Service 1997a). Cattle grazing within meadows has led to direct mortality and habitat loss by ingestion of host plants and larval stage populations (Service 2019b). Other cumulative threats to this species include climate change and drought (Service 2019b).

Conservation needs identified in the recovery plan include gathering information to refine our understanding of Laguna Mountains skipper demography and factors influencing population size and persistence, protecting and managing habitat supporting existing populations, and conducting translocation efforts to reintroduce Laguna Mountains skipper into appropriate portions of its former range (Service 2019b).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, OP 77 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the Laguna Mountains skipper:

77. Laguna Mountains Skipper (*Pyrgus ruralis lagunae*)

a. Impacts from Covered Activities where there is a potential for Laguna Mountains skipper to occur on Palomar Mountain or designated critical habitat with physical and biological features (PBFs) in the Lagunas (LMS-Habitat) shall be avoided through project design considerations, to the extent feasible. PBFs include:

i. The host plants, Cleveland's horkelia (*Horkelia clevelandii*) or Sticky cinquefoil (*Drymocallis glandulosa*), in meadows or forest openings needed for reproduction.

ii. Nectar sources suitable for feeding by adult Laguna Mountains skippers, including *Lasthenia* spp., *Pentachaeta aurea*, *Ranunculus* spp., and *Sidalcea* spp. found in woodlands or meadows.

iii. Wet soil or standing water associated with features such as seeps, springs, or creeks where water and minerals are obtained during the adult flight season.

b. If impacts to LMS-Habitat cannot be avoided, a Biologist shall survey LMS-Habitat that has the potential to be impacted by Covered Activities. Surveys are to be conducted during the adult flight season (April 15 through August 15) using appropriate survey techniques to determine presence of Laguna Mountains skipper. If project timing does not allow for adult flight season surveys, it shall be assumed that all LMS-Habitat to be impacted is occupied.

c. If surveys determine that LMS-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within LMS-Habitat.

d. If surveys determine LMS-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied LMS-Habitat shall be mitigated per Section 5.5, Table 5.3a.

e. When work shall occur within or adjacent to LMS-Habitat, timing of Covered Activities shall be evaluated to ensure minimization of impacts to Laguna Mountains skipper. A qualified Biologist shall provide recommendations to avoid and minimize impacts to this species. Depending on the Covered Activity and construction methods required, minimization of impacts may be increased by conducting work within the diapause phase, or in the flight season for this species. Recommendations shall be included in the PSR for USFWS review. Measures that may be implemented include, but are not limited to, the following:

i. Flag Cleveland's horkelia for avoidance. The host plants shall be avoided to the extent feasible.

ii. When trampling Cleveland's horkelia is necessary to conduct work, plywood boards shall be placed where crews shall be working in order to distribute weight more evenly and reduce impacts to Cleveland's horkelia.

iii. Pole replacement may be conducted by helicopter, where feasible, to reduce impacts on the ground from vehicle and equipment travel and staging.

iv. Incorporate Cleveland's horkelia seed collection and dispersal into native habitat restoration Covered Activities, where appropriate.

v. For new projects, impacts to Laguna Mountains skipper and LMS-Habitat shall only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Laguna Mountains skipper habitat. However, not all Modeled Habitat is expected to support Laguna Mountains skipper occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the Laguna Mountains skipper Modeled Habitat, there are approximately 1,172 acres present within the Plan Area and approximately 14 acres located within the PIZ associated with existing SDG&E Facilities. In San Diego County, Laguna Mountains skipper Modeled Habitat occurs in the central foothills ecoregion. This species is not known or expected to occur in Orange County or at the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately nine and four Laguna Mountains skipper occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2019 5-year review for Laguna Mountains skipper included an analysis of the status of Laguna Mountains skipper at different locations throughout its range. Each of the records included in the 2019 5-year review may represent one or more occurrences from the CNDDB**.** The 2019 5-year review identified a total of six known historical or extant Laguna Mountains skipper occurrences in San Diego County; four extant on Palomar Mountain and two extirpated on Laguna Mountain. Reintroduction efforts at Laguna Mountain began in 2021, with limited signs of success.

Laguna Mountains skipper and its known range are not covered by any existing regional HCPs. However, Laguna Mountains skipper is found in public lands managed by the U.S. Forest Service and California State Parks, which limit urban development.

Currently, approximately 882 acres of Modeled Habitat occur within Preserves, and no Modeled Habitat occurs within Proposed Preserves (collectively, 75 percent of all Modeled Habitat). In addition, six occurrences of Laguna Mountains skipper recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to at existing SDG&E mitigation lands.

The Plan Area includes the Palomar Mountain and Laguna Mountains management units described in the recovery plan.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 0.23 acre of Laguna Mountains skipper Modeled Habitat, which is a fraction of the 1,172 acres of Laguna Mountains skipper Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 0.11 acre of permanent impacts (0.01 percent of Modeled Habitat in the Plan Area);
- Approximately 0.06 acre of temporary impacts (<0.01 percent of Modeled Habitat in the Plan Area); and
- Approximately 0.06 acre of Wildfire Fuels Management impacts (<0.01 percent of Modeled Habitat in the Plan Area).

The impact represents about 0.01 percent of Laguna Mountains skipper Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for Laguna Mountains skipper. However, because Laguna Mountains skippers are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[13] However, because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a Laguna Mountains skipper occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat)as individual Covered Activities are implemented.[14]

Impacts to Laguna Mountains skipper habitat from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale

[13] Up to 0.01 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 4 extant Laguna Mountains skipper occurrences in the Plan Area. The product of 0.01 percent and 4 is less than one.
[14] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

New Construction is expected, and New Construction projects that impact Laguna Mountains skipper and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Laguna Mountains skipper will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of Laguna Mountains skipper within the Plan Area and its specific habitat requirements (i.e., habitat with Cleveland's horkelia or sticky cinquefoil host plants and surface water such as streams and wet seeps), we anticipate that only limited areas within Modeled Habitat support occurrences of Laguna Mountains skipper. Therefore, it is likely that substantially less than 0.23 acre of occupied Laguna Mountains skipper habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some Laguna Mountains skipper adults, eggs, larvae, and pupae will be killed or injured from collision, crushing, trampling, or removal of host plants within up to 0.23 acre of Laguna Mountains skipper Tracked Habitat that is impacted in association with the Covered Activities.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of Laguna Mountains skipper habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 77 for Laguna Mountains skipper are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a 15 miles-per-hour speed limit shall be observed on dirt access roads (OP 2), a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts Laguna Mountains skipper, as specified in OP 77 include the following restrictions while in Laguna Mountains skipper habitat: flag Cleveland's horkelia host plants for avoidance, and avoid the host and nectaring plants and areas with wet soils or standing water to the extent feasible; avoid work during the diapause or flight season; when trampling Cleveland's horkelia is necessary to conduct work, plywood boards shall be placed where crews shall be working in order to distribute weight more evenly and reduce impacts to Cleveland's horkelia; and use helicopters for pole replacement, where feasible, to reduce impacts on the ground from vehicle and equipment travel and staging. In addition, Cleveland's horkelia will be incorporated into native habitat restoration Covered Activities, where appropriate.

Unavoidable temporary impacts to Laguna Mountains skipper occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to Laguna Mountains skipper occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated

disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Laguna Mountains skipper habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Laguna Mountains skipper within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Laguna Mountains skippers within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities and incorporation of Cleveland's horkelia into native habitat restoration are also expected to help offset impacts to Laguna Mountains skipper.

Because Covered Activities will impact a small fraction of the Laguna Mountains skipper habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Laguna Mountains skipper within the Plan Area or rangewide.

Effects from Changes to Hydrology, Non-Native Plants, Fire, and Habitat Fragmentation

The Laguna Mountains skipper could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to Laguna Mountains skipper include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology, non-native plants, fire, and habitat fragmentation.

Changes to meadow hydrology, especially groundwater, pose a potential threat to Laguna Mountains skipper which is closely tied to wet meadows and dependent on soil moisture land surface water availability (Service 2019c). Development projects upslope and adjacent to Laguna Mountains skipper occurrences may dewater the site, interfering with these processes. Measures will be implemented to minimize changes to hydrology (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21).

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of host and nectar plants by non-native plants and remove or degrade suitable habitat necessary for Laguna Mountains skipper. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of Laguna Mountains skipper host and nectar plants.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities and restoration of temporary impact areas are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for*

Transportation and Utility Corridors – California Invasive Plant Council (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Frequent intense fires may burn habitat and kill Laguna Mountains skipper adults and larvae, and occupied areas that were burned by fires may not be recolonized naturally. However, patchy low intensity wildfires can also remove dense vegetation, increasing habitat suitability for Laguna Mountains skipper (Service 2019c).

Approximately 64 percent of the Plan Area is in "High Fire Threat Districts" (HFTDs). The HFTD consists of Tier 2 areas, "where there is an elevated risk for destructive utility associated wildfires," and Tier 3 areas, "where there is an extreme risk for destructive utility associated wildfires." The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds, coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing facilities (e.g., electric lines) and O&M of these facilities are potential wildlife ignition sources and wildfire ignition sources may increase with construction of new facilities. In addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation.

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007 after San Diego experienced some of the most destructive wildfires in the county's history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have developed and implemented programs to enhance situational awareness, which has increased SDG&E's ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment),Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities (Section 8.5, pages 8 to16). For example, SDG&E will regularly maintain fire protection areas around facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas and equipping vehicles with shovels and fire extinguishers. Based on SDG&E's increased ability to

monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP 10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Laguna Mountains skipper dispersal/movement corridors that contribute to long-term population viability for Laguna Mountains skipper. However, no large-scale New Construction is expected that could cause significant habitat fragmentation, and most of SDG&E's Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology, non-native plants, fire and habitat fragmentation due to Covered Activities are not likely to result in a decrease in Laguna Mountains skipper survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area includes the Palomar Mountain and Laguna Mountains management units described in the recovery plan. Conservation needs identified in the recovery plan include gathering information to refine our understanding of Laguna Mountains skipper demography and factors influencing population size and persistence, protecting and managing habitat supporting existing populations, and conducting translocation efforts to reintroduce Laguna Mountains skipper into appropriate portions of its former range (Service 2019b).

The HCP Amendment does not conflict with the recovery plan objectives to increase abundance and ensure long-term persistence and population redundancy of Laguna Mountains skipper. Although the proposed Covered Activities will impact habitat that is used by Laguna Mountains skippers for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts to Laguna Mountains skipper occupied habitat will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to result in a no "net loss" of habitat and support recovery of the Laguna Mountains skipper. As discussed above, SDG&E will also implement significant measures to prevent and reduce the risk of fires.

The proposed conservation and restoration/enhancement of suitable Laguna Mountains skipper habitat, and the associated in-perpetuity management of all conservation/restoration/ enhancement areas provided by the HCP Amendment will be consistent with recovery outline to

preserve and protect significant populations of the Laguna Mountains skipper throughout representative portions of its range. Therefore, the breeding, feeding, and sheltering functions degraded or destroyed due to unavoidable impacts to Laguna Mountains skipper habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection goals outlined in action plan of the recovery plan objectives.

We expect no more than 0.23 acre of Laguna Mountains skipper Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the Laguna Mountains skipper habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any Laguna Mountains skipper population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the Laguna Mountains skipper. We base these conclusions on the following:

1. Impacts will be limited to no more a total of 0.23 acre of Laguna Mountains skipper Tracked Habitat, which represents about 0.01 percent of Modeled Habitat for the Laguna Mountains skipper in the Plan Area/rangewide.

2. Based on the known distribution of the Laguna Mountains skipper within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of Laguna Mountains skippers. Therefore, it is likely that substantially less than 0.23 acre of occupied Laguna Mountains skipper habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual Laguna Mountains skippers will be harmed by Covered Activities.

4. Impacts to Laguna Mountains skipper will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands are occupied or through the R/E program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan.

5. Because Covered Activities will affect a small proportion of the Laguna Mountains skipper habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Laguna Mountains skipper, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of Laguna Mountains skipper in the Plan Area/rangewide.

6. Long-term management and monitoring of mitigation lands will help Laguna Mountains skipper in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Listed Amphibians

Arroyo Toad (Anaxyrus (=Bufo) californicus)

Status of the Species

Listing Status

The Service listed the arroyo toad as endangered on December 16, 1994 (59 FR 64859). According to Frost et al. (2006) and Crother (2008), the currently recognized name for the arroyo toad is *Anaxyrus californicus*. The arroyo toad recovery plan was completed on July 24, 1999 (Service 1999a). A 5-Year Review for the arroyo toad was completed on August 3, 2009 (Service 2009a). The most recent critical habitat designation for the arroyo toad was finalized on February 9, 2011 (76 FR 7246, Service 2011b).

A 12-Month Finding on a petition to downlist the arroyo toad and a proposed rule to reclassify the arroyo toad as threatened was completed on March 27, 2014 (79 FR 17106, Service 2014a). A withdrawal of proposed rule to reclassify the arroyo toad as threatened was completed on December 23, 2015 (80 FR 79805, Service 2015a).

Species and Critical Habitat Description

The arroyo toad is a small, dark-spotted toad of the family Bufonidae. The parotoid glands, located on the top of the head, are oval-shaped and widely separated. A light/pale area or stripe is usually present on these glands and on top of the eyes. The arroyo toad's underside is buff-colored and usually without spots (Stebbins 1985). Recently metamorphosed individuals will easily blend with the substrate and are usually found adjacent to water. At the time of listing, the arroyo toad was described as the arroyo southwestern toad (*Bufo microscaphus californicus*). Gergus (1998) published genetic justification for the reclassification of the arroyo southwestern toad as a full species [i.e., arroyo toad (*Bufo californicus*)]. Frost et al. (2006) recommended partitioning the genus *Bufo* into three genera, with the North American clade of *Bufo* renamed as the genus *Anaxyrus*, which is consistent with research on molecular phylogenetics of Nearctic toads (*Bufo*) (Pauly et al. 2004). Thus, the arroyo toad *Bufo californicus* has been renamed *Anaxyrus californicus*, and this revised nomenclature has been widely adopted (Crother 2008).

Critical habitat for the arroyo toad encompasses approximately 98,366 acres. Critical habitat is separated into 23 units within the following recovery units (as described within the arroyo toad recovery plan): Northern Recovery Unit, Southern Recovery Unit, and Desert Recovery Unit (Service 2011b). Seven critical habitat units are within the Northern Recovery Unit, 12 critical habitat units are within the Southern Recovery Unit, and 4 critical habitat units are within the Desert Recovery Unit.

PBFs of designated critical habitat support the need for: 1) space for individual and population growth; 2) water and physiological requirements; 3) breeding, reproduction, and rearing of

offspring; and 4) habitats that are representative of the historical, geographical, and ecological distributions of the species are essential to the conservation of the arroyo toad. The PBFs for the arroyo toad include: 1) rivers or streams with hydrologic regimes that supply water to provide space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, and adult breeding toads. Specifically, breeding pools that are less than 6 inches deep, areas of flowing water with current velocities less than 1.3 feet per second, and surface water that lasts for a minimum of 2 months during the breeding season; 2) riparian and adjacent upland habitats, particularly low-gradient (typically less than 6 percent) stream segments and alluvial streamside terraces with sandy or fine gravel substrates that support the formation of shallow pools and sparsely vegetated sand and gravel bars for breeding and rearing of tadpoles and juveniles; and adjacent valley bottomlands that include areas of loose soil where toads can burrow underground, to provide foraging and living areas for juvenile and adult arroyo toads; 3) a natural flooding regime, or one sufficiently corresponding to a natural regime. This regime is characterized by intermittent or near-perennial flow that contributes to the persistence of shallow pools into at least mid-summer and maintains areas of open, sparsely vegetated, sandy stream channels and terraces by periodically scouring riparian vegetation. In addition, this regime modifies stream channels and terraces to redistribute sand and sediment such that breeding pools and terrace habitats with scattered vegetation are maintained; and 4) stream channels and adjacent upland habitats that allow for movement to breeding pools, foraging areas, overwintering sites, upstream and downstream dispersal, and connectivity to areas that contain suitable habitat. PBFs may require special management considerations to ensure that aquatic and riparian upland habitats provide abundant breeding and non-breeding areas, prey species, shelter, and connectivity within the landscape (Service 2011b).

Habitat Affinities

Arroyo toads require shallow, slow-moving streams and riparian habitats that have natural flooding regimes, which maintain areas of open, sparsely vegetated, sandy stream channels and terraces (Service 2001). Optimal breeding habitat consists of low gradient stream reaches that have shallow pools with fine textured substrates (i.e., sand or gravel). Upland habitats used by arroyo toads during both the breeding and non-breeding seasons include alluvial scrub, coastal sage scrub, chaparral, grassland, and oak woodland (Griffin 1999, Service 2001). This species has been observed moving approximately 1 mile within a stream reach and up to about 0.93 mile away from the stream, into native upland habitats (Sweet 1992, Holland and Goodman 1998) or agricultural areas (Griffin 1999). Holland and Sisk (2001) found on Cristianitos Creek on Camp Pendleton that 88.73 percent (323 of 364) of captures of adult and subadult toads were within the riparian area and 11.26 percent (41 of 364) were in upland habitats; no metamorphic toads were captured in uplands. Of the 41 captures, distances from the edge of the riparian area varied greatly from 82 to 3,747 feet. Movement distances may be regulated by topography and channel morphology (Holland and Sisk 2000). Arroyo toads are critically dependent on upland terraces and the marginal zones between stream channels and upland terraces during the non-breeding season, especially during periods of inactivity, generally late fall and winter (Sweet 1992). Adult and juvenile arroyo toads burrow into loose soils in stream terraces and in uplands, where they may remain during daylight hours or for longer periods during the dry season (Sweet 1992).

The elevational range for most arroyo toad populations in San Diego County is about 1,000 to 4,600 feet, although they were historically known to extend into the lower portions of most river

basins (Service 1999a), and populations on Camp Pendleton extend down to just above sea level (Holland and Goodman 1998).

Life History

Arroyo toads typically breed from February to July on streams with persistent water (Griffin 1999). Female arroyo toads must feed for a minimum of approximately 2 months to develop the fat reserves needed to produce a clutch of eggs (Sweet 1992). Eggs are deposited, and larvae develop in shallow pools with minimal current and little or no emergent vegetation. The substrate in these pools is generally sand or fine gravel overlain with silt. Arroyo toads need breeding pools that are no more than 6 inches deep. Arroyo toad eggs hatch in 4 to 5 days, and the larvae are essentially immobile for an additional 5 to 6 days. They then begin to disperse from the pool margin into the surrounding shallow water, where they spend an average of 10 weeks. After metamorphosis (June to July), the juvenile toads remain on the bordering gravel bars until the pool no longer persists (usually from 8 to 12 weeks depending on-site and yearly conditions) (Sweet 1992). Male arroyo toads reach adulthood in 1 to 2 years, and females become sexually mature in 2 to 3 years. Individuals may become sexually mature by the following spring if conditions are favorable (Sweet 1992, 1993); however, female arroyo toads generally do not become sexually mature until 2 years of age (Service 2011b).

Outside of the breeding season, arroyo toads are essentially terrestrial and use a variety of upland habitats for foraging, burrowing, and dispersal that include, but are not limited to, sycamore-cottonwood woodlands, oak woodlands, coastal sage scrub, chaparral, and grassland (Service 1999a, Holland 1995, Griffin 1999). During the non-breeding season, arroyo toads seek shelter during the day and other periods of inactivity by burrowing into the sandy areas of upland terraces. They also use the marginal zones between the stream channels and upland terraces for burrowing, especially during late fall and winter (Sweet 1992). Arroyo toads will go into aestivation in their burrows during the non-breeding season, starting in the later summer from approximately August through January (Ramirez 2003).

Arroyo toad larvae feed on loose organic material such as interstitial algae, bacteria, and diatoms. They do not forage on macroscopic vegetation (Sweet 1992, Jennings and Hayes 1994). Juveniles rely on ants almost exclusively (Service 1999a). By the time they reach 0.7 to 0.9 inches in length, they take more beetles, along with ants (Sweet 1992, Service 1999a). Adults probably consume a wide variety of arthropods including ants, beetles, spiders, caterpillars, and others.

Arroyo toad populations vary considerably from year to year, depending on environmental conditions. Approximately three-fold changes have been observed from one year to the next (Sweet 1993), and greater variations would likely be observed with more data on toad populations. Because female arroyo toads lay an average of approximately 5,000 eggs during the breeding season (Sweet 1992), there is the potential for rapid increases in population size given favorable conditions, but toad recruitment reflects the inherent variability of their environment. During years of drought, pools may dry before larvae have reached metamorphosis, and females may forego breeding altogether. If flooding occurs after eggs have been laid, a large percentage of the eggs and larvae can be lost. Finally, heavy predation pressure by birds, mammals, reptiles, and other amphibians on metamorphosing and newly metamorphosed juveniles can drastically

reduce recruitment. Once arroyo toads have reached the subadult stage, survivorship is higher. Annual mortality of adults and subadults has been estimated between 35 percent and 70 percent (Sweet 1993, Holland and Sisk 2000, 2001), which would mean that few arroyo toads survive past 5 years in the wild.

Stream order, elevation, and floodplain width are important factors in determining the size and long-term viability of a toad population (Sweet 1992, Barto 1999, Griffin 1999). Streams with the greatest potential to support self-sustaining populations are typically of a high stream order (i.e., 3rd to 6th order), at low elevations below 3,000 feet, with wide floodplains (Sweet 1992, Barto 1999, Griffin 1999). Because of the dynamic nature of toad populations and their habitat, movements of individuals are likely important for colonizing areas where arroyo toads have been locally extirpated or where new habitat has been created due to flooding events or changes in human management.

Status and Distribution

The arroyo toad was once relatively abundant in the coastal portions of central and southern California. At the time of listing, arroyo toads were known to occur in 22 river basins from the upper Salinas River system in Monterey and San Luis Obispo Counties; south through the Santa Maria and Santa Ynez River basins in Santa Barbara County; the Santa Clara River basin in Ventura County; the Los Angeles River basin in Los Angeles County; river basins of Orange, Riverside, and San Diego counties; and south to the Arroyo San Simeon system in Baja California, Mexico (Sweet 1992, Service 1999a, Service 2014a). Prior to the time of listing, Jennings and Hayes (1994) documented a decline of 76 percent of arroyo toad populations throughout the species' range due to loss of habitat and hydrological alterations to stream systems as a result of dam construction and flood control. This figure was based on studies done in the early 1990s by Sam Sweet (Jennings and Hayes 1994) that addressed the natural history and status of arroyo toad populations on a portion of the species' range on the Los Padres National Forest.

Though arroyo toads have been extirpated from some rivers and streams within river basins that they occupied at the time of listing, the number of areas known to be occupied by arroyo toads has increased since the time of listing, mostly due to increased survey efforts. Although Jennings and Hayes (1994) estimated that arroyo toads had been eliminated from 76 percent of their historical range prior to the time of listing, subsequent discoveries of new localities and remnant populations reduce this estimate to 65 percent (Lanoo 2005, as cited in Service 2015a). We now consider there to be a total of 35 river basins that support arroyo toads with 25 in the United States and 10 in Mexico; arroyo toads are still extant in all 22 river basins occupied at the time of listing (Service 2014a). Arroyo toads are limited to isolated populations primarily in the headwaters of coastal streams along the central and southern coast of California and southward to Rio Santa Maria near San Quintin in northwestern Baja California, Mexico (Lovich 2009, as cited in Service 2015a).

As documented in the Service's withdrawal of the proposed rule to reclassify the arroyo toad as threatened (Service 2015a), although arroyo toads are still persisting within the range they occupied historically and at the time of listing, more recent data indicate that the species has continued to decline in numbers and in area occupied within its current range (Hancock 2007–

2014; Hollingsworth in litt. 2014; Brehme et al. in litt. 2014; Samuel Sweet, pers. comm. 2015, as cited in Service 2015a; USGS, pers. comm. 2015, as cited in Service 2015a). At least three occurrences in the Northern Recovery Unit (Salinas River Basin, Santa Ynez River Basin, and Santa Clara River Basin) (Hancock 2007–2014; Samuel Sweet, pers. comm. 2015, as cited in Service 2015a) and at least eight occurrences in the Southern Recovery Unit (Lower Santa Margarita River Basin, Upper San Luis Rey River Basin, Upper and Lower Santa Ysabel Creek Basins, Upper San Diego River Basin, Upper Sweetwater River Basin, and Upper and Lower Cottonwood Creek Basins) (Brehme et al. in litt. 2014; USGS, pers. comm. 2015, as cited in Service 2015a) have shown recent declines.

Insufficient information regarding population dynamics and suitable habitat is available to estimate the rangewide arroyo toad population (Service 1999a). The density of toads is unevenly distributed in space and time, with particular sites having high densities of larvae, metamorphs, subadults, and adults under favorable ecological conditions, but absent during poor conditions (Holland et al. 2001). Dramatic natural fluctuations in all life-stage categories and difficulty in detecting adult toads under all but the most optimal conditions make accurate estimation of populations difficult. Due to the mobility of arroyo toads and other factors affecting their spatial and temporal heterogeneity, estimating toad densities (per unit area) at given sites is likely to be inaccurate.

Threats and Conservation Needs

Many arroyo toad populations were reduced in size or extirpated due to extensive habitat loss from 1920 to 1980 (Service 1999a), mainly because toad habitats (i.e., broad, flat floodplains in southern California) are favored sites for flood control projects, agriculture, urbanization, and recreational facilities such as campgrounds and off-highway vehicle parks. The loss of habitat, coupled with habitat modifications due to the manipulation of water levels in many central and southern California streams and rivers, as well as predation from introduced aquatic species, caused toads to disappear from a large portion of their previously occupied habitat in California (Jennings and Hayes 1994). In 2001, a telemetry study of toads in San Juan Creek indicated that exotic predators and vehicle traffic were the cause of mortality for 2 of the 13 study animals (Cadre Environmental 2003). One toad was tracked by its transmitter to the gut of a bullfrog, and another was tracked to the treads of a dump truck that had driven on a dip-crossing through San Juan Creek. Other observations from the telemetry study included the desiccation of toad larvae in pools along the creek that dried up prior to the completion of toad metamorphosis (Cadre Environmental 2003). The authors speculated that drying of these pools may have been due to decreased rainfall or to groundwater pumping for agricultural practices that affected creek water levels.

Threats to arroyo toad populations remain basically the same as when it was listed in 1994 (Service 2009a). These threats include stream alteration, urban and rural development, mining, recreation, grazing, drought, wildfire, large flood events, and presence of exotic animal and plant species, such as the bullfrog (*Rana catesbeiana*), crayfish (*Procambarus* spp.), salt cedar (*Tamarix* spp.), and giant reed (*Arundo donax*). Threats to the arroyo toad identified subsequent to the listing are the chytrid fungus disease and wildfire suppression activities (Service 2009a).

Conservation needs, as described in the recovery plan, include protecting and managing breeding and non-breeding habitat throughout the range of the species, monitoring existing populations to ensure recovery actions such as exotics removal are successful, identifying additional toad habitat and populations, obtaining research data to guide management efforts, and conducting outreach and public education regarding the toad.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 79 the HCP Amendment will be implemented to avoid and/or minimize impacts to arroyo toad:

79. Arroyo Toad (*Anaxyrus californicus*)

a. Impacts from Covered Activities where there is a potential for arroyo toad to occur or in designated critical habitat with PBFs (ARTO-Habitat) shall be avoided through project design considerations (e.g., use of elevated roadway segment placed on top of the existing road surface), to the extent feasible. PBFs include:

i. Rivers or streams with hydrologic regimes that supply water to provide space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, and adult breeding toads. Breeding pools must persist a minimum of 2 months for the completion of larval development. However, due to the dynamic nature of southern California riparian systems and flood regimes, the location of suitable breeding pools may vary from year to year. Specifically, the conditions necessary to allow for successful reproduction of arroyo toads are:

(1) Breeding pools less than 6 inches deep;

(2) Areas of flowing water with current velocities less than 1.3 feet per second; and

(3) Surface water that lasts for a minimum of 2 months during the breeding season (a sufficient wet period in the spring months to allow arroyo toad larvae to hatch, mature, and metamorphose).

ii. Riparian and adjacent upland habitats, particularly low-gradient (typically less than 6%) stream segments and alluvial streamside terraces with sandy or fine gravel substrates that support the formation of shallow pools and sparsely vegetated sand and gravel bars for breeding and rearing of tadpoles and juveniles; and adjacent valley bottomlands that include areas of loose soil where toads can burrow underground, to provide foraging and living areas for juvenile and adult arroyo toads.

iii. A natural flooding regime, or one sufficiently corresponding to natural, that:

(1) Is characterized by intermittent or near-perennial flow that contributes to the persistence of shallow pools into at least mid-summer;

(2) Maintains areas of open, sparsely vegetated, sandy stream channels and terraces by periodically scouring riparian vegetation; and

(3) Also modifies stream channels and terraces and redistributes sand and sediment, such that breeding pools and terrace habitats with scattered vegetation are maintained.

iv. Stream channels and adjacent upland habitats that allow for movement to breeding pools, foraging areas, overwintering sites, upstream and downstream dispersal, and connectivity to areas that contain suitable habitat.

b. If impacts to ARTO-Habitat cannot be avoided, a Biologist shall survey ARTO-Habitat that has the potential to be impacted by Covered Activities following current USFWS protocols to determine species presence. If project timing does not allow for surveys, it shall be assumed that all ARTO-Habitat to be impacted is occupied.

c. If surveys determine that ARTO-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within ARTO-Habitat.

d. If surveys determine ARTO-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied ARTO-Habitat shall be mitigated per Section 5.5, Tables 5.3a and 5.3b.

e. When work shall occur within or adjacent to ARTO-Habitat, timing of Covered Activities shall be evaluated to ensure minimization of impacts to arroyo toad. A qualified Biologist shall provide recommendations to avoid and minimize impacts to this species. Recommendations shall be included in the PSR for USFWS review. Measures that may be implemented include, but are not limited to, the following:

i. A Biologist shall be present during construction as needed in order to avoid impacts to arroyo toad.

ii. A Biologist shall lead a worker environmental awareness training for crews and conduct a sweep of the work area prior to the beginning of work each day, as needed. If arroyo toad individuals are found, the individuals shall be relocated by a Biologist out of harm's way.

iii. A Biologist shall guide the crews to select an appropriate area for equipment and material staging that specifically excludes or minimizes any areas with the high potential for arroyo toad to occur.

iv. A Biologist shall escort construction vehicles along an overland travel route that minimizes potential impacts to sensitive species.

v. Covered Activities shall be designed to avoid or minimize the placement of equipment or personnel within the stream channel, on sand and fine gravel bars, on intermittent shallow pools, on banks, on sparsely vegetated sandy terraces, and/or on flats within waters of the United States. A qualified Biologist shall be present during construction within suitable habitat in order to avoid impacts, including to arroyo toad.

vi. Covered Activities within uplands that may support arroyo toad shall take place from approximately March 15 through August 15 when practicable during the arroyo toad breeding season when arroyo toads are typically more active and closer to breeding habitat.

vii. Covered Activities within stream channels that may support arroyo toad breeding shall take place from approximately August 16 through March 14 when practicable to avoid the arroyo toad breeding season. When practicable, Covered Activities shall be timed so that work within a stream channel is conducted when flows are at their lowest or are nonexistent.

viii. Where feasible, prior to clearing, grubbing, and construction, arroyo toad exclusionary fencing shall be installed around the perimeter of all work areas within potential arroyo toad breeding habitat and non-breeding habitat (typically within about 500 feet, but up to 0.7 mile, of breeding habitat) as determined by a qualified arroyo toad Biologist and USFWS.[15] In areas without water flows, the fence shall consist of woven nylon fabric or similar material at least 2 feet high, staked firmly to the ground. In areas with water flows, an appropriate fabric shall be used to permit water movement while restricting arroyo toads from entering the exclusion area. In areas where soils are suitable for burrowing, the lower 1 foot of material shall stretch outward along the ground and be secured with a continuous line of sandbags to prevent burrowing beneath the fence. Doubling this line (i.e., stacking sand or gravel bags two-deep) may reduce maintenance and should be considered to improve the integrity of the fencing. In areas where soils are not suitable for burrowing, (i.e., hardpack soils), fencing may be buried to reduce maintenance concerns and improve the integrity of the fencing over time. Decisions on the appropriate fencing installation method for a given reach shall be made by the qualified arroyo toad Biologist. All fencing shall be removed following completion of all project-related Covered Activities. Ingress and egress of equipment and personnel shall use a single access point to the site, which shall be as narrow as possible and closed off by exclusionary fence when personnel are not on the work site.

ix. Prior to vegetation grubbing or construction, but after exclusionary fence has been installed around the impact footprint where feasible, at least three surveys for arroyo toads of any life stages or clutches shall be conducted within the

[15] A qualified arroyo toad Biologist will be approved by USFWS and must be able to identify arroyo toad visually and vocally and should have experience in handling and translocating arroyo toads. In addition, the Biologist should be familiar with all life stages and habitat of the arroyo toad.

project footprint and/or fenced area by a qualified Biologist knowledgeable of arroyo toad biology and ecology. Surveys shall be conducted during the appropriate climatic conditions during the appropriate time of day or night to maximize the likelihood of encountering arroyo toads. If climatic conditions are not appropriate for arroyo toad movement during the surveys, a qualified Biologist may attempt to elicit a response from the arroyo toads, during nights (i.e., at least 1 hour after sunset) with temperatures above 50 degrees Fahrenheit (to the extent practicable depending on time of year), by spraying the project area with water to simulate a rain event. If arroyo toads of any life stages or clutches are found within the project area, they shall be captured and translocated, by the Biologist, to the closest area of suitable habitat. Before each workday begins, the qualified Biologist shall also check to see if arroyo toads have entered the impact footprint. If arroyo toads are found within the impact footprint, the individuals shall be moved outside of the impact footprint, if suitable habitat exists, or out of harm's way.

x. The qualified Biologist shall be present each morning before construction begins to inspect all arroyo toad exclusionary fencing for damage or holes, conduct a sweep of the work area for arroyo toad of any life stages, and inspect any covered stockpiles for gaps or sign that arroyo toads have accessed the soils underneath, and shall be present when these covers are removed. If burrows characteristic of arroyo toads are found, the burrows shall be hand excavated. The qualified Biologist shall relocate any arroyo toads found to suitable habitat adjacent to the construction site but at least 200 feet away.

xi. Nighttime construction shall be avoided in and/or adjacent to occupied ARTO breeding habitat. If critical work during nighttime hours is necessary, a biological monitor shall conduct a clearance survey of the access road and work areas within 500 feet of occupied ARTO breeding habitat year-round.

xii. In areas with the potential for arroyo toad, stockpiled soils shall be covered with plastic or other material at the end of each workday. Any covered stockpile edges shall be held in place by sandbag, fabric-wrapped wattles, or hydromulch at soil storage sites to avoid creating an attractive nuisance for toads.

xiii. Holes or trenches created by Covered Activities that have the potential to trap arroyo toads shall be covered with cover plates or other materials at the end of each workday. Holes or trenches that are covered shall have the edges sealed with sandbags, bricks, or boards to prevent arroyo toads from becoming trapped in holes or trenches. Sonotubes (i.e., round, concrete forming tubes) in lieu of hardware cloth nets may also be used to restrict arroyo toads from falling into open holes. The qualified Biologist shall inspect all holes and trenches (covered and uncovered) for the presence of arroyo toads prior to disturbance of soils or removal of cover plates. The qualified Biologist shall be present when the cover plates are removed and shall inspect and relocate any arroyo toads that may have entered the trench during the night to suitable habitat adjacent to the construction site but at least 200 feet away.

f. For new projects, impacts to arroyo toad and occupied ARTO-Habitat shall only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied arroyo toad breeding habitat. However, not all Modeled Habitat is expected to support arroyo toad occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the arroyo toad Modeled Habitat for breeding habitat, there are approximately 26,702 acres present within the Plan Area and approximately 1,176 acres within the PIZ associated with existing SDG&E Facilities (Table 12). Because there is no existing model of arroyo toad upland non-breeding habitat, we used areas mapped as grassland, agriculture, coastal sage scrub, and chaparral to "model" the extent of suitable arroyo toad upland non-breeding habitat within the Plan Area. Based on this analysis, there are approximately 1,183,766 acres of non-breeding Modeled Habitat present within the Plan Area and approximately 37,081 acres within the PIZ associated with existing SDG&E Facilities. Arroyo toads are generally known to forage and burrow in areas with friable soils up to 0.93 mile away from, and 82 feet in elevation above, the stream channel (Service 2011b). Therefore, the overall extent of upland non-breeding habitat within the Plan Area is overestimated as it includes grassland, agriculture, coastal sage scrub and chaparral habitats without consideration based on distance from the stream channel. There is no suitable habitat for this species on the Moreno Compressor Station property.

In San Diego County, the three ecoregions with the highest acreages of arroyo toad Modeled Habitat are the northern valley, north coast, and central foothills ecoregions. In the Plan Area in Orange County, the highest acreage of arroyo toad Modeled Habitat can be found in the Orange County foothill and valley ecoregion.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 72 and 31 arroyo toad occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

In San Diego County, large populations occur on MCBCP within Cristianitos Creek, San Mateo Creek, and Talega Creek in the San Mateo Watershed and in the Santa Margarita River from just west of Fallbrook to just north of Wire Mountain. The species also historically has occurred in large numbers along the San Luis Rey River near Rincon Reservation and from Pala Reservation to Bonsall. It also occurs in the upper reaches of the San Luis Rey River near Warner Springs. Another major population occurs within the Temescal Creek in Pamo Valley and continues down to where the creek joins Santa Ysabel Creek as well as down to the confluence of Santa Maria Creek. Other large populations occur upstream of these areas in the Ramona grasslands and in Santa Ysabel Creek upstream of Lake Sutherland. Other population hotspots include San Vicente Creek, San Diego River upstream of El Capitan Reservoir, Sweetwater River through Cuyamaca State Park into Descanso, Pine Valley Creek west of Pine Valley, Cottonwood Creek and Kitchen Creek upstream of Lake Morena, Potrero Creek, lower Cottonwood Creek in Marron Valley, and along the upper reaches of Agua Caliente Creek.

In the Plan Area in Orange County, large populations of arroyo toads occur along San Juan Creek, Cristianitos Creek, and Gabino Creek.

The arroyo toad is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- San Diego MHCP Subregional NCCP/HCP
- Orange County Southern Subregional HCP
- SDCWA Subregional NCCP/HCP

Together, these HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 11,247 acres of Modeled Habitat occur within Preserves and 2,302 acres of Modeled Habitat occur within Proposed Preserves (collectively, 50 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 43 occurrences of arroyo toad recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species has a moderate potential to occur on SDG&E's Willow Glen mitigation lands but is not known or expected to occur at the Cielo or Otay Lakes mitigation lands.

The Plan Area and PIZ include a total of approximately 64,133 acres and 3,613 acres (1,331 acres with PBFs), respectively, in Units 10a, 11a and b, 12a and b, 13a and b, 14, 15, 16a and d, 17a, b, and d, 18a and c, and 19a-e of designated critical habitat for the arroyo toad. These units: may function as an important linkage between arroyo toad populations (Units 10, 18 and 19); support large arroyo toad populations in close proximity to the coast (Unit 11); support large arroyo toad populations in proximity and connection to other large arroyo toad populations (Unit 12); provide potential links to arroyo toad populations and other nearby drainages (Unit 13); support one of the largest contiguous river reaches that is occupied by the species (Unit 14); support a unique assemblage of small, disjunct, high-elevation arroyo toad populations and one significant population (Unit 15); support large amounts of suitable habitat connecting large populations with several additional populations (Unit 16); support suitable habitat for population expansion (Unit 17); and encompass a large number of arroyo toads occurrences (Unit 19). Critical habitat within the Plan Area includes all PBFs needed for the arroyo toad. The PBFs may require special management considerations to ensure that aquatic and riparian upland habitats provide abundant breeding and non-breeding areas, prey species, shelter, and connectivity within the landscape.

The Plan Area is also within the Southern Recovery Unit identified in the recovery plan (Service 2011b). The Southern Recovery Unit provides essential features for maintaining the species' full range of genetic and phenotypic variation.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 20.31 acres arroyo toad breeding Modeled Habitat, which is a fraction of the 26,702 acres of arroyo toad breeding Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 9.62 acres of permanent impacts (0.04 percent of breeding Modeled Habitat in the Plan Area);
- Approximately 5.61 acres of temporary impacts (0.02 percent of breeding Modeled Habitat in the Plan Area); and
- Approximately 5.08 acres of Wildfire Fuels Management impacts (0.02 percent of breeding Modeled Habitat in the Plan Area).

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to impact up to 823.22 acres arroyo toad upland non-breeding Modeled Habitat, which is a fraction of the 1,183,766 acres of arroyo toad upland non-breeding Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 390.03 acres of permanent impacts (0.03 percent of upland non-breeding Modeled Habitat in the Plan Area);
- Approximately 227.46 acres of temporary impacts (0.02 percent of upland non-breeding Modeled Habitat in the Plan Area); and
- Approximately 205.73 acres of Wildfire Fuels Management impacts (0.02 percent of upland non-breeding Modeled Habitat in the Plan Area).

The total 843.53 acres (20.31 acres breeding and 823.22 acres non-breeding) of impacts represents about 0.07 percent of the combined breeding and non-breeding Modeled Habitat (0.08 percent breeding and 0.07 percent non-breeding) within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for arroyo toad. However, because arroyo toads are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[16] However, because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within an arroyo toad occurrence

[16] Up to 0.07 percent of the combined breeding and non-breeding Modeled Habitat within the Plan Area will be impacted, and there are an estimated 72 arroyo toad occurrences in the Plan Area. The product of 0.07 percent and 72 is less than one.

but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[17]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored may continue to provide habitat to meet the species' needs. No large-scale New Construction is expected, and New Construction projects that impact arroyo toad and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to arroyo toad will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of arroyo toads (i.e., they are not known to occur in most creeks and rivers) within the Plan Area and their specific habitat requirements (i.e., upland areas with friable soils up to 0.93 mile from, and 82 feet above, occupied stream channels) we anticipate that only limited areas within Modeled Habitat support occurrences of arroyo toad. Therefore, it is likely that substantially less than 843.53 acres of occupied arroyo toad habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some arroyo toad adults, eggs, tadpoles, and juveniles could be killed or injured from crushing and trampling within up to 843.53 acres of arroyo toad Tracked Habitat (20.31 acres breeding and 823.22 acres non-breeding) that is impacted in association with the Covered Activities. Arroyo toads may also be trapped in stockpiled soils, holes, and trenches created by Covered Activities, especially at night when they are active.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of arroyo toad habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 79 for arroyo toad are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a 15 miles-per-hour speed limit shall be observed on dirt access roads (OP 2), a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to arroyo toad, as specified in OP 79 include: avoid impacts to the extent feasible through project design considerations (e.g., use of elevated roadway segment placed on top of the existing road

[17] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

surface); biological monitoring; conduct Covered Activities within suitable habitat during times that minimize potential for take; install exclusionary fencing when feasible; avoid night-time construction; cover soil stockpiles, holes and trenches; and survey for and relocate any arroyo toads found in the project area.

Because of the extended time period over which the proposed activity will occur, the dispersed nature of the proposed activities, and dramatic fluctuations in the numbers and densities of individual arroyo toads of different life history stages on a seasonal and annual basis, it is not possible to quantify exactly how many arroyo toads may be subject to capture, handling, and relocation. Regardless, the numbers of arroyo toads relocated should be low due to the limited extent of Covered Activities. We are not limiting the number of arroyo toads that will be moved pursuant to this biological opinion since this is a conservation measure intended to move individuals out of harm's way. However, the number of arroyo toads observed within project footprints will be reported to the Service annually. Although some arroyo toads could be killed, injured, or stressed during capture, handling, and relocation, these actions will minimize the likelihood that arroyo toads will be killed or injured during implementation of Covered Activities.

Unavoidable temporary impacts to arroyo toad occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to arroyo toad occupied habitat will be mitigated at a 1:1 to 3:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of arroyo toad habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual arroyo toads within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of arroyo toads within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the arroyo toad.

Because Covered Activities will impact a small fraction of the arroyo toad habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of arroyo toads within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation, and Habitat Fragmentation

The arroyo toad could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to arroyo

toad include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation.

Changes to hydrology, such as stream alteration or increasing urban runoff, can remove or alter arroyo toad aquatic habitat. Erosion, sedimentation, runoff and leaks and spills from project construction and new facilities could adversely impact arroyo toads by smothering eggs and contaminating the water in riparian habitats used by this species for reproduction. Measures will be implemented to minimize changes to hydrology and water quality, erosion, sedimentation, and runoff (OP 16, 19, 20, 22, 28, 39 and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23).

Project construction and new facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for arroyo toad. Night lighting can modify the behavior of snakes and other nocturnal animals (Lieberman 2002) and may have adverse impacts to arroyo toad. To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats, and any permanent lighting will be directed away and/or shielded so as not to illuminate habitats (OP 25),

The ground disturbance and landscaping associated with Covered Activities may facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants may out-compete and exclude native plants potentially altering the structure of the vegetation, degrading or eliminating upland habitat used by arroyo toad, and providing food and cover for non-native animals (Bossard et al. 2000). Furthermore, the increased irrigation required by many common landscaping plants may provide suitable conditions for the establishment of introduced Argentine ants (*Linepithema humile*) within the adjacent habitat areas. Argentine ants can build large colonies and eliminate the native ant fauna that is a major food source of the arroyo toad (Ward 1987, Holway 1995, Human and Gordon 1997). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of arroyo toads.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, is expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager

and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting arroyo toad dispersal/movement corridors that contribute to long-term population viability for arroyo toads. However, no large-scale New Construction is expected that could cause significant habitat fragmentation, and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in arroyo toad survival or reproduction beyond baseline conditions.

Effects to Critical Habitat

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to a total of 38.7 acres of arroyo toad critical habitat with PBFs within Units 10a, 11a and b, 12a and b, 13a and b, 14, 15, 16a and d, 17a, b, and d, 18a and c, and 19a-e, which is a fraction of the 64,133 acres of arroyo toad critical habitat within the Plan Area. These impacts will include:

- Approximately 18.36 acres of permanent impacts (0.02 percent of critical habitat in the Plan Area);
- Approximately 10.7 acres of temporary impacts (0.01 percent of critical habitat in the Plan Area); and
- Approximately 9.68 acres of Wildfire Fuels Management impacts (0.01 percent of critical habitat in the Plan Area).

This impact represents about 0.04 percent of the overall arroyo toad critical habitat designation. Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ. Therefore, impacts to each critical habitat unit are also expected

to be minor. Potential adverse effects of changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation due to Covered Activities could also impact arroyo toad critical habitat.

Impacts to arroyo toad critical habitat will be avoided, if possible, during the planning process. If permanent impacts to critical habitat cannot be avoided, then SDG&E will first attempt to mitigate with credits in the existing mitigation lands that have critical habitat for the same species or acquire other lands that are designated as critical habitat. If no critical habitat is available from the existing or additional acquired mitigation lands, SDG&E will acquire, restore, and/or enhance mitigation land that will benefit the arroyo toad and/or its critical habitat, with the concurrence of the Service (Section 5.4.2 of the HCP Amendment). In addition, any new Facility that would impact more than 1.75 acres of critical habitat would require a Minor Amendment.

For the same reasons discussed in the species-specific analysis above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in functioning of arroyo toad critical habitat beyond baseline conditions.

Based on the above, we do not expect Covered Activities to impair the functions of Units 10a, 11a and b, 12a and b, 13a and b, 14, 15, 16a and d, 17a, b, and d, 18a and c, 19a-e, and the overall arroyo toad critical habitat designation, as sufficient areas will remain within the Plan Area to support core populations and all dispersal/movement corridors that contribute to long-term population viability for the arroyo toad.

Effect on Recovery

The Plan Area is in the Southern Recovery Unit identified in the recovery plan (Service 1999a). The recovery plan identifies the need to protect existing and establish additional self-sustaining metapopulations of arroyo toads within the Southern Recovery Unit. The wetland and upland habitats included in the Plan Area are part of a system that provides important breeding, feeding, and sheltering habitat for the arroyo toad.

The HCP Amendment does not conflict with the goals and objectives of the recovery plan. Although the proposed Covered Activities will impact wetland and upland habitats that may be used by the arroyo toad for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. These impacts will be mitigated through the conservation, restoration/ enhancement, and in-perpetuity management of occupied arroyo toad habitat. These mitigation lands and restoration/enhancement are expected to result in a no “net loss” of habitat and support recovery of the arroyo toad.

The proposed conservation and restoration/enhancement of suitable arroyo toad habitat, and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with the arroyo toad recovery plan Task 1 (i.e., populations should be secured by protecting, maintaining, restoring and enhancing breeding and upland habitats). Therefore, the breeding, feeding, and sheltering functions degraded or

destroyed due to unavoidable impacts to arroyo toad habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan.

We expect no more than 843.53 acres (20.31 acres breeding and 823.22 acres non-breeding) of arroyo toad Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the arroyo toad habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any arroyo toad population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the arroyo toad and will not result in the destruction or adverse modification of its critical habitat. We base these conclusions on the following:

1. The current range of arroyo toad includes Monterey County southward into Baja California; thus, the action area for the HCP Amendment represents only a portion of the species' rangewide distribution.

2. Impacts will be limited to no more a total of 843.53 acres (20.31 acres breeding and 823.22 acres non-breeding) of arroyo toad Tracked Habitat, which represents about 0.07 percent of the of the combined breeding and non-breeding Modeled Habitat (0.08 percent breeding and 0.07 percent non-breeding) for arroyo toad in the Plan Area.

3. Based on the known distribution of arroyo toads within the Plan Area and their specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of arroyo toad. Therefore, it is likely that substantially less than 843.53 acres of occupied arroyo toad habitat will be impacted.

4. General and species-specific OPs will reduce the likelihood that individual arroyo toads will be harmed by Covered Activities.

5. Covered Activities could result in the loss of PBFs within up to 38.7 acres of arroyo toad critical habitat, which represents only 0.04 percent of the overall designation.

6. Loss of PBFs from Covered Activities within small project footprints distributed throughout the Plan Area are not expected to impair the function of the overall critical habitat designation, as sufficient areas will remain within the Plan Area to support core populations and all dispersal/movement corridors that contribute to long-term population viability for the arroyo toad.

7. Impacts to arroyo toad and its critical habitat will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at existing or acquired mitigation lands that are occupied or have critical habitat or through the R/E Program or measures that will benefit this species or its critical habitat. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan.

8. Because Covered Activities will affect a small proportion of arroyo toad habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by arroyo toad, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of arroyo toad in the Plan Area or rangewide.

9. Long-term management and monitoring of mitigation lands will help arroyo toad in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

California red-legged frog (Rana draytonii)

Status of the Species

The California red-legged frog (*Rana draytonii*) is listed as threatened under the Act. The species is considered a California Species of Special Concern by the CDFW (CNDDB 2022). In 2022, the Service completed the Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*) (Service 2022b) and a 5-year review addressing the status of the California red-legged frog (Service 2022b), which recommended no change in the status of the species.

Species Description

The California red-legged frog is the largest native frog in the western United States (Wright and Wright 1949). Adult females attain a significantly longer body length than males (5.4 inches versus 4.5 inches snout-urostyle length) (Hayes and Miyamoto 1984). The posterior abdomen and hind legs of adults are often red or salmon pink; the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish-brown background color. Dorsal spots usually have light centers (Stebbins 1985). Dorsolateral folds (the ridges of skin along the back) are prominent. Larvae (tadpoles) range from 0.6 to 3.1 inches in length, and the background color of the body is dark brown or olive with darker spots (Storer 1925). A line of very small, indistinct gold-colored spots becomes the dorsolateral fold (Rathbun 1998). The California red-legged frog has paired vocal sacs and calls in air. The advertisement calls happen for 1-2 weeks and is typically 5-7 weak sounding ‘uh’ notes, sometimes ending with a growl or groan. Juveniles tend to be active diurnally and nocturnally, whereas adult frogs are largely nocturnal (Hayes and Tennant 1985).

Habitat Affinities

California red-legged frogs live in a Mediterranean climate, which is characterized by temporal and spatial changes in habitat quality. In addition to climatic fluctuations, the habitats used by this species typically change in extent and suitability in response to the dynamic nature of floodplain and fluvial processes (i.e., natural water flow and sedimentation regimes that, in flux, create, modify, and eliminate deep pools, backwater areas, ponds, marshes, and other aquatic habitats) (Scott and Rathbun 1998). Therefore, the frog uses a variety of areas, including various aquatic, riparian, and upland habitats.

Breeding adults are often associated with deep (greater than 2 feet) still or slow moving water and dense, shrubby riparian or emergent vegetation (Hayes and Jennings 1988), but frogs have been observed in shallow sections of streams that are not cloaked in riparian vegetation. Reis (1999) found the greatest number of tadpoles occurring in study plots with water depths of 10 to 20 inches. California red-legged frogs also frequently breed in artificial impoundments such as stock ponds, when there is proper management of hydroperiod, pond structure, vegetative cover, and control of non-native predators.

California red-legged frogs are sensitive to high water temperatures, and water with high salinity, such as coastal lagoons. Reis (1999) found that the proportion of study plots without tadpoles was greatest among plots with salinity levels greater than 6.6 parts per thousand. Early embryos of northern red-legged frogs are tolerant of temperatures only between 48 and 70 degrees Fahrenheit (Nussbaum *et al*. 1983). Observations by Steven Bobzien (pers. comm. 1998) indicated that California red-legged frogs were absent when temperatures exceed 70 degrees Fahrenheit, particularly when the temperature throughout a pool was this high and there are no cool, deep portions.

The manner in which California red-legged frogs use upland habitats is not well understood. Some individuals may move through upland habitats during periods of wet weather, or, if their pond is receding, during dry weather. Individuals have been observed traveling more than 2 miles, straight-line, point to point to other water sources without regard to topography, vegetation type, or riparian corridors (Bulger 1998). Individuals have been found up to 100 feet from water in adjacent dense riparian vegetation, for up to 77 days (Rathbun et al. 1993). Riparian vegetation provides moisture and cover for foraging and may facilitate dispersal in addition to providing pools and backwater aquatic areas for breeding.

If water is not available, California red-legged frogs will seek refugia under boulders, rocks; organic debris, such as downed trees or logs; industrial debris; small mammal burrows; incised stream channels; large cracks in the bottom of dried ponds; and agricultural features, such as drains, watering troughs, abandoned sheds, or hay-ricks;

Life History

The California red-legged frog breeds from November through early April and deposits egg masses of 2,000-5,000 dark reddish brown eggs on emergent vegetation so that the masses float on the surface of the water (Storer 1925, Hayes and Miyamoto 1984). Eggs require approximately 20-22 days to develop into tadpoles, and tadpoles require 11 to 20 weeks to

develop into terrestrial frogs, although sometimes the tadpoles will overwinter (Bobzien *et. al.* 2000, Storer 1925, Wright and Wright 1949). Egg predation is infrequent, although some eggs are susceptible to being washed away by high stream flows; most mortality probably occurs during the tadpole stage (Licht 1969). Aquatic larvae are herbivorous, while adults often prey on aquatic and terrestrial insects, worms, snails, fish, tadpoles, small frogs, and small mammals (Morey 2008). Sexual maturity can be attained at 2 years of age by males and 3 years of age by females (Jennings and Hayes 1985); adults may live 8 to 10 years (Jennings et al. 1992), although the average life span is probably much lower (Norman Scott, pers. comm. 1998). Schmieder and Nauman (1994) reported that California red-legged frog larvae are highly vulnerable to fish predation, especially immediately after hatching, when the nonfeeding larvae are relatively immobile.

Status and Distribution

In 1996, the Service listed the subspecies *R. aurora draytonii* as threatened under the Act (Service 1996a). Subsequently, Shaffer et al. (2004) used genetic data to differentiate *R. aurora* into two distinct species: northern red-legged frog (*R. aurora*) and California red-legged frog (*R. draytonii*). In 2010, the Service formally recognized full species status for *R. draytonii* in its final rule designating critical habitat for the species (Service 2010a).

It is believed that before the arrival of Europeans on the west coast of North America, the California red-legged frog was common in coastal habitats from the vicinity of Point Reyes National Seashore, Marin County, California, and inland from the vicinity of Redding, Shasta County, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1985, Hayes and Krempels 1986). Its known elevational range extends from near sea level to about 5,200 feet, and nearly all sightings have occurred below 3,500 feet (Natural Diversity Database 2001). The species has been extirpated from 70 percent of its former range and now is found primarily in coastal drainages of central California, from Marin County, California, south to northern Baja California, Mexico, and in isolated drainages in the Sierra Nevada, northern Coast, and northern Transverse Ranges (Service 1996a). Populations remain in approximately 256 streams or drainages in 28 counties (Service 2002a).

California red-legged frogs were extirpated from San Diego County, but recently reintroduced on the Wheatley Ranch in Mesa Grande (USGS 2020; Heil 2021). This species was recommended for coverage under the currently in development North County Multiple Species Conservation Plan. The Service has developed multiple safe harbor agreements to address concerns about introducing and managing California red-legged frogs on private party throughout much of its range (Service 2022b). In 2021, the Service completed a programmatic safe harbor agreement that covers the species historic range in southern California, including San Diego County (Service 2021d).

Threats and Conservation Needs

California red-legged frogs require aquatic habitat such as streams, marshes, and ponds for survival; therefore, this species is particularly vulnerable to habitat loss and hydrology alteration, both of which have drastically reduced the population. Habitat loss and degradation due to urban development, agricultural practices, timber harvesting, mining, livestock grazing, off-road

vehicle recreation, and water management practices are the cumulative threats to California red-legged frog populations across the state (Service 2002a). Other cumulative threats include overexploitation, disease, predation by nonnative species, drought, and pesticide contamination (Service 2002a). Additional mortality of California red-legged frogs is likely near developed areas from vehicle strikes and predation from invasive species. Due to fragmentation, populations in coastal areas south of Santa Barbara County currently are separated from one another by tens of kilometers and likely do not exchange migrants (Richmond et al. 2013).

As documented in the Service's five-year review of the status of California red-legged frogs, although comprehensive surveys of California red-legged frog habitat and populations have not been conducted, it is likely that habitat quality and survival and reproduction of individuals have declined relative to historical conditions and conditions at the time of listing (Service 2022b). Development has reduced habitat quality by increasing human encroachment, reducing water availability because of water withdrawals, and introducing and spreading invasive plant and animal species, particularly crayfish and bullfrogs. Additionally, regional climate change has led to a generally warmer and drier climate, which has reduced the amount and duration of ponding water supporting California red-legged frogs (Service 2022b).

Conservation needs for the species identified in recovery plan include developing a range-wide monitoring program, working with public and private landowners to protect habitat and extant populations of California red-legged frogs (including minimizing indirect effects of agriculture on adjacent habitat), controlling non-native predators within occupied habitat, identifying suitable sites for reintroduction, and working with public and private landowners to facilitate reintroductions within suitable habitat (Service 2022b).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 80 the HCP Amendment will be implemented to avoid and/or minimize impacts to the California red-legged frog:

80. California Red-legged Frog (*Rana draytonii*)

    a. Impacts from Covered Activities where there is a potential for California red-legged frog to occur (CRLF-Habitat)[18] shall be avoided through project design considerations, to the extent feasible. CRLF-Habitat includes:

        i. wetlands, both natural and altered, including ponds, rivers and creeks that are suitable for breeding and upland habitat within a 325-foot buffer from water.

    b. If impacts to CRLF-Habitat cannot be avoided, a Biologist shall survey CRLF-Habitat that has the potential to be impacted by Covered Activities following current USFWS protocols to determine species presence. If project timing does not allow for surveys, it shall be assumed that all CRLF-Habitat to be impacted is occupied.

[18] This species was previously extirpated from the Plan Area and reintroduced to a single locale in March of 2020. Assessment of potential habitat shall consider the vicinity of the habitat to known locations.

c. If surveys determine that CRLF-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Tables 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within CRLF-Habitat.

d. If surveys determine CRLF-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied CRLF-Habitat shall be mitigated per Section 5.5, Tables 5.3a and 5.3b.

e. Covered Activities within wetlands that may support California red-legged frog breeding shall take place from approximately April 16 through October 31 when practicable to avoid the California red-legged frog breeding season (i.e., time period when eggs and tadpoles are absent).

f. Nighttime construction shall be avoided in and/or adjacent to occupied CRLF-Habitat. If critical work during nighttime hours is necessary, a biological monitor shall conduct a clearance survey of the access road and work areas within 325 feet of occupied breeding Habitat year-round.

g. Within 14 days prior to the onset of construction, a qualified Biologist shall conduct preconstruction surveys for California red legged frog within areas that fall within 300 feet of any suitable aquatic habitat for this species. If California red-legged frogs are observed during the preconstruction survey, they shall be avoided to the greatest extent practicable. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

h. For new projects, impacts to California red-legged frog and its habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied California red-legged frog habitat. However, not all Modeled Habitat is expected to support California red-legged frog occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. As discussed above in the Habitat Affinities section, California red-legged frogs may use upland habitats and have been observed traveling more than 2 miles, straight-line, point to point to other water sources without regard to topography, vegetation type, or riparian corridors. The landscape-level vegetation mapping available for Modeled Habitat analysis did not capture specific vegetation communities relative to each other (i.e., upland vegetation within 2 miles of wetland vegetation). Therefore, to avoid further overestimating the extent of suitable habitat, we did not include non-wetland vegetation communities in our estimate of Modeled Habitat for this species.

Based on the California red-legged frog Modeled Habitat, there are approximately 61,071 acres present within the Plan Area and approximately 2,620 acres within the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the three ecoregions with the highest acreages of California red-legged frog habitat are the northern mountain, central foothills, and northern valley ecoregions. In the Plan Area in Orange County, the highest acreage of California red-legged frog Modeled Habitat can be found in the Orange County foothill and valley ecoregion. There is no suitable habitat for this species on the Moreno Compressor Station property.

As previously noted, this species is extirpated from the Plan Area and there are no recent Service or CNDDB locations within the Plan Area. However, red-legged frogs were recently reintroduced on the Wheatley Ranch in San Diego County (USGS 2020; Heil 2021).

The California red-legged frog is covered by the following existing regional HCP that overlaps the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)

This HCP forms a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 32,894 acres of Modeled Habitat occur within Preserves and 4,025 acres of Modeled Habitat occur within Proposed Preserves (collectively, 58 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. This species is not known or expected to occur on existing SDG&E mitigation lands, however California red-legged frogs Modeled Habitat is found on the Cielo and Willow Glen mitigation lands.

The Plan area includes the Southern Transverse and Peninsular Ranges Recovery Unit, and the Santa Rosa Plateau, San Luis Rey, Sweetwater, and Laguna Mountain Core Areas, identified in the recovery plan (Service 2002a). Core Areas represent a system of areas that, when protected and managed for California red-legged frogs, will allow for long-term viability of existing populations and reestablishment of populations within the historic range.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to impact up to 45.25 acres of California red-legged frog Modeled Habitat, which is a fraction of the 61,071 acres of California red-legged frog Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 21.44 acres of permanent impacts (0.04 percent of Modeled Habitat in the Plan Area);

- Approximately 12.5 acres of temporary impacts (0.02 percent of Modeled Habitat in the Plan Area); and

- Approximately 11.31 acres of Wildfire Fuels Management impacts (0.02 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.08 percent of Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for California red-legged frog. However, because California red-legged frogs are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

Currently there is only one known occurrence of California red-legged frogs in the Plan Area and implementation of Covered Activities is not anticipated to impact that occurrence. However, in the future there may be unknown or reintroduced occurrences that may be impacted by Covered Activities. Because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within an California red-legged frogs occurrence but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[19]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored may continue to provide habitat to meet the species' needs. No large-scale New Construction is expected, and New Construction projects that impact California red-legged frogs and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to California red-legged frogs will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of the California red-legged frog within the Plan Area (i.e., they are only known to occur at the Wheatly Ranch reintroduction site), we do not anticipate any impacts to currently occupied California red-legged frog habitat. Even if California red-legged frogs disperse or are introduced to more locations in the future, based on its specific habitat requirements [i.e., ponds or streams that have deep (greater than 2 feet) still or slow moving water and dense, shrubby riparian or emergent vegetation] we anticipate that only limited areas within Modeled Habitat could potentially support occurrences of California red-legged frog. Therefore, it is likely that substantially less than 45.25 acres of occupied California red-legged frog habitat will be impacted in the future.

[19] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

We do not expect impacts to the California red-legged frogs at the Wheatly Ranch reintroduction site. However, if California red-legged frogs disperse or are introduced to more locations in the future we anticipate that some individual California red-legged frog eggs, tadpoles, adults, and juveniles could be killed or injured from crushing and trampling within up to 45.25 acres of California red-legged frog Tracked Habitat that is impacted in association with the Covered Activities. California red-legged frogs may also be trapped in stockpiled soils, holes, and trenches, created by Covered Activities, especially at night when they are active. Management and monitoring activities on mitigation lands could result in minor, temporary loss of California red-legged frog habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 80 for California red-legged frog are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a 15 miles-per-hour speed limit shall be observed on dirt access roads (OP 2), a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to California red-legged frogs habitat, as specified in the OP 80 include: avoid impacts to the extent feasible through project design considerations; biological monitoring; if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location; and avoid night-time construction;.

Because of the extended time period over which the proposed activity will occur, the dispersed nature of the proposed activities, and dramatic fluctuations in the numbers and densities of individual California red-legged frogs of different life history stages on a seasonal and annual basis, it is not possible to quantify exactly how many California red-legged frogs may be subject to capture, handling, and relocation. Regardless, the numbers of California red-legged frogs relocated should be low due to the limited extent of construction activities. We are not limiting the number of California red-legged frogs that will be moved pursuant to this biological opinion since this is a conservation measure intended to move individuals out of harm's way. However, the number of California red-legged frogs observed within project footprints will be reported to the Service annually. Although California red-legged frogs could be killed, injured, or stressed during relocation efforts, relocation will minimize the likelihood that California red-legged frogs will be killed or injured during implementation of Covered Activities.

Unavoidable temporary impacts to California red-legged frog occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to California red-legged frog occupied habitat will be mitigated at a 1:1 to 3:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping)

over time. Mitigating the loss of California red-legged frog habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual California red-legged frogs within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of California red-legged frogs within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the California red-legged frog.

Because Covered Activities will impact a small fraction of the California red-legged frog habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of California red-legged frogs within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation and Habitat Fragmentation

The California red-legged frog could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to California red-legged frogs include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species predation and habitat fragmentation.

Changes to hydrology, such as stream alteration or increasing urban runoff, can remove or alter the California red-legged frog aquatic habitat. Erosion, sedimentation, runoff and leaks and spills from project construction and new facilities could adversely impact California red-legged frogs by smothering eggs and contaminating the water in riparian habitats used by this species for reproduction. Measures will be implemented to minimize changes to hydrology and water quality, erosion, sedimentation and runoff (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23).

Project construction and new facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for California red-legged frogs. Night lighting can modify the behavior of snakes and other nocturnal animals (Lieberman 2002) and may have adverse impacts to arroyo toad. To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety,

selectively placed, shielded and directed away from natural habitats, and any permanent lighting will be directed away and/or shielded so as not to illuminate habitats (OP 25),

The ground disturbance and landscaping associated with Covered Activities may facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants may out-compete and exclude native plants potentially altering the structure of the vegetation, degrading or eliminating upland habitat used by the California red-legged frogs, and providing food and cover for non-native animals (Bossard et al. 2000). Furthermore, the increased irrigation required by many common landscaping plants may provide suitable conditions for the establishment of introduced Argentine ants (*Linepithema humile*) within the adjacent habitat areas. Argentine ants can build large colonies and eliminate the native ant fauna that is a major food source of the California red-legged frog (Ward 1987, Holway 1995, Human and Gordon 1997). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of California red-legged frogs.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, is expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting or precluding California red-legged frog dispersal/movement corridors that could contribute to long-term population viability for the California red-legged frog. Existing facilities such as access roads may limit California red-legged frog dispersal from new occurrences to adjoining suitable habitat. However, no large-scale New Construction is expected that could cause significant habitat fragmentation, and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation and habitat fragmentation due to Covered Activities are not likely to result in a decrease in California red-legged frog survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area is in the Southern Transverse and Peninsular Ranges Unit identified in the recovery plan (Service 2002a). The recovery plan identifies the need to protecting existing populations by reducing threats; restoring and creating habitat that will be protected and managed in perpetuity; surveying and monitoring populations The wetland habitats included in the Plan Area are part of a system that provides important breeding, feeding, and sheltering habitat for the California red-legged frogs.

The HCP Amendment does not conflict with the goals and objectives of the recovery plan. Although the proposed Covered Activities will impact riparian habitats that may be used by the California red-legged frog for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. These impacts will be mitigated through the conservation, restoration/ enhancement and in-perpetuity management of California red-legged frog habitat. These mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the California red-legged frog.

The proposed conservation and restoration/enhancement of suitable California red-legged frog habitat, and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with the California red-legged frogs recovery plan Tasks 1, 2 and 3 (i.e., develop and implement watershed management and protection plans for core areas, and priority 2 and 3 watersheds). Therefore, the breeding, feeding, and sheltering functions degraded or destroyed due to unavoidable impacts to California red-legged frog habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan.

We expect no occupied habitat and no more than 45.25 acres of California red-legged frog Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the California red-legged frog habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any California red-legged frog population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the California red-legged frog. We base these conclusions on the following:

1. The current range of California red-legged frog includes Marin County, California southward into Baja California; thus, the action area for the HCP Amendment represents only a portion of the species' rangewide distribution.

2. Impacts will be limited to no more a total of 45.25 acres of California red-legged frog Tracked Habitat, which represents about 0.08 percent of Modeled/Habitat for the California red-legged frog in the Plan Area.

3. Based on the known distribution of California red-legged frog within the Plan Area and their specific habitat requirements, we anticipate that only limited areas within Modeled Habitat could support occurrences of California red-legged frogs. Therefore, it is likely that substantially less than 45.25 acres of occupied California red-legged frog habitat will be impacted.

4. General and species-specific OPs will reduce the likelihood that individual California red-legged frogs will be harmed by Covered Activities.

5. Because Covered Activities will affect a small proportion of the California red-legged frog habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by California red-legged frogs, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of California red-legged frogs in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help California red-legged frog in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Unlisted Amphibians

Western Spadefoot (Scaphiopus hammondii)

Status of the Species

Listing Status

The western spadefoot (*Scaphiopus hammondii*) is currently being evaluated for listing under the Act and is a CDFW Species of Special Concern (Service 2015b, CNDDB 2022).

Species Description

The western spadefoot is a small (approximately 1.0 to 1.5 inches), dusky green to gray toad of the family *Pleobatidae*. The western spadefoot often has four irregular, light-colored stripes on the back, skin tubercles tipped with orange or red, and a whitish to light gray venter lacking markings (Stebbins 2003). Western spadefoot are distinguished from true toads (genus *Bufo*) by their vertically elliptical pupils, the presence of a wedge-shaped, glossy black spade on their hind

feet, teeth in their jaws, and rather smooth skin. The vocalization of the western spadefoot is hoarse or snorelike and approximately 0.5 to 1 second in duration (Stebbins 2003).

Habitat Affinities

Western spadefoot may be found in coastal sage scrub, chaparral, and grasslands habitats, but it is most common in grasslands or mixed grassland/coastal sage scrub with vernal pools and areas of open vegetation and short grasses where the soil is sandy or gravelly (Holland and Goodman 1998). Within these habitats, western spadefoot requires rain pools with water temperatures between 48 degrees and 86 degrees Fahrenheit, in which to reproduce (Brown 1966, 1967) and that persist with more than 3 weeks of standing water (Feaver 1971), in which to metamorphose successfully. Additionally, according to Holland and Goodman (1998), riparian habitats with suitable water resources may also be used. Rain pools must lack fish, bullfrogs, and crayfish for western spadefoot to successfully reproduce and metamorphose (Jennings and Hayes 1994). Though not observed specifically for this taxon, soil characteristics of burrow refuge sites likely become fairly hard and compact during the period of summer estivation (Jennings and Hayes 1994, Ruibal et al. 1969). Western spadefoot aestivate in upland habitats adjacent to potential breeding sites in burrows approximating 3.3 feet in depth (Stebbins 1972). The distance that western spadefoot range from aquatic resources for dispersal and aestivation has wide spatiotemporal variation. Halstead et al. (2021) found adult western spadefoot home ranges to be from <1 acre to >15 acres, with most individuals found within 1,535 feet of their breeding pool; the maximum observed distance from a breeding pool was 1,972 feet, but during another study at the same location during a dry year, the maximum distance observed was only 869 feet (Baumberger et al. 2019).

Life History

Western spadefoot tadpoles consume planktonic organisms and algae, but they are also carnivorous and will forage on dead vertebrates and invertebrates (Bragg 1964). Also, western spadefoot tadpoles are known to pursue and eat fairy shrimp (Bragg 1962).

Adult western spadefoot are known to consume butterfly and moth larvae, beetles, termites, and ants (Dimmitt and Ruibal 1980a). Additional food items include crickets, flies, ants, earthworms, and other invertebrates (Stebbins 1972). Western spadefoot are able to consume approximately 11 percent of their body mass at a single foraging event (Dimmitt and Ruibal 1980a).

Western spadefoot are almost entirely nocturnal (Holland and Goodman 1998), with most above ground movement and breeding occurring during rainy nights (Ziener *et al*. 1988). Typically, western spadefoot are not found above the surface, instead they are found in underground burrows for most of the year (Stebbins 1972). Western spadefoot remain underground 8 to 10 months of the year (Jennings and Hayes 1994, Holland and Goodman 1998, Storey *et al*. 1999) following which adults emerge from underground burrows during relatively warm (>/=50 degrees to 55 degrees Fahrenheit) rainfall events to breed, typically from January through March; however, they may also emerge in any month between October and April if rain thresholds are met (Stebbins 1972, Morey and Guinn 1992, Jennings and Hayes 1994, Holland and Goodman 1998).

The western spadefoot breeds during the winter (January through May) in ephemeral ponds and vernal pools with water temperatures between 48 degrees and 86 degrees Fahrenheit (State of California 2006). During the dry season of the year, western spadefoot live beneath the soil surface in burrows in upland habitats adjacent to the pools. Western spadefoot tadpoles exhibit numerous adaptations for breeding in temporary pools: rapid embryonic and larval development, tadpole cannibalism, production of growth inhibitors by tadpoles, and high heat tolerance of tadpoles (Low 1976). After periods of warm rains, western spadefoot emerge from burrows and form explosive and sometimes large (>1,000 individuals; Jennings and Hayes 1994) aggregations. This typically occurs in late-winter and early-spring, but such events may also occur during the fall (Storer 1925, Feaver 1971, Jennings and Hayes 1994). Holland and Goodman (1998) note that breeding efforts are probably tied to the amount of rainfall. Eggs are deposited in irregular small clusters, about 9.8 to 11.8 inches in diameter (Holland and Goodman 1998), attached to vegetation or debris (Storer 1925) in shallow temporary pools or sometimes ephemeral streamcourses (Stebbins 1985, Jennings and Hayes 1994).

Status and Distribution

Western spadefoot is a California near endemic, ranging from Shasta County southward into Baja California (Stebbins 1985). This species occurs west of the coastal ranges southward from Point Conception to northern Baja California, Mexico, and northward in the Central Valley and southern Coast Ranges of California (Zeiner et al. 1988). Its known elevation range extends from near sea level to 4,921 feet (Zeiner *et al*. 1988, Ervin et al. 2001). Estimates of loss of historical habitat range from 30 percent in northern California to 80 percent in southern California (Jennings and Hayes 1994).

The range of the western spadefoot in San Diego County may closely follow the vernal pool habitat along the coast and foothills, including areas such as Otay Mesa, Kearny Mesa, Del Mar Mesa, and the Ramona Airport. This species is also found within playas, vernal pools, and other suitable habitat within western Riverside County.

Protocol surveys for western spadefoot in southern California were conducted by the USGS in 2016, 2019, and 2020 (Baumberger et al. 2020). Western spadefoot were detected at 55 of 239 historic pool locations (23 percent); 22 of the pools no longer exist, and 47 of the pools were dry at the time of surveys, despite average to above average rainfall. The USGS rapid assessment could indicate that other climatic variables such as temperature are limiting pool inundation to less than the 30 days required for larval development (Baumberger et al. 2020).

Threats and Conservation Needs

Western spadefoot are threatened by urbanization, road construction, off-road vehicular traffic, illegal dumping, livestock grazing, and other edge effects that degrade habitat quality. The continued placement of mosquito fish by mosquito abatement programs in rain pools threatens some populations (Jennings and Hayes 1994). Bullfrogs emigrating into rain pool breeding sites may also pose a threat (Hayes and Warner 1985, Morey and Guinn 1992). By far the largest threat is continued conversion of habitat in southern California. Grazing, off-road vehicles, mining, and projects which impact fluvial processes in burrow areas have a significant impact on local populations. Emergence from dormancy depends on low frequency sound caused by

rainfall events, but work completed by Dimmitt and Ruibal (1980b) showed that the vibration caused by an electric motor consistently induced 100 percent emergence from dormancy under very arid conditions.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following Vernal Pool and Road-Rut OPs (59-75) as well as OP 98 specific to western spadefoot in the HCP Amendment will be implemented to avoid and/or minimize impacts to the western spadefoot:

Vernal Pools (naturally occurring, non-man-made)

59. Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable. Vehicular traffic through dry vernal pools shall not be considered an impact that requires mitigation.

60. If impacts to vernal pool habitat cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for vernal pool Covered Species. If project timing does not allow for surveys, SDG&E shall confer with USFWS to determine if any vernal pool Covered Species should be assumed present.

61. If surveys determine a vernal pool is occupied (or is assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the occupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

62. If surveys determine vernal pools are not occupied, permanent impacts that cannot be avoided shall be mitigated per the unoccupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

63. Prior to permanent and temporary impacts, SDG&E shall confer with USFWS on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools. Seed from vernal pool indicator plants shall be collected from the pools that will be impacted when the plants have dried and before the seed disperses. Seed collection may not be possible when precluded by weather or physical constraints, such as the Covered Activity occurring at a time of year when no seed is present. However, it is assumed that salvaged soil would contain a seed bank for these species, and they would be allowed to recover once the soil was reinstalled.

Inoculum shall be collected only from vernal pools that are free of versatile fairy shrimp (*Branchinecta lindahli*), and when it is dry to avoid damaging or destroying fairy shrimp cysts. Hand tools (i.e., shovels and trowels) shall be used to remove the first 2 inches of soil from the pools. Whenever possible, the trowel shall be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool shall be stored individually in labeled boxes that are adequately ventilated and kept out of direct

sunlight in order to prevent the occurrence of fungus or excessive heating of the soil and stored offsite at an appropriate facility for vernal pool inoculum. Inoculum from different source pools shall not be mixed for seeding any restored pools, unless otherwise approved by USFWS.

64. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools. The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist.

65. Grading Covered Activities immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools shall comply with the following:

a. Grading shall occur only when the soil is dry to the touch both at the surface and 1 inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and 1 inch below indicates whether the soil is dry.

b. After rainfall of greater than 0.2 inch, grading shall occur only after the soil surface has dried sufficiently as described above, and no sooner than 2 days (48 hours) after the rain event ends.

c. If rain occurs during grading, work shall stop and resume only after soils are dry, as described above.

d. Grading shall be done in a manner to prevent runoff from entering preserved vernal pools.

e. If necessary, water spraying shall be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

f. If mechanized grading is necessary, grading shall be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

66. If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools. If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact

minimization measures shall be used, such as the installation of steel plates or fabric mats. A qualified Biologist shall be present to oversee implementation of minimization measures.

67. When vernal pools are located above gas lines and repair work is necessary, work areas shall be minimized and soil shall be stockpiled for replacement after repairs.

68. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills.

69. For new projects, impacts to vernal pools and vernal pool Covered Species would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Road Ruts and Other Seasonal, Man-Made Depressions

70. Impacts from Covered Activities to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp to occur shall be avoided through project design considerations, to the extent feasible. Vehicular traffic through dry road ruts and other seasonal, man-made depressions shall not be considered an impact that requires mitigation.

71. If impacts to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for fairy shrimp to determine species presence. If project timing does not allow for surveys, it shall be assumed that the road ruts and other seasonal, man-made depressions are occupied.

72. If surveys determine that road ruts and other seasonal, man-made depressions are occupied (or assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the vernal pool mitigation ratios in Table 5.5. or through other alternatives outlined in Section 5.5 as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring to the road ruts and other seasonal, man made depressions.

73. If surveys determine road ruts and other man-made depressions are not occupied by Covered fairy shrimp species, Covered Activities and impacts shall be allowed without mitigation.

74. Prior to permanent and temporary impacts to occupied road ruts, soil (inoculum) shall be collected as described in Section 5.1.11.1, Protocol 63 for vernal pools.

75. Grading Covered Activities on existing access roads shall not take place when the soils are wet, as described in Section 5.1.11.1, Protocol 65 for vernal pools, to minimize indirect impacts from erosion and sedimentation. Prior to grading Covered Activities, a Biologist shall demarcate a road rut proposed for grading and a Biologist shall be present during grading Covered Activities. Direct impacts when grading existing access roads shall be avoided by lifting the blade of the grader over the demarcated road rut within the road. Any windrows resulting from grading in the vicinity of vernal pools or complexes shall be flattened with equipment tires to avoid affecting hydrology in the area.

98. Western Spadefoot (*Spea hammondii*)

a. Impacts from Covered Activities where there is a potential for western spadefoot to occur (Spadefoot-Habitat) shall be avoided through project design considerations, to the extent feasible. Spadefoot-Habitat includes:

i. Permanent and temporary wetlands (that maintain water for at least 30 days), both natural and altered, including vernal pools, ephemeral streams, artificial ponds, livestock ponds, sedimentation and flood control ponds, irrigation and roadside ditches, roadside puddles, tire ruts, and borrow pits that are suitable for breeding;

ii. Adjacent uplands (including coastal sage scrub, oak woodlands, chaparral, and grasslands) up to 1,500 feet from breeding habitat that allow for movement to breeding habitat, foraging areas and overwintering sites.

b. If impacts to Spadefoot-Habitat cannot be avoided, a qualified western spadefoot Biologist[20] shall survey Spadefoot-Habitat that has the potential to be impacted by Covered Activities using appropriate survey techniques to determine species presence. If project timing does not allow for surveys, it shall be assumed that all Spadefoot-Habitat to be impacted is occupied.

c. If surveys determine that Spadefoot-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4 or Table 5.5 if in vernal pools, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within Spadefoot-Habitat.

d. If surveys determine Spadefoot-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied Spadefoot-Habitat shall be mitigated per Section 5.5, Table 5.3a and 5.3b, or Table 5.5 if in vernal pools.

e. When work shall occur within or adjacent to Spadefoot-Habitat, timing of Covered Activities shall be evaluated to ensure minimization of impacts to western spadefoot. A qualified Biologist shall provide recommendations to avoid and minimize impacts to this species. Recommendations shall be included in the PSR for USFWS review. Measures that may be implemented include, but are not limited to, the following:

i. A Biologist shall be present during construction as needed in order to avoid impacts to western spadefoot.

ii. A Biologist shall lead a worker environmental awareness training for crews and conduct a sweep of the work area prior to the beginning of work each

[20] A qualified western spadefoot Biologist will be approved by USFWS and must be able to identify the species visually and vocally and should have experience in handling and translocating western spadefoot. In addition, the Biologist should be familiar with all life stages and habitat of the western spadefoot.

day, as needed. If western spadefoot individuals are found, the individuals shall be relocated by a Biologist out of harm's way.

iii. A Biologist shall guide the crews to select an appropriate area for equipment and material staging that specifically excludes or minimizes any areas with the high potential for western spadefoot to occur.

iv. A Biologist shall escort construction vehicles along an overland travel route that minimizes potential impacts to sensitive species.

v. Covered Activities shall be designed to avoid or minimize the placement of equipment or personnel within breeding habitat. A qualified Biologist shall be present during construction within suitable habitat in order to avoid impacts, including to western spadefoot.

vi. Covered Activities within uplands that may support western spadefoot shall take place to the extent feasible from approximately December 1 through June 30 (depending upon seasonal rains) when practicable during the western spadefoot breeding season when the species is typically more active and closer to breeding habitat.

vii. Covered Activities within wetlands that may support western spadefoot breeding shall take place from approximately July 1 through November 30 when practicable to avoid the western spadefoot breeding season. When practicable, Covered Activities shall be timed so that work within pools or ponds is conducted when they are dry (and no recent metamorphs/toadlets are present in cracked soil).

viii. Where feasible, prior to clearing, grubbing, and construction, western spadefoot exclusionary fencing shall be installed around the perimeter of all work areas within potential western spadefoot breeding and non-breeding habitat (up to 1,500 feet away from breeding habitat) as determined by a qualified western spadefoot Biologist and USFWS. The fence shall consist of woven nylon fabric or similar material at least 2 feet high, and the lower 1 foot of material shall stretch outward along the ground and be secured with a continuous line of sandbags to prevent soil disturbance and burrowing beneath the fence. Doubling this line (i.e., stacking sand or gravel bags two-deep) may reduce maintenance and should be considered to improve the integrity of the fencing. Decisions on the appropriate fencing installation method for a given reach shall be made by the qualified western spadefoot Biologist. All fencing shall be removed following completion of all project-related Covered Activities. Ingress and egress of equipment and personnel shall use a single access point to the site, which shall be as narrow as possible and closed off by exclusionary fence when personnel are not on the work site.

ix. Prior to vegetation grubbing or construction, but after exclusionary fence has been installed around the impact footprint, at least three surveys for western spadefoot of any life stage shall be conducted within the fenced area by a qualified Biologist knowledgeable of western spadefoot biology and ecology. Surveys shall be conducted during the appropriate climatic conditions during the appropriate time of day or night to maximize the likelihood of encountering western spadefoot. If western spadefoot of any life stages or clutches are found within the project area, they shall be captured and translocated, by the Biologist, to the closest area of suitable habitat. Before each workday begins, the qualified Biologist shall also check to see if western spadefoot have entered the impact footprint. If western spadefoot are found within the impact footprint, the individuals shall be moved outside of the impact footprint, if suitable habitat exists, or out of harm's way.

x. The qualified Biologist shall be present each morning before construction begins to inspect all western spadefoot exclusionary fencing for damage or holes, conduct a sweep of the work area for western spadefoot, inspect any covered stockpiles for gaps or sign that western spadefoot individuals have accessed the soils underneath and shall be present when these covers are removed. The qualified Biologist shall relocate any western spadefoot found to suitable habitat adjacent to the construction site but at least 200 feet away.

xi. Nighttime construction shall be avoided in and/or adjacent to occupied Spadefoot-Habitat. If critical work during nighttime hours within the breeding season is necessary, a biological monitor shall conduct a clearance survey of the access road and work areas within 500 feet of occupied breeding habitat with water present or recently present in breeding pools.

xii. In areas with the potential for western spadefoot, stockpiled soils shall be covered with plastic or other material at the end of each workday. Any covered stockpile edges shall be held in place by sandbag, fabric-wrapped wattles, or hydromulch at soil storage sites to avoid creating an attractive nuisance.

xiii. Holes or trenches created by Covered Activities that have the potential to trap western spadefoot shall be covered with cover plates or other materials at the end of each workday. Holes or trenches that are covered shall have the edges sealed with sandbags, bricks, or boards to prevent western spadefoot from becoming trapped in holes or trenches. The qualified Biologist shall inspect all holes and trenches (covered and uncovered) for the presence of western spadefoot prior to disturbance of soils or removal of cover plates. The qualified Biologist shall be present when the cover plates are removed and shall inspect and relocate any western spadefoot that may have entered the trench during the night to suitable habitat adjacent to the construction site but at least 200 feet away.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied western spadefoot habitat. However, not all Modeled Habitat is expected to support western spadefoot occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the western spadefoot breeding Modeled Habitat, there are approximately 39,348 acres present within the Plan Area and approximately 2,159 acres within the PIZ associated with existing SDG&E Facilities. Because there is no existing model of western spadefoot upland non-breeding habitat, we used areas mapped as grassland, coastal sage scrub, and chaparral to "model" the extent of suitable western spadefoot upland non-breeding habitat within the Plan Area. Based on this analysis, there are approximately 1,183,766 acres of upland non-breeding habitat present within the Plan Area and approximately 37,081 acres within the PIZ associated with existing SDG&E Facilities. Western spadefoots are generally known to forage and burrow in areas with friable soils up to 1,985 feet away from the breeding pool and from near sea level to 4,921 feet in elevation. Therefore, the overall extent of upland non-breeding habitat within the Plan Area is overestimated as it includes grassland, coastal sage scrub, and chaparral habitats without consideration based on distance from the stream channel. There is no suitable habitat for this species on the Moreno Compressor Station property.

In San Diego County, the three ecoregions with the highest acreages of western spadefoot habitat are the central foothills, northern mountain, and southern foothills ecoregions. In the Plan Area in Orange County, the highest acreage of western spadefoot Modeled/Upland Habitat is in foothill and valley ecoregions.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 285 and 161 western spadefoot occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

In San Diego County, western spadefoot occurs on Camp Pendleton within Cristianitos Creek, San Mateo Creek, Jardine Canyon, and Pueblitos Canyon. The species also historically has occurred along the San Luis Rey River near Lake Henshaw, Agua Caliente, San Ysidro Creek, San Dieguito River, Los Peñasquitos Creek, and San Diego River. In the Plan Area in Orange County, western spadefoot occurs along San Juan Creek, Cristianitos Creek, Aliso Creek, Horno Creek, Canada Chiquita, and San Juan Creek.

The western spadefoot is covered by the following existing regional HCPs that overlap the Plan Area.

- San Diego MHCP Subregional NCCP/HCP
- Orange County Southern Subregion HCP
- SDCWA Subregional NCCP/HCP

Together, these HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 17,593 acres of breeding Modeled Habitat occur within Preserves and 3,521 acres of breeding Modeled Habitat occur within Proposed Preserves (collectively, 54 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. Approximately 697,620 acres of upland habitat occur within Preserves and 85,592 acres of upland habitat occur within Proposed Preserves (collectively, 66 percent of all upland habitat) associated with these regional conservation efforts within the Plan Area. In addition, 149 occurrences of western spadefoot are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known to occur on existing SDG&E mitigation lands, however these mitigation lands have western spadefoot Modeled/Upland Habitat.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 27.97 acres of western spadefoot breeding Modeled Habitat, which is a fraction of the 39,348 acres of western spadefoot breeding Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 17.67 acres of permanent impacts (0.04 percent of breeding Modeled Habitat in the Plan Area); and

- Approximately 10.3 acres of temporary impacts (0.02 percent of breeding Modeled Habitat in the Plan Area).

Wildfire Fuels Management is not expected to occur in areas of western spadefoot breeding Modeled Habitat.

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 640.29 acres western spadefoot upland non-breeding Modeled Habitat, which is a fraction of the 1,183,766 acres of spadefoot upland non-breeding Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 303.36 acres of permanent impacts (0.03 percent of upland non-breeding Modeled Habitat in the Plan Area);

- Approximately 176.92 acres of temporary impacts (0.01 percent of upland non-breeding Modeled Habitat in the Plan Area); an

- Approximately 160.01 acres of Wildfire Fuels Management impacts (0.01 percent of upland non-breeding Modeled Habitat in the Plan Area).

The total 668.26 acres (27.97 acres breeding and 640.29 acres non-breeding) of impacts represents about 0.11 percent of the combined breeding and non-breeding Modeled Habitat (0.06 percent breeding and 0.05 percent non-breeding) within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for western spadefoot. However, because western spadefoot are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[21] However, because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within an western spadefoot occurrence but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[22]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored may continue to provide habitat to meet the species' needs. No large-scale New Construction is expected, and New Construction projects that impact western spadefoot and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to western spadefoot will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of western spadefoots within the Plan Area and their specific habitat requirements (i.e., deep breeding pools and upland areas up to 1,985 feet from breeding pools), we anticipate that only limited areas within Modeled/Upland Habitat support occurrences of western spadefoot. Therefore, it is likely that substantially less than 668.26 acres (27.97 acres breeding and 640.29 acres non-breeding) of occupied western spadefoot habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some western spadefoot adults, eggs, tadpoles, and juveniles could be killed or injured from crushing and trampling within up to 668.26 acres (27.97 acres breeding and 640.29 acres non-breeding) of western spadefoot Tracked Habitat that is impacted in association with Covered Activities. Western spadefoots could also be trapped in stockpiled soils, holes, and trenches created by Covered Activities, especially at night when they are active.

[21] Up to 0.06 percent of the combined breeding and non-breeding Modeled Habitat within the Plan Area will be impacted, and there are an estimated 285 western spadefoot occurrences in the Plan Area. The product of 0.06 percent and 285 is less than one.

[22] See "Description of the Proposed Action" for an explanation of how impacts to occupied Tracked Habitat for Covered Species will be calculated, tracked, and reported.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of western spadefoot habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) are anticipated to avoid, minimize, and mitigate the direct impacts associated with Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a 15 miles-per-hour speed limit shall be observed on dirt access roads (OP 2), a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to western spadefoot, as specified in the Vernal Pool and Road Rut Protocols (OPs 59 to 75) and OP 98 include: avoid impacts to the extent feasible through project design considerations; biological monitoring; conduct Covered Activities within suitable habitat during times that minimize potential for take; install exclusionary fencing when feasible; avoid night-time construction; cover soil stockpiles, holes and trenches; and survey for and relocate any western spadefoots found in the project area.

Because of the extended time period over which the proposed activity will occur, the dispersed nature of the proposed activities, and dramatic fluctuations in the numbers and densities of individual western spadefoots of different life history stages on a seasonal and annual basis, it is not possible to quantify exactly how many western spadefoots may be subject to capture, handling, and relocation. Regardless, the numbers of western spadefoots relocated should be low due to the limited extent of construction activities. We are not limiting the number of western spadefoots that will be moved pursuant to this Opinion since this is a conservation measure intended to move individuals out of harm's way. However, the number of western spadefoots observed within project footprints will be reported to the Service annually. Although western spadefoots could be killed, injured, or stressed during relocation efforts, relocation will minimize the likelihood that western spadefoots will be killed or injured during implementation of Covered Activities.

Unavoidable temporary impacts to western spadefoot occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable impacts to western spadefoot occupied habitat will be mitigated at a 1:1 to 3:1 ratio [Table 5.4 and Table 5.5 (if found in vernal pools)] of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of western spadefoot habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual western spadefoots within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of western spadefoots within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to western spadefoot.

Because Covered Activities will impact a small fraction of the western spadefoot habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of western spadefoots within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation, and Habitat Fragmentation

The western spadefoot could be subject to indirect effects from Covered Activities as described in the General Effects section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to western spadefoot include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation.

Changes to pool hydrology, such as increasing urban runoff, can remove or alter the western spadefoot aquatic habitat. Erosion, sedimentation, runoff, and leaks and spills from project construction and new Facilities could adversely impact western spadefoots by smothering eggs and contaminating the water in riparian habitats used by this species for reproduction. Measures will be implemented to minimize changes in hydrology and water quality, erosion, sedimentation, and runoff (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23). Grading adjacent to vernal pools would be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). In addition, SDG&E would use biological monitors and protective fencing if necessary (OP 64); maintain avoidance buffers when working adjacent to vernal pools; fuel, stage, and maintain construction equipment at least 100 feet from the nearest vernal pools where feasible; and use protective measures to prevent spills where 100-foot buffers from the nearest vernal pools are not feasible (OP 68).

Project construction and new Facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for western spadefoot. Night lighting can modify the behavior of snakes and other nocturnal animals (Lieberman 2002) and may have adverse impacts to western spadefoot. To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety,

selectively placed, shielded, and directed away from natural habitats, and any permanent lighting will be directed away and/or shielded so as not to illuminate habitats (OP 25),

The ground disturbance and landscaping associated with Covered Activities may facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants may out-compete and exclude native plants potentially altering the structure of the vegetation, degrading or eliminating upland habitat used by the western spadefoot, and providing food and cover for non-native animals (Bossard et al. 2000). Furthermore, the increased irrigation required by many common landscaping plants may provide suitable conditions for the establishment of introduced Argentine ants (*Linepithema humile*) within the adjacent habitat areas. Argentine ants can build large colonies and eliminate the native ant fauna that is a major food source of the western spadefoot (Ward 1987, Holway 1995, Human and Gordon 1997). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of western spadefoots.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species. The removal and restoration of existing access roads that are not needed for Covered Activities and restoration of temporary impact areas is expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting western spadefoots dispersal/movement corridors that contribute to long-term population viability for the western spadefoots. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in western spadefoot survival or reproduction beyond baseline conditions.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to drive the species closer to a point where listing is warranted. We base these conclusions on the following:

1. The current range of the western spadefoot includes Shasta County southward to northwestern Baja California; thus, the action area for the HCP Amendment represents only a portion of the species' rangewide distribution.

2. Impacts will be limited to no more a total of 668.26 acres (27.97 acres breeding and 640.29 acres non-breeding) of western spadefoot Tracked Habitat, which represents about 0.06 percent of Modeled Habitat (0.06 percent breeding and 0.05 percent non-breeding) for the western spadefoot in the Plan Area.

3. Based on the known distribution of the western spadefoot within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled/Upland Habitat support occurrences of western spadefoots. Therefore, it is likely that substantially less than 668.26 acres of occupied western spadefoot habitat will be impacted.

4. General and species-specific OPs will reduce the likelihood that individual western spadefoots will be harmed by Covered Activities.

5. Impacts to the western spadefoot will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced.

6. Because Covered Activities will affect a small proportion of western spadefoot habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by western spadefoot, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of western spadefoot in the Plan Area or rangewide.

7. Long-term management and monitoring of mitigation lands will help the western spadefoot in the Plan Area and will contribute to the rangewide conservation of this species.

Unlisted Reptiles

Southwestern Pond Turtle (Actinemys pallida)

Status of the Species

Listing Status

The southwestern pond turtle (*Actinemys pallida*) is currently being evaluated for listing under the Act (87 FR 20881) and is a CDFW Species of Special Concern (Service 2015c, CNDDB 2022).

Species Description

The adult southwestern pond turtle has a low-domed carapace that ranges from about 4.7 to 7.2 inches in length and is olive or dark with a network of brown or black lines or dashes coming from its growth centers (Fisher and Case 2003). Its limbs and head are olive, yellow, orange or brown, often with darker lines, flecks, or spots. Relative to females, males have a lighter throat, a much longer tail, and a concave shell bottom. Juveniles are similar in appearance to adults, but with head, limbs, and tail marked with yellow and a striking pattern of radiating lines on the carapace (Fisher and Case 2003).

Traditionally, there were two recognized subspecies of western pond turtle (*Actinemys marmorata*): the northwestern pond turtle (*A. m. marmorata*), and the southwestern pond turtle (*A. m. pallida*) (Seeliger 1945). Currently, the Society for the Study of Amphibians and Reptiles recognizes two distinct species of pond turtle, the northwestern pond turtle (*Actinemys marmorata*), and the southwestern pond turtle (*Actinemys pallida*) (Crother 2017). However, recent genetic studies indicate populations from Baja California may represent a third distinct species pending results from additional analyses (Spinks et al. 2014; Thomson et al. 2016)

Habitat Affinities

The southwestern pond turtle is an aquatic freshwater turtle. This species inhabits rivers, streams, ponds, lakes, permanent and ephemeral wetlands, and altered aquatic habitats (e.g., reservoirs, stock ponds, sewage treatment ponds) (Holland 1994). The preferred aquatic habitat for this species consists of pools within streams (Bury 1972). Typical habitat characteristics in these aquatic environments include submerged and exposed logs, rocks, and roots, mudbanks, and ledges, which provide sites for basking and refugia (Holland 1994).

The southwestern pond turtle also inhabits seasonal floodplains and upland areas adjacent to aquatic habitat for nesting, cover, and dispersal (Holland and Goodman 1996, Reese and Welsh 1997). Nesting generally occurs within 165 feet of the water's edge, but females have been observed depositing eggs in upland habitat 1,319 feet from the water's edge (Holland 1994). Nesting sites consist of well-drained clay or silt soils, and are sparsely vegetated with grasses or forbs (Holland 1994).

Life History

The southwestern pond turtle is generally diurnal, and daily activity revolves around thermoregulation and foraging patterns. In the early morning and evening, southwestern pond turtles may move up or downstream, moving from one pool to the next in search of basking sites, mates, or foraging areas. Bury (1972) found that the distribution of turtles is not uniform, with aggregations occurring in pools. Aggressive behaviors are exhibited by southwestern pond turtles competing for adequate spacing at basking sites (Bury and Woltheim 1973). In the summer, southwestern pond turtles will often remain sheltered or at the bottom of the pond in the middle of the day to avoid the heat (Bury 1972). The southwestern pond turtle is secretive and will rapidly depart basking sites, seeking refuge under rocks, root masses or other debris at the bottom of a pond or stream when disturbed (Bury and Germano 2008).

The southwestern pond turtle is an opportunistic predator with a broad feeding niche. Adults eat some plant material, but they generally prefer live or dead animal prey (Bury 1986). Among the many types of food items eaten by this species are algae, plants, insects, crustaceans, fish, and carrion (Bury 1986). Predators on the southwestern pond turtle include a variety of carnivorous mammals, birds, amphibians and fish (e.g., skunk, raccoon, coyote, osprey, heron, bullfrog, largemouth bass) that primarily target eggs and young turtles (Holland 1994).

Southwestern pond turtles mature slowly and have low fecundity but are potentially long-lived. Females in the southern part of the southwestern pond turtle's range begin breeding at 4 to 8 years of age (Bury and Germano 2008). Courtship and mating behaviors of the southwestern pond turtle have been observed from February to November (Holland 1988b). The nesting season peaks from late May through early July (Holland 1994). Clutch size varies from 1 to 13 eggs (Holland 1994). Incubation periods vary with latitude but are typically 80 to 126 days (Holland 1994, Goodman 1997). Gender in southwestern pond turtles is determined by incubation temperature. Below about 86 degrees Fahrenheit, embryos develop into males, and above about 86 degrees Fahrenheit, embryos develop into females (Ewert et al. 1994). Most hatchlings emerge in the early fall, but some may overwinter in the nest (Holland 1994). The potential life span of the southwestern pond turtle is over 40 years (Holland 1994).

Home range size and configuration varies between age class, gender, and location. Bury (1972) studied a northwestern pond turtle population in a northern California stream and found that adult males had the largest range, averaging 2.42 acres with a mean length of 3,201 feet. Adult female home ranges averaged 0.62 acre with a mean length of 813 feet. Juvenile home ranges averaged 0.89 acre and 1,191 linear feet. Female southwestern pond turtles in two southern California streams had home ranges that were longer and smaller (Goodman and Stewart 2000) than those observed by Bury (1972), likely because the streams in southern California tend to be narrower so southwestern pond turtles have to move further distances to obtain sufficient resources. Southwestern pond turtles are capable of dispersing substantial distances. Holland (1994) reports overland movements of up to 3.1 miles, including rare movements between drainages.

Status and Distribution

The historical range of the western pond turtle extends along most of the west coast of North America, primarily west of the Cascade-Sierra crest, from western British Colombia to northern Baja California, Mexico (Ernst et al. 1994, Holland 1994). The current range of the southwestern pond turtle is restricted to those populations inhabiting the central Coast Range south of the San Francisco Bay area to the species' southern range boundary, including the Mojave River (Spinks et al. 2014).

The southwestern pond turtle is still extant throughout most of its range, but a number of populations have been extirpated. Between Ventura County and the Mexican border, known localities decreased from 87 sites in 1960 to 53 sites by 1987, and many of the remaining populations are small and/or isolated (Brattstrom and Messer 1988).

During 2020-2021 surveys for southwestern pond turtles in San Diego County, the U.S. Geological Survey (USGS) found southwestern pond turtles at 10 of 29 sites representing 8 watersheds and recorded a total of 181 individuals (Molden et al. 2022). Three of the 10 sites surveyed were restoration sites with translocated populations of southwestern pond turtles. Although these surveys did not include all historically known southwestern pond turtle populations in the county, several represented key populations that have undergone long-term monitoring by USGS, namely the most robust natural populations in the county at Cockleburr Canyon, Pine Valley Creek, and Oak Valley. At 22 of the 29 sites surveyed, there were crayfish and/or bullfrogs detected – invasive species documented to prey on juvenile southwestern pond turtles. Only six of the 10 southwestern pond turtle sites contained juvenile southwestern pond turtles, which is further evidence of populations in decline (Molden et al. 2022).

Threats and Conservation Needs

Habitat destruction and alternation are the primary threats to the southwestern pond turtle. Over 90 percent of wetland habitat within its historic California range has been eliminated by agricultural development, flood control, and water diversion projects (e.g., dams, reservoirs, channelization), and urbanization (Brattstrom and Messer 1988).

Loss of upland habitat adjacent to southwestern pond turtle populations can isolate individuals from surrounding populations and eliminate nesting sites, thus limiting the ability to successfully reproduce (Holland 1994, Spinks *et al*. 2003). Agricultural areas and grazing pastures provide suitable habitat for nesting southwestern pond turtles, but certain practices, such as plowing and irrigation, could destroy nests (Crump 2001). Areas with soils that are too wet, including irrigated sites such as lawns and golf courses, are generally unsuitable for nesting because southwestern pond turtles have hard-shelled eggs that absorb water, expand, and crack when the soil reaches a certain moisture level (Feldman 1982, Spinks et al. 2003). Roads cause further population fragmentation and may directly impact southwestern pond turtle populations as a result of road kill (Gibbs and Shriver 2002). Therefore, although southwestern pond turtle populations in developed areas may persist for years, they can become functionally extinct long before they are extirpated (Spinks *et al*. 2003).

Development can also indirectly lead to habitat degradation and/or mortality as a result of down cutting and erosion, introduction of non-native plants and animals, water pollution, and recreational activities (Holland 1991). Increased runoff from irrigation results in down cutting and erosion which can eliminate pools, basking sites, and refugia used by southwestern pond turtles and isolates the aquatic environment from the surrounding upland environment. Invasion by non-native aquatic plant species, such as *Arundo* spp. can alter the stream hydrology and displace emergent aquatic vegetation that provides refuge for juvenile turtles. Introduced non-native and urban-related animals include predators (e.g., non-native fish, bullfrogs, crayfish, dogs, and corvids) and competitors (e.g., non-native turtles, such as the red-eared slider). Recreational activities that can degrade habitat or result in mortality include collection for pets, accidental capture from fishing practices (e.g., hooks, lines, nets), boating, swimming, and off-road vehicle uses (Holland 1991).

Southwestern pond turtles are also susceptible to drought conditions. Observations in California during 1987 to 1992 indicated that many populations in the southern and central portions of the State were severely impacted by drought, displaying declines of up to 85 percent and possibly more. Repeated sampling of several populations indicated that many have failed to recover (i.e., capture rates remained low during subsequent surveys). Coupled with anthropogenic factors, drought may have a locally and regionally significant negative impact on southwestern pond turtle populations (Holland 1991, 1994).

The conservation needs for this species include conserving large blocks of suitable aquatic and associated upland habitat and maintaining connectivity by providing suitable habitat linkages for dispersal. Management activities that address threats to this species include controlling non-native plants such as *Arundo* spp. controlling non-native aquatic predators and competitors such as fish, bullfrogs, crayfish, and red-eared sliders, and limiting predation by urban predators, such as dogs and ravens. Because of the potential threat posed by road mortality, measures such as the installation of low-lying fine-mesh fence or barrier fencing in areas likely to be used by southwestern pond turtles may help minimize this source of mortality. In addition, since southwestern pond turtles may be collected as pets or non-native red-eared sliders purchased from the pet store could be released into the wild, public education regarding these effects would benefit this species.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 81 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the southwestern pond turtle:

81. Southwestern Pond Turtle (*Actinemys pallida*)

    a. Impacts from Covered Activities where there is a potential for southwestern pond turtle to occur (SWPT-Habitat) shall be avoided through project design considerations, to the extent feasible. SWPT-Habitat includes:

        i. wetlands, both natural and altered, including ponds, rivers, and creeks that are suitable for breeding; and

ii. 165-foot upland buffer.

b. If impacts to SWPT-Habitat cannot be avoided, a Biologist shall survey SWPT-Habitat that has the potential to be impacted by Covered Activities to determine species presence. If project timing does not allow for surveys, it shall be assumed that all SWPT-Habitat to be impacted is occupied.

c. If surveys determine that SWPT-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Tables 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within SWPT-Habitat.

d. If surveys determine SWPT-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied SWPT-Habitat shall be mitigated per Section 5.5, Tables 5.3a and 5.3b.

e. Covered Activities within SWPT-Habitat shall take place outside the breeding/nesting season from approximately April 1 through September 30 when practicable to avoid female southwestern pond turtle that are moving upland to nest and to avoid impacting hatchling southwestern pond turtle.

f. Within 14 days prior to the onset of construction, a qualified Biologist shall conduct preconstruction surveys for western pond turtle within areas that fall within 100 feet of any suitable aquatic and upland nesting habitat for this species. If western pond turtles are observed during the preconstruction survey, they shall be avoided to the greatest extent practicable. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. g. For new projects, impacts to western pond turtle and its habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied southwestern pond turtle habitat. However, not all Modeled Habitat is expected to support southwestern pond turtle occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the southwestern pond turtle Modeled Habitat for aquatic habitat, there are approximately 48,246 acres present within the Plan Area and approximately 2,366 acres within the PIZ associated with existing SDG&E Facilities (Table 12). The southwestern pond turtle is also dependent on adjacent upland habitat for nesting, cover, and dispersal, when these communities occur in the immediate vicinity of appropriate aquatic habitat; however, the landscape level vegetation mapping available for the Modeled Habitat does not capture these distinct areas separate from the broader vegetation

communities. Therefore, to avoid further overestimating the extent of suitable habitat for the species, we did not include these upland vegetation communities.

In San Diego County, the three ecoregions with the highest acreages of southwestern pond turtle habitat are generally associated with wetland areas scattered throughout the north coast, northern valley, and central coast ecoregions. In the Plan Area in Orange County, the highest acreage of southwestern pond turtle Modeled Habitat can be found associated with wetland areas in the foothill and valley ecoregion.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 24 and 7 southwestern pond turtle occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

In San Diego County, the largest populations based on known occurrences are located with Pine Valley Creek south of Interstate 8 and the upper San Diego River and Cedar Creek in the Cleveland National Forest. Other areas with several occurrences are located within Long Canyon in Bonita; in Santa Ysabel Creek in Black Canyon and downstream southwest of Pamo Valley, Guejito Creek, Los Peñasquitos Canyon, a pond in upper Lusardi Creek, Boulder Oaks Preserve, and Sycuan Peak Ecological Reserve; and along Jamul Creek on Rancho Jamul Ecological Reserve. In Orange County, the species has known occurrences in Oso Creek and artificial ponds in Cristianitos Canyon.

The southwestern pond turtle is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- San Diego MHCP Subregional NCCP/HCP
- Western Riverside County MSHCP Subregional NCCP/HCP
- Orange County Southern Subregional HCP
- SDCWA Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 23,598 acres of Modeled Habitat occur within Preserves and 3,985 acres of Modeled Habitat occur within Proposed Preserves (collectively, 56 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 18 occurrences of southwestern pond turtle recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species

has a low and moderate potential to occur on SDG&E's Cielo and Willow Glen mitigation lands, respectively, and is not known or expected to occur on the Otay Lakes mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 40.86 acres of southwestern pond turtle Modeled Habitat, which is a fraction of the 48,246 acres of southwestern pond turtle Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 19.36 acres of permanent impacts (0.04 percent of Modeled Habitat in the Plan Area);
- Approximately 11.29 acres of temporary impacts (0.02 percent of Modeled Habitat in the Plan Area); and
- Approximately 10.21 acres of Wildfire Fuels Management impacts (0.02 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.08 percent of southwestern pond turtle Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for southwestern pond turtle. However, because southwestern pond turtles are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[23] However, because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within an southwestern pond turtle occurrence but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[24]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored may continue to provide habitat to meet the species' needs. No large-scale New Construction is expected, and New Construction

[23] Up to 0.08 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 24 southwestern pond turtle occurrences in the Plan Area. The product of 0.08 percent and 24 is less than one.
[24] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

projects that impact southwestern pond turtle and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to southwestern pond turtle will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of southwestern pond turtles within the Plan Area and their specific habitat requirements (e.g., pools with appropriate basking and refugia areas) we anticipate that only limited areas within Modeled Habitat support occurrences of southwestern habitat. Therefore, it is likely that substantially less than 40.86 acres of habitat occupied by the southwestern pond turtle will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some individual southwestern pond turtle, adults, eggs and juveniles will be killed or injured within up to 40.86 acres of southwestern pond turtle Tracked Habitat that is impacted in association with the Covered Activities. Southwestern pond turtles may also be trapped in stockpiled soils, holes, and trenches, created by Covered Activities. Management and monitoring activities on mitigation lands could result in minor, temporary loss of southwestern pond turtle habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 81 for southwestern pond turtle are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a 15 miles-per-hour speed limit shall be observed on dirt access roads (OP 2), a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to southwestern pond turtle, as specified in the OP 81 include: 1) whenever practicable, do work in southwestern pond turtle outside the breeding season, 2) preconstruction surveys, and 3) avoiding direct take of individuals. If avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Because of the extended time period over which the proposed activity will occur, the dispersed nature of the proposed activities, and dramatic fluctuations in the numbers and densities of individual southwestern pond turtles of different life history stages on a seasonal and annual basis, it is not possible to quantify exactly how many southwestern pond turtles may be subject to capture, handling, and relocation. Regardless, the numbers of southwestern pond turtles relocated should be low due to the limited extent of construction activities. We are not limiting the number of southwestern pond turtles that will be moved pursuant to this biological opinion since this is a conservation measure intended to move individuals out of harm's way. However, the number of southwestern pond turtles observed within project footprints will be reported to the Service annually. Although southwestern pond turtles could be killed, injured, or stressed during relocation efforts, relocation will minimize the likelihood that southwestern pond turtles will be killed or injured during implementation of Covered Activities.

Unavoidable temporary impacts to southwestern pond turtle occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to southwestern pond turtle occupied habitat will be mitigated at a 1:1 to 3:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. In perpetuity monitoring and management of the future mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of southwestern pond turtle habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual southwestern pond turtles within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of southwestern pond turtles within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the southwestern pond turtle.

Because Covered Activities will impact a small fraction of the southwestern pond turtle habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of southwestern pond turtles within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation and Habitat Fragmentation

The southwestern pond turtle could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to southwestern pond turtle include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation and habitat fragmentation.

Changes to hydrology, such as stream alteration or increasing urban runoff, can remove or alter the southwestern pond turtle aquatic habitat. Erosion, sedimentation, runoff and leaks and spills from project construction and new facilities could adversely impact pond turtles by altering the hydrology and/or contaminating the water in habitats used by this species for reproduction. Measures will be implemented to minimize changes to hydrology and water quality, erosion, sedimentation and runoff (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23).

Project construction and new facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for pod turtle. Night lighting can modify the behavior of southwestern pond turtles and may increase predation by nocturnal predators. To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats, and any permanent lighting will be directed away and/or shielded so as not to illuminate habitats (OP 25).

The ground disturbance and landscaping associated with Covered Activities may facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants may out-compete and exclude native plants potentially altering the structure of the vegetation, degrading or eliminating upland habitat used by the southwestern pond turtle and providing food and cover for non-native animals (Bossard et al. 2000). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of southwestern pond turtles.

SDG&E will implement several measures that will minimize the spread of non-native species. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, is expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting southwestern pond turtle dispersal/movement corridors that contribute to long-term population viability for southwestern pond turtles. However, no large-scale New Construction is expected that could cause significant habitat fragmentation, and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation and habitat fragmentation due to Covered Activities are not likely to result in a decrease in southwestern pond turtle survival or reproduction beyond baseline conditions.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the southwestern pond turtle. We base these conclusions on the following:

1. The current range of the southwestern pond turtle includes the Cascade-Sierra crest, from western British Colombia to northern Baja California, Mexico; thus, the action area for the HCP Amendment represents only a portion of the species' rangewide distribution.

2. Impacts will be limited to no more than 40.86 acres of southwestern pond turtle Tracked Habitat, which represents about 0.06 percent of the Modeled Habitat for the southwestern pond turtle in the Plan Area.

3. Based on the known distribution of the southwestern pond turtle within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of southwestern pond turtles. Therefore, it is likely that substantially less than 40.86 acres of occupied southwestern pond turtle habitat will be impacted.

4. General and species-specific OPs will reduce the likelihood that individual southwestern pond turtles will be harmed by Covered Activities.

5. Impacts to southwestern pond turtle will be avoided to the maximum extent practicable, and all unavoidable impacts to the southwestern pond turtle occupied habitat will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

6. Because Covered Activities will affect a small proportion of the southwestern pond turtle habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by southwestern pond turtle, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of southwestern pond turtle in the Plan Area or rangewide.

7. Long-term management and monitoring of mitigation lands will help southwestern pond turtle in the Plan Area and will contribute to the rangewide conservation of this species.

Coast Horned Lizard (Phrynosoma blainvillii)

Status of the Species

Listing Status

The coast (=Blainville's) horned lizard (*Phrynosoma blainvillii*) is recognized as a Species of Special Concern by CDFW (CNDDB 2022). Currently, the coast horned lizard is neither listed nor proposed for listing under the Act.

Species Description

The coast horned lizard is a large (2.6 to 4.3 inches snout to ventral length), dorsoventrally flattened lizard with five backwardly projecting head spines. There is a large shelf box above each eye terminating in a backward projecting, spine-like scale. The dorsal color is highly variable, but typically gray, tan, reddish-brown, or whitish, and usually resembles the prevailing soil color (Jennings 1988). The venter is yellow to white with discrete, dark spots.

Habitat Affinities

Coast horned lizards utilize chamise chaparral, sage scrub, and lower montane forest habitats. Generally, it is found in (but not restricted to) relatively level or gently sloping terrain, and near the coast it shows some affinity for ancient alluvial terraces and floodplains. Vegetative understory is often sparse in its habitat. It sometimes occurs along seldom-used dirt roads where native species of harvester ants, its primary prey item, are particularly prevalent. Distinctive scat filled with ant remains can be diagnostic even if these lizards are not observed. The coast horned lizard utilizes a sit-and-wait approach to foraging. Most feeding activities are confined to the morning hours, starting approximately 2 hours after sunrise (Whitford and Bryant 1979). Daily activity may peak in the late morning, or again later in the afternoon, with reduced activity during particularly hot temperatures.

Life History

Coast horned lizards of the genus *Phrynosoma* are primarily ant-eating reptiles whose dietary habits are well known (Pianka and Parker 1975). Up to 90 percent of the diet of coast horned lizard consists of native harvester ants (*Pogonomyrmex* spp.) (Pianka and Parker 1975), and this species does not appear to eat non-native Argentine ants (Jennings and Hayes 1994) that have replaced native ants in much of southern California. Other slow moving insects, such as beetles, flies, and caterpillars are consumed opportunistically when encountered (Pianka and Parker 1975).

High site fidelity is often exhibited by coast horned lizard, as effective thermoregulation (optimum: 84 to 102 degrees Fahrenheit) requires familiarity with their surroundings (Heath 1965). Midday temperatures over 104 degrees Fahrenheit are avoided as coast horned lizards bury themselves in the substrate, reemerging in the later afternoon to resume full activities (e.g., feeding, territorial, and reproductive). Some populations may aestivate during warm periods of late July (Jennings 1987).

Hibernation occurs in September or early October with the onset of markedly colder weather. The coast horned lizard generally emerges from winter hibernation in late March and is particularly active in the spring from April 15 to May 15. Egg laying occurs from late May through June (Pianka and Parker 1975). Clutch size ranges from 6 to 16 eggs (Stebbins 2003) with a mean of 13 eggs (Pianka and Parker 1975). Hatchlings appear in late July to early August, and require 2 to 3 years to reach reproductive age (Stebbins 1954, Howard 1974, Pianka and Parker 1975, Goldberg 1983).

Status and Distribution

Historically, coast horned lizards were distributed from the Transverse Ranges in Kern, Los Angeles, Santa Barbara, and Ventura counties southward through the Peninsular Ranges of southern California to Baja California (Jennings 1988). Coast horned lizard seems to have disappeared from about 45 percent of its former range in southern California, in particular on the coastal plain where it was once common (Hayes and Guyer 1981) and in riparian and coastal sage scrub habitats on the old alluvial fans of the southern California coastal plain (Bryant 1911). In California, coast horned lizards range from the Transverse Ranges south to the Mexican border west of the deserts, although the taxon occurs on scattered sites along the extreme western desert slope of the Peninsular Ranges (Jennings 1988). The known elevation range of this species is from 33 feet at the El Segundo dunes (Los Angeles County) to approximately 6,988 feet at Tahquitz Meadow, on San Jacinto Mountain, in Riverside County. Coast horned lizards are thought to intergrade with *Phrynosoma coronatum frontale* in extreme southern Kern County and northern Santa Barbara, Ventura, and Los Angeles counties (Montanucci 1968, Jennings 1988). The distribution of coast horned lizards is locally patchy and dependent upon a variety of factors including microhabitat and the availability of its primary food item, harvester ants (e.g., *Pogonomyrmex* and *Pheidole* spp.). Substantial populations of coastal horned lizards still occur in the western foothills in large blocks of relatively undeveloped lands.

Threats and Conservation Needs

The specialized diet and habitat requirements, site fidelity, and cryptic defense behavior make the coast horned lizard highly vulnerable. Off-road vehicle activity, collection for pets, ecological effects of introduced ant species, predation by introduced predators (e.g., cats), and habitat loss due to agriculture and urbanization are the main reasons cited for the decline of this taxa. However, the primary threat to the coast horned lizard is the continued elimination of its food base by exotic ants. Argentine ants (*Linepithema humile)* colonize around more mesic soils associated with building foundations, roads and landfills, and expand into adjacent areas, eliminating native ant colonies. Under these conditions coast horned lizard populations have become increasingly fragmented and have undergone the added stress of a number of other factors, including fire, grazing, off-road vehicles, domestic cats, and development (Jennings and Hayes 1994). This taxon is unable to survive habitats altered by development, agriculture, off-road vehicle use, or flood control structures (Goldberg 1983). Thus, the conservation needs of the species include conserving suitable in a configuration that provides for the conservation of core populations and population connectivity as well as the management of conserved populations to maintain suitable conditions for coast horned lizards, in particular through the control of anthropogenic water sources within and adjacent to conserved habitat.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied coast horned lizard habitat. However, not all Modeled Habitat is expected to support coast horned lizard occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the coast horned lizard Modeled Habitat for habitat, there are approximately 933,391 acres present within the Plan Area and approximately 26,019 acres within the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the three ecoregions with the highest acreages of coast horned lizard habitat are the central foothills, southern foothills, and northern mountains ecoregions. In the Plan Area in Orange County, the highest acreage of coast horned lizard Modeled Habitat is the Orange County Santa Ana Mountains ecoregion. There is no suitable habitat for this species on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 184 and 96 coast horned lizard occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

In San Diego County, populations occur around Lake Hodges and in the City of San Diego's Peñasquitos and Dela Mar Preserves. It also occurs on the University of California's Elliot Preserve, the County of San Diego's Sycamore Canyon and Goodan Ranch Preserves, the U.S. Forest Service's Cleveland National Forest, the Service's San Diego National Wildlife Refuge, CDFW's Rancho Jamul Preserve, McCaine Valley and the Bureau of Land Management's Otay Wilderness. In Orange County, populations of coast horned lizard occur in the County's Irvine Ranch Open Space Park, Laguna Coast Wilderness Park and Carbon Canyon Regional Park.

The coast horned lizard is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional Plan
- Orange County Southern Subregion HCP
- SDCWA Subregional NCCP/HCP

Together, these HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 551,104 acres of Modeled Habitat occur within Preserves and 69,496 acres of Modeled Habitat occur within Proposed Preserves (collectively, 62 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 124 occurrences of coast horned lizard are located within Preserves and Proposed

Preserves in the Plan Area (CDFW 2023). Coast horned lizard also has the potential to occur at SDG&E's Cielo, Willow Glen and Otay Lakes mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 449.28 acres of coast horned lizard Modeled Habitat, which is a fraction of the 933,391 acres of coast horned lizard Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 212.86 acres of permanent impacts (0.03 percent of Modeled Habitat in the Plan Area);
- Approximately 124.14 acres of temporary impacts (0.01 percent of Modeled Habitat in the Plan Area); and
- Approximately 112.28 acres of Wildfire Fuels Management impacts (0.01 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.05 percent of Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for coast horned lizard habitat. However, because coast horned lizard is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[25] However, because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within an coast horned lizard occurrence but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[26]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored may continue to provide habitat to meet the species' needs. No large-scale New Construction is expected, and New Construction

[25] Up to 0.05 percent of modeled habitat within the Plan Area will be impacted, and there are an estimated 184 horned lizard occurrences in the Plan Area. The product of 0.05 percent and 184 is less than one.
[26] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

projects that impact more than 1.75 acres of a Preserve or Planned Preserve will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to coast horned lizard will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of coast horned lizard within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of coast horned lizard. Therefore, it is likely that substantially less than 449.31 acres of occupied coast horned lizard habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some coast horned lizard adults and juveniles will be killed or injured from crushing and trampling within up to 449.31 acres of coast horned lizard Tracked Habitat that is impacted in association with the Covered Activities. Coast horned lizards may also be trapped in stockpiled soils, holes, and trenches, created by Covered Activities. Management and monitoring activities on mitigation lands could result in minor, temporary loss of coast horned lizard habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion for coast horned lizard are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a 15 miles-per-hour speed limit shall be observed on dirt access roads (OP 2), a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32), and supplies or equipment where wildlife could hide (e.g., pipes, culverts, pole holes) shall be inspected prior to moving or working on them to reduce the potential for injury to wildlife. Supplies or equipment that cannot be inspected or from which animals could not be removed shall be capped or otherwise covered at the end of each workday. If an animal is found entrapped in supplies or equipment, such as a pipe section, the supplies or equipment shall be avoided and the animal(s) left to leave on its own accord, except as otherwise authorized by the Service (OP 35).

The Service may authorize capture, handling, and relocation of coast horned lizards under OP 35. Because of the extended time period over which the proposed activity will occur, the dispersed nature of the proposed activities, and dramatic fluctuations in the numbers and densities of individual coast horned lizards on a seasonal and annual basis, it is not possible to quantify exactly how many coast horned lizards may be subject to capture, handling, and relocation. Regardless, the numbers of coast horned lizards relocated should be low due to the limited extent of Covered Activities. We are not limiting the number of coast horned lizards that will be moved pursuant to this biological opinion since this is a conservation measure intended to move individuals out of harm's way. Although some coast horned lizards could be killed, injured, or stressed during capture, handling and relocation, these actions will minimize the likelihood that coast horned lizards will be killed or injured during implementation of Covered Activities.

Unavoidable temporary impacts to coast horned lizard Modeled Habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands or through measures that will

benefit the species. Unavoidable permanent impacts to coast horned lizard Modeled Habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.3a of the HCP Amendment) at existing or acquired mitigation lands or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of the future mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of coast horned lizard habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual coast horned lizards within occupied habitat. However, the conservation of the mitigation lands is expected contribute to the long-term viability of the species by securing and managing habitat within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the coast horned lizard.

Because Covered Activities will impact a small fraction of the coast horned lizard habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of coast horned lizards within the Plan Area or rangewide.

Effects from Lighting, Non-Native Species, Predation and Habitat Fragmentation

The coast horned lizard could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to coast horned lizard include the degradation of habitat outside the footprint of Covered Activities as a result of lighting, non-native species, predation and habitat fragmentation.

Project construction and new facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat. Night lighting can modify the behavior of snakes and other nocturnal (Lieberman 2002) and crepuscular animals and may have adverse impacts to coast horned lizard. If night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats, and any permanent lighting will be directed away and/or shielded so as not to illuminate habitats (OP 25).

The ground disturbance and landscaping associated with Covered Activities may facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants may out-compete and exclude native plants potentially altering the structure of the vegetation, degrading or eliminating upland habitat used by coast horned lizards, and providing food and cover for non-native animals (Bossard et al. 2000). Furthermore, the increased irrigation required by many common landscaping plants may provide suitable conditions for the establishment of introduced Argentine ants (*Linepithema humile*) within the adjacent habitat areas. Argentine ants can build large colonies and eliminate the native ant fauna that is a major food source of the coast horned lizard (Ward 1987, Holway 1995, Human and Gordon 1997). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of coast horned lizards.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, is expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting coast horned lizards' dispersal/movement corridors that contribute to long-term population viability for the coast horned lizards. However, no large-scale New Construction is expected that could cause significant habitat fragmentation, and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from lighting, non-native species, predation and habitat fragmentation due to Covered Activities are not likely to result in a decrease in coast horned lizard survival or reproduction beyond baseline conditions.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the coast horned lizard and will not result in the destruction or adverse modification of its critical habitat. We base these conclusions on the following:

1. The current range of the coast horned lizard includes Kern County southward to Baja California; thus, the action area for the HCP Amendment represents only a portion of the species' rangewide distribution.

2. Impacts will be limited to no more a total of 449.28acres of coast horned lizard Tracked Habitat, which represents about 0.05 percent of Modeled Habitat for the coast horned lizard in the Plan Area.

3. Based on the known distribution of coast horned lizard within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of coast horned lizard. Therefore, it is likely that substantially less than 449.28 acres of occupied coast horned lizard habitat will be impacted.

4. General OPs will reduce the likelihood that individual coast horned lizards will be harmed by Covered Activities.

5. Impacts to coast horned lizard will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at existing or acquired mitigation lands or through the R/E Program or measures that will benefit this species.

6. Because Covered Activities will affect a small proportion of the coast horned lizard habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by coast horned lizard, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of coast horned lizard in the Plan Area or rangewide.

7. Long-term management and monitoring of mitigation lands will help coast horned lizard in the Plan Area and will contribute to the rangewide conservation of this species.

Listed Birds

Western Distinct Population Segment (DPS) Yellow-Billed Cuckoo (Coccyzus americanus)

Status of the Species

Listing Status

The Service listed the western DPS of the yellow-billed cuckoo (western yellow-billed cuckoo) (*Coccyzus americanus*) as threatened on October 3, 2014 (79 FR 59992; Service 2014b). Critical habitat was designated for the species in 2021 (Service 2021e). A 12-month finding for the species was completed in 2020 (Service 2020a) in response to a petition to delist the DPS. The review recommended no change in listing status.

Species Description

The western yellow-billed cuckoo is a medium size migratory bird that measures about 12 inches in length, and about 2 ounces in weight (Service 2020a). It has a fairly stout and slightly down-curved bill; a slender, elongated body with a long-tailed look; and a narrow yellow ring of

colored, bare skin around the eye. The plumage is loose and grayish brown above and white below, with reddish primary flight feathers. The tail feathers are boldly patterned with black and white below. The bill is blue-black with yellow on the basal half of the lower mandible. The legs are short and bluish-gray. Males and females differ slightly and are indistinguishable in the field (Hughes 1999).

The final listing rule (Service 2014b) evaluated the western yellow-billed cuckoo under the Service's 'Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act'' (DPS Policy; 61 FR 4722, February 7, 1996). It concluded that the western population segment of the yellow-billed cuckoo is discrete from the remainder of the species because the yellow-billed cuckoo population segment that nests west of the Continental Divide and in northwestern Mexico is markedly separated geographically and behaviorally from all other populations of yellow-billed cuckoo, including those that nest in eastern North America.

Habitat Affinities

The western yellow-billed cuckoo primarily uses nesting sites in riparian habitat where conditions are typically cooler and more humid than in the surrounding environment (Gaines and Laymon 1984, Laymon 1998, Corman and Magill 2000). In the southwestern United States, the western yellow-billed cuckoo also nests in more arid-adapted habitat in drainages where conditions are also cooler and more humid than the surrounding environment (Griffin 2015, MacFarland and Horst 2015, MacFarland and Horst 2017, Corson 2018, Drost et al. 2020). Riparian habitat characteristics, such as dominant tree species, size and shape of habitat patches, tree canopy structure, tree age, vegetation height, and vegetation density, are important parameters of western yellow-billed cuckoo breeding habitat.

Life History

The western yellow-billed cuckoo is a migratory bird species, traveling between its wintering grounds in Central and South America and its breeding grounds in North America (Continental United States and Mexico) each spring and fall, often using river corridors as travel routes (Service 2020a). The geographical breeding range of yellow-billed cuckoo in western North America includes suitable habitat within the low- to moderate-elevation areas west of the crest of the Rocky Mountains in Canada, Mexico, and the United States, including the upper and middle Rio Grande, the Colorado River Basin, the Sacramento and San Joaquin River systems, the Columbia River system, and the Fraser River. (Service 2014b). Based on the best available science, the watershed boundary between the Rio Grande and Pecos Rivers is the optimum dividing line between eastern and western yellow-billed cuckoo populations (Service 2014b). Currently, the species no longer breeds in western Canada and the northwestern continental United States (Washington, Oregon, and Montana) (Service 2014b). The western yellow-billed cuckoo generally breeds June through September (May breeding does occur but is less common) (Service 2021e).

Western yellow-billed cuckoos depend on an abundance of large, nutritious insect and vertebrate prey to survive and raise young. In portions of the southwestern United States, high densities of prey species may be seasonally found, often for brief periods of time, during the vegetation growing season (Service 2021e). The arrival and nesting of western yellow-billed cuckoos

typically coincides with the availability of prey (Hughes 2020, entire). Desiccated riparian sites produce fewer suitable insects than moist sites (Service 2021e). In areas that typically receive rains during the summer monsoon, an increase in humidity, soil moisture, and surface water flow are important triggers for insect reproduction and western yellow-billed cuckoo nesting (Wallace et al. 2013). Western yellow-billed cuckoos select a nesting site based on optimizing the near-term foraging potential of the habitat (Wallace et al. 2013).

Given that western yellow-billed cuckoos are medium birds with a short hatch-to-fledge time, the adults must have access to abundant food sources to successfully rear their offspring (Laymon 1980). The variability of monsoon precipitation across a region may result in areas with favorable conditions for western yellow-billed cuckoo nesting in one year and less favorable in a different year. In years of high insect abundance, western yellow-billed cuckoos lay larger clutches (three to five eggs rather than two), a larger percentage of eggs produce fledged young, and they breed multiple times (two to three nesting attempts rather than one) (Laymon et al. 1997).

Status and Distribution

Current western yellow-billed cuckoo breeding populations are fragmented and geographically isolated (Service 2020a). In California prior to the 1930s, the species was widely distributed in suitable river bottom habitats and was locally common (Grinnell and Miller 1944, Small 1994). Western yellow-billed cuckoos historically were recorded from every county in the San Joaquin Valley region except Kings County, and were locally common as a breeding bird at least in San Joaquin, Kern, Fresno, and Stanislaus counties (Gaines and Laymon 1984). The species no longer breeds in the San Joaquin Valley (Service 2020b). The last nesting record for this region was in 1974 on Lewis Creek near Lindsey, Tulare County (Laymon and Halterman 1987). Western yellow-billed cuckoo numbers in California have declined by more than 99 percent from historical levels and are estimated to be 18 percent of levels observed in the late 1970s (Service 2020b). Current nesting populations (areas which have consistently supported numerous nesting pairs) in the state are found at only 3 locations (Sacramento River, Kern River, and the California side of the lower Colorado River) (Service 2020b). Declines in observed nesting numbers are continuing, especially along the Sacramento and Kern Rivers and at isolated sites that recently supported nesting, but are now not being used. Statewide numbers are most likely lower than 40 to 50 breeding pairs (excluding the lower Colorado River population, which is included in Arizona estimates), down from approximately 280 pairs as recently as 1977 and perhaps as many as 15,000 pairs prior to the increased human settlement in the 1850s (Service 2020b).

Threats and Conservation Needs

The 12-month findings for western yellow-billed cuckoo identified the following threats: habitat loss and degradation from altered watercourse hydrology and natural stream processes, livestock overgrazing, encroachment from agriculture, conversion of native habitat to predominantly nonnative vegetation, and sedimentation of riparian habitat; poor water quality, and, to a lesser extent, effects of invasive species, and the effects of climate change (Service 2020a). All of the threats can work cumulatively to exacerbate effects on the species.

Principal causes of riparian habitat destruction, modification, and degradation in the range of the western yellow-billed cuckoo have occurred from alteration of hydrology due to dams, water diversions, management of river flow that differs from natural hydrological patterns, channelization, and levees and other forms of bank stabilization that encroach into the floodplain (Service 2014b). Other alterations in river hydrology with ongoing effects on western yellow-billed cuckoo habitat include river channelization, construction of levees, bank stabilization, and placement of any flood control structures that encroach into the river and its floodplain. These actions result in direct loss of habitat from construction and from maintenance activities that remove woody vegetation that has become established on the structures.

Throughout most of its range, habitat for the western yellow-billed cuckoo is threatened by the conversion of native riparian woodlands to riparian vegetation dominated by tamarisk and other nonnative vegetation (Service 2014b). The major threat from this habitat conversion is the change from vegetation that supplies the western yellow-billed cuckoos with essential food and adequate thermal cover to vegetation that does not provide these necessary components of habitat for the western yellow-billed cuckoo. The establishment and persistence of tamarisk is often, but not always, aided by altered hydrology.

Most of the current impacts from agricultural land uses arise from livestock overgrazing in riparian areas. Riparian vegetation can recover relatively quickly from these effects after livestock removal (Smith 1996, Krueper et al. 2003). However, without proper management to reduce overgrazing, ongoing overgrazing will continue to contribute to habitat modification in the range of the western yellow-billed cuckoo into the future.

Conservation needs of western yellow-billed cuckoo include conservation, management, and restoration of western yellow-billed cuckoo habitat, active and hydrological process-based restoration of riparian habitat such as in the Colorado, Kern, and Sacramento Rivers, and the development of a western yellow-billed cuckoo recovery plan (Service 2014b).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 87 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the western yellow-billed cuckoo:

87. Western Yellow-billed Cuckoo (*Coccyzus americanus*)

a. Impacts from Covered Activities where there is a potential for the western yellow-billed cuckoo to occur (WYBC-Habitat) shall be avoided through project design considerations, to the extent feasible.

b. If impacts to WYBC-Habitat cannot be avoided, a Biologist shall survey WYBC-Habitat that has the potential to be impacted by Covered Activities using appropriate survey techniques to determine species presence. If project timing does not allow for surveys, it shall be assumed that all WYBC-Habitat to be impacted is occupied.

c. If surveys determine that WYBC-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind

with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within WYBC-Habitat.

d. If surveys determine WYBC-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied WYBC-Habitat shall be mitigated per Section 5.5, Table 5.3b.

e. Whenever practicable, minimize impacts through timing of work in WYBC-Habitat to avoid the nesting season for riparian avian species and conduct WYBC-Habitat removal prior to the initiation of the riparian avian breeding season (March 15 through September 15).

f. If work is scheduled during the riparian avian breeding season and within WYBC-Habitat, a Biologist shall conduct a preconstruction nesting survey to ensure that no western yellow-billed cuckoo active nests are present within 300 feet of the Covered Activities.

g. If nesting surveys indicate an active nest is likely or an active nest is observed, no Covered Activities shall be implemented within 300 feet of the nest. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by the Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures to be approved by USFWS. Specific buffer requirements may be reduced, with approval of USFWS, on a project-by-project basis as appropriate.

h. When an active nest is present, a Biologist shall be onsite during Covered Activities as needed to avoid and minimize the potential for impacts to individuals.

i. Direct take of nesting individuals and destruction of active nests are not allowed.

j. For new projects, impacts to yellow-billed cuckoo and WYBC-Habitat shall only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied western yellow-billed cuckoo habitat. However, not all Modeled Habitat is expected to support western yellow-billed cuckoo occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the western yellow-billed cuckoo Modeled Habitat, there are approximately 13,110 acres in the Plan Area and approximately 963 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the three ecoregions with the highest acreages of western yellow-billed cuckoo habitat are the northern valley, north coast, and southern-coast ecoregions. In the Plan Area in Orange County, the highest acreage of western yellow-billed cuckoo Modeled Habitat is found in

the coastal ecoregion. There is no suitable habitat for this species on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately two and one western yellow-billed cuckoo occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

Western yellow-billed cuckoo is a rare summer visitor to San Diego County (Clark 2020; Unitt 2004, as cited in SDG&E 2023). Breeding of this migrant species has not been confirmed within San Diego County in decades (Unitt 2004, as cited in SDG&E 2023). Historical observations of this species have been documented along rivers, lakes, and other riparian areas including the Santa Margarita River at the upper end of Ysidora Basin, Guajome Lake, Lake Hodges, Tijuana River Valley, and Smuggler's Gulch (Unitt 2004, as cited in SDG&E 2023). More recent observations (within the last 10 years) have been recorded along the San Luis Rey River, Otay River Valley, east of Lake Hodges, in Mission Bay, and San Felipe Canyon in Anza Borrego Desert State Park (Clark et al. 2014; eBird 2020; Service 2020, as cited in SDG&E 2023). No known species occurrences occur in the Plan Area in Orange County. However, yellow-billed cuckoo has potential to occur in the portion of the Plan Area that includes but is not limited to San Juan Creek and Cristianitos Creek.

Although western yellow-billed cuckoo is not covered, the following existing regional HCPs overlap with the Plan Area:

- San Diego MSCP NCCP/HCP
- San Diego MHCP Subregional NCCP/HCP
- Orange County Southern Subregion HCP
- SDCWA Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 5,888 acres of Modeled Habitat occur within Preserves and 871 acres of Modeled Habitat occur within Proposed Preserves (collectively, about 52 percent of all Modeled Habitat) associated with regional conservation efforts in the Plan Area (CDFW 2023). In addition, two occurrences of western yellow-billed cuckoo recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area. This species is not known or expected to occur at SDG&E's existing mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 is expected to impact up to 16.64 acres western yellow-billed cuckoo Modeled/Habitat, which is a fraction of the 13,110 acres of western yellow-billed cuckoo Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 7.88 acres of permanent impacts (0.06 percent of Modeled Habitat in the Plan Area);
- Approximately 4.6 acres of temporary impacts (0.04 percent of Modeled Habitat in the Plan Area); and
- Approximately 4.16 acres of Wildfire Fuels Management impacts (0.03 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.13 percent of western yellow-billed cuckoo Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for western yellow-billed cuckoos. However, because western yellow-billed cuckoos are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

Because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a western yellow-billed cuckoo occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[27]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact western yellow-billed cuckoo and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to western yellow-billed cuckoo will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of the western yellow-billed cuckoo within the Plan Area and its specific habitat requirements (i.e., riparian habitat where conditions are typically cooler and

[27] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

more humid than in the surrounding environment) we anticipate that only limited areas within Modeled Habitat support occurrences of western yellow-billed cuckoo. Therefore, it is likely that substantially less than 16.64 acres of occupied western yellow-billed cuckoo habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

Impacts to riparian habitat due to Covered Activities will primarily result from construction of linear Facilities (e.g., power lines and pipelines) across a creek or river with removal or destruction of riparian vegetation limited to relatively narrow strips of suitable habitat within the riparian corridor. We have little information regarding the effect of different amounts of habitat removal on western yellow-billed cuckoo survival or reproductive output, so we used our best professional judgment to estimate that the loss of more than 20 percent of western yellow-billed cuckoo habitat within a territory will substantially increase the risk of mortality or interfere with western yellow-billed cuckoo breeding activity. For adults whose territories are destroyed or significantly reduced (i.e., estimated as loss of 20 percent or more of territory), the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the impact area will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Western yellow-billed cuckoos that do find suitable habitat could lose their mates and may not be able to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation.

Conversely, loss of less than 20 percent of a territory may force a western yellow-billed cuckoo pair to adjust its territory boundaries slightly or result in a limited increase in territorial interactions with neighboring pairs but will not result in a substantial increase in mortality or decrease in reproductive output (i.e., effects would not rise to the level of "take").

Our analysis assumes impacts to western yellow-billed cuckoo pairs is roughly proportional to impacts to Modeled Habitat. There are 13,110 acres of Modeled Habitat in the Plan Area, 16.64 acres of anticipated impacts to Modeled Habitat, and an estimated two western yellow-billed cuckoo territories in the Plan Area. Using these calculations, we estimate that no more than one western yellow-billed cuckoo pair will be harmed from Covered Activities.[28] The territory could be impacted multiple times over the course of the permit term as habitat could be managed, regrow over time, and then be impacted again.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of western yellow-billed cuckoo habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 87 for the western yellow-billed cuckoo are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all

[28] 16.64 acres/13,110 acres x 2 territories ÷ 0.2 (20 percent threshold for harm) = <1 pair of western yellow-billed cuckoo harmed

Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to western yellow-billed cuckoo habitat, as specified in OP 87 include: 1) whenever practicable, do work in western yellow-billed cuckoo habitat outside the nesting season, 2) preconstruction nesting surveys if needed, 3) maintaining a 300-foot buffer around any nests found and monitoring the nests, and 4) avoiding direct take of individuals and destruction of active nests.

Within implementation of the above OPs, we do not expect any direct injury or mortality of adults, eggs, and nestlings from Covered Activities.

Unavoidable temporary impacts to western yellow-billed cuckoo occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to western yellow-billed cuckoo occupied habitat will be mitigated at a 3:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied, through the R/E Program, or measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of western yellow-billed cuckoo habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual western yellow-billed cuckoos within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of western yellow-billed cuckoos within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the western yellow-billed cuckoo.

Because Covered Activities will impact a small fraction of western yellow-billed cuckoo habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of western yellow-billed cuckoos within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation, and Habitat Fragmentation

The western yellow-billed cuckoo could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to western yellow-billed cuckoo include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, lighting, non-native species invasion, and habitat fragmentation.

Changes to hydrology, such as decreasing flows, erosion, and sedimentation can remove or alter the wetland habitat of western yellow-billed cuckoo. OPs will be implemented to minimize changes to hydrology, erosion, and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23).

Project construction and new Facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for western yellow-billed cuckoo. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (e.g., Rich and Longcore 2006). Since vulnerability to predators is a factor associated with habitat quality for the western yellow-billed cuckoo, project-associated increases in nighttime light levels may reduce the quality of western yellow-billed cuckoo habitat in localized areas. To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded, and directed away from natural habitats and any permanent lighting will be directed away and/or shielded so as not to illuminate native habitats (OP 25).

The ground disturbance and landscaping associated with Covered Activities can facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants can alter the species composition and structure of the habitat, which may make it less suitable to the western yellow-billed cuckoo. Arthropod abundance and diversity may decrease in correlation with the decline in their native plant hosts, decreasing the food supply of this insectivorous species. Leaks in water conveyance/holding facilities and landscape irrigation at new Facilities may also result in a reduction of food resources for the western yellow-billed cuckoo by creating favorable conditions for invasive ant species. Argentine ants can alter the native arthropod community, thereby significantly reducing their diversity and abundance (Bolger et al. 2000). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of western yellow-billed cuckoos.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species, and potential for increased predation. The removal and restoration of existing access roads that are not needed for Covered Activities and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between

sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting western yellow-billed cuckoo dispersal/movement corridors that contribute to long-term population viability for the western yellow-billed cuckoo. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat in order to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, lighting, non-native species, predation, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in western yellow-billed cuckoo survival or reproduction beyond baseline conditions.

Effect on Recovery

Although the proposed project will impact riparian habitat that is used by the western yellow-billed cuckoo for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be offset through the conservation, restoration/enhancement, and in-perpetuity management of western yellow-billed cuckoo habitat. These mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the western yellow-billed cuckoo.

We expect no more than 16.64 acres of western yellow-billed cuckoo Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the western yellow-billed cuckoo occupied habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any western yellow-billed cuckoo population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the western yellow-billed cuckoo. We base this conclusion on the following:

1. The current range of the western yellow-billed cuckoo includes North Central and South America, the western United States, part of northern Mexico, and Baja California, Mexico; thus, the action area for HCP Amendment represents only a portion of the species' rangewide distribution.

2. One pair of western yellow-billed cuckoo may be harmed through loss or partial loss of its primary breeding, feeding, and sheltering habitat, which is a small fraction of the pairs in the Plan Area.

3. Impacts will be limited to no more than 16.64 acres of western yellow-billed cuckoo Tracked Habitat, which represents about 0.13 percent of the Modeled Habitat for western yellow-billed cuckoo in the Plan Area.

4. Based on the known distribution of western yellow-billed cuckoo within the Plan Area and their specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of western yellow-billed cuckoo. Therefore, it is likely that substantially less than 16.64 acres of occupied western yellow-billed cuckoo habitat will be impacted.

5. General and species-specific OPs will reduce the likelihood that individual western yellow-billed cuckoos will be harmed by Covered Activities and will avoid direct death or injury or destruction of nests.

6. Impacts to western yellow-billed cuckoo will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced.

7. Because Covered Activities will affect a small proportion of the western yellow-billed cuckoo habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by western yellow-billed cuckoo, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of western yellow-billed cuckoo in the Plan Area or rangewide.

8. Long-term management and monitoring of mitigation lands will help sustain western yellow-billed cuckoos in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Southwestern Willow Flycatcher (Empidonax traillii extimus)

Status of the Species

Listing Status

The southwestern willow flycatcher (*Empidonax traillii extimus*) was listed as endangered by the Service on February 27, 1995 (60 FR 10694). The southwestern willow flycatcher is also listed as endangered by CDFW. The Service designated critical habitat on July 22, 1997 (62 FR 39129) and finalized a revised critical habitat on January 3, 2013 (78 FR 344 534). The Southwestern Willow Flycatcher Recovery Plan (recovery plan) was completed on August 30, 2002 (Service 2002e). A 12-Month Finding and 5-year review that recommended no change in the listing status of southwestern willow flycatcher was completed on December 29, 2017 (82 FR 61725).

Species Description

The southwestern willow flycatcher is a recognized subspecies of the willow flycatcher (*Empidonax traillii*). The southwestern willow flycatcher is a relatively small, insectivorous songbird, approximately 5.75 inches in length. Both sexes of the southwestern willow flycatcher have grayish-green back and wings, whitish throats, light gray-olive breasts, and pale, yellowish bellies. The primary song of the southwestern willow flycatcher is a sneezy "fitz-bew" or "fitz-a-bew" and the typical call is a breathy "whit" (Unitt 1987). Males sing regularly within their breeding territories to attract prospective mates and to defend their territories; females may also occasionally sing, but they do so less often than males and more quietly (Service 2002b).

Habitat Affinities

Southwestern willow flycatchers are obligate riparian breeders and occur within riparian zones along watercourses where willows (*Salix* spp.), cottonwoods (*Populus* spp.), seepwillow (*Baccharis* spp.), arrowweed (*Pluchea* spp.), and other riparian plants provide dense thickets. Non-native invasive plants such as saltcedar (*Tamarix* spp.) and Russian olive (*Eleagnus angustifolia*) are often a component of habitat used by southwestern willow flycatchers and do not appear to be avoided. Nests are built in thickets that are 6 to 98 feet in height that typically have a dense understory layer of up to 13 feet (Grinnell and Miller 1944; Phillips 1948; Hubbard 1987; Unitt 1987; Whitfield 1990; Brown 1991; Service 1993b, 1995a, 2002b). Nests are typically placed between 6.5 to 23 feet above the ground (Service 2002b). Southwestern willow flycatchers generally prefer nesting sites with surface water nearby (Bent 1960, Harris et al. 1986). Fragmented riparian zones with large distances between willow patches and individual willow plants are not selected for either nesting or singing (Sedgwick and Knopf 1992).

All willow flycatcher subspecies spend time migrating and breeding in the United States from April to September. Use of riparian habitats along major drainages in the southwest during migration has been documented (Sogge et al. 1997, Yong and Finch 1997, Johnson and O'Brien 1998, McKernan and Braden 1999, Koronkiewicz et al. 2004). Many of the willow flycatchers found migrating are detected in riparian habitats or patches (small areas of riparian vegetation) that would be unsuitable for nest placement (the vegetation structure is too short or sparse or the patch of vegetation is too small). In these drainages, migrating willow flycatchers may use a variety of riparian habitats, including ones dominated by native or exotic plant species or

mixtures of both (Service 2002b). Willow flycatchers, like most small, migratory, insect-eating birds, require food-rich stopover areas in order to replenish energy reserves and continue their northward or southward migration (Finch et al. 2000, Service 2002b). Migration stopover areas are likely critically important for willow flycatcher productivity and survival (Sogge et al.1997, Yong and Finch 1997, Service 2002b).

Life History

Southwestern willow flycatchers typically glean insects from the foliage, sally to catch flying insects, and occasionally capture insects on the ground (Sedgwick 2000). Common food items include wasps and bees (Hymenoptera), beetles (Coleoptera), flies (Diptera), butterflies and moths (Lepidoptera), and true bugs (Hemiptera) (Beal 1912).

Males typically arrive in southern California from May through mid-June and establish a territory by singing and interacting aggressively with other nearby southwestern willow flycatchers (Service 2002b). Females arrive approximately 1 week later. Territory size varies greatly, probably due to differences in population density, habitat quality, and nesting stage. Breeding territories generally range from 0.25 to 5.7 acres, with most in the range of 0.5 to 1.2 acres (3 acres average) (Sogge 1995, Whitfield and Enos 1996, Skaggs 1996, Sogge et al. 1997). Southwestern willow flycatchers are generally gone from breeding grounds in southern California by late August and are exceedingly scarce in the United States after mid-October (Garrett and Dunn 1981). Southwestern willow flycatchers commonly return to or near the general area (or site) where they previously bred or hatched (Service 2005a).

Although generally monogamous, polygyny and extra-pair mating by males (i.e., mating with females in other territories) is not uncommon (Service 2002b). Southwestern willow flycatchers typically raise one brood per year, although second broods may occur (Service 2002b). The clutch size is usually 3 to 4 eggs, and incubation lasts 12 to 13 days (Service 2002b). Nestlings fledge 12 to 15 days after hatching and then remain in the general nest area for another 14 to 15 days (minimum) before dispersing (Service 2002b). Birds are able to breed at 1 year of age, and banding studies have documented survivorship up to 11 years of age, although a life span of 1 to 3 years is most likely (Sedgwick 2000, Service 2002b).

Status and Distribution

The breeding range of the southwestern willow flycatcher includes Arizona, New Mexico, the southern third of California, the extreme southern portions of Nevada, Utah, Colorado, and western Texas (Hubbard 1987, Unitt 1987, Browning 1993, Service 2002b, Durst et al. 2008). Records of breeding in Mexico are few and confined to extreme northern Baja California and Sonora (Unitt 1987, Howell and Webb 1995, Service 2002b). California, Arizona, and New Mexico account for 89 percent of known southwestern willow flycatcher territories, while Nevada, Colorado, and Utah collectively account for the remaining 11 percent of known territories (Service 2002b, Durst et al. 2008). The current status of the southwestern willow flycatcher in Texas is unknown because no systematic surveys have been conducted for this species in Texas (Durst et al. 2008). Southwestern willow flycatchers winter in Mexico, Central America, and northern South America (Phillips 1948, American Ornithologists' Union (AOU) 1983, Stiles and Skutch 1989, Ridgely and Tudor 1994, Howell and Webb 1995, Service 2002b).

Once considered to be a widespread common breeder in southern California, the southwestern willow flycatcher had declined precipitously throughout its range within the 50 years prior to listing in 1995 (Unitt 1987, Service 1995b). At the time of the listing, the number of southwestern willow flycatcher territories was estimated to be approximately 350 known territories (Service 2002b), but this estimate was based on limited survey data and was acknowledged to be an underestimate of the probable population size. Listing of the southwestern willow flycatcher not only improved habitat protections, but it provided incentive to improve the level of effort expended to locate and monitor southwestern willow flycatchers throughout their range.

At the time the recovery plan was completed in 2002 (i.e., including information up through 2001), there were 986 known southwestern willow flycatcher territories rangewide, 256 known territories in California, and 186 known territories in the Coastal California Recovery Unit. Southwestern willow flycatcher territories in the Coastal California Recovery Unit were distributed across relatively small watersheds, mostly in the southern third of this recovery unit (Service 2002b); 101 territories were within the San Diego Management unit, encompassing San Diego County and the southern portion of Orange County. Most breeding sites were small (<5 territories); the largest populations within the Coastal California Recovery Unit were along the San Luis Rey (57 territories), Santa Margarita (18 territories), and Santa Ynez (26 territories) Rivers (Kus et al. 2003).

In 2007, there were 1,299 estimated southwestern willow flycatcher territories rangewide (Durst et al. 2008); this apparent increase from the 2001 population estimate (Service 2002b) should not be interpreted as an increase in the actual population because the rangewide survey effort has also continued to increase since the completion of the recovery plan. In contrast, the estimated number of flycatcher territories in California in 2007 was 172, with 120 territories in the Coastal California Recovery Unit and 77 territories in the San Diego Management Unit; once again, these decreased population estimates coincided with a changed (i.e., decreased) level of survey effort within California since 2001, so may not represent actual population declines. Estimates from 2004 to 2007 for the three largest populations within the Coastal California Recovery Unit based on Durst et al.(2008) [San Luis Rey River, 2004: 55 territories; Santa Margarita River, 2007: 14 territories; Santa Ynez River, 2002 to 2003: 7 territories (estimate based on multiple small-scale surveys that did not survey the entire area referenced in [Service 2002b)]) indicate a small potential population decline, but the ability to identify clear population trends was limited by a lack of concurrent and/or complete survey effort at two of the sites (i.e., the San Luis Rey and Santa Ynez Rivers).

A more recent study in San Diego County documented population declines and reduced distribution in all historically occupied southwestern willow flycatcher survey locations (Howell et al. 2022). The population declines observed in this study mirror declines observed at other known breeding locations for southwestern willow flycatchers in San Diego County, including at Camp Pendleton (Kus 2019, as cited in Howell et al. 2022) and the lower San Luis Rey River (Houston *et. al.* 2021, as cited in Howell *et al*. 2022), which have declined precipitously or been extirpated. Of particular note is the decline at Camp Pendleton, which progressed over many years despite seemingly high demographic performance. Additionally, declines have continued statewide, with populations in South Fork Kern River Valley (Whitfield 2020, as cited in Howell et al. 2022).

Threats and Conservation Needs

The southwestern willow flycatcher was listed as endangered due to threats from the destruction, modification, or reduction of suitable habitat and brood parasitism by the brown-headed cowbird (*Molothrus ater*, "cowbird") (Service 1995b). Changes in riparian plant communities has resulted in the degradation and elimination of nesting habitat for the southwestern willow flycatcher, which in turn has reduced the range, distribution, and population size of this species (Service 1995b).

Loss and modification of southwestern riparian areas has occurred as a result of agricultural development, water diversion and impoundment, channelization, livestock grazing, off-road vehicle and other recreational uses, and hydrological changes resulting from these and other land uses (Klebenow and Oakleaf 1984, Taylor and Littlefield 1986, Service 1995b). Estimated losses of wetlands between 1780 and the 1980s in the southwestern United States are: California (91 percent); Nevada (52 percent); Utah (30 percent); Arizona (36 percent); New Mexico (33 percent); and Texas (52 percent) (Dahl 1990). Listing of the southwestern willow flycatcher and other riparian species has substantially reduced impacts to riparian habitats. While large-scale trends in riparian habitat abundance and quality across the southwestern willow flycatcher's range have not been quantified, riparian habitat appears to be stabilized or improving at many known flycatcher breeding locations (Service 2002b).

If cowbird populations are not controlled, brood parasitism of southwestern willow flycatchers by cowbirds can be very high and appears to substantially reduce flycatcher nesting success (Unitt 1987, Service 1995b). Parasitism rates on southwestern willow flycatchers have been documented to range as high as 50 to 80 percent at several sites in California in the absence of cowbird trapping efforts (Whitfield 1990, Kus and Whitfield 2005) and 100 percent in the Grand Canyon in 1993 (Service 1995b). Based on this information, there was an explicit assumption (Service 1995b) that increased efforts to control cowbirds would improve southwestern willow flycatcher nest success and lead to increasing populations.

In California, intensive management to reduce nest parasitism and restore degraded riparian corridors has been underway for nearly two decades. The removal of breeding cowbirds at multiple sites has proven to be effective at increasing nesting success for the least Bell's vireo (*Vireo bellii pusillus*), a federally endangered species that shares the southwestern willow flycatcher's apparent vulnerabilities to habitat loss and parasitism (Kus and Whitfield 2005). Increased nest success for the least Bell's vireo has resulted in steadily increasing least Bell's vireo populations in areas where cowbirds have been controlled. While cowbird control has concurrently improved the apparent nest success for southwestern willow flycatchers, southwestern willow flycatcher populations have not exhibited any increase (Kus and Whitfield 2005). Although cowbird control efforts could benefit southwestern willow flycatcher productivity, cowbird parasitism does not appear to be the main factor limiting southwestern willow flycatcher population growth (Kus and Whitfield 2005).

The primary conservation needs for the southwestern willow flycatcher include protection and management of riparian breeding habitat (including enhancement or restoration of this habitat where possible) and identification and protection of wintering sites (Service 2002b). Other conservation needs include continuing cowbird control where needed and further research on

species biology, population dynamics and demographics (including the effects of cowbird parasitism), and susceptibility to contaminants within the environment on both the breeding and wintering grounds (Service 2002b, Kus and Whitfield 2005).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 88 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the southwestern willow flycatcher:

88. Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

a. Impacts from Covered Activities where there is a potential for southwestern willow flycatcher to occur or in designated critical habitat with PBFs (SWFL-Habitat) shall be avoided through project design considerations, to the extent feasible. PBFs include:

i. *Riparian vegetation.* Riparian habitat along a dynamic river or lakeside, in a natural or man-made successional environment (for nesting, foraging, migration, dispersal, and shelter) that is composed of trees and shrubs (that can include Gooddings willow (*Salix gooddingii*), coyote willow (*Salix exigua*), Geyer's willow (*Salix geyeriana*), arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), yewleaf willow (*Salix taxifolia*), pacific willow (*Salix lucida*), boxelder (*Acer negundo*), tamarisk sp. (*Tamarix* sp.), Russian olive (*Elaeagnus angustifolia*), buttonbush (*Cephalanthus occidentalis*), cottonwood (*Populus deltoides*), stinging nettle (*Urtica dioica*), alder sp. (*Alnus* sp.), velvet ash (*Fraxinus velutina*), poison hemlock (*Conium maculatum*), blackberry (*Rubus ursinus*), seep willow (*Baccharis salicifolia*), oak sp. (*Quercus* sp.), rose sp. (*Rosa* sp.), sycamore (*Platanus occidentalis*), false indigo (*Baptisia australis*), Pacific poison oak (*Toxicodendron diversilobum*), grape sp. (*Vitis* sp.), Virginia creeper (*Parthenocissus quinquefolia*), Siberian elm (*Ulmus pumila*), and walnut sp. (*Juglans* sp.) and some combination of:

(1) Dense riparian vegetation with thickets of trees and shrubs that can range in height from about 6 to 98 feet. Lower-stature thickets 6 to 13 feet tall are found at higher elevation riparian forests and tall-stature thickets are found at middle and lower-elevation riparian forests;

(2) Areas of dense riparian foliage at least from the ground level up to approximately 13 feet above ground or dense foliage only at the shrub or tree level as a low, dense canopy;

(3) Sites for nesting that contain a dense (about 50% to 100%) tree or shrub (or both) canopy (the amount of cover provided by tree and shrub branches measured from the ground);

(4) Dense patches of riparian forests that are interspersed with small openings of open water or marsh or areas with shorter and sparser vegetation that

creates a variety of habitat that is not uniformly dense. Patch size may be as small as 0.25 acre or as large as 175 acres.

b. If impacts to SWFL-Habitat cannot be avoided, a Biologist shall survey SWFL-Habitat that has the potential to be impacted by Covered Activities following current USFWS protocols to determine species presence. If project timing does not allow for surveys, it shall be assumed that all SWFL-Habitat to be impacted is occupied.

c. If surveys determine that SWFL-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within SWFL-Habitat.

d. If surveys determine SWFL-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied SWFL-Habitat shall be mitigated per Section 5.5, Table 5.3b.

e. Whenever practicable, minimize impacts through timing of work in riparian SWFL-Habitat to avoid the nesting season for riparian avian species and conduct SWFL-Habitat removal prior to the initiation of the riparian avian breeding season (March 15 through September 15).

f. If work is scheduled during the riparian avian breeding season, and within suitable SWFL-Habitat, a Biologist shall conduct a preconstruction nesting survey to ensure that no active southwestern willow flycatcher nests are present within 300 feet of the Covered Activities.

g. If an active southwestern willow flycatcher nest is observed, no Covered Activities shall be implemented within 300 feet of the nest. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by the Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures approved by USFWS. Specific buffer requirements may be reduced with approval by USFWS on a project-by-project basis as appropriate.

h. When an active nest is present, a Biologist shall be onsite during Covered Activities as needed to avoid and minimize the potential for impacts to individuals.

i. Direct take of nesting individuals and destruction of active nests are not allowed.

j. For new projects, impacts to southwestern willow flycatcher and SWFL-Habitat shall only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied southwestern willow flycatcher habitat. However, not all Modeled Habitat is expected to support southwestern willow flycatcher occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the southwestern willow flycatcher Modeled Habitat, there are approximately 46,030 acres in the Plan Area and approximately 2,228 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of southwestern willow flycatcher Modeled Habitat occur in the northern valley, north coast, and central foothills ecoregions. In the Plan Area in Orange County, the highest acreages of southwestern willow flycatcher Modeled Habitat occur in the Orange County foothill and valley ecoregions. There is no suitable habitat for this species on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 23 and 10 southwestern willow flycatcher occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

In 2007, there were 77 territories in the San Diego Management Unit (Service 2002b). While not a comprehensive survey, a more recent study in San Diego County documented population declines and reduced distribution in all historically occupied southwestern willow flycatcher survey locations (Howell *et al*. 2022). Therefore, there are likely less than 77 territories in the Plan Area. These records do not correspond to the CNDDB occurrences since a territory may include multiple CNDDB occurrences, or a CNDDB occurrence may include multiple territories.

In San Diego County, historic occurrences were located in various riparian corridors throughout the region with most detections located along the San Luis Rey River and in the Tijuana River Valley Regional Park. Occurrences were also located throughout the various riparian corridors on MCBCP; specifically, the Santa Margarita River; and within Preserves in the city of Oceanside, east towards Bonsall, and south of Imperial Beach towards the Tijuana River Valley Regional Park. Historic occurrences in the Plan Area in Orange County were primarily found within Cañada Gobernadora Canyon and along San Juan Creek near the community of Ladera Ranch.

The southwestern willow flycatcher is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- San Diego MHCP Subregional NCCP/HCP
- Orange County Southern Subregional HCP
- Western Riverside County MSHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 24,661 acres of Modeled Habitat occur within Preserves and 3,430 acres of Modeled Habitat occur within Proposed Preserves (collectively, about 57 percent of all Modeled Habitat) associated with regional conservation efforts in the Plan Area. In addition, 11 occurrences of southwestern willow flycatcher recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species has a low and moderate potential to occur at SDG&E's Cielo and Willow Glen mitigation lands, respectively, and is not known or expected to occur at the Otay Lakes mitigation lands. The Plan Area is in the San Diego Management Unit of the recovery plan.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 38.47 acres of southwestern willow flycatcher Modeled Habitat, which is a fraction of the 46,030 acres of southwestern willow flycatcher Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 18.23 acres of permanent impacts (0.04 percent of Modeled Habitat in the Plan Area);
- Approximately 10.63 acres of temporary impacts (0.02 percent of Modeled Habitat in the Plan Area); and
- Approximately 9.61 acres of Wildfire Fuels Management impacts (0.02 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.08 percent of southwestern willow flycatcher Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for southwestern willow flycatchers. However, because southwestern willow flycatchers are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

Because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a southwestern willow flycatcher occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres

of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[29]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact southwestern willow flycatcher and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to southwestern willow flycatcher will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of southwestern willow flycatchers within the Plan Area and its specific habitat requirements (i.e., mature riparian wetland sites with surface water nearby) we anticipate that only limited areas within Modeled Habitat support occurrences of southwestern willow flycatcher. Therefore, it is likely that substantially less than 38.47 acres of occupied southwestern willow flycatcher habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

Impacts to riparian habitat due to Covered Activities will primarily result from construction of linear Facilities (e.g., power lines and pipelines) across a creek or river with removal or destruction of riparian vegetation limited to relatively narrow strips of suitable habitat within the riparian corridor. We have little information regarding the effect of different amounts of habitat removal on southwestern willow flycatcher survival or reproductive output, so we used our best professional judgment to estimate that the loss of more than 20 percent of southwestern willow flycatcher habitat within a territory will substantially increase the risk of mortality or interfere with southwestern willow flycatcher breeding activity. For adults whose territories are destroyed or significantly reduced (i.e., estimated as loss of 20 percent or more of territory), the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the impact area will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Southwestern willow flycatchers that do find suitable habitat could lose their mates and may be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation.

Conversely, loss of less than 20 percent of a territory may force a southwestern willow flycatcher pair to adjust its territory boundaries slightly or result in a limited increase in territorial interactions with neighboring pairs but will not result in a substantial increase in mortality or decrease in reproductive output (i.e., effects would not rise to the level of "take").

[29] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

Our analysis assumes impacts to southwestern willow flycatcher pairs is roughly proportional to impacts to Modeled Habitat. There are 46,030 acres of Modeled Habitat in the Plan Area, 38.47 acres of anticipated impacts to Modeled Habitat, and an estimated 77 southwestern willow flycatcher territories in the Plan Area (based on the most recent comprehensive surveys from 2007 (Service 2002b). Using these calculations, we estimate that no more than 1 southwestern willow flycatcher pair will be harmed from Covered Activities.[30] The territory could be impacted multiple times over the course of the permit term as habitat could be managed, regrow over time, and then be impacted again.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of southwestern willow flycatcher habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 88 for the southwestern willow flycatcher are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to southwestern willow flycatcher habitat, as specified in the OP 88 include: 1) whenever practicable, do work in southwestern willow flycatcher habitat outside the nesting season, 2) preconstruction nesting surveys if needed, 3) maintaining a 300-foot buffer around any nests found and monitoring the nests, and 4) avoiding direct take of individuals and destruction of active nests.

Within implementation of the above OPs, we do not expect any direct injury or mortality of adults, eggs, and nestlings from Covered Activities.

Unavoidable temporary impacts to southwestern willow flycatcher occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to southwestern willow flycatcher occupied habitat will be mitigated at a 3:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through or through the R/E program or measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of southwestern willow flycatcher habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual southwestern willow flycatchers within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of southwestern willow flycatchers within these mitigation lands.

[30] 38.47 acres/46,030 acres x 77 territories ÷ 0.2 (20 percent threshold for harm) = <1 pair of southwestern willow flycatcher harmed

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the southwestern willow flycatcher.

Because Covered Activities will impact a small fraction of the southwestern willow flycatcher habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of southwestern willow flycatchers within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation, and Habitat Fragmentation

The southwestern willow flycatcher could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to southwestern willow flycatcher include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, lighting, non-native species, predation, and habitat fragmentation.

Changes to hydrology, such as decreasing flows, erosion, and sedimentation can remove or alter the wetland habitat of southwestern willow flycatcher. OPs will be implemented to minimize changes to hydrology, erosion, and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23).

Covered Activities and new Facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for southwestern willow flycatcher. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (e.g., Rich and Longcore 2006). Since vulnerability to predators is a factor associated with habitat quality for the southwestern willow flycatcher, project-associated increases in nighttime light levels may reduce the quality of southwestern willow flycatcher habitat in localized areas. To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats, and any permanent lighting will be directed away and/or shielded so as not to illuminate native habitats (OP 25).

The ground disturbance and landscaping associated with Covered Activities can facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants can alter the species composition and structure of the habitat, which may make it less suitable to the southwestern willow flycatcher. Arthropod abundance and diversity may decrease in correlation

with the decline in their native plant hosts, decreasing the food supply of this insectivorous species. Leaks in water conveyance/holding facilities and landscape irrigation at new Facilities may also result in a reduction of food resources for the southwestern willow flycatcher by creating favorable conditions for invasive ant species. Argentine ants can alter the native arthropod community, thereby significantly reducing their diversity and abundance (Bolger et al. 2000). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of southwestern willow flycatchers.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species, and potential for increased predation. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting southwestern willow flycatcher dispersal/movement corridors that contribute to long-term population viability for the southwestern willow flycatcher. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, lighting, non-native species, predation and habitat fragmentation due to Covered Activities are not likely to result in a decrease in southwestern willow flycatcher survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area is in the San Diego Management Unit of the Coastal California Recovery Unit identified in the recovery plan (Service 2002b). The recovery plan identifies the need to increase the number of territories in each management unit to help meet the recovery criteria established for each Recovery Unit and identifies specific reaches of occupied streams, many of which cross the Plan Area, where recovery efforts should be focused. The riparian habitat included in the Plan Area is part of a system that provides important breeding, feeding, and sheltering habitat for the southwestern willow flycatcher.

The HCP Amendment does not conflict with the goals of the recovery plan. Although the Covered Activities will impact riparian habitat that is used by the southwestern willow flycatcher for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation, restoration/enhancement, and in-perpetuity management of occupied southwestern willow flycatcher habitat. The mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the southwestern willow flycatcher.

The proposed conservation and restoration/enhancement of occupied southwestern willow flycatcher habitat, and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with the recovery plan Task 1 (increase and improve currently suitable and potentially suitable habitat). Therefore, the breeding, feeding, and sheltering functions degraded or destroyed due to unavoidable impacts to southwestern willow flycatcher habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan.

We expect no more than 39 acres of southwestern willow flycatcher Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the southwestern willow flycatcher habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any southwestern willow flycatcher population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the southwestern willow flycatcher. We base this conclusion on the following:

1. The current range of the southwestern willow flycatcher includes Arizona, New Mexico, California, Nevada, Utah, Colorado, and western Texas; thus, the

action area for HCP Amendment represents only a portion of the subspecies' rangewide distribution.

2. One pair of southwestern willow flycatcher may be harmed through loss or partial loss of its primary breeding, feeding, and sheltering habitat, which is a small fraction of the pairs in the Plan Area and rangewide.

3. Impacts will be limited to no more than 38.47 acres of southwestern willow flycatcher Tracked Habitat, which represents about 0.08 percent of the Modeled Habitat for southwestern willow flycatcher in the Plan Area.

4. Based on the known distribution of southwestern willow flycatcher within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of southwestern willow flycatcher. Therefore, it is likely that substantially less than 38.47 acres of occupied southwestern willow flycatcher habitat will be impacted.

5. General and species-specific OPs will reduce the likelihood that individual southwestern willow flycatchers will be harmed by Covered Activities and will avoid direct death or injury or destruction of nests.

6. Impacts to southwestern willow flycatcher will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan.

7. Because Covered Activities will affect a small proportion of the southwestern willow flycatcher habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by southwestern willow flycatcher, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of southwestern willow flycatcher in the Plan Area or rangewide.

8. Long-term management and monitoring of mitigation lands will help sustain southwestern willow flycatchers in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this subspecies.

Coastal California Gnatcatcher (Polioptila californica californica)

Status of the Species

Listing Status

The Service listed the coastal California gnatcatcher (*Polioptila californica californica*) as threatened on March 30, 1993 (58 FR 16742). The most recent final rule designating critical

habitat was published on December 19, 2007 (72 FR 72010). A 5-year review for the coastal California gnatcatcher was completed in June 2020 that recommended no change in the listing status (Service 2020c).

Species and Critical Habitat Description

The coastal California gnatcatcher is a small, long-tailed member of the thrush family (Muscicapidae) that is endemic to cismontane southern California and northwestern Baja California, Mexico (Atwood 1991). Its body plumage is dark blue-gray above and grayish-white below, while the tail is mostly black above and below. The male has a distinctive black cap that is absent during the winter, and both sexes have a distinctive white eye-ring. The coastal California gnatcatcher is distinguished from the black-tailed gnatcatcher (*Polioptila melanura*) by its darker body plumage, less extensive white on tail feathers (rectrices 5 and 6), and longer tail.

There are 11 designated critical habitat units for the coastal California gnatcatcher that include 197,303 acres of federal, State, local, and private land in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties (72 FR 72010). Designated critical habitat includes habitat throughout the species' range in a variety of climatic zones and vegetation types to preserve the genetic and behavioral diversity that currently exists within the species. The individual units contain essential habitat for the coastal California gnatcatcher and help to identify special management considerations for the species.

PBFs for the coastal California gnatcatcher are those habitat components that are essential for the primary biological needs of foraging, nesting, rearing of young, intra-specific communication, roosting, dispersal, genetic exchange, or sheltering (72 FR 72010). These include: 1) dynamic and successional sage scrub habitats (i.e., Venturan coastal sage scrub, Diegan coastal sage scrub, Riversidean sage scrub, maritime succulent scrub, Riversidean alluvial fan scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub) that provide space for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal, and foraging; and 2) non-sage scrub habitats such as chaparral, grassland, and riparian areas, in proximity to sage scrub habitats that provide space for dispersal, foraging, and nesting.

Habitat Affinities

The coastal California gnatcatcher typically occurs in or near coastal sage scrub, which is composed of relatively low-growing, dry-season deciduous, and succulent plants. Characteristic plants of these communities include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), lemonadeberry (*Rhus integrifolia*), bush penstemon (*Keckiella antirrhinoides*), *Salvia* spp., *Encelia* spp., and *Opuntia* spp. (Weaver 1998). The coastal California gnatcatcher may also use chaparral, grassland, and riparian plant communities where they occur adjacent to or intermixed with coastal sage scrub, especially during the non-breeding season (Campbell et al. 1998), but coastal California gnatcatchers are closely tied to coastal scrub for reproduction (Atwood 1993). Potential factors contributing to the coastal California gnatcatcher's use of alternative habitats may include more abundant food resources, higher survival rates during dispersal, fire avoidance, and cooler microclimate during heat stress (Campbell et al. 1998).

Because coastal sage scrub is patchily distributed and variable in both structure and composition throughout the range of the species, coastal California gnatcatchers are not uniformly distributed within available coastal sage scrub. For example, Weaver (1998) found that coastal California gnatcatcher densities in northern San Diego County are highest in areas where California buckwheat or California encelia are co-dominant with sagebrush. Beyers and Wirtz (1997) found that nesting territories typically have greater than 50 percent shrub cover and an average shrub height that exceeds 2.3 feet. Other parameters that contribute to the quality of habitat for coastal California gnatcatchers include slope, aspect, temperature, and precipitation. Winchell and Doherty (2008) found higher coastal California gnatcatcher occupancy probabilities corresponded with areas that had less than 40 percent slopes, annual precipitation ≤ 13.2 inches, and an average January minimal temperature of ≥41 degrees Fahrenheit. Slope, temperature, and precipitation were also found to have a stronger influence on occupancy than patch size (Winchell and Doherty 2008).

Life History

The coastal California gnatcatcher is primarily insectivorous. Based on fecal sample analysis, its diet consists of small arthropods, especially leaf-hoppers (Homoptera) and spiders (Araneae), while true bugs (Hemiptera) and wasps, bees, and ants (Hymenoptera) are minor components (Burger et al. 1999).

Coastal California gnatcatchers are non-migratory and exhibit strong site tenacity (Atwood 1993). Breeding season territories range in size from about 2.5 acres to 19.8 acres (11.1 acres average) (Atwood et al. 1998, Preston et al. 1998a), with mean territory size generally greater for inland populations than coastal populations (Preston et al. 1998a). During the non-breeding season, coastal California gnatcatchers have been observed to wander in adjacent territories and unoccupied habitat increasing their home range size to approximately 78 percent larger than their breeding territory (Preston et al. 1998a).

The coastal California gnatcatcher breeding season extends from late-February through early-August with the peak of nesting attempts occurring from mid-March through mid-May (Atwood and Bontrager 2001). Most coastal California gnatcatchers first breed at 1 year of age (Atwood and Bontrager 2001). Nests are constructed over a 4-to-10-day period and are most often placed in California sagebrush about 3 feet above the ground (Atwood 1993). Clutch size averages four eggs (Atwood and Bontrager 2001). The egg incubation period is 14 days and the nestling period is 10 to 15 days (Grishaver et al. 1998). Both sexes participate in all phases of the nesting cycle and coastal California gnatcatcher pairs may produce more than one brood in one nesting season (Atwood and Bontrager 2001).

Juveniles stay within their natal territories up to 5 weeks after fledging from the nest (Grishaver et al. 1998), with juveniles subsequently dispersing to find their own foraging and nesting territories. Juveniles have been observed to disperse up to 6.2 miles from their natal territory (Atwood and Bontrager 2001), but they generally disperse less than 1.9 miles on average (Bailey and Mock 1998, Galvin 1998, Atwood and Bontrager 2001). Dispersing coastal California gnatcatchers are apparently able to traverse highly human-modified landscapes for at least short distances (Bailey and Mock 1998). Juveniles begin to establish territories as early as late spring and territories are established by the end of October (Preston et al. 1998a).

Similar to other passerine species, coastal California gnatcatcher mortality is highest for the youngest age class, with much of this attributable to predation of young in nests. Mean average survivorship of coastal California gnatcatchers during their first year is estimated to be 29 percent, with annual survivorship for adults 57 percent, although there is probably a high annual variation within and between populations. The oldest documented individual was a female at least 8 years old (Atwood and Bontrager 2001).

Coastal California gnatcatchers develop vocalizations within 2 weeks of fledging (Grishaver et al. 1998). Male coastal California gnatcatchers call more frequently than females; the greatest vocalization rates occur in February, just prior to nest building (mean 238 vocalizations per hour) and lowest in June during brooding of nestlings (mean 67 vocalizations per hour) (Preston et al. 1998b). Calls have been recorded in association with mobbing potential predators, during pair interactions (i.e., pair bonding, copulation, nest-building, or delivery of food to nestlings), and following the loss of a mate during the breeding season (Preston et al. 1998b, Atwood and Bontrager 2001).

Status and Distribution

The range of the coastal California gnatcatcher is coastal southern California and northwestern Baja California, Mexico, from southern Ventura and San Bernardino counties, California, south to near El Rosario, Mexico, at about 30 degrees north latitude (Service 2020c). The northern and eastern limits of the coastal scrub vegetation communities used by the coastal California gnatcatcher are largely bound by mountainous areas, while the southern limit is defined by the transition to the Vizcaíno desert. Atwood and Bontrager (2001) estimated approximately 94 percent of the coastal California gnatcatchers in the United States are found in Orange, western Riverside, and San Diego counties. Relatively isolated populations also remain in portions of its former range in Los Angeles, San Bernardino, and southern Ventura counties. The current overall range is roughly the same as it was at the time of listing (Service 2020c).

Coastal California gnatcatchers were considered locally common in the mid-1940s, but they had declined substantially in the United States by the 1960s (Atwood 1980). At the time of listing in 1993, we estimated about 2,562 pairs of coastal California gnatcatchers remained in the United States (Service 1993c); however, this estimate was not statistically valid because it was calculated using methods not supported by probability theory (Winchell and Doherty 2008). Additionally, coastal California gnatcatcher population sizes are known to fluctuate from year to year (Atwood and Bontrager 2001), which further complicates any trend assessment.

In a study using more rigorous sampling techniques, Winchell and Doherty (2008) estimated there were 1,324 (95 percent confidence interval: 976 to 1,673) coastal California gnatcatcher pairs over a 111,006-acre area on public and quasi-public lands of Orange and San Diego counties. Their sampling frame covered only a portion of the United States range, focusing on the coast, and was limited to 1 year. Although it is not valid to extrapolate beyond the sampling frame, especially in light of known differences in population densities across the range of the coastal California gnatcatcher, it is likely that more coastal California gnatcatchers occur in the United States portion of the range than was suggested by earlier estimates. For example, additional core populations are located on Camp Pendleton and in Los Angeles and Riverside counties (Service 2007a).

The population estimates described above are based on surveys conducted prior to catastrophic fires in San Diego County in 2003 and San Diego and Orange counties in 2007. These fires are assumed to have temporarily reduced the overall coastal California gnatcatcher population because of the temporary loss of coastal California gnatcatcher occupied habitat. In the 2007 firestorm, about 28,173 acres of coastal sage scrub burned in Orange County and about 84,202 acres of coastal sage scrub burned in San Diego County in several separate locations. Surveys were repeated for San Diego County in 2009 and concluded that the coastal California coastal California gnatcatcher will recolonize burned areas, but that it can take more than 5 years post-burn for populations to reach pre-burn occupancy levels, even in higher-quality habitat areas (Winchell and Doherty 2014).

Based on rangewide surveys in 2020, about 28 percent of coastal California gnatcatcher habitat was found to be occupied (Kus and Housten 2021).

Threats and Conservation Needs

The 5-year review for coastal California gnatcatcher includes a detailed evaluation of the current threats and conservation needs of the species. The species was listed in 1993 because of habitat loss and fragmentation resulting from urban and agricultural development (58 FR 16742). The direct loss of habitat reduces the amount of breeding, sheltering, and foraging area available, thereby proportionally reducing the population size and overall reproductive capacity of the species. Fragmented habitats have reduced biological integrity due to the increased potential for human-generated disturbance. Directly associated with development is an increase in recreational use of habitats, fire frequency, waste dumping, air pollution, exotic plant and animal species, predators, cowbird parasitism, domestic pets, and night lighting, all of which can have adverse impacts on the quality of habitat for the coastal California gnatcatcher.

Several stressors, including livestock grazing, anthropogenic atmospheric pollutants, and wildfire, promote habitat type conversion within the range of the coastal California gnatcatcher. Wildfire in particular is a major contributor because it promotes a feedback loop. That is, wildfire allows non-native grasses to outcompete re-growing native shrubs, which leads to an increase in non-native grasses, which makes the area more susceptible to wildfire, which allows the process to repeat—but with successively fewer native shrubs with each iteration. The number of wildfires has increased dramatically as urbanization (with its multitude of ignition sources) has come into greater contact with open space areas. Thus, the threat of habitat type conversion has increased throughout the range of the coastal California gnatcatcher since listing (Service 2020c).

Long-term management is required to address the numerous threats posed by the urban edge and ensure the persistence of the species. Some long-term management actions that will address identified threats include development and implementation of fire management plans, homeowner education programs (for residences adjacent to occupied habitat), predator control, cowbird trapping, routine invasive vegetation removal, limited public access in areas of high quality habitat, and control of irrigation water and other urban runoff adjacent to preserved habitat. Monitoring of the species distribution over time will assist in determining the effectiveness of management actions at reducing threats and will allow for management to be adapted in the event that threats have not been adequately reduced.

Development continues throughout the range of the coastal California gnatcatcher. However, the implementation of regional NCCP/HCPs in southern California has directed growth into certain areas, while establishing habitat preserves consisting of large "core" areas of coastal California gnatcatcher habitat and connecting "linkage" areas. Five regional plans are finalized and once fully implemented are anticipated to preserve in perpetuity over 182,976 acres of coastal California gnatcatcher habitat (Service 2010b). Preserved habitat is managed for the benefit of the coastal California gnatcatcher, thereby reducing the magnitude of this threat since listing. Large federal landholdings that support coastal California gnatcatcher habitat also contribute to core and linkage areas. These lands include Camp Pendleton, MCAS Miramar, Cleveland National Forest, and San Diego NWR. Habitat type conversion can affect all areas of habitat, even those areas otherwise considered preserved. Because habitat type conversion is a threat of high magnitude, particularly given the increasing occurrence of wildfire, additional time is needed to evaluate the adequacy of existing management programs for reducing this threat.

Conservation needs for coastal California gnatcatcher include conservation and restoration of habitat to increase the amount of live-in habitat and habitat connectivity and managing threats to coastal California gnatcatcher habitat, such as wildfire ignition, human disturbance, and non-native vegetation.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 91 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the coastal California gnatcatcher:

91. Coastal California Gnatcatcher (*Polioptila californica californica*)

    a. Impacts from Covered Activities where there is a potential for coastal California gnatcatcher to occur, or in designated critical habitat with PBFs (CAGN-Habitat), shall be avoided through project design considerations, to the extent feasible PBFs include sage scrub and non-sage scrub habitats such as chaparral, grassland, riparian areas, in proximity to sage scrub habitats that provide space for dispersal, foraging, and nesting.

    b. If impacts to CAGN-Habitat cannot be avoided, a Biologist shall survey CAGN-Habitat that has the potential to be impacted by Covered Activities following current USFWS protocols to determine species presence. If project timing does not allow for surveys, it shall be assumed that all CAGN-Habitat to be impacted is occupied.

    c. If surveys determine that CAGN-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within CAGN-Habitat.

d. If surveys determine CAGN-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied CAGN-Habitat shall be mitigated per Section 5.5, Table 5.3a.

e. Whenever practicable, minimize impacts through timing of work in CAGN-Habitat to avoid the nesting season and conduct CAGN-Habitat removal prior to the initiation of the breeding season (February 15 through August 15).

f. If work is scheduled during the coastal California gnatcatcher breeding season, and within suitable CAGN-Habitat, a Biologist shall conduct a preconstruction nesting survey to ensure that no active coastal California gnatcatcher nests are present within 300 feet of the Covered Activities.

g. If an active coastal California gnatcatcher nest is observed, no Covered Activities shall be implemented within 300 feet of the nest. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by the Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures approved by USFWS. Specific buffer requirements may be reduced with approval by USFWS on a project-by-project basis as appropriate.

h. When an active nest is present, a Biologist shall be onsite during Covered Activities as needed to avoid and minimize the potential for impacts to individuals.

i. Direct take of individuals and destruction of active nests are not allowed.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied coastal California gnatcatcher habitat. However, not all Modeled Habitat is expected to support coastal California gnatcatcher occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the coastal California gnatcatcher Modeled Habitat, there are approximately 95,163 acres in the Plan Area and approximately 7,365 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of coastal California gnatcatcher Modeled Habitat occur in the southern foothills, central foothills, and northern valley ecoregions. In the Plan Area in Orange County, the highest acreage of coastal California gnatcatcher Modeled Habitat is found in the Orange County foothill and valley ecoregion. There is no suitable habitat for this species on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 424 and 361 coastal California gnatcatcher occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

In many cases, impacts to documented occurrences of the coastal California gnatcatcher have already been evaluated in section 7 consultations with federal agencies or regional HCPs. One biological opinion was issued to address potential impacts to the coastal California gnatcatcher as a result of SDG&E Sunrise Powerlink project (FWS-08B0423-11F004). The terms and

conditions of this biological opinion remain in effect and will not be superseded by the HCP Amendment. Measures to offset impacts associated with this project included acquisition of the Lakeside Ranch (464.9 acres) and Hamlet (105.8 acres) properties that contribute to regional conservation efforts for the coastal California gnatcatcher (see *Existing Conservation Lands* section).

The coastal California gnatcatcher is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- San Diego MHCP Subregional NCCP/HCP
- Orange County Southern Subregional HCP
- Western Riverside County MSHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP

Together, these HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Prior to the completion of these HCPs, impacts to suitable habitat for the coastal California gnatcatcher were authorized by Interim Habitat Loss Plans under the Special 4(d) rule for the coastal California gnatcatcher. Currently, an estimated 787.01 acres of coastal sage scrub remain available for habitat loss permits (Kendalyn White, pers. comm. 2023). Therefore, additional habitat losses under the 4(d) rule may continue in the North County MSCP planning area where NCCP/HCP planning efforts are still underway.

Currently, approximately 39,417 acres of Modeled Habitat occur within Preserves and 10,722 acres of Modeled Habitat occur within Proposed Preserves (collectively, about 52 percent of all Modeled Habitat) associated with regional conservation efforts in the Plan Area. In addition, 251 occurrences of coastal California gnatcatcher recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is known to occur at SDG&E's Cielo and Willow Glen mitigation lands and has a high potential to occur on the Otay Lakes mitigation lands.

The Plan Area and PIZ include approximately 80,372 acres and 6,313 acres (3,389 acres with PBFs), respectively, within Unit 1, Unit 2, Unit 3, Unit 5, Unit 6, Unit 7, and Unit 10 of designated critical habitat for the coastal California gnatcatcher. These units provide for connectivity and genetic interchange among core populations and contain large blocks of high-quality habitat capable of supporting persistent populations of coastal California gnatcatchers. Critical habitat within the Plan Area includes all PBFs needed for the coastal California gnatcatcher. The PBFs may require special management considerations or protection to minimize

impacts associated with habitat type conversion and degradation occurring in conjunction with urban and agricultural development.

Critical habitat for the coastal California gnatcatcher is conserved at SDG&E's Otay Lakes, Willow Glen, and Cielo mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to impact up to 127.18 acres of coastal California gnatcatcher Modeled Habitat, which is a fraction of the 95,163 acres of coastal California gnatcatcher Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 60.26 acres of permanent impacts (0.06 percent of Modeled Habitat in the Plan Area);
- Approximately 35.14 acres of temporary impacts (0.04 percent of Modeled Habitat in the Plan Area); and
- Approximately 31.78 acres of Wildfire Fuels Management impacts (0.03 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.13 percent of coastal California gnatcatcher Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for coastal California gnatcatchers. However, because coastal California gnatcatchers are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, Modeled Habitat is not expected to always be occupied.

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the 2050 ITP term for the HCP Amendment. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact more than 1.75 acres of a preserve or planned preserve (including critical habitat) will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to coastal California gnatcatcher and/or its critical habitat if present will be evaluated for consistency with the HCP Amendment.

Impacts to coastal California gnatcatcher habitat due to Covered Activities will primarily result from construction of linear Facilities (e.g., power lines and pipelines) with removal or destruction of vegetation limited to relatively narrow strips of suitable habitat. We have little information regarding the effect of different amounts of habitat removal on coastal California gnatcatcher survival or reproductive output, so we used our best professional judgment to estimate that the loss of more than 20 percent of coastal California gnatcatcher habitat within a

territory will substantially increase the risk of mortality or interfere with coastal California gnatcatcher breeding activity. For adults whose territories are destroyed or significantly reduced (i.e., estimated as loss of 20 percent or more of territory), the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the impact area will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Coastal California gnatcatchers that do find suitable habitat could lose their mates and may be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation.

Conversely, loss of less than 20 percent of a territory may force a coastal California gnatcatcher pair to adjust its territory boundaries slightly or result in a limited increase in territorial interactions with neighboring pairs but will not result in a substantial increase in mortality or decrease in reproductive output (i.e., effects would not rise to the level of "take").

As stated above, based on rangewide surveys in 2020, about 28 percent of gnatcatcher habitat was found to be occupied (Kus and Houston 2021). Assuming a 28 percent occupancy rate, about 36 acres of 127 acres of Modeled Habitat may be occupied by coastal California gnatcatcher at any point in time. Applying the 20 percent threshold to an assumed average territory size of 11.1 acres, up to 16 pairs of coastal California gnatcatcher may be harmed through loss or partial loss of their primary breeding, feeding, and sheltering habitat.[31] Individual territories could be impacted multiple times over the course of the permit term as habitat could be managed, regrow over time, and then be impacted again. The number of gnatcatcher territories impacted (16) represents less than 4 percent of the 424 occurrences in the Plan Area described in the Environmental Baseline. However, because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a coastal California gnatcatcher occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[32]

Management and monitoring activities on mitigation lands could result in minor, temporary loss of coastal California gnatcatcher habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 91 for the coastal California gnatcatcher are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered

[31] 36 acres of occupied coastal California gnatcatcher habitat ÷ [11.1 acres per territory x 0.2 (20 percent threshold for harm)] = 16 pairs of gnatcatchers harmed

[32] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to coastal California gnatcatcher habitat, as specified in the OP 91 include: 1) whenever practicable, do work in coastal California gnatcatcher habitat outside the nesting season, 2) preconstruction nesting surveys, 3) maintaining a 300-foot buffer around nests and monitoring the nests, and 4) avoiding direct take of individuals and destruction of active nests.

Within implementation of the above OPs, we do not expect any direct injury or mortality of adults, eggs, and nestlings from Covered Activities.

Unavoidable temporary impacts to coastal California gnatcatcher occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to coastal California gnatcatcher habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. As of 2021, about 110 acres of credits were available in the Cielo and Willow Glen mitigation lands that could be used to mitigate impacts to coastal California gnatcatcher occupied habitat. Additional mitigation lands will be established as needed in the future. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of coastal California gnatcatcher habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual coastal California gnatcatchers within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of coastal California gnatcatchers within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the coastal California gnatcatcher.

Because Covered Activities will impact a small fraction of the coastal California gnatcatcher habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of coastal California gnatcatchers within the Plan Area or rangewide.

Effects from Lighting, Non-Native Species, Predation, Fire, and Habitat Fragmentation

The coastal California gnatcatcher could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to coastal California gnatcatcher include the degradation of habitat outside the footprint of Covered Activities as a result of lighting, non-native species, fire, and habitat fragmentation.

Project construction and new Facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for coastal California gnatcatcher. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (e.g., Rich and Longcore 2006). Since vulnerability to predators is a factor associated with habitat quality for the coastal California gnatcatcher, project-associated increases in nighttime light levels may reduce the quality of coastal California gnatcatcher habitat in localized areas. If night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats and any permanent lighting adjacent to all on- or off-site habitat will be directed away from and/or shielded so as not to illuminate native habitats (OP 25).

The ground disturbance associated with Covered Activities can facilitate the spread of non-native species into adjacent undisturbed habitat. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the coastal California gnatcatcher. Arthropod abundance and diversity may decrease in correlation with the decline in their native plant hosts, decreasing the food supply of this insectivorous species. Leaks in water conveyance/holding facilities and landscape irrigation at new Facilities may also result in a reduction of food resources for the coastal California gnatcatcher by creating favorable conditions for invasive ant species. Argentine ants can alter the native arthropod community, thereby significantly reducing their diversity and abundance (Bolger et al. 2000). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of coastal California gnatcatchers.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive pest species. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, is expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such species. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species. BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities (OP 11). Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's "Invasive Plant Inventory", and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OPs 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Approximately 64 percent of the Plan Area is in "High Fire Threat Districts" (HFTDs). The HFTD consists of Tier 2 areas, "where there is an elevated risk for destructive utility associated wildfires," and Tier 3 areas, "where there is an extreme risk for destructive utility associated wildfires." The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds, coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing Facilities (e.g., electric lines) and O&M of these Facilities are potential wildlife ignition sources and wildfire ignition sources may increase with construction of new Facilities. In addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. An increase in the number of wildfires could lead to increased habitat fragmentation and isolation, diminishing the dispersal ability and inter-population connections of the coastal California gnatcatcher.

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007, after San Diego experienced some of the most destructive wildfires in the county's history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have developed and implemented programs to enhance situational awareness, which has increased SDG&E's ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment) and Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities (Section 8.5, pages 8 to16). For example, SDG&E will regularly maintain fire protection areas around Facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas and equipping vehicles with shovels and fire extinguishers. Based on SDG&E's increased ability to monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP 10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting coastal California gnatcatcher dispersal/movement corridors that contribute to long-term population viability for the coastal California gnatcatcher. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from lighting, non-native species, fire, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in coastal California gnatcatcher survival or reproduction beyond baseline conditions.

Effects to Critical Habitat

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 58.52 acres of coastal California gnatcatcher critical habitat with PBFs within Units 1, 2, 3, 5, 6, 7, and 10, which is a fraction of the 80,372 acres of coastal California gnatcatcher critical habitat within the Plan Area. These impacts will include:

- Approximately 27.73 acres of permanent impacts (0.01 percent of critical habitat in the Plan Area);

- Approximately 16.17 acres of temporary impacts (0.01 percent of critical habitat in the Plan Area); and

- Approximately 14.62 acres of Wildfire Fuels Management impacts (0.01 percent of critical habitat in the Plan Area).

This impact represents about 0.03 percent of the overall of coastal California gnatcatcher designation. Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ. Therefore, direct impacts to each critical habitat unit are also expected to be minor. Potential adverse effects of lighting, non-native species, predation, fire, and habitat fragmentation due to Covered Activities could also impact coastal California gnatcatcher critical habitat.

Impacts to coastal California gnatcatcher critical habitat will be avoided, if possible, during the planning process. If permanent impacts to critical habitat cannot be avoided, then SDG&E will first attempt to mitigate with credits in existing or acquire additional mitigation lands that are designated as critical habitat. If no critical habitat is available from the existing or additional acquired mitigation lands, SDG&E will acquire, restore, and/or enhance mitigation land that will benefit the coastal California gnatcatcher and/or its critical habitat, with the concurrence of Service (Section 5.4.2 of the HCP Amendment). In addition, any new Facility that would impact more than 1.75 acres of critical habitat would require a Minor Amendment.

We anticipate that SDG&E will debit remaining credits from the existing Otay Lakes and Willow Glen mitigation lands since they include coastal California gnatcatcher critical habitat. The preservation and management of critical habitat (or equivalent) in existing/future mitigation lands will help to ensure core populations of coastal California gnatcatchers are maintained in the Plan Area. The removal and restoration of existing access roads is also expected to improve the functioning of critical habitat.

For the same reasons discussed in the species-specific analysis above, potential adverse effects from lighting, non-native species, fire, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in functioning of coastal California gnatcatcher critical habitat beyond baseline conditions.

Based on the above, we do not anticipate Covered Activities to impair the function of Units 1, 2, 3, 5, 6, 7, and 10 and the overall coastal California gnatcatcher critical habitat designation, as sufficient areas will remain within the Plan Area to support core populations and all dispersal/movement corridors that contribute to long-term population viability for the coastal California gnatcatcher.

Effect on Recovery

Conservation and recovery of the coastal California gnatcatcher is largely being accomplished through the development and implementation of regional NCCP/HCP planning efforts. Most of the range of the coastal California gnatcatcher within southern California is covered by these efforts. Five regional NCCP/HCPs covering the coastal California gnatcatcher are now in place, and one more is in development. Although these plans allow for incidental take of the coastal California gnatcatcher through destruction of habitat, these plans also regulate and mitigate such actions. These NCCP/HCPs are making substantial contributions to the conservation of the coastal California gnatcatcher by creating a network of managed preserves with core habitat areas that are linked across the broader landscape.

Implementation of the HCP Amendment is consistent with the Service's efforts to recover the coastal California gnatcatcher through regional NCCP/HCP planning efforts in San Diego County. The Plan Area for the SDG&E's subregional plan overlaps and is compatible with several of the broader NCCP/HCPs within the region. Although the proposed Covered Activities will impact habitat that is used by the coastal California gnatcatcher for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts to coastal California gnatcatcher occupied habitat will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to be integral to our ongoing NCCP/HCP regional planning efforts and to result in a no "net loss" of habitat and support recovery of the coastal California gnatcatcher.

We expect no more than 127 acres of coastal California gnatcatcher Tracked Habitat will be impacted and 16 coastal California gnatcatcher pairs will be harmed through loss or partial loss of their primary breeding, feeding, and sheltering habitat. Because the HCP Amendment will affect a fraction of the coastal California gnatcatcher habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any coastal California gnatcatcher occurrence or population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the coastal California gnatcatcher and will not result in the destruction or adverse modification of its designated critical habitat. We base this conclusion on the following:

1. The current range of the coastal California gnatcatcher includes coastal southern California to northwestern Baja California, Mexico; thus, the action area for the HCP Amendment represents only a portion of the species' rangewide distribution.

2. A total of 16 pairs of coastal California gnatcatchers may be harmed through loss or partial loss of their primary breeding, feeding, and sheltering habitat, which is a small fraction of the pairs in the Plan Area and rangewide.

3. Impacts will be limited to no more than 127.18 acres of coastal California gnatcatcher Tracked Habitat, which represents about 0.13 percent of Modeled Habitat for the coastal California gnatcatcher within the Plan Area.

4. Based on the known distribution of coastal California gnatcatchers within the Plan Area and their specific habitat requirements, we estimate that only 36 acres of the 127.18 acres of Modeled Habitat that will be impacted is likely to be by occupied by coastal California gnatcatchers.

5. General and species-specific OPs will reduce the likelihood that individual coastal California gnatcatchers will be harmed by Covered Activities and will avoid direct death or injury or destruction of nests.

6. Covered Activities could result in the loss of PBFs within up to 58.52 acres of coastal California gnatcatcher critical habitat, which represents only 0.03 percent of the overall designation.

7. Loss of PBFs from Covered Activities within small project footprints distributed throughout the Plan Area are not expected to impair the function of the overall critical habitat designation, as sufficient areas will remain within the Plan Area to support core populations and all dispersal/movement corridors that contribute to long-term population viability for the coastal California gnatcatcher.

8. Impacts to the coastal California gnatcatcher or its critical habitat will be avoided to the maximum extent practicable, and unavoidable impacts will be mitigated at existing or acquired mitigation lands that are occupied or have critical habitat, or through the R/E Program or through measures that will benefit this species or its critical habitat.

9. Because Covered Activities will affect a small proportion of coastal California gnatcatcher habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by coastal California gnatcatchers, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any coastal California gnatcatcher occurrence or population in the Plan Area or rangewide.

10. Long-term management and monitoring of mitigation lands will help sustain coastal California gnatcatcher in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Light-Footed Ridgway's (=Clapper) Rail (Rallus obsoletus levipes)

Status of the Species

Listing Status

The Service listed the light-footed Ridgway's rail (*Rallus obsoletus levipes*) as endangered on October 13, 1970 (Service 1970) and issued a recovery plan in July 1979, which was revised on June 24, 1985 (Service 1985a) and then amended in September 2019 (Service 2019d). Critical habitat has not been designated for light-footed Ridgway's rail. Five-Year Reviews for the species were completed in 2009 and 2020. These reviews recommended no change in listing status.

Species Description

The light-footed Ridgway's rail is a hen-sized marsh bird approximately 14 inches in length, with a slightly down-curved bill that is longer than the head and a short, upturned tail (Thelander and Crabtree 1994). Its long legs and long toes are dull yellowish-gray. Males and females are identical in plumage. The cinnamon breast contrasts with the streaked plumage of its grayish-brown back and gray and white barred flanks. Most of the side of the head is gray, including the cheeks. The chin and throat, and a line from the base of the bill to the top of the eye, are very light buff. Three subspecies of *Rallus longirostris* occur in California. The subspecies *R. l. obsoletus* and *R. l. levipes* occur in coastal salt marshes of northern and southern California respectively. *R. l. yumanensis* occurs inland along the Salton Sea and lower Colorado River.

The taxon now recognized in the scientific community as the light-footed Ridgway's rail (*Rallus obsoletus levipes*) was first listed in 1969 as the light-footed clapper rail (*Rallus longirostris levipes*) under the Endangered Species Preservation Act of 1966 (Service 1969, 34 FR 5034). Since the species was listed, phylogenetic analysis has revealed the rails of California as distinct from the clapper and king rails of the East Coast, leading to a taxonomic name change (Maley and Brumfield 2013, Chesser et al. 2014, Eddleman and Conway 2018).

Habitat Affinities

The light-footed Ridgway's rail generally resides in coastal marshes of southern California and northern Baja California, Mexico (Jorgensen and Baron 1994; Service 2009b). Nesting habitat includes tall, dense cordgrass (*Spartina foliosa*) and occasionally pickleweed (*Salicornia virginica*) in the low littoral zone, wrack deposits in the low marsh zone, and hummocks of high marsh within the low marsh zone (Massey et al. 1984). At Mugu Lagoon, nesting occurs in stands of (*Juncus acutus* spp. *leopoldii*) (Zembal et al. 2007). Fringing areas of high marsh serve as refugia during high tides. Although used infrequently, this habitat may be extremely important for reducing mortality during high tides. Although less common, light-footed Ridgway's rails have also been observed to reside and nest in freshwater marshes (Thelander and Crabtree 1994).

Life History

Light-footed Ridgway's rails are predominantly crepuscular, resting throughout the middle of the day with activity peaking during the mornings and evenings (Zembal et al. 1989, Taylor 1996). The light-footed Ridgway's rail is an omnivorous and opportunistic forager with a broad diet, living hidden among dense vegetation (Zembal and Fancher 1988). Typical foraging behavior includes hunting by sight, scavenging, shallowly probing water and mud, diving, and gleaning the marsh surface (Service 1985a, Zembal and Fancher 1988). The birds forage throughout the marsh and surrounding habitats, with considerable foraging occurring among the higher marsh dominated by *Salicornia* spp., *Limonium californicum*, and *Triglochin* spp. (Service 1985a, Zembal et al. 1989). Light-footed Ridgway's rails are known to feed at vegetated marsh edge-mudflat ecotones, along muddy creek banks, in freshwater vegetation, in ditches and ponded water, and more rarely in upland areas and in open mudflats (Service 1985a, Zembal and Fancher 1988, Zembal et al. 1989). The diet comprises upland and marsh fauna such as tadpoles (*Hyla* sp.), California killifish (*Fundulus parvipinnis*), California voles (*Microtus californicus*), beetles (*Coleoptera*), various snails (including *Helix* spp., *Cerithidea californica,* and *Melampus olivaceus*), fiddler and hermit crabs (including *Pachygrapsus crassipes*, *Hemigrapsus oregonensis*, and *Uca crenulata*), crayfish, isopods, other decapods, and some plant material (Jorgensen 1975, Wilburn et al. 1979, Service 1985a).

Breeding and nesting begin in March when males start to construct nests in the low marsh out of dead *Spartina* stems placed approximately 10–46 centimeters above the ground (Eddleman and Conway 1998, Zedler 1993, Massey et al. 1984). Nesting site selection involves balancing flood avoidance and predator avoidance; sites at higher elevations within a marsh have a lower risk of flooding but typically have less dense plant cover, while sites at lower elevations have a higher risk of flooding but denser cover (Eddleman and Conway 1998). The ideal nesting site is located within tall (> 60 cm) cordgrass (*Spartina foliosa*) so that the blades may be folded over the nest, creating a camouflaging dome canopy that is high enough to allow the nest to float up during higher tides (Zedler 1993). To ensure the nest does not float away in the tide, the outer edges of the nest are typically woven into the surrounding vegetation. Nests also commonly have one or two ramps of dead cordgrass connecting the nest platform to the ground (Massey et al. 1984). Although cordgrass is often an important habitat feature for light-footed Ridgway's rails, the species also nests in other vegetation types, including pickleweed, tumbleweeds, and other debris, especially when tall, dense cordgrass is unavailable (Zedler 1993). Clutch size ranges from 4-8 eggs with incubation ranging from 18-27 days with an average of 23 days (Jorgensen 1975).

Status and Distribution

When annual statewide light-footed Ridgway's rail censuses began in 1980, 203 pairs of light-footed Ridgway's rails were detected within 11 coastal wetlands surveyed (Service 2009b). Since 1980, the lowest number of pairs detected was 142 in 1985 when 14 coastal wetlands were surveyed (Service 2009b). The highest number of pairs detected was 656 in 2016 when the census surveyed 30 coastal wetlands, 18 of which were occupied by light-footed Ridgway's rail (Zembal et al. 2016). About 95 percent of the pairs counted in 2016 were found in only 11 of the 30 coastal wetlands surveyed. These coastal wetlands include, from north to south: Mugu Lagoon, Seal Beach National Wildlife Refuge, Huntington Beach Wetlands, Upper Newport

Bay, Batiquitos Lagoon, San Elijo Lagoon, San Dieguito Lagoon, Los Peñasquitos Lagoon, Kendall-Frost Mission Bay Marsh Reserve, San Diego River, and Tijuana Slough National Wildlife Refuge. Light-footed Ridgway's rails have been documented in two coastal wetlands in Baja California, Mexico (Zembal and Massey 1986); however, the status of the light-footed Ridgway's rail in Mexico is not well documented and an abundance estimate is unavailable (Service 2009b).

The 2022 census results show that the population of light-footed Ridgway's rails dropped from the all-time high of 656 pairs in 2016 to 514 pairs in 2017, then to 320 pairs in 17 wetlands in 2022 (Zembal et al. 2022). The 2019 count of 308 pairs was the lowest tallied since the crash of 2008 and followed six consecutive years of population totals over 500 pairs. The decline was due to habitat and light-footed Ridgway's rail loss in Upper Newport Bay and 13 other subpopulations. The Newport subpopulation was the largest in California for 39 consecutive years. With only 44 pairs in 2022, 190 fewer than in 2015, the decline has been unexpectedly severe and swift. Nesting habitat and general cover in Upper Newport Bay and most other coastal wetlands in the southern California bight have been greatly degraded by higher ocean levels. In Tijuana Marsh National Wildlife Refuge, 73 pairs were counted in 2022, several times more than the number detected in 2019 when this subpopulation was again subjected to anoxic conditions with prolonged closure of the ocean outlet. Since 2019, the ocean inlet at the Tijuana Marsh has been opened mechanically whenever it closes to prevent anoxic conditions from forming. The Newport subpopulation comprised only 14 percent of the state population in 2022, and the subpopulation in the Tijuana Marsh National Wildlife Refuge comprised 23 percent, together accounting for 37 percent of the breeding population in California, as compared to 30 percent in 2019, 56 percent in 2014, and 80 percent in 1987.

The San Elijo Lagoon subpopulation reached a record high of 78 breeding pairs in 2021, but was down to 49 pairs in 2022, still second largest in California. San Dieguito Lagoon held 45 breeding pairs in 2022 and ranked the third largest California subpopulation; Batiquitos Lagoon with 34 breeding pairs ranked fifth largest. The Seal Beach National Wildlife Refuge subpopulation comprised only 3 pairs in 2022, a 95 percent reduction from its 66 pair high in 2015; higher, longer submergence has greatly diminished the marsh cover for this population. The University of California's Kendall-Frost Reserve was down to 6 pairs in 2022, down from its record high of 33 pairs in 2015. Nesting activity in Point Mugu was scant, with only 4 pairs, after increasing steadily to a record high of 23 pairs in 2013 (Zembal et al. 2022).

Threats and Conservation Needs

The most recent 5-year review for the light-footed Ridgeway's rail identified the following threats: development, changes in habitat hydrology, contaminants, nonnative invasive species, predation, climate change and sea level rise, fragmentation, connectivity, and small population size (Service 2020d). All of the threats can work cumulatively to exacerbate effects on the species. Light-footed Ridgeway's rails are at risk of extirpation from individual marshes simply due to the combination of small, isolated populations and annual stochastic events. Limited availability of appropriate marsh habitat is the primary limiting factor for the species. This exacerbates predation vulnerability because the narrow and fragmented remaining habitat patches are often close to urban edges where domestic and other predators occur. Even minimal development (such as levees) can provide artificial access for terrestrial predators, expose

vulnerable light-footed Ridgway's rails by displacing optimal predator-avoidance cover of high marsh vegetation, and offer access for human activities that diminish habitat quality.

Conservation needs of light-footed Ridgway's rail identified in the most recent 5-year review include conservation, management, and restoration of light-footed Ridgway's rail habitat; protection of occupied marshes in Mexico; continuing the captive propagation program and monitoring it for success; finalizing and implementing the light-footed Ridgway's rail survey protocol; and researching dispersal of light-footed Ridgway's rail between populations to gain a better understanding of population structure and connectivity (Service 2020d).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 92 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the light-footed Ridgway's rail:

92. Light-footed Ridgway's Rail (*Rallus obsoletus levipes*)

a. Impacts from Covered Activities where there is a potential for the light-footed Ridgway's rail to occur (LFRR-Habitat) shall be avoided through project design considerations, to the extent feasible.

b. If impacts to LFRR-Habitat cannot be avoided, a Biologist shall survey LFRR-Habitat that has the potential to be impacted by Covered Activities using appropriate survey techniques to determine species presence. If project timing does not allow for surveys, it shall be assumed that all LFRR-Habitat to be impacted is occupied.

c. If surveys determine that LFRR-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within LFRR-Habitat.

d. If surveys determine LFRR-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied LFRR-Habitat shall be mitigated per Section 5.5, Table 5.3b.

e. Whenever practicable, minimize impacts through timing of work in LFRR-Habitat to avoid the nesting season for riparian avian species and conduct LFRR-Habitat removal prior to the initiation of the light-footed Ridgway's rail breeding season (March 1 through August 31).

f. If work is scheduled during the light-footed Ridgway's rail breeding season and within LFRR-Habitat, a Biologist shall conduct preconstruction nesting surveys to attempt to identify any active light-footed Ridgway's rail nests within 500 feet of the proposed Covered Activities.

g. If nesting surveys indicate an active nest is likely or if an active nest is observed, no Covered Activities shall be conducted within 500 feet of the nest. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by the Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures approved by USFWS. Specific buffer requirements may be reduced with approval by USFWS on a project-by-project basis as appropriate.

h. If light-footed Ridgway's rail individuals are present within the impact footprint at the time of construction, SDG&E shall halt work until the individuals have left the work area. The Biologist shall direct construction personnel to begin work in portions of the impact footprint farthest away from the light-footed Ridgway's rails. A Biologist shall be onsite during Covered Activities as needed to avoid impacts to individuals.

i. When an active nest is present, a Biologist shall be onsite during Covered Activities as needed to avoid and minimize the potential for impacts to individuals.

j. Direct take of individuals and destruction of active nests are not allowed.

k. For new projects, impacts to LFRR-habitat shall only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied light-footed Ridgway's rail habitat. However, not all Modeled Habitat is expected to support light-footed Ridgway's rail occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the light-footed Ridgway's rail Modeled Habitat, there are approximately 3,661 acres in the Plan Area and approximately 308 acres in the PIZ associated with existing SDG&E Facilities. In San Diego County, the highest acreages of light-footed Ridgway's rail Modeled Habitat occur in the central coast, southern coast, and north coast ecoregions. This species is not known or expected to occur in the Plan area in Orange County, and there is no suitable habitat for this species on the Moreno Compressor Station property.

There are approximately 20 and 17 light-footed Ridgway's rail occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023). The 2022 census found a total of 261 light-footed Ridgway's rail pairs in San Diego County at Buena Vista Lagoon, Agua Hedionda Lagoon, Batiquitos Lagoon, San Elijo Lagoon, San Dieguito River Lagoon, Los Peñasquitos Lagoon, Kendall-Frost Reserve, San Diego River, J Street Marsh, Otay River mouth, and Tijuana Marsh (Zembal et al. 2022). Each of the records included in the 2022 census may represent one or more occurrences from the CNDDB.

The light-footed Ridgway's rail is covered by the following existing regional habitat conservation plans that overlap the Plan Area:

- San Diego MSCP NCCP/HCP (conditionally)

- San Diego MHCP Subregional Plan

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 2,198 acres of Modeled Habitat occur within Preserves and 111 acres of Modeled Habitat occurs within Proposed Preserves (collectively about 63 percent of all Modeled Habitat) associated with regional conservation efforts in the Plan Area. In addition, 15 occurrences of light-footed Ridgway's rail recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). There is no suitable habitat for this species at existing SDG&E existing mitigation lands.

The recovery plan and amendment identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor the salt marshes in the Plan Area to help meet the recovery criteria established for these marshes.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 3.99 acres of light-footed Ridgway's rail Modeled Habitat, which is a fraction of the 3,661 acres of light-footed Ridgway's rail Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 2.52 acres of permanent impacts (0.07 percent of Modeled Habitat in the Plan Area); and

- Approximately 1.47 acres of temporary impacts (0.04 percent of Modeled Habitat in the Plan Area).

Wildfire Fuels Management is not expected to occur in areas of light-footed Ridgway's rail habitat.

This impact represents about 0.11 percent of light-footed Ridgway's rail Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for light-footed Ridgway's rails. However, because light-footed Ridgway's rails are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

Because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a light-footed Ridgway's rail occurrence but not have a biologically

meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat)as individual Covered Activities are implemented.[33]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact light-footed Ridgway's rail and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to light-footed Ridgway's rails will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of the light-footed Ridgway's rail within the Plan Area and its specific habitat requirements (i.e., salt marsh with tall, dense cordgrass and limited freshwater marsh), we anticipate that only limited areas within Modeled Habitat support occurrences of light-footed Ridgway's rail. Therefore, it is likely that substantially less than 3.99 acres of occupied light-footed Ridgway's rail habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

Impacts to salt marshes due to Covered Activities will primarily result from construction of linear Facilities (e.g., power lines and pipelines) with removal or destruction of vegetation limited to relatively narrow strips of suitable habitat within the salt marsh. We have little information regarding the effect of different amounts of habitat removal on light-footed Ridgway's rail survival or reproductive output, so we used our best professional judgment to estimate that the loss of more than 20 percent of light-footed Ridgway's rail habitat within a territory will substantially increase the risk of mortality or interfere with light-footed Ridgway's rail breeding activity. For adults whose territories are destroyed or significantly reduced (i.e., estimated as loss of 20 percent or more of territory), the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the impact area will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Light-footed Ridgway's rail that do find suitable habitat could lose their mates and may be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation.

Conversely, loss of less than 20 percent of a territory may force a light-footed Ridgway's rail pair to adjust its territory boundaries slightly or result in a limited increase in territorial

[33] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

interactions with neighboring pairs but will not result in a substantial increase in mortality or decrease in reproductive output (i.e., effects would not rise to the level of "take").

Our analysis assumes impacts to light-footed Ridgway's rail pairs is roughly proportional to impacts to Modeled Habitat. There are 3,661 acres of Modeled Habitat in the Plan Area, 3.99 acres of anticipated impacts to Modeled Habitat, and an estimated 20 light-footed Ridgway's rail territories in the Plan Area. Using these calculations, we estimate that no more than one light-footed Ridgway's rail pair will be harmed from Covered Activities.[34] The territory could be impacted multiple times over the course of the permit term as habitat could be managed, regrow over time, and then be impacted again.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of light-footed Ridgway's rail habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the Description of the Proposed Action section of this Opinion and OP 92 for the light-footed Ridgway's rail are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to light-footed Ridgway's rail habitat, as specified in the OP 92 include: 1) whenever practicable, do work in light-footed Ridgway's rail habitat outside the nesting season, 2) preconstruction nesting surveys if needed, 3) maintaining a 500-foot buffer around any nests found and monitoring the nests, and 4) avoiding direct take of individuals and destruction of active nests.

Within implementation of the above OPs, we do not expect any direct injury or mortality of adults, eggs, and nestlings from Covered Activities.

Unavoidable temporary impacts to light-footed Ridgway's rail occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to light-footed Ridgway's rail occupied habitat will be mitigated at a 2:1 to 4:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of light-footed Ridgway's rail habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual light-footed Ridgway's rail within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of light-footed Ridgway's rails within these mitigation lands.

[34] 3.99 acres/3,661 acres x 20 territories ÷ 0.2 (20 percent threshold for harm) = <1 pair of light-footed Ridgway's rail

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the light-footed Ridgway's rail.

Because Covered Activities will impact a small fraction of the light-footed Ridgway's rail habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of light-footed Ridgway's rails within the Plan Area or rangewide

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation, and Habitat Fragmentation

The light-footed Ridgway's rail could be subject to indirect effects from Covered Activities as described in the General Effects section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to light-footed Ridgway's rails include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species invasion, and habitat fragmentation.

Changes to hydrology, such as reducing tidal flows or increasing urban runoff, erosion and sedimentation can remove or alter the salt marsh habitat of light-footed Ridgway's rails. OPs will be implemented to minimize changes to hydrology, erosion, and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands and narrow endemic populations (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23).

Covered Activities and new Facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for light-footed Ridgway's rail. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (Rich and Longcore 2006). Since vulnerability to predators is a factor associated with habitat quality for the light-footed Ridgway's rail, project-associated increases in nighttime light levels may reduce the quality of light-footed Ridgway's rail habitat in localized areas. To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats and any permanent lighting will be directed away and/or shielded so as not to illuminate native habitats (OP 25).

The ground disturbance and landscaping associated with Covered Activities can facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants can alter the species composition and structure of the habitat, which may make it less suitable to the light-footed Ridgway's rail. Prey abundance and diversity may decrease in correlation with the decline

in native plants. In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of light-footed Ridgway's rails.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species and potential for increased predation. The removal and restoration of existing access roads that are not needed for Covered Activities and restoration of temporary impact areas are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting light-footed Ridgway's rail dispersal/movement corridors that contribute to long-term population viability for the light-footed Ridgway's rail. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat in order to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in light-footed Ridgway's rail survival or reproduction beyond baseline conditions.

Effect on Recovery

Most of the coastal lagoons, estuaries, salt marshes, and river mouths in the Plan Area are identified in the recovery plan (Service 1985a) and amendment (Service 2019d). The recovery plan and amendment identify the need to preserve, manage, and increase the number of territories in each of these locations to help meet the recovery criteria. The salt and freshwater

marsh in the Plan Area is part of a system that provides important breeding, feeding, and sheltering habitat for the light-footed Ridgway's rail.

The HCP Amendment does not conflict with the goals of the recovery plan and amendment. Although Covered Activities will impact salt and freshwater marsh habitat that is used by the light-footed Ridgway's rail for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation, restoration/enhancement, and in-perpetuity management of light-footed Ridgway's rail habitat. The mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the light-footed Ridgway's rail.

The proposed conservation and restoration/enhancement of suitable light-footed Ridgway's rail habitat and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with the recovery plan criteria to preserve and manage light-footed Ridgway's rail habitat. Therefore, the breeding, feeding, and sheltering functions degraded or destroyed due to unavoidable impacts to light-footed Ridgway's rail habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan and amendment.

We expect no more than 13.99 acres of light-footed Ridgway's rail Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the light-footed Ridgway's rail habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any light-footed Ridgway's rail population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the light-footed Ridgway's rail. We base this conclusion on the following:

1. The current range of the light-footed Ridgway's rail includes coastal southern California to northwestern Baja California, Mexico; thus, the action area for the HCP Amendment represents only a portion of the species' rangewide distribution.

2. One pair of light-footed Ridgway's rails may be harmed through loss or partial loss of its primary breeding, feeding, and sheltering habitat, which is a small fraction of the pairs in the Plan Area and rangewide.

3. Impacts will be limited to no more than 3.99 acres of light-footed Ridgway's rail Tracked Habitat, which represents about 0.11 percent of Modeled Habitat for the light-footed Ridgway's rail within the Plan Area.

4. Based on the known distribution of the light-footed Ridgway's rail within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of light-footed Ridgway's rails. Therefore, it is likely that substantially less than 3.99 acres of occupied light-footed Ridgway's rail habitat will be impacted.

5. General and species-specific OPs will reduce the likelihood that individual light-footed Ridgway's rails will be harmed by Covered Activities and will avoid direct death or injury or destruction of nests.

6. Impacts to the light-footed Ridgway's rail will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan and amendment.

7. Because Covered Activities will affect a small proportion of light-footed Ridgway's rail habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by light-footed Ridgway's rails, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any light-footed Ridgway's rail occurrence or population in the Plan Area or rangewide.

8. Long-term management and monitoring of mitigation lands will help sustain light-footed Ridgway's rail in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Least Bell's Vireo (Vireo bellii pusillus)

Status of the Species

Listing Status

The least Bell's vireo (*Vireo bellii pusillus*) was listed as endangered on May 2, 1986 (51 FR 16474). The State of California also listed the species as endangered in 1980. The Service designated critical habitat on February 2, 1994 (59 FR 4845) and completed a draft recovery plan in March 1998 (Service 1998b). A 5-year review of the least Bell's vireo was completed in September 2006 (Service 2006). The 5-year review recommended downlisting the least Bell's vireo from endangered status to threatened status because of an increase in population size since its listing in 1986, expansion of locations with breeding least Bell's vireo throughout southern

California, and conservation and management of suitable breeding habitat throughout its range. An updated 5-year review is expected to be completed in 2023.

Species Description

The least Bell's vireo is a small migratory songbird that is olive-gray above and mostly white on its underparts, with a tinge of gray on the upper breast and yellow on the flanks (Coues 1866, Service 1998b). The least Bell's vireo has indistinct white spectacles and two faint wing bars, with males and females having identical plumage. Male least Bell's vireos are easily distinguished by their song, a rapid series of harsh, slurred notes that increase in intensity as the song progresses (Grinnell and Storer 1924, Pitelka and Koestner 1942, Barlow 1962, Beck 1996). Phrases of the least Bell's vireo song are alternatively slurred upward and downward and exhibit a "question-and-answer" quality (Grinnell and Storer 1924, Beck 1996). The least Bell's vireo is in the family Vireonidae and is one of four subspecies of Bell's vireo (*Vireo bellii*) that have been recognized (AOU 1957), with each subspecies isolated from one another throughout the year (Hamilton 1962, Service 1998b). Despite general concerns about avian subspecies, the least Bell's vireo continues to be recognized as one of four subspecies of the Bell's vireo (Kus et al. 2022). Recent genetics-based evidence suggested that the two western subspecies (least Bell's vireo and Arizona Bell's vireo) may compose a species distinguishable and separate from a species comprising the two eastern subspecies (eastern Bell's vireo and Texas Bell's vireo) (Klicka et al. 2016). The proposed recognition of two species-level taxa was not accepted by the North American Classification Committee (2017) based, in part, on the lack of sampling within the putative contact zone in New Mexico.

Habitat Affinities

Least Bell's vireos are obligate riparian breeders, typically inhabiting structurally diverse woodlands along watercourses that feature dense cover within 3 to 6 feet of the ground and a dense, stratified canopy (Goldwasser 1981; Salata 1983a, 1983b; Gray and Greaves 1984; Service 1998b). The understory within this riparian habitat is typically dominated by mulefat, California wild rose (*Rosa californica*), poison oak (*Toxicodendron diversiloba*), sandbar willow (*Salix hindsiana*), young individuals of other willow species, and several perennial species (Service 1998b). Important canopy species include mature arroyo willows (*S. lasiolepis*) and black willows (*S. gooddingii*) and occasional cottonwoods (*Populus* spp.), western sycamore, or coast live oak (*Quercus agrifolia*). Least Bell's vireos primarily forage and nest in riparian habitat, but they may also use adjoining upland scrub habitat (Salata 1983a, 1983b; Kus and Miner 1989). In the more inland, xeric portions of their range least Bell's vireo have also been documented nesting in xeroriparian vegetation, such as mesquite (Massey and Evans 1994, Whitfield and Stanek 2017).

Life History

Least Bell's vireos primarily feed on invertebrates, especially lepidopteran larvae, within willow stands or associated riparian vegetation (Miner 1989, Brown 1993). Least Bell's vireos occasionally forage in nonriparian vegetation such as coastal sage scrub, chaparral, and oak woodlands, although foraging in these other habitats usually occurs within 100 feet of the edge of riparian vegetation (Salata 1983a, 1983b; Gray and Greaves 1984; Kus and Miner 1989).

Least Bell's vireo feeding behavior largely consists of gleaning prey from leaves or woody surfaces while perched or hovering and, less frequently, by capturing prey by aerial pursuit (Salata 1983a, 1983b; Miner 1989). Least Bell's vireos concentrate most of their foraging within 20 feet of ground level (Salata 1983a, 1983b; Miner 1989).

Least Bell's vireos are migratory. They generally arrive in southern California breeding areas by mid-March to early April, with males arriving before females and older birds arriving before first-year breeders (Service 1998b). Individuals typically return to established breeding territories year after year (Greaves and Labinger 1997, Salata 1983a, 1983b). Least Bell's vireos generally remain on the breeding grounds until late September, although some post-breeding migration may begin as early as late July (Service 1998b). Male least Bell's vireos establish and defend breeding territories through singing and physically chasing intruders (Barlow 1962, Beck 1996, Service 1998b). Although territories typically range in size from 0.5 to 7.5 acres (Service 1998b), no relationship appears to exist between territory size and various measures of territory quality (Newman 1992).

Nest building commences a few days after pair formation, with the female selecting a nest-site location, and both sexes constructing the nest (Pitelka and Koestner 1942, Barlow 1962, Service 1998b). Nests are typically suspended in forked branches within 3 feet above the ground with no clear preference for any particular plant species as the nest host (Nolan 1960, Barlow 1962, Gray and Greaves 1984, Service 1998b). Typically, three to four eggs are laid on successive days shortly after nest construction (Service 1998b). The eggs are incubated by both parents for about 14 days with the young remaining in the nest for another 10 to 12 days (Pitelka and Koestner 1942, Nolan 1960, Barlow 1962). Each nest appears to be used only once with new nests constructed for each nesting attempt (Greaves 1987). Least Bell's vireos may attempt up to five nests within a breeding season, but they are typically limited to one or two successful nests within a given breeding season (Service 1998b).

In the past, multiple long-term monitoring studies indicate that approximately 59 percent of nests successfully produce fledglings, although on average only 1.8 chicks fledge per nest (Service 1998b). More recent studies in 2021 have estimated California populations of least Bell's vireo fledged an average of 1.2 to 4.5 chicks, with an average of 2.4 chicks per nest (Kus et al 2022). Although least Bell's vireo nests appear to be more accessible to terrestrial predators because of their relatively low placement (Franzreb 1989), western scrub-jays (*Aphelocoma californica*) have been documented to account for the majority of documented depredation events (Peterson 2002, Peterson *et al*. 2004); depredation by jays and other avian predators may have selected for relatively low nest placement (Ferree 2002). Nest predation rates can exceed 60 percent of the least Bell's vireo nests in a given area within a year (Kus 1999), but typical predation rates average around 30 percent (Franzreb 1989), which is comparable to predation rates for other North American passerines (Martin and Clobert 1996, Grishaver *et al*. 1998, Ferree 2002).

Brood parasitism by cowbirds is another major source of failure for least Bell's vireo nests (Franzreb 1989, Service 1998b, Kus 1999, 2002, Kus *et al*. 2022, Griffith and Griffith 2000, Sharp 2002); nests that are parasitized are either abandoned or fledge cowbird chicks rather than least Bell's vireos. It is believed that cowbirds did not historically occur within the least Bell's vireo's range, and, therefore, least Bell's vireos have not evolved adequate defenses to avoid loss of productivity due to parasitism (Franzreb 1989, Kus 2002). Parasitism of least Bell's vireo

nests may exceed 42 percent in some locations (Kus 1999), but extensive cowbird trapping and focused nest monitoring can substantially reduce parasitism or its effects at the local level (Franzreb 1989, Service 1998b, Griffith and Griffith 2000, Kus 2002, Kus *et al*. 2022).

Some individual least Bell's vireos have been documented to live at least 12 years (Kus *et. al.* 2022), but the average lifespan for this species is substantially lower. Long-term data from multiple sites in southern California between 1987 and 2020 revealed that of 923 vireos banded as nestlings and surviving to at least breeding age, 32 percent lived 1 year, 23 percent lived 2 years, 18 percent lived 3 years, 11 percent lived 4 years, and 6 percent lived 5 years and only 10 percent lived to be older than 5 years of age (Kus 2020 unpublished data as cited in Kus *et. al.* 2021). Annual survival of females appears to be slightly lower than that for males, presumably due to the higher energetic costs of egg production by females (Service 1998b).

Fledgling least Bell's vireos expand their dispersal distances from about 35 feet the first day to about 200 feet several weeks after fledging (Hensley 1950, Nolan 1960). This distance has been shown to increase to at least 1 mile prior to their first fall migration (Gray and Greaves 1984). Banding records indicate that while most first-year breeding least Bell's vireos return to their natal drainage after winter migration, some disperse considerable distances to other breeding locations (Greaves and Labinger 1997, Kus and Beck 1998, Service 1998b). Movement by least Bell's vireos between drainages within San Diego County is not uncommon (Kus and Beck 1998). Additionally, several least Bell's vireos banded as nestlings in San Diego County have been re-sighted as breeding adults in Ventura County, and the opposite movement from Ventura to San Diego has also been observed (Greaves and Labinger 1997). The maximum dispersal distance documented is approximately 130 miles (Service 1998b), but this is probably an underestimate due to the limited number of least Bell's vireos that are banded and insufficient re-sighting efforts. Although movement between sites by older birds may occur, site fidelity by least Bell's vireos after the first breeding season is generally high, and most dispersal between sites occurs between the time that least Bell's vireos fledge from their nest and their first breeding season (Service 1998b).

Status and Distribution

The least Bell's vireo population in the United States has increased 10-fold since its listing in 1986, from 291 to 2,968 known territories (Service 2006) and the population has continued to grow since. The population has grown during each 5-year period since the original listing, with surveys in 2016 to 2020 across 36 southern California sites showing a 47 percent increase in the number of male territories of least Bell's vireo (Kus et. al. 2021). Population growth has been greatest in San Diego and Riverside counties, with lesser but significant increases in Orange, Ventura, San Bernardino, and Los Angeles counties. The population in Santa Barbara County has declined since the listing in 1986. Kern, Monterey, San Benito, and Stanislaus counties have had a few isolated individuals and/or breeding pairs since the original listing, but these counties have not supported any sustained populations. The least Bell's vireo historically occupied riparian habitats from Tehama County, in northern California, southward to northwestern Baja California, Mexico, and as far east as Owens Valley, Death Valley, and the Mojave River (Grinnell and Miller 1944, Service 1998b). Although originally considered to be abundant locally, regional declines of this subspecies were noticeable by the 1940s (Grinnell and Miller

1944), and the least Bell's vireo was believed to have been extirpated from California's Central Valley by the early 1980s (Franzreb 1989).

Historically, the San Joaquin and Sacramento valleys were considered to be the center of the least Bell's vireo's breeding range (60 to 80 percent of the historic population; Service 1986), but the least Bell's vireo has not yet meaningfully re-colonized those areas. At the time of the listing in 1986, greater than 99 percent of the remaining least Bell's vireos were concentrated in southern California (Santa Barbara County and southward), with San Diego County containing 77 percent of the population (Service 1986). In 2005 and 2006, the first breeding pair of least Bell's vireos detected in the San Joaquin Valley since the listing of the least Bell's vireo successfully bred at the San Joaquin NWR in Stanislaus County (Service 2006). There have been no sightings of least Bell's vireos in the Sacramento Valley since prior to the listing, and it is unlikely that any breeding least Bell's vireos have occurred within recent years in the Sacramento Valley (Service 2006).

Greater than 99 percent of least Bell's vireos still remain in southern California south of the Tehachapi Mountains and northwestern Baja California (Wilbur 1980, Garrett and Dunn 1981, Franzreb 1989, USGS 2002), although the populations are now more evenly distributed in southern California with about 54 percent of the total population occurring in San Diego County and 30 percent of the population occurring in Riverside County (Service 2006); however, there has been only a slight shift northward in the species' overall distribution. Thus, despite a significant increase in overall population numbers, the population remains restricted to the southern portion of its historic range (Service 2006). The largest concentrations of least Bell's vireos are in San Diego County along the Santa Margarita River on Camp Pendleton and in Riverside County at the Prado flood control basin (Service 2006).

Threats and Conservation Needs

At the time of the listing, loss of habitat due to agricultural practices, urbanization, and exotic plant invasion was identified as a major threat to least Bell's vireo populations. Since the listing of the least Bell's vireo, destruction and modification of riparian habitat within its current range has been greatly reduced, primarily as a consequence of protections provided by the original listing in 1986, the subsequent designation of critical habitat in 1994, and other federal and state regulatory processes. Other efforts not driven by regulatory processes have also promoted increased conservation and restoration of riparian habitat since the listing of the least Bell's vireo in 1986 (Service 2006).

Agriculture and grazing continue to threaten riparian habitat within the larger historic range, particularly the Salinas, San Joaquin, and Sacramento valleys (Service 1998b). Urbanization appears to have displaced former agriculture and grazing operations in many areas within southern California, thereby indirectly reducing riparian habitat degradation caused by these activities. On the other hand, occupied least Bell's vireo habitat that is adjacent to highly urbanized areas or within major river systems continues to be impacted by flood control and water impoundment projects and may be subject to ongoing and future habitat loss or degradation (Service 2006).

Several large, regional HCPs in southern California have addressed the effects of urban development on this species. These plans are expected to provide long-term protection of core occurrences of least Bell's vireos in western Riverside, Orange, and San Diego counties. In addition, compliance-driven and voluntary riparian restoration activities throughout the historic range may have contributed to an increase in riparian habitat since the listing of the least Bell's vireo (Service 2006).

Within the past few decades, control of giant reed (*Arundo donax*) and other exotic plants has been and continues to be systematically conducted on both the Santa Ana River and on Camp Pendleton. Giant reed removal has also been initiated within several other watersheds within southern California (Natural Resources Conservation Service 2006, Service 2006). In general, giant reed removal has been effective but will require continued annual efforts to achieve local eradications and address new invasions. Although control of giant reed has made great progress since the original listing of the least Bell's vireo, invasions by other exotic plants [e.g., *Tamarix* species, perennial pepperweed (*Lepidium latifolium*)] continue to degrade existing riparian habitat (Kus and Beck 1998, Hoffman and Zembal 2006).

The 1986 listing rule identified brood parasitism by cowbirds as a substantial threat to the least Bell's vireo, and it remains a major threat to the recovery of the least Bell's vireo (Service 2006). Cowbird trapping has proven a successful tool to halt least Bell's vireo population declines over the short term within a limited area, but Kus and Whitfield (2005) have argued that trapping may not be the best method for long-term recovery of the least Bell's vireo because maintaining cowbird populations at low levels may not allow the least Bell's vireo to evolve resistance to cowbird parasitism. It remains unclear as to the best way to manage this threat and additional research is needed to determine whether there are any alternatives to the intensive cowbird trapping programs currently being implemented (Service 2006).

Lastly, changes to hydrology, such as damming or channelization of rivers, have the potential to degrade least Bell's vireo habitat over time by reducing the periodic flooding at different elevations that maintain the mixed successional habitat preferred by least Bell's vireos (Service 1998b, Guilfoyle 2001, PCR Services 2002, Preston et al. 2021).

Conservation needs identified in the draft recovery plan include protecting and managing riparian and associated upland habitat within the least Bell's vireo's range, including controlling cowbird parasitism and controlling non-native invasive plant species; investigating the status of wintering habitat and attempting to work with Mexico to ameliorate any documented threats to the least Bell's vireo in this portion of the range; restoring riparian habitat where appropriate environmental conditions exist; and facilitating dispersal into the northern portions of its former range (Service 1998b).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 94 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the least Bell's vireo:

94. Least Bell's Vireo (*Vireo bellii pusillus*)

a. Impacts from Covered Activities where there is a potential for least Bell's vireo to occur, or in designated critical habitat with PBFs (LBVI-Habitat), shall be avoided through project design considerations, to the extent feasible. PBFs include riparian woodland vegetation that generally contains both canopy and shrub layers, and includes some associated upland habitats.

b. If impacts to LBVI-Habitat cannot be avoided, a Biologist shall survey LBVI-Habitat that has the potential to be impacted by Covered Activities following current USFWS protocols to determine species presence. If project timing does not allow for surveys, it shall be assumed that all LBVI-Habitat to be impacted is occupied.

c. If surveys determine that LBVI-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within LBVI-Habitat.

d. If surveys determine LBVI-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied LBVI-Habitat shall be mitigated per Section 5.5, Table 5.3b.

e. Whenever practicable, minimize impacts through timing of work in riparian areas where there is a potential for the least Bell's vireo to occur (LBVI-Habitat) to avoid the nesting season for riparian avian species and conduct LBVI-Habitat removal prior to the initiation of the riparian avian breeding season (March 15 through September 15).

f. If work is scheduled during the riparian avian breeding season, and within suitable LBVI-Habitat, a Biologist shall conduct a preconstruction nesting survey to ensure that no active least Bell's vireo nests are present within 300 feet of the Covered Activities.

g. If an active least Bell's vireo nest is observed, no Covered Activities shall be implemented within 300 feet of the nest. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by the Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures approved by USFWS. Specific buffer requirements may be reduced with approval of USFWS on a project-by-project basis as appropriate.

h. When an active nest is present, a Biologist shall be onsite during Covered Activities as needed to avoid and minimize the potential for impacts to individuals.

i. Direct take of nesting individuals and destruction of active nests are not allowed.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied least Bell's vireo habitat. However, not all Modeled Habitat is expected to support least Bell's vireo occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the least Bell's vireo Modeled Habitat, there are approximately 36,832 acres in the Plan Area and approximately 1,799 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the three ecoregions with the highest acreages of least Bell's vireo Modeled Habitat are the northern valley, central foothills, and north coast ecoregions. In the Plan Area in Orange County, the highest acreage of least Bell's vireo Modeled Habitat is in the Orange County foothill and valley ecoregion. There is no suitable habitat for this species on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 166 and 117 least Bell's vireo occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2006 5-year review for least Bell's vireo included an analysis of the status of least Bell's vireo at different locations throughout its range. Each of the records included in the 2006 5-year review may represent one or more occurrences from the CNDDB. The 2006 5-year review identified a total of 1,609 and 177 least Bell's vireo territories in the Plan Area in San Diego County (approximately 50 percent or greater on Camp Pendleton) and Orange County (including outside the Plan Area).

The least Bell's vireo is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- San Diego MHCP Subregional NCCP/HCP
- Orange County Southern Subregion HCP
- SDCWA Subregional NCCP/HCP
- Western Riverside County MSHCP Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* section of this Opinion.

Currently, approximately 20,881 acres of Modeled Habitat occur within Preserves and 2,815 acres of Modeled Habitat occur within Proposed Preserves (collectively, about 64 percent of all Modeled Habitat) associated with regional conservation efforts in the Plan Area. In addition, 107

occurrences of least Bell's vireo recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species has a moderate and high potential to occur on SDG&E's Cielo and Willow Glen mitigation lands, respectively, and is not known or expected to occur on the Otay Lakes mitigation lands.

The Tijuana River, Dulzura Creek/Jamul Creek/Otay River, Sweetwater River, San Diego River, San Luis Rey River, and Camp Pendleton/Santa Margarita River Recovery Units identified in the draft recovery plan are within the Plan Area.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to impact up to 31.05 acres of least Bell's vireo Modeled Habitat, which is a fraction of the 20,881 acres of least Bell's vireo Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 14.71 acres of permanent impacts (0.04 percent of Modeled Habitat in the Plan Area);
- Approximately 8.58 acres of temporary impacts (0.02 percent of Modeled Habitat in the Plan Area); and
- Approximately 7.76 acres of Wildfire Fuels Management impacts (0.02 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.08 percent of least Bell's vireo Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for least Bell's vireos. However, because least Bell's vireos are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

Because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a least Bell's vireo occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[35]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated

[35] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact more than 1.75 acres of a preserve or planned preserve will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to least Bell's vireo will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of least Bell's vireo within the Plan Area and its specific habitat requirements (i.e., structurally diverse woodlands along watercourses that feature dense cover within 3 to 6 feet of the ground and a dense, stratified canopy), we anticipate that only limited areas within Modeled Habitat support occurrences of least Bell's vireo. Therefore, it is likely that substantially less than 31.05 acres of occupied least Bell's vireo habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

Impacts to riparian habitat due to Covered Activities will primarily result from construction of linear Facilities (e.g., power lines and pipelines) across a creek or river with removal or destruction of riparian vegetation limited to relatively narrow strips of suitable habitat within the riparian corridor. We have little information regarding the effect of different amounts of habitat removal on least Bell's vireo survival or reproductive output, so we used our best professional judgment to estimate that the loss of more than 20 percent of least Bell's vireo habitat within a territory will substantially increase the risk of mortality or interfere with least Bell's vireo breeding activity. For adults whose territories are destroyed or significantly reduced (i.e., estimated as loss of 20 percent or more of territory), the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the impact area will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Least Bell's vireos that do find suitable habitat could lose their mates and may be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation.

Conversely, loss of less than 20 percent of a territory may force a least Bell's vireo pair to adjust its territory boundaries slightly or result in a limited increase in territorial interactions with neighboring pairs but will not result in a substantial increase in mortality or decrease in reproductive output (i.e., effects would not rise to the level of "take").

Our analysis assumes impacts to least Bell's vireo pairs is roughly proportional to impacts to Modeled Habitat. There are 36,991 acres of Modeled Habitat in the Plan Area, 31.05 acres of anticipated impacts to Modeled Habitat, and an estimated 166 least Bell's vireo territories in the Plan Area. Using these calculations, we estimate that no more than one least Bell's vireo pair will be harmed from Covered Activities.[36] The territory could be impacted multiple times over

[36] 31.05 acres/36,991 acres x 166 territories ÷ 0.2 (20 percent threshold for harm) = <1 pair of least Bell's vireo harmed

the course of the permit term as habitat could be managed, regrow over time, and then be impacted again.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of least Bell's vireo habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 94 for the least Bell's vireo are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to least Bell's vireo, as specified in the OP 94 include: 1) whenever practicable, do work in least Bell's vireo habitat outside the nesting season, 2) preconstruction nesting surveys if needed, 3) maintaining a 300-foot buffer around any nests found and monitoring the nests, and 4) avoiding direct take of individuals and destruction of active nests.

Within implementation of the above OPs, we do not expect any direct injury or mortality of adults, eggs, and nestlings from Covered Activities.

Unavoidable temporary impacts to least Bell's vireo occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to least Bell's vireo occupied habitat will be mitigated at a 3:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. In perpetuity monitoring and management of the mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of least Bell's vireo habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual least Bell's vireos within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of least Bell's vireos within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the least Bell's vireo.

Because Covered Activities will impact a small fraction of the least Bell's vireo habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of least Bell's vireos within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation, and Habitat Fragmentation

The least Bell's vireo could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to least Bell's vireo include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation.

Changes to hydrology, such as decreasing flows, erosion, and sedimentation can remove or alter the wetland habitat of least Bell's vireo. OPs will be implemented to minimize changes to hydrology and water quality, erosion, and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23).

Covered Activities and new Facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for least Bell's vireo. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (Rich and Longcore 2006). Since vulnerability to predators is a factor associated with habitat quality for the least Bell's vireo, project-associated increases in nighttime light levels may reduce the quality of least Bell's vireo habitat in localized areas. To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats, and any permanent lighting will be directed away and/or shielded so as not to illuminate native habitats (OP 25).

The ground disturbance and landscaping associated with Covered Activities can facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants can alter the species composition and structure of the habitat, which may make it less suitable to the least Bell's vireo. Arthropod abundance and diversity may decrease in correlation with the decline in their native plant hosts, decreasing the food supply of this insectivorous species. Leaks in water conveyance/holding facilities and landscape irrigation at new Facilities may also result in a reduction of food resources for the least Bell's vireo by creating favorable conditions for invasive ant species. Argentine ants can alter the native arthropod community, thereby significantly reducing their diversity and abundance (Bolger et al. 2000). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of least Bell's vireos.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species, and potential for increased predation. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting least Bell's vireo dispersal/movement corridors that contribute to long-term population viability for the least Bell's vireo. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in least Bell's vireo survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area includes the Tijuana River, Dulzura Creek/Jamul Creek/Otay River, Sweetwater River, San Diego River, San Luis Rey River, and Camp Pendleton/Santa Margarita River Units identified in the draft recovery plan (Service 1998b). The draft recovery plan identifies Criteria 1 to down-list this species as stable or increasing least Bell's vireo populations consisting of several hundred or more breeding pairs at all of these units. The riparian habitat included in the Plan Area is part of a system that provides important breeding, feeding, and sheltering habitat for the least Bell's vireo.

The HCP Amendment does not conflict with the goals of the draft recovery plan. Although the proposed Covered Activities will impact riparian habitat that is used by the least Bell's vireo for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation, restoration/enhancement, and in-perpetuity management of least Bell's vireo habitat. The mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the least Bell's vireo.

The proposed conservation and restoration/enhancement of suitable least Bell's vireo habitat and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with Criteria 1 to down-list this species identified in the draft recovery plan for stable or increasing least Bell's vireo populations consisting of several hundred or more breeding pairs at all of these units. Therefore, the breeding, feeding, and sheltering functions degraded or destroyed due to unavoidable impacts to least Bell's vireo habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the draft recovery plan.

We expect no more than 31.05 acres of least Bell's vireo Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the least Bell's vireo habitat and the least Bell's vireo population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any least Bell's vireo population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the least Bell's vireo. We base this conclusion on the following:

1. The current range of the least Bell's vireo includes southern California to northwest Baja California in Mexico; thus, the action area for HCP Amendment represents only a portion of the species' rangewide distribution.

2. One pair of least Bell's vireos may be harmed through loss or partial loss of its primary breeding, feeding, and sheltering habitat, which is a small fraction of the pairs in the Plan Area and rangewide.

3. Impacts will be limited to no more than 31.05 acres of least Bell's vireo Tracked Habitat, which represents about 0.08 percent of the Modeled Habitat for the least Bell's vireo in the Plan Area.

4. Based on the known distribution of the least Bell's vireo within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within

Modeled Habitat support occurrences of least Bell's vireo. Therefore, it is likely that substantially less than 31.05 acres of occupied least Bell's vireo habitat will be impacted.

5. General and species-specific OPs will reduce the likelihood that individual least Bell's vireos will be harmed by Covered Activities and will avoid direct death or injury or destruction of nests.

6. Impacts to the least Bell's vireo will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the draft recovery plan.

7. Because Covered Activities will affect a small proportion of least Bell's vireo habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by least Bell's vireo, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of least Bell's vireo in the Plan Area or rangewide.

8. Long-term management and monitoring of mitigation lands will help sustain least Bell's vireos in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Unlisted Birds

Tricolored Blackbird (Agelaius tricolor)

Status of the Species

Listing Status

The tricolored blackbird (*Agelaius tricolor*) is a state listed threatened bird species; it is not currently federally listed under the Act.

Species Description

The tricolored blackbird is a medium sized (7 to 9.5 inches in length), sexually dimorphic blackbird. The male is black with a bright red and white patch on the shoulder. The female is mostly black with grayish streaks, a whitish chin and throat, and a small reddish shoulder patch. The juveniles are similar to the adult female but lighter gray and buff in color (Beedy and Hamilton 1999).

Habitat Affinities

The tricolored blackbird generally breeds near fresh water, preferably in emergent wetlands with tall, dense cattails (*Typha* spp.) or bulrushes (*Schoenoplectus* spp.) (Zeiner et al. 1990). In the Sacramento Valley, almost 93 percent of the nesting locations were in freshwater marshes dominated by cattails or bulrushes (Neff 1937). Nests have historically also been located in nettles (*Urtica* spp.), thistles (*Cirsium* spp.), and willows (*Salix* spp.) (Neff 1937). Since the 1970s, an increasing percentage of colonies have been reported in Himalayan blackberry (*Rubus discolor*) and thistle (DeHaven *et al*. 1975, Cook 1996). Other less commonly used nesting substrates include safflower (*Carthamus tinctoruis*), tamarisk (*Tamarix* spp.), elderberry and poison oak (*Sambucus* spp. and *Toxicodendron diversilobum*), giant reed (*Arundo donax*), and riparian scrublands and forests (e.g., *Salix* spp., *Populus* spp., *Fraxinus* spp.) (Beedy and Hamilton 1999). A few small breeding colonies have also been documented at private and public lakes, reservoirs, and parks located near shopping centers, subdivisions, and other urban development (Beedy and Hamilton 1999). In general, nest sites include: accessible water, protected nesting sites (either flooded or surrounded by thorny or spiny vegetation), and suitable foraging areas with adequate insect prey within a few miles of the nesting colony (Beedy and Hamilton 1999).

In winter, tricolored blackbirds can form single-species, multi-species, and sometimes single-sex flocks. Foraging occurs on the ground within a few miles of the nesting colony in crop lands, grassy fields, flooded land, irrigated pastures, lightly grazed rangelands, dry seasonal pools, mowed alfalfa fields, feedlots, dairies, garbage dumps, parking lots, and along edges of ponds (Zeiner et al. 1990, Beedy and Hamilton 1999, Unitt 2004).

Life History

During the breeding season, adult tricolored blackbirds are opportunistic foragers of any abundant insect resource (Beedy and Hamilton 1997) including grasshoppers, beetles (61 percent of all nesting foods in a large study by Crase and DeHaven [1977]), weevils, caddis fly larvae, moth and butterfly larvae, dragonfly larvae, and lakeshore midges (Skorupa *et al*. 1980). In California, animal matter accounted for 91 percent of the food volume being consumed by nestlings and fledglings (Skorupa et al. 1980). Seeds and cultivated grains, such as rice, cracked corn, and oats, are eaten mostly during the fall and winter (Martin et al. 1961).

The tricolored blackbird is a colonial nester, forming the largest breeding colonies of any North American passerine bird (Orians 1961, Beedy and Hamilton 1997). The stages of colony development include: 1) synchronous en masse flights to prospective foraging areas by colonizing individuals; 2) synchronous male song, female nest building and egg-laying; and 3) cessation of most male song following completion of egg laying. During the day, when females are incubating the eggs, males leave the colony. At this time, colony size is easily underestimated, and large colonies can be overlooked. Presence of large, all-male foraging flocks during the breeding season identifies the presence of nesting colonies in the vicinity (Hamilton 2004). This species is considered a nomadic or “itinerant” breeder, changing its nesting locations from year-to-year. Their colonial, nomadic breeding system probably evolved in the Central Valley, where locations of surface waters and rich sources of insect food were ephemeral and varied annually (Orians 1961).

The typical breeding season for tricolored blackbirds is mid-April into late July (Payne 1969). Orians (1960) also reported active breeding in October and November in the Sacramento Valley, although reproductive success was low. In dense vegetation, the breeding territory, which includes only the vicinity of the nest, is typically 35 square feet but may be larger in habitats of less suitable cover (Orians 1961). Tricolored blackbirds usually forage less than 4 miles from the breeding grounds (Orians 1961).

The species is polygynous, with each male having one to four females in his territory (Hamilton 2004). Nests are usually located a few feet over, or near, fresh water or hidden on the ground among low vegetation and are built of mud and plant materials (Zeiner et al. 1990). Average clutch size for this species is three to four eggs (Emlen 1941), and two broods per year are common (Terres 1980). Eggs are incubated for about 11 days, and the young leave the nest around 13 days of age (Zeiner et al. 1990). After fledging, offspring will either be moved up to several miles from the colony to crèche sites where parental provisioning continues or they stay near the natal colony if it is not disrupted and foraging in the immediate area remains productive (Hamilton 2004).

Black crowned night herons, coyotes, ravens, and raccoons are all documented predators of the tricolored blackbird. Harriers are also known to harass colonies incessantly, imposing a reproductive cost. Cook (1996) reported high nestling mortality after severe or prolonged storms. Females will occasionally shelter nests during rain; at one colony, 17 of 2,040 nests examined post-nesting, contained a dead female covering her chicks or eggs (Beedy and Hamilton 1999). Rainfall can destroy from a few to all nests in a colony, depending on developmental stage of nestlings and severity of storms. Other effects of severe storms include blowdown of cattails, silage, and other plants supporting nests. Responses to drought include failure to breed (Collier 1968), abandonment of active colonies, and low reproductive success (Orians and Collier 1963).

Status and Distribution

The tricolored blackbird breeds from southern Oregon and the Modoc Plateau of northeastern California, south through the lowlands of California west of the Sierra Nevada to northwestern Baja California (Grinnell and Miller 1944). Tricolored blackbirds are colonial nesters, likely in response to varied and ephemeral water and food sources (Orians 1961). The species is a near endemic to California with at least 95 to 99 percent of the world's population restricted to the state, and only small breeding colonies in Nevada, Oregon, Washington, and Baja California, Mexico (Beedy and Hamilton 1999, Kyle and Kelsey 2011). The overall range of the tricolored blackbird has changed little since the mid-1930s with the exception of its recent expansion into Washington and British Columbia (Hamilton 2004).

In California, the tricolored blackbird is common locally throughout the Central Valley and in coastal districts from Sonoma County south to Baja, Mexico (Zeiner et al. 1990). Since 1980, active breeding colonies have been observed in 46 of the 58 California counties, with the largest colonies occurring in the Central Valley (Beedy and Hamilton 1999). During a 1994 statewide survey in California, 94 percent of all breeding adults were found in the Central Valley (Beedy and Hamilton 1999). Combined results from population surveys conducted throughout California by Hamilton *et al*. (1999) estimated the 1994 population at 370,000 (±15 percent) breeding adults. A survey of similar coverage and intensity estimated the 1997 population at 233,000

(±15 percent) adults, a decline of 37 percent (Beedy and Hamilton 1997). Breeding Bird Survey data show an annual decline of 4.5 percent throughout its range from 1980 to 2004, with a similar trend documented for California (Sauer *et al*. 2005).

In Central California, the tricolored blackbird's breeding range extends east into the foothills of the Sierra Nevada (Beedy and Hamilton 1999). In the southern deserts, it is found regularly only at Antelope Valley, Los Angeles County. In winter, it becomes more widespread along the central coast and San Francisco Bay area (Grinnell and Miller 1944, McCaskie et al. 1979, Garrett and Dunn 1981).

In southern California, declines in numbers of tricolored blackbirds were noted as early as the 1930s (Neff 1937). More recent surveys indicate that tricolored blackbird populations have continued to decline (Beedy and Hamilton 1997, Hamilton et al. 1999, Hamilton 2000). In 2001, a volunteer-coordinated breeding survey was conducted throughout California (Humple and Churchwell 2002). No breeding colonies were detected in Orange and Los Angeles counties. One small colony of 30 individuals was observed in Riverside County, a significant reduction from 1997, when 35,000 individuals had been observed at this site (San Jacinto ponds). A volunteer-coordinated breeding survey conducted in 2011 estimated the southern California subpopulation to be 5,965 individuals found only in Los Angeles, Riverside, and San Diego counties (Kyle and Kelsey 2011). In San Diego County, Unitt (2004) estimated the population at 5,000 to 8,000 individuals, concentrated in 20 to 30 colonies. During the 2011 breeding survey, 767 individuals were observed in San Diego County; a similar survey effort in 2008 recorded 1,367 birds (Kyle and Kelsey 2011); and a similar survey in 2021 documented a single breeding colony on conserved land consisting of about 450 individuals as well as two locations with foraging tricolored blackbirds supporting about 412 individuals (AECOM 2022). This is a dramatic decline from its earlier status as "the most abundant species near San Diego" (Neff 1937).

Threats and Conservation Needs

The loss of suitable nesting and foraging habitats from water diversion and land conversion is the primary threat to the tricolored blackbird. Other current threats to this species include burning and discing of marshes, predation by native and non-native species, changes in the types and timing of agricultural practices, severe storms, and poisoning (Beedy and Hamilton 1997). Brood parasitism by cowbirds appears to be rare (Beedy and Hamilton 1999).

Due to the significant loss of wetlands in southern California, a primary conservation need of this species is the maintenance of wetland nesting habitat in proximity to preferred foraging sites. Focused surveys of potential breeding locales are also essential. Due to the colonial nature of this species, wetlands must be large enough to support hundreds to thousands of breeding pairs. Hydrological considerations may also be essential to the successful maintenance, management, restoration, and regeneration of tricolored blackbird breeding habitats.

Beedy and Hamilton (1997) also made the following management recommendations for this species: 1) improve breeding habitat on public lands and encourage private landowners to do the same; 2) enhance public awareness of this species; and 3) minimize habitat losses. Hamilton (2003a) emphasized: 1) monitoring to include measurements of reproductive success;

2) designating adequate and sufficient habitat in HCPs; 3) protecting ephemeral habitats; 4) developing habitat to take advantage of rice as a nesting habitat when associated with native marsh vegetation; 5) avoiding dairies as a focus for management and restoration; 6) developing water point sources where their absence limits settlement; 7) encouraging development of colonies in conspicuous urban environments where their educational value will be useful; 8) creating habitat when reservoirs are designed and constructed; 9) creating restoration colonies; 10) emphasizing native plants in restoration efforts; and 11) managing problem species such as ravens, night herons, and coyotes whenever possible.

Within the Plan Area, the following management actions would benefit the tricolored blackbird: 1) maintaining hydrology and water quality and minimizing additional loadings of nutrients or pollutants at potential breeding sites; 2) enhancing habitat at historic, current, and potential breeding sites (this species responds well to habitat manipulation); 3) protecting grassland foraging habitats in proximity to breeding areas; 4) controlling urban-related predators such as cats; and 5) minimizing human disturbance at breeding sites.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 82 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the tricolored blackbird:

82. Tricolored Blackbird (*Agelaius tricolor*)

a. Impacts from Covered Activities where there is a potential for the tricolored blackbird to occur (TRBL-Habitat) shall be avoided through project design considerations, to the extent feasible.

b. If impacts to TRBL-Habitat cannot be avoided, a Biologist shall survey TRBL-Habitat that has the potential to be impacted by Covered Activities using appropriate survey techniques to determine species presence. If project timing does not allow for surveys, it shall be assumed that all TRBL-Habitat to be impacted is occupied.

c. If surveys determine that TRBL-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within TRBL-Habitat.

d. If surveys determine TRBL-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied TRBL-Habitat shall be mitigated per Section 5.5, Table 5.3b.

e. Whenever practicable, minimize impacts through timing of work in freshwater marsh TRBL-Habitat to avoid the nesting season for tricolored blackbird and conduct TRBL-Habitat removal prior to the initiation of the riparian avian breeding season breeding season (March 15 through September 15).

f. If work is scheduled during the riparian avian breeding season and within suitable habitat, a Biologist shall conduct a preconstruction nesting survey to ensure that no tricolored blackbird active nests are present within 500 feet of Covered Activities.

g. If nesting surveys indicate an active nest is likely or an active tricolored blackbird nest is observed, no Covered Activities shall be implemented within 500 feet of the nest. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by the Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures approved by USFWS. Specific buffer requirements may be reduced with approval by USFWS on a project-by-project basis as appropriate.

h. When an active nest is present, a Biologist shall be I during Covered Activities as needed to avoid and minimize the potential for impacts to individuals.

i. Direct take of nesting individuals and destruction of active nests are not allowed.

j. For new projects, impacts to tricolored blackbird and TRBL-Habitat shall only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied tricolored blackbird habitat. However, not all Modeled Habitat is expected to support tricolored blackbird occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. As discussed above in the *Habitat Affinities* section, tricolored blackbirds forage in a variety of upland vegetation communities (i.e., crop lands, grassy fields, flooded land, irrigated pastures, lightly grazed rangelands, dry seasonal pools, mowed alfalfa fields) within a few miles of the nesting colony. The landscape-level vegetation mapping available for Modeled Habitat analysis did not capture specific vegetation communities relative to each other (i.e., upland vegetation within a few miles of wetland vegetation). Therefore, to avoid further overestimating the extent of suitable habitat, we did not include non-wetland vegetation communities in our estimate of Modeled Habitat for this species.

Based on the tricolored blackbird Modeled Habitat, there are approximately 67,345 acres in the Plan Area and approximately 4,296 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the three ecoregions with the highest acreages of tricolored blackbird habitat are the north coast, northern valley, and northern mountains ecoregions. In the Plan Area in Orange County, the highest acreage of tricolored blackbird Modeled Habitat is found in the Orange County foothill and valley ecoregion. There is no suitable habitat for this species at the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 31 and 22 tricolored blackbird occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

In San Diego County, tricolored blackbird colonies are concentrated in two areas: (1) north-central San Diego County from Dameron Valley and Oak Grove south to Ramona and Santa Ysabel, and (2) the Campo Plateau from Potrero to Jacumba (Unitt 2004). In the Plan Area in Orange County, tricolored blackbird but has likely been extirpated as a breeder (Hamilton and Willick 1996). Historically, nesting colonies were scattered throughout Orange County, including several large colonies at Cañada Chiquita, San Diego Creek, and Peters Canyon Regional Park, as well as smaller colonies at city parks in Huntington Beach and Costa Mesa (Humple and Churchwell 2002).

The tricolored blackbird is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- Orange County Southern Subregional HCP
- Western Riverside County MSHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP

Although tricolored blackbird is not covered, the following existing regional HCP overlaps with the Plan Area:

- San Diego MHCP Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 31,384 acres of Modeled Habitat occur within Preserves and 2,128 acres of Modeled Habitat occur within Proposed Preserves (collectively, about 50 percent of all Modeled Habitat) associated with regional conservation efforts in the Plan Area (CDFW 2023). In addition, 17 occurrences of tricolored blackbird recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area. This species is not known or expected to occur at existing SDG&E mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 is expected to impact up to 8.98 acres of tricolored blackbird Modeled Habitat, which is a fraction of the 67,345 acres of tricolored blackbird Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 5.67 acres of permanent impacts (0.03 percent of Modeled Habitat in the Plan Area); and

- Approximately 3.31 acres of temporary impacts (0.02 percent of Modeled Habitat in the Plan Area);

Wildfire Fuels Management is not expected to impact tricolored blackbird habitat.

This impact represents about 0.05 percent of tricolored blackbird Modeled Habitat within the Plan Area. Except as noted above, this estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for tricolored blackbirds. However, because tricolored blackbirds are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

Because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a tricolored blackbird occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[37]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact tricolored blackbird and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to tricolored blackbird will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of the tricolored blackbird within the Plan Area and its specific habitat requirements (i.e., nesting sites with surface water nearby), we anticipate that only limited areas within Modeled Habitat support occurrences of tricolored blackbirds. Therefore, it is likely that substantially less than 8.98 acres of occupied tricolored blackbird habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

Impacts to wetland habitat due to Covered Activities will primarily result from construction of linear Facilities (e.g., power lines and pipelines) across a creek or river with removal or destruction of riparian vegetation limited to relatively narrow strips of suitable habitat within the wetland corridor. We have little information regarding the effect of different amounts of habitat removal on tricolored blackbird survival or reproductive output, so we used our best professional

[37] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

judgment to estimate that the loss of more than 20 percent of tricolored blackbird habitat within a territory will substantially increase the risk of mortality or interfere with tricolored blackbird breeding activity. For adults whose territories are destroyed or significantly reduced (i.e., estimated as loss of 20 percent or more of territory), the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the impact area will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Tricolored blackbirds that do find suitable habitat could lose their mates and may be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation.

Conversely, loss of less than 20 percent of a territory may force a tricolored blackbird pair to adjust its territory boundaries slightly or result in a limited increase in territorial interactions with neighboring pairs but will not result in a substantial increase in mortality or decrease in reproductive output (i.e., effects would not rise to the level of "take").

Our analysis assumes impacts to tricolored blackbird pairs is roughly proportional to impacts to Modeled Habitat. There are 67,342 acres of Modeled Habitat in the Plan Area, 8.98 acres of anticipated impacts to Modeled Habitat, and an estimated 31 tricolored blackbird territories in the Plan Area. Using these calculations, we estimate that no more than one tricolored blackbird pair will be harmed from Covered Activities.[38] The territory could be impacted multiple times over the course of the permit term as habitat could be managed, regrow over time, and then be impacted again.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of tricolored blackbird habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 82 for the tricolored blackbird are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to tricolored blackbird habitat, as specified in OP 82 include: 1) whenever practicable, do work in tricolored blackbird habitat outside the nesting season, 2) preconstruction nesting surveys if needed, 3) maintaining a 300-foot buffer around any nests found and monitoring the nests, and 4) avoiding direct take of individuals and destruction of active nests.

[38] 8.98 acres/67,342 acres x 31 territories ÷ 0.2 (20 percent threshold for harm) = <1 pair of tricolored blackbird harmed

Within implementation of the above OPs, we do not expect any direct injury or mortality of adults, eggs, and nestlings from Covered Activities.

Unavoidable temporary impacts to tricolored blackbird occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to tricolored blackbird occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of tricolored blackbird habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual tricolored blackbirds within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of tricolored blackbirds within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the tricolored blackbird.

Because Covered Activities will impact a small fraction of the tricolored blackbird habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of tricolored blackbirds within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation, and Habitat Fragmentation

The tricolored blackbird could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to tricolored blackbird include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, and habitat fragmentation.

Changes to hydrology, such as decreasing flows, erosion, and sedimentation can remove or alter the wetland habitat of tricolored blackbird. OPs will be implemented to minimize changes to hydrology, erosion, and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23).

Covered Activities and new Facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for tricolored blackbird. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (e.g., Rich and Longcore 2006). Since vulnerability to predators is a factor associated with habitat quality for the tricolored blackbird, project-associated increases in nighttime light levels may reduce the quality of tricolored blackbird habitat in localized areas. To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats and any permanent lighting will be directed away and/or shielded so as not to illuminate native habitats (OP 25).

The ground disturbance and landscaping associated with Covered Activities can facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants can alter the species composition and structure of the habitat, which may make it less suitable to the tricolored blackbird. Arthropod abundance and diversity may decrease in correlation with the decline in their native plant hosts, decreasing the food supply of this insectivorous species. Leaks in water conveyance/holding facilities and landscape irrigation at new Facilities may also result in a reduction of food resources for the tricolored blackbird by creating favorable conditions for invasive ant species. Argentine ants can alter the native arthropod community, thereby significantly reducing their diversity and abundance (Bolger et al. 2000). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of tricolored blackbirds.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species, and potential for increased predation. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting tricolored blackbird dispersal/movement corridors that contribute to long-term population viability for the tricolored blackbird. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural

habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in tricolored blackbird survival or reproduction beyond baseline conditions.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the tricolored blackbird. We base this conclusion on the following:

1. The current range of the tricolored blackbird includes the Pacific coast of North America from Northern California and southern Oregon to upper Baja California in Mexico; thus, the action area for HCP Amendment represents only a portion of the species' rangewide distribution.

2. One pair of tricolored blackbirds may be harmed through loss or partial loss of its primary breeding, feeding, and sheltering habitat, which is a small fraction of the pairs in the Plan Area and rangewide.

3. Impacts will be limited to no more than 8.98 acres of tricolored blackbird Tracked Habitat, which represents about 0.05 percent of the Modeled Habitat for tricolored blackbird in the Plan Area.

4. Based on the known distribution of the tricolored blackbird within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of tricolored blackbird. Therefore, it is likely that substantially less than 8.98 acres of occupied tricolored blackbird habitat will be impacted.

5. Impacts within unoccupied habitat will not result in mortality, injury, or harm to individual tricolored blackbirds.

6. General and species-specific OPs will reduce the likelihood that individual tricolored blackbirds will be harmed by Covered Activities and will avoid direct death or injury or destruction of nests.

7. Impacts to the tricolored blackbird will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

8. Because Covered Activities will affect a small proportion of tricolored blackbird habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by tricolored blackbird, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of tricolored blackbird in the Plan Area or rangewide.

9. Long-term management and monitoring of mitigation lands will help sustain tricolored blackbirds in the Plan Area and will contribute to the rangewide conservation of this species.

Western Burrowing Owl (Athene cunicularia hypugaea)

Status of the Species

Listing Status

The western burrowing owl (*Athene cunicularia hypugaea*) is not listed under the Act. The species is considered a California Species of Special Concern by CDFW.

Species Description

The western burrowing owl is a small ground-dwelling owl. The western burrowing owl underwent several taxonomic changes until placed in its current genus *Athene* (Clark et al. 1997, AOU 1998). Two subspecies of burrowing owl occur in North America: the western burrowing owl (*A. c. hypugaea*) and the Florida burrowing owl (*A. c. floridana*) (Klute et al. 2003). Females are generally darker than males overall, particularly in worn plumage (Haug et al. 1993).

Habitat Affinities

Western burrowing owls use a variety of habitats in California including native and non-native grasslands, lowland scrub, agricultural lands (particularly rangelands), fallow fields, open developed areas, agricultural areas, drainage features, coastal dunes, desert floors, and some disturbed areas (Haug et al. 1993). They require large, sparsely vegetated, open expanses on gently rolling or level terrain. The presence of a nest burrow appears to be the necessary habitat requirement for the western burrowing owl. They typically require a mammal burrow [e.g., ground squirrels *(Spermophilus beecheyi)*], but when these are not available they have been known to use pipes and natural rock and lava cavities, as well as artificial burrows constructed in support of management efforts for this subspecies. Currently, little is known about specific habitat requirements in wintering areas (Klute *et al*. 2003).

Life History

The western burrowing owl is an opportunistic forager, primarily feeding on arthropods, small mammals, birds, amphibians, and reptiles (Haug et al. 1993). The western burrowing owl's diet varies by season, with vertebrates occurring more commonly in the winter diet and arthropods in the summer diet.

The western burrowing owl breeds from March through August, depending on the location of its breeding grounds. Typically, this species uses old burrows dug by mammals such as ground squirrels. Western burrowing owls lay 6 to 11 eggs per clutch. Young emerge from the burrow at 2 weeks of age, forage for themselves by 4 weeks, and can fly by 6 weeks (Zarn 1974). Western burrowing owl families often switch burrows every 2 weeks when the young are 3 to 4 weeks old. They remain as a loose-knit group until early fall when the young begin to disperse to nearby burrows (Haug et al. 1993, Dechant et al. 1999). Home ranges vary from 0.1 to 4 acres with an average distance between burrows of 435 feet (Thomsen 1971, Martin 1973). Territory size is directly proportional to habitat quality and burrow availability.

Predators of western burrowing owls include coyotes, American crows, domestic dogs and cats, prairie falcons, and red-tailed, Swainson's, and ferruginous hawks (Martin 1973). Collisions with vehicles are also a common cause of mortality as the owls habitually sit and hunt on roads at night (Bent 1937, Ratcliffe 1987).

Status and Distribution

The western burrowing owl breeds from southern interior British Columbia (nearly extirpated), southern Alberta, southern Saskatchewan (extirpated from portion of province), and southern Manitoba (extirpated from portion of province), south through eastern Washington, central Oregon, and California to Baja California, east to western Minnesota, northwestern Iowa, eastern Nebraska, central Kansas, Oklahoma, eastern Texas, and Louisiana, and south to central Mexico. The winter range is similar to the breeding range, except that most western burrowing owls vacate the northern areas of the Great Plains and Great Basin (Haug et al. 1993).

In California, western burrowing owls are restricted to the Central Valley extending from Redding south to the Grapevine, east through the Mojave Desert and west to San Jose, the San Francisco Bay area, and south to San Diego and the Sonoran desert (Grinnell and Miller 1944). Historically, it was a resident in the open lowland areas throughout southern California (Garrett and Dunn 1981), but population numbers have markedly declined in recent decades (Zeiner et al. 1990). The species appears to be threatened with extirpation from central western and southern California (DeSante and Ruhlen 1995). Statewide surveys conducted from 1986 to 1991 showed up to a 52 percent decrease in population groups and up to a 27 percent decrease in the number of breeding pairs throughout the state (DeSante et al. 1997, Klute et al. 2003). The western burrowing owl has been severely reduced as a breeding species in the five coastal counties of southern California (Comrack and Mayer 2003).

Within Los Angeles County, the western burrowing owl has been extirpated as a breeder from the coastal and interior basin areas, while only a few individuals are detected in this area each winter. The high desert area of Antelope Valley provides the only remaining habitat for this

species in Los Angeles County. A small breeding population (20 to 50 pairs) and a core wintering population of unknown size can still be found there; however, these owls are located on private lands that are likely to be developed (Comrack and Mayer 2003).

In Orange County, the western burrowing owl is nearing extirpation as a breeding species and is very rare in winter with less than 50 individuals remaining (Comrack and Mayer 2003). The remaining nesting colony is located at Seal Beach Naval Weapons Station. In May of 2003, 10 to 14 individuals and 2 active nests were located at this site.

Within San Diego County, western burrowing owls are nearing extirpation as a breeding species. The only natural "colony" (defined as more than five breeding pairs) of western burrowing owls remaining in the county are on the Otay Mesa (San Diego Zoo Institute for Conservation Research 2017). Efforts are underway to establish new breeding colonies at the Ramona Grasslands and Rancho Jamul Ecological Reserve using translocated individuals from development sites and captive-bred individuals from the San Diego Zoo. From 2021-2022, 40 captive-bred individuals were released at Ramona Grasslands (Melissa Merrick, pers. comm. 2022). In 2022, at Ramona Grasslands there were 3 successful nests that fledged 13 young and at Rancho Jamul Ecological Reserve there were 6 successful nests that fledged 27 young. Predation by skunks, coyotes, and hawks at these sites has been observed and continues to be a threat to the existence of these colonies (Melissa Merrick, pers. comm. 2022).

A small number of pairs still persist within western Riverside County, with at least 12 sites thought to support breeding western burrowing owls. A minimum of 6 pairs of western burrowing owls with 20 young were observed within the Prado/Chino Basins during the 2003 breeding season (Service 2004b). These birds are thought to be part of a larger, increasingly important, population of western burrowing owls within northwestern Riverside County and adjacent southwestern San Bernardino County.

Threats and Conservation Needs

The primary threats to western burrowing owls include the loss and fragmentation of their habitat due to intense agricultural and urban development and habitat degradation due to declines in populations of colonial western burrowing mammals (Haug et al. 1993, Sheffield 1997, Dundas and Jensen 1994/95, Dechant *et al*. 1999). Elimination of burrowing rodents through control programs has been a primary factor in the recent and historical decline of western burrowing owl populations throughout the United States (Butts and Lewis 1982, Pezzolesi 1994, Toombs 1997, Dechant et al. 1999, Desmond et al. 2000, Murphy et al. 2001). Use of insecticides and rodenticides in western burrowing owl habitat has also contributed to this species' decline. These chemicals not only reduce their food supply but may also be toxic to the owls, reducing their reproductive success and overall health (Klute et al. 2003). Other threats include the crushing of owl burrows by heavy equipment and ground maintenance machinery, collisions with vehicles (Haug et al. 1993), and shooting. Owl survival can also be adversely affected by disturbance from humans and pets (Thomsen 1971, Comrack and Mayer 2003).

Several large-scale HCPs have been implemented in southern California. In 1996, the Service issued a permit for the Central and Coastal Orange County NCCP/HCP. In 1998, the MSCP was implemented in southwestern San Diego County and in 2003, the MHCP was implemented in

northwestern San Diego County. In 2004, the Service issued a permit for the Western Riverside County MSHCP. These plans have created large reserve systems that include substantial amounts of suitable habitat for the western burrowing owl and requirements for monitoring and management actions beneficial to the long-term conservation of the species.

Given the apparent rarity of the species in coastal southern California, conservation of this species depends on the protection and management of extant western burrowing owl colonies and populations in the region. Prudent management and conservation measures should enable or drive the increased growth of individual colonies by providing for additional or enhanced foraging and nesting habitat to maximize reproductive success and facilitate the expansion of the current distribution. As this species appears to have evolved as a colonial species in association with western burrowing mammal communities, protection of these communities is essential. Western burrowing owl colonies should also be buffered from human disturbance as western burrowing owls are sensitive to human impacts. Active management, including the construction of artificial burrows and the preservation of significant foraging areas are necessary for the western burrowing owl to persist long term in the urban landscapes of southern California.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 83 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the western burrowing owl:

83. Burrowing Owl (*Athene cunicularia*)

a. Impacts from Covered Activities where there is known or a potential for burrowing owl to nest (e.g., in the vicinity (within 600 meters [or approximately 0.4 mile] of known nesting occurrences) (BUOW-Habitat) shall be avoided through project design considerations, to the extent feasible. Vegetation communities considered suitable for burrowing owl nesting shall include low-lying open vegetation such as open coastal sage scrub, native and nonnative annual grassland, landscape/ornamental, and disturbed habitats.

b. If impacts to BUOW-Habitat cannot be avoided, a Biologist shall survey BUOW-Habitat that has the potential to be impacted by Covered Activities following current protocols to determine species presence. If project timing does not allow for surveys, it shall be assumed that all BUOW-Habitat to be impacted is occupied.

c. If surveys determine that BUOW-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within BUOW-Habitat.

d. If surveys determine BUOW-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied BUOW-Habitat shall be mitigated per Section 5.5, Table 5.3a.

e. During the breeding season (February 1 through August 31) and non-breeding (September 1 through January 31), a preconstruction survey (i.e., take avoidance survey) shall be conducted no less than 14 days prior to initiating ground disturbance Covered Activities when there is the presence of small mammal burrows that have potential to support burrowing owl. The Biologist shall conduct a preconstruction survey to ensure that no active burrows are present within 300 feet of Covered Activities. The Biologist shall also survey irrigation pipes, culverts, and other depressions or non-natural "burrows" that may provide shelter for burrowing owl.

f. If active burrowing owl nests or burrow shelters are identified, no Covered Activities shall be conducted within a minimum distance of 300 feet of the nest. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by the Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures approved by USFWS. Specific buffer requirements may be reduced with approval by USFWS on a project-by-project basis as appropriate.

g. When an active nest is present, a Biologist shall be onsite during Covered Activities as needed to avoid and minimize potential impacts to individuals.

h. During the non-breeding season, individual burrowing owls that shall be directly impacted by the Project may be passively relocated with concurrence from USFWS. Passive relocation methodologies shall be outlined in a project-specific plan and follow the most current guidelines accepted by USFWS.

i. Direct take of nesting individuals and destruction of active nests are not allowed.

j. Pesticides are prohibited in areas where burrowing owls are present.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied western burrowing owl habitat. However, not all Modeled Habitat is expected to support western burrowing owl occurrences (i.e., Occupied Habitat) and Occupied Habitat may occur outside of Modeled Habitat. Based on the western burrowing owl Modeled Habitat, there are approximately 218,362 acres in the Plan Area and approximately 6,519 acres in the PIZ associated with existing SDG&E Facilities. In San Diego County, the highest acreages of western burrowing owl Modeled Habitat occur within the south desert slopes, north coast, and northern valley ecoregions. In the Plan Area in Orange County, the highest acreages of western burrowing owl Modeled Habitat occur within the Orange County foothill and valley ecoregion. There are also 6 acres of suitable habitat (included in Modeled Habitat below) for present this species on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 22 and 14 western burrowing owl occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

In San Diego County, this species is most commonly detected in east Otay Mesa along the United States and Mexico border, as well as on the Ramona Grasslands Preserve located in the community of Ramona, on North Island Naval Air Station, and on CDFW's Rancho Jamul Ecological Reserve. This species is particularly prevalent within Preserves in the Otay Mesa area as well as scattered observations in the Tijuana Slough National Wildlife Refuge. In the Plan Area in Orange County, western burrowing owl detections have been minimal and have occurred at the Prima Deshecha Landfill located in the city of San Juan Capistrano.

The western burrowing owl is covered by the following existing regional habitat conservation plans that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- San Diego MHCP Subregional NCCP/HCP
- Orange County Southern Subregional HCP
- Western Riverside County MSHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 139,520 acres of Modeled Habitat occur within Preserves and 2,533 acres of Modeled Habitat within Proposed Preserves (collectively about 65 percent of all Modeled Habitat) associated with regional conservation efforts in the Plan Area. In addition, 2 occurrences of western burrowing owl recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on SDG&E's existing mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 117.57 acres of western burrowing owl Modeled Habitat, which is a fraction of the 218,368 acres of western burrowing owl Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 53.34 acres of permanent impacts (or 0.02 percent of Modeled/Suitable Habitat in the Plan Area);
- Approximately 31.1 acres of temporary impacts (or 0.01 percent of Modeled/Suitable Habitat in the Plan Area);

- Approximately 28.13 acres of Wildfire Fuels Management impacts (or 0.01 percent of Modeled/Suitable Habitat in the Plan Area); and

- Approximately 5 acres of permanent impacts at the Moreno Compressor Station Facility (or <0.01 percent of Modeled/Suitable Habitat in the Plan Area).

This impact represents about 0.05 percent of western burrowing owl Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for western burrowing owl. However, because western burrowing owls are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

Because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a western burrowing owl occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[39]

Impacts from Covered Activities other than the Moreno Compressor Station Facility are expected to be relatively small and distributed across a broad landscape within the PIZ over the 2050 ITP term for the HCP Amendment. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact more than 1.75 acres of a preserve or planned preserve will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts western burrowing owl will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of the western burrowing owl within the Plan Area and its specific habitat requirements (i.e., large, sparsely vegetated, open expanses on gently rolling or level terrain), we anticipate that only limited areas within Modeled support occurrences of western burrowing owl. Therefore, it is likely that substantially less than 117.57 acres of occupied western burrowing owl habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

Impacts to western burrowing owl habitat due to Covered Activities will primarily result from construction of linear Facilities (e.g., power lines and pipelines) with removal or destruction of vegetation limited to relatively narrow strips of suitable habitat. We have little information regarding the effect of different amounts of habitat removal on western burrowing owl survival or reproductive output, so we used our best professional judgment to estimate that the loss of more than 20 percent of western burrowing owl habitat within a territory will substantially

[39] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

increase the risk of mortality or interfere with western burrowing owl breeding activity. For adults whose territories are destroyed or significantly reduced (i.e., estimated as loss of 20 percent or more of territory), the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the impact area will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Western burrowing owls that do find suitable habitat could lose their mates and may be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation.

Conversely, loss of less than 20 percent of a territory may force a western burrowing owl pair to adjust its territory boundaries slightly or result in a limited increase in territorial interactions with neighboring pairs, but will not result in a substantial increase in mortality or decrease in reproductive output (i.e., effects would not rise to the level of "take").

Our analysis assumes impacts to western burrowing owl pairs is roughly proportional to impacts to western burrowing owl Modeled Habitat. There are 218,368 acres of western burrowing owl Modeled Habitat in the Plan Area, 117.57 acres of anticipated impacts to western burrowing owl Modeled Habitat, and an estimated 22 western burrowing owl territories in the Plan Area. Using these calculations, we estimate that no more than one western burrowing owl pair will be harmed from Covered Activities.[40] The territory could be impacted multiple times over the course of the permit term as habitat could be managed, regrow over time, and then be impacted again.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of western burrowing owl habitat (e.g., during the repair of fencing), but no death or injury of individuals, destruction of nests, or harm due to habitat loss are anticipated as a result of these activities.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 83 for the western burrowing owl are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to western burrowing owl, as specified in the OP 83 include: 1) whenever practicable, do work in western burrowing owl habitat outside the nesting season, 2) preconstruction nesting surveys, 3) maintaining a 300-foot buffer around nests and monitoring the nests, and 4) avoiding direct take of individuals and destruction of active nests.

Within implementation of the above OPs, we do not expect any direct injury or mortality of adults, eggs and nestlings from Covered Activities.

[40] 117.57 acres/218,368 acres x 22 territories ÷ 0.2 (20 percent threshold for harm) = <1 pair of western burrowing owls harmed

Unavoidable temporary impacts to western burrowing owl occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to western burrowing owl occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of western burrowing owl habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual western burrowing owls within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of western burrowing owls within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the western burrowing owl.

Because Covered Activities will impact a small fraction of the western burrowing owl habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of western burrowing owls within the Plan Area or rangewide.

Effects from Lighting, Non-Native Species, Predation, Fire, and Habitat Fragmentation

The western burrowing owl could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to western burrowing owl include the degradation of habitat outside the footprint of Covered Activities as a result of lighting, non-native species, fire and habitat fragmentation.

Project construction and new Facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for western burrowing owl. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (Rich and Longcore 2006). Since vulnerability to predators is a factor associated with habitat quality for the western burrowing owl, project-associated increases in nighttime light levels may reduce the quality of western burrowing owl habitat in localized areas. If night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats, and any permanent lighting adjacent to all on- or off-site habitat will be directed away from and/or shielded so as not to illuminate native habitats (OP 25).

The ground disturbance associated with Covered Activities can facilitate the spread of non-native species into adjacent undisturbed habitat. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the western burrowing owl. Arthropod abundance and diversity may decrease in correlation with the decline in their native plant hosts, decreasing the food supply of this insectivorous species. Leaks in

water conveyance/holding facilities and landscape irrigation at new Facilities may also result in a reduction of food resources for the western burrowing owl by creating favorable conditions for invasive ant species. Argentine ants can alter the native arthropod community, thereby significantly reducing their diversity and abundance (Bolger et al. 2000). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of western burrowing owls.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive pest species. The removal and restoration of existing access roads that are not needed for Covered Activities and restoration of temporary impact areas is expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such species. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species. BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities (OP 11). Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's "Invasive Plant Inventory" and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OPs 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Approximately 64 percent of the Plan Area is in "High Fire Threat Districts" (HFTDs). The HFTD consists of Tier 2 areas, "where there is an elevated risk for destructive utility associated wildfires," and Tier 3 areas, "where there is an extreme risk for destructive utility associated wildfires." The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds, coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing Facilities (e.g., electric lines) and O&M of these Facilities are potential wildlife ignition sources and wildfire ignition sources may increase with construction of new Facilities. In addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. An increase in the number of wildfires could lead to increased habitat fragmentation and isolation, diminishing the dispersal ability and inter-population connections of the western burrowing owl.

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007, after San Diego experienced some of the most destructive wildfires in the county's history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have

developed and implemented programs to enhance situational awareness, which has increased SDG&E's ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment), Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities. For example, SDG&E will regularly maintain fire protection areas around Facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas and equipping vehicles with shovels and fire extinguishers. Based on SDG&E's increased ability to monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP 10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting western burrowing owl dispersal/movement corridors that contribute to long-term population viability for the western burrowing owl. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat in order to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from night lighting, non-native species, fire, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in western burrowing owl survival or reproduction beyond baseline conditions.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the western burrowing owl. We base this conclusion on the following:

1. The current range of the western burrowing owl includes coastal southern California to northwestern Baja California, Mexico; thus, the action area for the HCP Amendment represents only a portion of the species' rangewide distribution.

2. One pair of western burrowing owls may be harmed through loss or partial loss of its primary breeding, feeding, and sheltering habitat, which is a small fraction of the pairs in the Plan area and rangewide.

3. Impacts will be limited to no more than 117.57 acres of western burrowing owl Tracked Habitat, which represents about 0.05 percent of Modeled Habitat for the western burrowing owl within the Plan Area and rangewide.

4. Based on the known distribution of the western burrowing owl within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of western burrowing owls. Therefore, it is likely that substantially less than 117.57 acres of occupied western burrowing owl habitat will be impacted.

5. General and species-specific OPs will reduce the likelihood that individual western burrowing owls will be harmed by Covered Activities and will avoid direct death or injury or destruction of nests.

6. Impacts to western burrowing owl will be avoided to the maximum extent practicable, and all unavoidable impacts to the western burrowing owl habitat will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

7. Because Covered Activities will affect a small proportion of the western burrowing owls habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by western burrowing owls, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any western burrowing owl occurrence or population in the Plan Area or rangewide.

8. Long-term management and monitoring of mitigation lands will help sustain western burrowing owls in the Plan Area and will contribute to the rangewide conservation of this species.

Coastal Cactus Wren (Campylorhynchus brunneicapillus sandiegensis)

Status of the Species

Listing Status

The coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*) is not listed under the Act. The species is designated as a Species of Special Concern by the CDFW.

Species Description

The coastal cactus wren is one of eight subspecies of cactus wren (*Campylorhynchus brunneicapillus*), distinguished by plumage patterns and characters (Rea and Weaver 1990). The subspecies fall roughly into two groups (peninsular and continental forms) with coastal cactus wren having plumage intermediate between the two groups (Proudfoot et al. 2000). Taxonomic affiliations of the populations in California have been under debate (Bancroft 1923, Rea and Weaver 1990). Atwood and Lerman (2007) contend that coastal southern California populations (including *C. b. sandiegensis*) are geographically isolated, differ in song behavior, and occur in a unique and unusual ecological setting from populations in Baja California, and the Sonoran and Chihuahuan deserts.

Habitat Affinities

The coastal cactus wren is a non-migratory resident of open stands of coastal sage scrub below 1,500 feet in elevation (Unitt 2004). It occurs almost exclusively in tall thickets of cholla (*Opuntia prolifera)* and prickly pear (*Opuntia littoralis* and *Opuntia oricola)* on south- and west-facing slopes, at the base of hillsides, and within a quarter mile of river valleys (Unitt 2004).

Life History

The coastal cactus wren is primarily insectivorous and generally forages on the ground, turning over fallen leaves and other debris in search of prey items (Proudfoot et al. 2000). The breeding season for the coastal cactus wren extends from late February to August (Unitt 2004). Football shaped nests are built in cholla or prickly pear ranging from 2.4 to 7.4 feet in height (Rea and Weaver 1990). In coastal California, clutch sizes range from three to five eggs, and coastal cactus wrens generally fledge one or possibly two successful broods (Solek and Szijj 2004). Fledglings are dependent on their parents 4 to 6 weeks post-fledging and often remain within their natal territory for several months.

Information on dispersal capacity of coastal cactus wrens is limited; however, dispersal away from breeding sites is thought to be minimal (Unitt 2004). Adult cactus wrens are considered highly sedentary, remaining in the same territory for their entire adult life (Ogden Environmental and Energy Services 1993). Territory size in coastal ranges from 2.0 to 4.9 acres (Rea and Weaver 1990). Known predators of cactus wrens include domestic cats, roadrunners, snakes, birds of prey, and woodrats (Ogden Environmental and Energy Services 1993).

Status and Distribution

Coastal cactus wrens are a common species in deserts but have a limited distribution on the coastal slopes of southern California. The cactus wren is a resident species in southern California, Baja California, southern Nevada, southwestern Utah, northwestern and south-central Arizona, southern New Mexico, central and south-western Texas, and Mexico (Proudfoot et al. 2000).

Historically, coastal cactus wrens were common on the coastal slopes and lowlands of southern California in arid and semiarid regions with abundant cacti; however, as early as 1944,

authorities noted that loss of habitat had greatly reduced the historic range of this species (Grinnell and Miller 1944). Coastal and interior populations in California were historically connected by the San Gorgonio Pass in Riverside County (Rea and Weaver 1990). Due to urbanization along this corridor, the coastal population is now geographically isolated from interior desert populations (Rea and Weaver 1990). The current range of the San Diego subspecies of cactus wren extends from northwestern Baja California, through the coastal lowlands of San Diego County and potentially into southern Orange County, although the northern limits of the subspecies are uncertain (Rea and Weaver 1990).

Threats and Conservation Needs

The primary threats to the coastal cactus wren in coastal Southern California are habitat loss, degradation, and fragmentation due to urbanization and agricultural development (Harper and Salata 1991). Habitat loss and degradation directly reduce coastal cactus wren populations while fragmentation then isolates these decreasing populations. Coastal cactus wrens that are confined to isolated patches of habitat in urbanizing areas are subject to higher rates of predation and invasion by non-native species (Crooks and Soulé 1999). Small population size coupled with fragmentation may compromise long-term viability of the species by increasing genetic homozygosity and lowering species fitness (Ogden Environmental and Energy Services 1993).

Another consequence of urbanization that is contributing to coastal cactus wren declines in coastal southern California is an increase in human caused wildfires (Harper and Salata 1991). Because of its narrow habitat requirements, sedentary behavior, and low dispersal characteristics, coastal cactus wrens are particularly vulnerable to wildfires. Studies in Orange County found that a formerly large population of coastal cactus wrens in the San Joaquin Hills was recovering very slowly from the effects of the 1993 Laguna Beach fire (Hamilton 2003b). Intense fires may actually kill cactus plants and eliminate habitat for the coastal cactus wren. As a result of competition from invasive plant species, grazing, weather patterns, and other natural and human-influenced disturbances, the re-establishment of tall cactus patches may take many years.

Conservation of as much of the remaining coastal cactus wren occupied coastal sage scrub habitat appears to be the most efficient and viable strategy for the survival of this subspecies (Solek and Szijj 2004). On already conserved lands, measures should be implemented to ensure the maintenance and ultimate expansion of component cactus patches. This would include removal on non-natives, and measures to minimize the threat of fire and other associated edge effects.

Species-Specific OPs

In addition to general OPs identified in the Description of the Proposed Action section of this Opinion, the following OP 85 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the coastal cactus wren:

85. Coastal Cactus Wren (*Campylorhynchus brunneicapillus sandiegensis*)

a. Impacts from Covered Activities where there is a potential for coastal cactus wren to occur, especially individuals or groupings of cactus greater than 2 feet tall (CACW-

Habitat), shall be avoided through project design considerations, to the extent feasible.

b. If impacts to CACW-Habitat cannot be avoided, a Biologist shall survey CACW-Habitat that has the potential to be impacted by Covered Activities using appropriate survey techniques to determine species presence. If project timing does not allow for surveys, it shall be assumed that all CACW-Habitat to be impacted is occupied.

c. If surveys determine that CACW-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within CACW-Habitat.

d. If surveys determine CACW-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied CACW-Habitat shall be mitigated per Section 5.5, Table 5.3a.

e. Whenever practicable, minimize impacts through timing of work in CACW-Habitat and conduct CACW-Habitat removal prior to the initiation of the upland avian breeding season (February 15 through August 31).

f. If work is scheduled during the breeding season and within CACW-Habitat, a Biologist shall conduct a preconstruction nesting survey to ensure that no active cactus wren nests are present within 300 feet of the Covered Activities.

g. If an active nest is observed, no Covered Activities shall be conducted within 300 feet of the nest. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by the Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures approved by USFWS. Specific buffer requirements may be reduced with approval by USFWS on a project-by-project basis as appropriate.

h. When an active nest is present, a Biologist shall be onsite during Covered Activities as needed to avoid and minimize potential impacts to individuals.

i. Direct take of nesting individuals and destruction of active nests are not allowed.

j. Salvage native cactus to be impacted within CACW-Habitat and make available for use in restoration projects per County of San Diego guidelines for cactus salvage or other appropriate references.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied coastal cactus wren habitat. However, not all Modeled Habitat is expected to support coastal cactus wren occurrences (i.e., Occupied Habitat) and limited

Occupied Habitat may occur outside of Modeled Habitat. Based on the coastal cactus wren Modeled Habitat, there are approximately 133,326 acres in the Plan Area and approximately 10,895 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of coastal cactus wren Modeled Habitat occur within the northern valley, central valley, and southern foothills ecoregions. In the Plan Area in Orange County, the highest acreages of coastal cactus wren Modeled Habitat occur within the Orange County foothill and valley ecoregion. This species is not known or expected to occur on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 52 and 45 coastal cactus wren occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

In San Diego County, coastal cactus wren detections are relatively common throughout the coastal slopes and lowlands of the region. Larger populations occur throughout Los Peñasquitos Canyon Preserve, Tecolote Canyon, and Otay Valley Regional Park, and also occur adjacent to the Sweetwater Reservoir, Lake Hodges, and Lake Jennings. Occurrences have also been noted in and around Torrey Pines State Park and Carmel Valley Open Space. The species is found within Preserves scattered throughout much of the western half of San Diego County, associated with many of the areas noted above. In the Plan Area in Orange County, population hotspots occur along Cristianitos Canyon, and in areas to the north including Bell Canyon.

The coastal cactus wren is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- San Diego MHCP Subregional NCCP/HCP
- Orange County Southern Subregional HCP
- SDCWA Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 54,374 acres of Modeled Habitat occur within Preserves and 14,616 acres of Modeled Habitat occur within Proposed Preserves (collectively, about 52 percent of all Modeled Habitat) associated with regional conservation efforts in the Plan Area. In addition, 31 occurrences of coastal cactus wren recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species has a moderate potential to occur on SDG&E's Cielo, Willow Glen, and Otay Lakes mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 188.12 acres of cactus wren Modeled Habitat, which is a fraction of the 133,326 acres of coastal cactus wren Modeled Habitat within the Plan Area (Table 12) These impacts will include:

- Approximately 89.13 acres of permanent impacts (0.07 percent of Modeled Habitat in the Plan Area);
- Approximately 51.98 acres of temporary impacts (0.04 percent of Modeled Habitat in the Plan Area); and
- Approximately 47.01 acres of Wildfire Fuels Management impacts (0.04 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.14 percent of coastal cactus wren Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for coastal cactus wren. However, because coastal cactus wrens are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

Because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a coastal cactus wren occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat)as individual Covered Activities are implemented.[41]

Impacts to coastal cactus wren habitat from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the 2050 ITP term for the HCP Amendment. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact more than 1.75 acres of a Preserve or Planned Preserve will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to coastal cactus wren will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of the coastal cactus wren within the Plan Area and its specific habitat requirements (i.e., tall thickets of cholla and prickly pear on south- and west-facing slopes, at the base of hillsides, and within a quarter mile of river valleys), we anticipate that only

[41] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

limited areas within Modeled Habitat support occurrences of coastal cactus wren. Therefore, it is likely that substantially less than 118.12 acres of occupied coastal cactus wren habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

Impacts to coastal cactus wren habitat due to Covered Activities will primarily result from construction of linear Facilities (e.g., power lines and pipelines) with removal or destruction of vegetation limited to relatively narrow strips of suitable habitat. We have little information regarding the effect of different amounts of habitat removal on coastal cactus wren survival or reproductive output, so we used our best professional judgment to estimate that the loss of more than 20 percent of coastal cactus wren habitat within a territory will substantially increase the risk of mortality or interfere with coastal cactus wren breeding activity. For adults whose territories are destroyed or significantly reduced (i.e., estimated as loss of 20 percent or more of territory), the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the impact area will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Coastal cactus wren that do find suitable habitat could lose their mates and may be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation.

Conversely, loss of less than 20 percent of a territory may force a coastal cactus wren pair to adjust its territory boundaries slightly or result in a limited increase in territorial interactions with neighboring pairs, but will not result in a substantial increase in mortality or decrease in reproductive output (i.e., effects would not rise to the level of "take").

Our analysis assumes impacts to coastal cactus wren pairs is roughly proportional to impacts to Modeled Habitat. There are 133,326 acres of Modeled Habitat in the Plan Area, 188.12 acres of anticipated impacts to Modeled Habitat, and an estimated 52 coastal cactus wren territories in the Plan Area. Using these calculations, we estimate that no more than one coastal cactus wren pair will be harmed from Covered Activities.[42] The territory could be impacted multiple times over the course of the permit term as habitat could be managed, regrow over time, and then be impacted again.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of coastal cactus wren habitat (e.g., during the repair of fencing), but no death or injury of individuals, destruction of nests, or harm due to habitat loss are anticipated as a result of these activities.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 85 for the coastal cactus wren are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered

[42] 188.12 acres/133,326 acres x 52 territories ÷ 0.2 (20 percent threshold for harm) = <1 pair of coastal cactus wren harmed

Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to coastal cactus wren habitat, as specified in OP 85 include: 1) whenever practicable, do work in coastal cactus wren habitat outside the nesting season, 2) preconstruction nesting surveys, 3) maintaining a 300-foot buffer around nests and monitoring the nests, and 4) avoiding direct take of individuals and destruction of active nests.

Within implementation of the above OPs, we do not expect any direct injury or mortality of adults, eggs and nestlings from Covered Activities.

Unavoidable temporary impacts to coastal cactus wren occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to coastal cactus occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or through measures that will benefit the species. As of 2021, about 110 acres of credits were available in the Cielo and Willow Glen mitigation lands that could be used mitigate impacts to coastal cactus wren occupied habitat. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of coastal cactus wren habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual coastal cactus wrens within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of coastal cactus wrens within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the coastal cactus wren.

Because Covered Activities will impact a small fraction of the coastal cactus wren habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of coastal cactus wrens within the Plan Area or rangewide.

Effects from Lighting, Non-Native Species, Predation, Fire and Habitat Fragmentation

The coastal cactus wren could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to coastal cactus wren include the degradation of habitat outside the footprint of Covered Activities as a result of lighting, non-native species, fire, and habitat fragmentation.

Project construction and new Facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for coastal cactus wren. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators

(e.g., Rich and Longcore 2006). Since vulnerability to predators is a factor associated with habitat quality for the coastal cactus wren, project-associated increases in nighttime light levels may reduce the quality of coastal cactus wren habitat in localized areas. If night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats, and any permanent lighting adjacent to all on- or off-site habitat will be directed away from and/or shielded so as not to illuminate native habitats (OP 25).

The ground disturbance associated with Covered Activities can facilitate the spread of non-native species into adjacent undisturbed habitat. Invasive weedy annual plants can alter the species composition and structure of the habitat, which may make it less suitable to the coastal cactus wren. Arthropod abundance and diversity may decrease in correlation with the decline in their native plant hosts, decreasing the food supply of this insectivorous species. Leaks in water conveyance/holding facilities and landscape irrigation at new Facilities may also result in a reduction of food resources for the coastal cactus wren by creating favorable conditions for invasive ant species. Argentine ants can alter the native arthropod community, thereby significantly reducing their diversity and abundance (Bolger et al. 2000). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of coastal California gnatcatchers.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive pest species. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, is expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such species. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species. BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities (OP 11). Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's "Invasive Plant Inventory", and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OPs 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Approximately 64 percent of the Plan Area is in "High Fire Threat Districts" (HFTDs). The HFTD consists of Tier 2 areas, "where there is an elevated risk for destructive utility associated wildfires," and Tier 3 areas, "where there is an extreme risk for destructive utility associated wildfires." The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds, coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing Facilities (e.g., electric lines) and O&M of these Facilities are potential wildlife ignition sources and wildfire ignition sources may increase with construction of new Facilities. In

addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. An increase in the number of wildfires could lead to increased habitat fragmentation and isolation, diminishing the dispersal ability and inter-population connections of the coastal cactus wren.

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007, after San Diego experienced some of the most destructive wildfires in the county's history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have developed and implemented programs to enhance situational awareness, which has increased SDG&E's ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment) and Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities (Section 8.5, pages 8 to 16). For example, SDG&E will regularly maintain fire protection areas around Facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas and equipping vehicles with shovels and fire extinguishers. Based on SDG&E's increased ability to monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP 10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting coastal cactus wren dispersal/movement corridors that contribute to long-term population viability for the coastal cactus wren. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from lighting, non-native species, fire, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in coastal cactus wren survival or reproduction beyond baseline conditions.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the coastal cactus wren. We base this conclusion on the following:

1. The current range of the coastal cactus wren includes coastal southern California to northwestern Baja California, Mexico; thus, the action area for the HCP Amendment represents only a portion of the species' rangewide distribution.

2. One pair of coastal cactus wren may be harmed through loss or partial loss of its primary breeding, feeding, and sheltering habitat, which is a small fraction of the pairs in the Plan Area and rangewide.

3. Impacts will be limited to no more than 188.12 acres of coastal cactus wren Tracked Habitat, which represents about 0.14 percent of Modeled Habitat for the coastal cactus wren within the Plan Area.

4. Based on the known distribution of the coastal cactus wren within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of coastal cactus wrens. Therefore, it is likely that substantially less than 188.12 acres of occupied coastal cactus wren habitat will be impacted.

5. General and species-specific OPs will reduce the likelihood that individual coastal cactus wrens will be harmed by Covered Activities and will avoid direct death or injury or destruction of nests.

6. Impacts to coastal cactus wren will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

7. Because Covered Activities will affect a small proportion of coastal cactus wren habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by coastal cactus wrens, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any coastal cactus wren occurrence or population in the Plan Area or rangewide.

8. Long-term management and monitoring of mitigation lands will help sustain coastal cactus wren in the Plan Area and will contribute to the rangewide conservation of this species.

Belding's Savannah Sparrow (Passerculus sandwichensis beldingi)

Status of the Species

Listing Status

The Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) is a State endangered bird listed under the California Endangered Species Act since 1974 (CNDDB 2023). Currently, the Belding's savannah sparrow is neither listed nor proposed for listing under the Act.

Species Description

The Belding's savannah sparrow is a 5.5 inch-long subspecies of savannah sparrow (*Passerculus sandwichensis*) that is brown and olive tinged on its upper parts with a white breast and very dark brown streaking on its sides, breast, and back, with a yellow eyebrow stripe extending to its bill (Unitt et al. 2004). Belding's savannah sparrow's legs and bill are pink, and it has a short, notched tail (Alden *et al*. 1998, CDFG 2005a). It does not exhibit sexual dimorphism (Unitt et al. 2004). The song of the male Belding's savannah sparrow during breeding season is approximately 2-3 seconds in duration and consists of a few quick notes; then a high, insect-like buzzy middle; ending with a brief lower trill. When alarmed, savannah sparrows use short chips consisting of a soft, hissing *tss* sound. They feed on insects and some vegetation, such as pickleweed during the winter. This subspecies has a unique adaptation in that it can drink saltwater and excrete the sodium through its highly efficient kidneys (CDFG 2005a).

Habitat Affinities

The Belding's savannah sparrow is a resident salt-marsh obligate and endemic species (Massey 1979). It nests in the mid- and upper-littoral zones of coastal marshes and forages within marsh vegetation, mudflats, and sometimes neighboring dunes (Powell 1993, Bradley 1973, Zedler 1982, Zembal et al. 1988). It has been shown that marshes larger than 10 hectares are required for successful breeding to occur (Powell and Collier 1998).

Life History

Belding's savannah sparrows are year-round residents in wetlands that forms winter flocks when foraging in marsh vegetation or mudflats (CDFG 2005a). Breeding territoriality begins in December with territories ranging from .02 to over .20 acres and nesting taking place March-August. In the best habitats there may be over 30 pairs per 2.5 acres. Nests are built a few inches above the high tide line and constructed with pickleweed twigs and lined with dried grass or other soft materials. Incubation lasts about 2 weeks and young leave the nest around day 10 while still being unable to fly. Young remain in the vicinity of the nest for 7-10 days where they are fed by their parents until they learn to forage on their own (CDFG 2005a).

Status and Distribution

One of 17 subspecies of Savannah Sparrow (*Passerculus sandwichensis*), the Belding's savannah sparrow resides year-round in coastal salt marshes from Goleta in Santa Barbara County, California, south to El Rosario, Baja California, Mexico (CDFG 2005a, Wheelwright and Rising 2008, Zembal et al. 2015). Statewide, populations have fluctuated greatly up and down since the 1970s, from 27 to 31 population– sometimes being extirpated, repopulated, and with one newly established in 1996. Seventeen of these populations have at least 50 pairs and have remained relatively stable in population size since the 1970s. The overall trend for this species is stable to increasing in the state with variable population size increasing recently with habitat restoration efforts such as the Bolsa Chica Wetlands Restoration Project in Orange County (CDFG 2005a). The last statewide survey of the number of breeding pairs in the state was 3,740 in 2015. Extant localities in San Diego County include the San Diego Bay, Mission Bay, Santa Margarita River Estuary, Buena Vista Lagoon, Agua Hedionda Lagoon, Batiquitos Lagoon, San Elijo Lagoon, San Dieguito Lagoon, and Los Peñasquitos Lagoon (Zembal et al. 2015).

Threats and Conservation Needs

Habitat degradation, disturbance, pollution, predation, invasive species, and sea level rise cumulatively exacerbate effects on Belding's savannah sparrow. In California, it is estimated that 91 percent of all wetlands and 75 percent of estuarine habitat has been lost or altered (Stein et al. 2014, Yuhas 2016). Additionally, two-thirds of 28 larger estuaries in southern California have been dredged or filled (California Coastal Zone Conservation Commissions 1975). This habitat loss continues to be a major threat. Insufficient quantities of appropriate marsh habitat is the primary limiting factor for the species. This exacerbates predation vulnerability because the narrow and fragmented remaining habitat patches are often close to urban edges where domestic and subsidized predators occur (Zembal et al. 2015). Non-native vegetation, particularly the invasive Algerian sea lavender (*Limonium ramosissimum*), crowd out native plant species used by the Belding's savannah sparrow for nesting. In some areas, the Algerian sea lavender is forming thick mats that are crowding out the endangered salt marsh bird's beak (*Cordylanthus maritimus maritimus*). Changes in hydrology, such as sea level rise, drought, ocean inlet closure, urban runoff, and drought can remove or alter salt marsh habitat. In Upper Newport Bay, the El Niño southern oscillation event in 2016 caused higher than predicted tides that drowned out the decades-old lower marsh cordgrass at one of the larger marshes (Zembal *et al*. 2015). Human activities such as recreation, homeless encampments, trash, and trampling can modify Belding's savannah sparrow's habitat use and reduce successful breeding. Buffer areas of 1.3 ha and a minimum approaching distance (distance at which humans should be separated from wildlife to minimize behavioral disturbance) of 63 m is recommended to avoid disturbance (Fernández-Juricic et al. 2009).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 90 in the HCP Amendment will be implemented to avoid and/or minimize impacts to the Belding's savannah sparrow:

90. Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*)

a. Impacts from Covered Activities where there is a potential for Belding's savannah sparrow habitat to occur (BSS-Habitat), shall be avoided through project design considerations, to the extent feasible.

b. If impacts to BSS-Habitat cannot be avoided, a Biologist shall survey BSS-Habitat that has the potential to be impacted by Covered Activities following current USFWS protocols to determine species presence. If project timing does not allow for surveys, it shall be assumed that all BSS-Habitat to be impacted is occupied.

c. If surveys determine that BSS-Habitat is occupied (or assumed occupied due to lack of survey), permanent impacts that cannot be avoided shall be mitigated in kind with occupied habitat or habitat that will benefit the species per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS. This mitigation shall be approved prior to Covered Activities occurring within BSS-Habitat.

d. If surveys determine BSS-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied BSS-Habitat shall be mitigated per Section 5.5, Table 5.3b.

e. Whenever practicable, minimize impacts through timing of work in Belding's savannah sparrow habitat (BSS-Habitat) to avoid the nesting season and conduct BSS-Habitat removal outside the breeding season (March 15 through September 15).

f. If work is scheduled during the Belding's savannah sparrow breeding season, and within suitable BSS-Habitat, a Biologist shall conduct a preconstruction nesting survey to ensure that no active Belding's savannah sparrow nests are present within 300 feet of the Covered Activities.

g. If an active Belding's savannah sparrow nest is observed, no Covered Activities shall be implemented within 300 feet of the nest. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by the Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures approved by USFWS. Specific buffer requirements may be reduced with approval by USFWS on a project-by-project basis as appropriate.

h. When an active nest is present, a Biologist shall be onsite during Covered Activities as needed to avoid and minimize the potential for impacts to individuals.

i. Direct take of individuals and destruction of active nests are not allowed.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Belding's savannah sparrow habitat. However, not all Modeled Habitat is expected to support Belding's savannah sparrow occurrences (i.e., Occupied Habitat) and limited

Occupied Habitat may occur outside of Modeled Habitat. Based on the Belding's savannah sparrow Modeled Habitat, there are approximately 1,292 acres in the Plan Area and approximately 108 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of Belding's savannah sparrow Modeled Habitat occur in the central coast, southern coast, and north coast ecoregions. This species is not known or expected to occur in the Plan Area in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 17 and 13 Belding's savannah sparrow occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

In San Diego County, the most established territories for this species include the Santa Margarita River Estuary, San Elijo Lagoon, Los Peñasquitos Lagoon, Sweetwater Marsh National Wildlife Refuge, Western Salt Company Dikes, and Tijuana Marsh.

Belding's savannah sparrow is covered by the following existing regional habitat conservation plans that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- San Diego MHCP Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 996 acres of Modeled Habitat occur within Preserves and 0.98 acre of Modeled Habitat occurs within Proposed Preserves (collectively about 77 percent of all Modeled Habitat) associated with regional conservation efforts in the Plan Area (CDFW 2023). In addition, 13 occurrences of Belding's savannah sparrow recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area. There is no suitable habitat for this species on existing SDG&E mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to impact up to 1.41 acres of Belding's savannah sparrow Modeled Habitat, which is a fraction of the 1,292 acres of Belding's savannah sparrow Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 0.89 acre of permanent impacts (0.07 percent of Modeled Habitat in the Plan Area); and

- Approximately 0.52 acre of temporary impacts (0.04 percent of Modeled Habitat in the Plan Area).

Wildfire Fuels Management is not expected to impact Belding's savannah sparrow habitat.

This impact represents about 0.11 percent of Belding's savannah sparrow Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for Belding's savannah sparrows. However, because Belding's savannah sparrows are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

Because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a Belding's savannah sparrow occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[43]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M on existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected and New Construction projects that impact that impact more than 1.75 acres of a Preserve or Planned Preserve will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Belding's savannah sparrow will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of the Belding's savannah sparrow within the Plan Area and its specific habitat requirements (i.e., salt marsh), we anticipate that only limited areas within Modeled Habitat support occurrences of Belding's savannah sparrows. Therefore, it is likely that substantially less than 1.41 acres of occupied Belding's savannah sparrow habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

Impacts to salt marshes due to Covered Activities will primarily result from construction of linear facilities (e.g., power lines and pipelines) with removal or destruction of vegetation limited to relatively narrow strips of suitable habitat within the salt marsh. We have little information regarding the effect of different amounts of habitat removal on Belding's savannah sparrow survival or reproductive output, so we used our best professional judgment to estimate that the loss of more than 20 percent of Belding's savannah sparrow habitat within a territory will substantially increase the risk of mortality or interfere with Belding's savannah sparrow breeding

[43] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

activity. For adults whose territories are destroyed or significantly reduced (i.e., estimated as loss of 20 percent or more of territory), the search for suitable habitat exposes them to increased predation pressure. Further, birds that are able to disperse from the impact area will likely have to engage in increased competition for remaining suitable habitat resulting in increased stress and energy expenditure beyond normal behavior, which can lead to death or reduced reproductive output for surviving birds. Belding's savannah sparrows that do find suitable habitat could lose their mates and may be unable to find new mates, at least initially after disturbance, again causing a decline, at least temporarily, in reproductive output. Finally, displaced birds that do not find suitable replacement habitat may starve or otherwise die from lack of shelter or predation.

Conversely, loss of less than 20 percent of a territory may force a Belding's savannah sparrow pair to adjust its territory boundaries slightly or result in a limited increase in territorial interactions with neighboring pairs but will not result in a substantial increase in mortality or decrease in reproductive output (i.e., effects would not rise to the level of "take").

Our analysis assumes impacts to Belding's savannah sparrow pairs is roughly proportional to impacts to Modeled Habitat. There are 1,292 acres of Modeled Habitat in the Plan Area, 1.41 acres of anticipated impacts to Modeled Habitat, and an estimated 17 Belding's savannah sparrow territories in the Plan Area. Using these calculations, we estimate that no more than one Belding's savannah sparrow pair will be harmed from Covered Activities.[44] The territory could be impacted multiple times over the course of the permit term as habitat could be managed, regrow over time, and then be impacted again.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of Belding's savannah sparrow habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the Description of the Proposed Action section of this Opinion and OP 90 for the Belding's savannah sparrow are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to Belding's savannah sparrow, as specified in the OP 90 include: 1) whenever practicable, do work in Belding's savannah sparrow habitat outside the nesting season, 2) preconstruction nesting surveys if needed, 3) maintaining a 300-foot buffer around any nests found and monitoring the nests, and 4) avoiding direct take of individuals and destruction of active nests.

Within implementation of the above OPs, we do not expect any direct injury or mortality of adults, eggs, and nestlings from Covered Activities.

Unavoidable temporary impacts to Belding's savannah sparrow occupied habitat will be restored onsite through the R/E Program, mitigated at existing or acquired mitigation lands that are

[44] 1.41 acres/1,292 acres x 17 territories ÷ 0.2 (20 percent threshold for harm) = <1 pair of Belding's savannah sparrow harmed

occupied or through measures that will benefit the species. Unavoidable permanent impacts to Belding's savannah sparrow occupied habitat will be mitigated at a 2:1 to 4:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of the mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Belding's savannah sparrow habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Belding's savannah sparrows within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Belding's savannah sparrows within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the Belding's savannah sparrow.

Because Covered Activities will impact a small fraction of Belding's savannah sparrow habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Belding's savannah sparrows within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation and Habitat Fragmentation

The Belding's savannah sparrow could be subject to indirect effects from Covered Activities as described in the General Effects section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to Belding's savannah sparrows include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, and habitat fragmentation.

Changes to hydrology, such as reducing tidal flows or increasing urban runoff, erosion and sedimentation can remove or alter the salt marsh habitat of Belding's savannah sparrows. OPs will be implemented to minimize changes to hydrology and water quality, erosion, and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands and narrow endemic populations (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23).

Project construction and new Facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for Belding's savannah sparrows. Increased ambient light

levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (Rich and Longcore 2006). Since vulnerability to predators is a factor associated with habitat quality for the Belding's savannah sparrow, project-associated increases in nighttime light levels may reduce the quality of Belding's savannah sparrow habitat in localized areas. To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats and any permanent lighting will be directed away and/or shielded so as not to illuminate native habitats (OP 25).

The ground disturbance and landscaping associated with Covered Activities can facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants can alter the species composition and structure of the habitat, which may make it less suitable to the Belding's savannah sparrow. Arthropod abundance and diversity may decrease in correlation with the decline in their native plant hosts, decreasing the food supply of this insectivorous species. Leaks in water conveyance/holding facilities and landscape irrigation at new Facilities may also result in a reduction of food resources for the Belding's savannah sparrow by creating favorable conditions for invasive ant species. Argentine ants can alter the native arthropod community, thereby significantly reducing their diversity and abundance (Bolger et al. 2000). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of Belding's savannah sparrows.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species, and potential for increased predation. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Belding's savannah sparrow dispersal/movement corridors that contribute to long-term population viability for the Belding's savannah sparrow. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and

restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat in order to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation and habitat fragmentation due to Covered Activities are not likely to result in a decrease in Belding's savannah sparrow survival or reproduction beyond baseline conditions.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the Belding's savannah sparrow. We base this conclusion on the following:

1. The current range of the Belding's savannah sparrow includes coastal southern California to northwestern Baja California, Mexico; thus, the action area for the HCP Amendment represents only a portion of the species' rangewide distribution.

2. One pair of Belding's savannah sparrows may be harmed through loss or partial loss of its primary breeding, feeding, and sheltering habitat, which is a small fraction of the pairs in the Plan area and rangewide.

3. Impacts will be limited to no more than 1.41 acres of Belding's savannah sparrow Tracked Habitat, which represents about 0.11 percent of Modeled Habitat for the Belding's savannah sparrow within the Plan Area.

4. Based on the known distribution of the Belding's savannah sparrow within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of Belding's savannah sparrows. Therefore, it is likely that substantially less than 1.41 acres of occupied Belding's savannah sparrow habitat will be impacted.

5. General and species-specific OPs will reduce the likelihood that individual Belding's savannah sparrows will be harmed by Covered Activities and will avoid direct death or injury or destruction of nests.

6. Impacts to the Belding's savannah sparrow will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

7. Because Covered Activities will affect a small proportion of Belding's savannah sparrow habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Belding's savannah sparrows, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any Belding's savannah sparrow occurrence or population in the Plan Area or rangewide.

8. Long-term management and monitoring of mitigation lands will help sustain Belding's savannah sparrow in the Plan Area and will contribute to the rangewide conservation of this species.

Eagles (Bald and Golden)

Bald Eagle (Haliaeetus leucocephalus)

Status of the Species

Listing Status

The bald eagle (*Haliaeetus leucocephalus*) was initially listed on February 14, 1978, as an endangered species throughout the lower 48 states, except in Minnesota, Michigan, Wisconsin, Washington, and Oregon, where it was listed as a threatened species. On July 12, 1995, the Service announced that the bald eagle would be reclassified from endangered to threatened in the lower 48 states, effective August 11, 1995 (Service 1995c). This species was entirely removed from the list of federal threatened and endangered species on July 9, 2007 (Service 2007b). The banning of the pesticide Dichlorodiphenyltrichloroethane (DDT) and the habitat protection afforded by the Endangered Species Act for nesting sites and important feeding and roost sites precipitated the delisting (Service 2007b). The bald eagle is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (Service 2007b). Despite federal delisting, the bald eagle is still designated as an endangered species in California and is fully protected in the state.

The Bald and Golden Eagle Protection Act (BGEPA), 16 United States Code (U.S.C.) 668 – 668d, prohibits take of eagles. Take as defined under the BGEPA, includes the actions to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" (16 U.S.C 668c). To disturb a bald or golden eagle means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best available scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding or sheltering behavior" (50 CFR 22.3). The BGEPA "is not a habitat management law" (Service 2007c), and does not protect habitat per se, other than eagle nests. Therefore, permit coverage for eagles is not required for activities that modify habitat, unless the activities result in take of an eagle under one of the terms in the definition. The Service determined through recent rulemaking that ITPs issued pursuant to the ESA and its

implementing regulations (16 U.S.C. 1531 et seq.; 50 CFR 17.1 et seq.) may be lawfully issued to cover take under the BGEPA.

In 2008, the Service issued a Final Rule regarding authorization under the BGEPA for take of bald and golden eagles (Service 2008c). This rule, which became effective on June 19, 2008, extended BGEPA take authorization to holders of existing ESA Section 10 permits and allowed take authorization to be extended to future Section 10 ITPs associated with HCPs for multiple species that include bald or golden eagles as Covered Species (50 CFR 22.11). The new regulations state that "a permit that covers take of bald eagles or golden eagles under [Section 10 of ESA and its implementing regulations at 50 CFR Part 17] for purposes of providing prospective or current ESA authorization constitutes a valid permit issued under this part for any take authorized under the permit under part 17 as long as the permittee is in full compliance with the terms and conditions of the permit issued under part 17" (50 CFR 22.11(a)). In general, the statutory and regulatory criteria for issuing ESA incidental take authorization include minimization, mitigation, or other conservation measures that also satisfy the statutory mandate under the BGEPA that authorized take be compatible with the preservation of the bald or golden eagle (Service 2008c). The new regulation provides for revocation of the ITP as applied to bald and golden eagles if the Service determines that activities covered by the ITP are "incompatible with preservation of the bald eagle or golden eagle."

Species Description

The bald eagle is a large raptor with a distinctive white head and tail and dark brown body and wings at maturity. Although the sexes are similar in appearance, females are slightly larger than males on average. Juveniles are distinguished from adults in their dark brown head, body, wings, and tail. Plumage also varies with timing and sequence of molt (McCollough 1989).

Habitat Affinities

Rangewide, bald eagles occur primarily at or near seacoasts, rivers, swamps, and large lakes (AOU 1998). It is considered a bird of aquatic ecosystems, but, within such areas, it must have an adequate food base, perching areas, roost sites, and nesting sites to support it (Gerrard and Bortolotti 1988). Perching sites need to be composed of large trees or snags with heavy limbs or broken tops (Brown 2006). The bald eagle nests in trees, rarely on cliff faces and ground nests in treeless areas, and always relatively close to water with suitable foraging opportunities. The actual distance to water varies within and among populations of the bald eagle. In some cases, the distance to water is not as critical as the quality of the foraging area. The quality of the foraging areas is defined by the diversity, abundance, and vulnerability of the prey base, the structure of aquatic habitat, such as the presence of shallow water, and absence of human development and disturbance (Buehler 2000). Diurnal perch habitat is characterized by the presence of tall, easily accessible, often "super-canopy" trees"[45] adjacent to the shoreline foraging habitat. The perch tree species used by the bald eagle are highly variable, including both coniferous and deciduous species, if present. Most perch trees are live trees, although dead trees

[45] A "super-canopy" tree is a tree that is taller than the immediate surrounding trees that allows the eagle to build its nest in the shelter of the tree crown but still be above the other trees for easy access to the nest.

may be preferred, if available. The bald eagle selects a wider range of tree species and sizes for perching than for nesting or roosting (Buehler 2000).

In winter, bald eagles often congregate at specific wintering sites that are generally close to open water and that offer good perch trees and night roosts. The bald eagle may roost communally in winter in dense, sheltered, remote conifer stands (Zeiner et al. 1990). In the Klamath National Forest, winter roosts were 10 to 12 miles from feeding areas (Spencer 1976). The bald eagle often concentrates in large numbers on the wintering grounds. The winter habitat suitability is defined by food availability, the presence of roost sites that provide protection from inclement weather, and the absence of human disturbance, although bald eagles will tolerate some human activity in areas of high prey availability. The perching habitat during the wintering season is characterized by the presence of tall trees located adjacent to foraging areas similar to other times of the year (Buehler 2000).

Life History

Fish are the principal component of the diet of bald eagles; however, many other types of prey are also taken, including waterfowl, small mammals, and carrion, especially in the wintering areas (Service 1995c). The bald eagle swoops from hunting perches or soaring flight to pluck fish from water. It is also known to wade into shallow water to pursue fish. It may pounce on, or chase, injured or ice-bound water birds. In flooded fields, the species occasionally pounces on displaced voles, or other small mammals. Open, easily approached hunting perches and feeding areas are used most frequently (Zeiner et al. 1990). Bald eagles may hunt cooperatively (Brown 2006). Studies of prey items in northern California showed bald eagles do not differentiate between native and non-native freshwater fish species (Jackman et al. 1999). One study of bald eagles in Texas found them to eat a relatively equal proportion of birds, reptiles, and fish (Mabie et al. 1995). One wintering population in the lower Great Lakes basin fed on carcasses of white-tailed deer during 47 percent of observed feedings (Ewins and Andress 1995). The same group observed immature individuals feeding on garbage and offal during 39 percent of observed feedings. The bald eagle competes with, and steals prey from, osprey (Zeiner et al. 1990). It has also been observed causing a turkey vulture to disgorge its food (Brown and Amadon 1968).

Wintering bald eagles in New Mexico spent 95.3 percent of their time perched and 4.7 percent in flight (Zwank et al. 1996). Of the time spent in flight, 13.0 percent was spent foraging (Zwank et al. 1996). Winter feeding usually occurs immediately after dawn and in late afternoon (Zeiner et al. 1990).

Bald eagle nesting occurs in open areas near water. These nests are often in large snags or old-growth trees (Brown 2006). The bald eagle will also nest in a dominant live tree with open branches, especially ponderosa pine (*Pinus ponderosa*). It nests most frequently in stands with less than 40 percent canopy cover, but usually with some foliage shading the nest (Call 1978). It often chooses the largest tree in a stand on which to build its stick platform nest. The nest may be a massive structure, 12 feet high and 8.5 feet across, with a wet mass of decaying vegetation in the center (Brown and Amadon 1968). The nest is usually located near a permanent water source. In California, 87 percent of the nest sites of the bald eagle were within 1 mile of water. Individuals have been known to use the same nest for up to 35 years (Brown 2006).

The clutch size of the typically monogamous (Zeiner et al. 1990) bald eagle is usually two, but can vary from one to three, and eggs are laid once annually (Brown 2006). The bald eagle breeds from December through July, with peak activity from March to June. Courtship can begin in December. Incubation of the eggs usually lasts 34 to 36 days (Ehrlich et al. 1988). The young of the bald eagle leave the nest 70 to 98 days after hatching but do not reach breeding age until four or five (Brown 2006). A mark-recapture study of a breeding population in Texas concluded that birds fledged there may disperse to breeding communities throughout the southern United States (Mabie et al. 1994).

In one study of bald eagle nests in British Colombia, Canada, food supply was identified as the "key factor" in limiting breeding success (Elliot et al. 1998). Because of the asynchronous hatching, the older nestling may kill the younger, smaller sibling if the food supply is inadequate (Brown and Amadon 1968). The recorded longevity in the wild is 28 years and 36 years in captivity. Bald eagles may follow the survival pattern similar to other raptors with lower first-year survival, followed by increasing survival to adulthood. Adult survival is high in most studies conducted on survivorship (Buehler 2000).

The home range of resident bald eagle pairs on the Columbia River averaged 13.67 square miles for both breeding and non-breeding periods (Garrett et al. 1993). The breeding territory in Alaska (n=14), varied from 11 to 45 hectares (28 to 112 acres), and averaged 23 hectares (57 acres) (Hensel and Troyer 1964). Non-breeding bald eagles, however, are known to use much larger areas. These areas are not used with any consistency like breeding eagles but, instead, they travel widely in search of food resources (Buehler 2000). Winter home ranges vary widely; Chesapeake Bay eagles used 10,000s of square miles (Buehler et al. 1991), Arizona eagles used from more than 24,000 square miles to less than 260 square miles (Grubb and King 1991), a Michigan eagle used more than 13,000 square miles (Grubb and King 1991), Colorado eagles used 192.62 square miles (Harmata 1984), and Montana eagles had wintering ranges between 63 to 2,439 square miles (McClelland et al. 1996). The breeding territory is defended from the time of mating through the fledging period, with minimum distances between bald eagle nests from 0.6 mile in Alaska to 10 miles in Washington (Zeiner et al. 1990). Non-breeding eagles, including wintering individuals, are not very aggressive and associate freely (Buehler 2000); however, this is anticipated to change based on food availability (Hansen 1986).

Status and Distribution

The bald eagle is the only sea eagle regularly occurring on the North American continent. Bald eagles breed locally from Alaska eastward to Newfoundland and southward locally to Baja California, Sonora, Texas, and Florida. The species winters in the large majority of the breeding range but generally withdraws from central Alaska and the central and the northern portions of Canada (AOU 1998). Individuals that breed in California may make only local winter movements in search of food.

Within mainland Southern California, the species primarily winters at larger bodies of water in the lowlands and mountains (Garrett and Dunn 1981). It is fairly common as a local winter migrant at a few favored inland waters in Southern California, with the largest numbers occurring at Big Bear Lake, Cachuma Lake, Lake Mathews, Nacimiento Reservoir, San Antonio Reservoir, and along the Colorado River (Zeiner et al. 1990). The CNDDB reports two bald

eagle observations along the California Aqueduct north of the southern portion of the Tehachapi Mountain Uplands (San Joaquin Valley side) of the Covered Lands (not on Covered Lands); the occurrences were in grasslands and agricultural fields (CDFW 2013; Tejon Ranch Company 2007). The observations were made in December 1995, and between January and November, 2001, suggesting the birds were wintering. Jesse Grantham (pers. comm. 2011) also observed low numbers of bald eagles in this same area on Tejon Ranch (not on Covered Lands) on multiple occasions during the 1980s.

In California, breeding populations of bald eagles are restricted mostly to Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties (Polite and Pratt 2005). This species remains susceptible to a number of threats, particularly environmental contaminants and excessive disturbance by humans. Despite these threats, the species continues to increase in numbers across its range. According to the National Audubon Society, public and private protection of the bald eagle has increased populations from 417 active nests in the lower 48 states in 1963 to 4,450 in 1994 (Service 1995c). Based on CDFW-coordinated breeding surveys begun in 1973, the bald eagle is also experiencing an increase in the number of breeding territories and an expansion in its range throughout the state. The number of occupied breeding territories increased from 32 in 1977 to 94 in 1990, 105 in 1995, 151 in 1999, and peaked at 175 in 2003 (CDFW 2016). Between 2001 and 2003, 14 new territories were discovered, extending the southern range to Lake Hemet in Riverside County. The breeding range of the bald eagle expanded from eight counties in 1981 to 32 counties in 2003, when the number of occupied breeding territories peaked. By 2009 and 2010, however, the number of occupied breeding territories declined to 105, and the number of young produced, which peaked in 2003 at 150, declined to 58 in 2010 (CDFW 2016).

The winter population is estimated to exceed 20,000 individuals within the continental United States (Buehler 2000). In California, the annual Midwinter Bald Eagle Survey indicates that California's winter population of bald eagle appears to be at least stable, although varying from year to year and exceeding 1,000 birds some winters. Typically, about half of California's wintering bald eagles are found in the Klamath Basin along the California–Oregon border, the location of the largest winter concentration of bald eagles in the contiguous United States (CDFW 2016).

Threats and Conservation Needs

The primary reason for the species' past decline includes effects of select pesticides on reproductive success. The use of DDT after World War II led to eggshell thinning, which drastically reduced reproductive success and the species' populations (Service 1995c). However, successful captive breeding efforts, the banning of certain organochlorine pesticides, and other recovery efforts have resulted in significant increases in eagle numbers on the continent. Other reasons for the species past decline include habitat loss and persecution.

Special pressures on individuals in the southwestern United States include heat stress, nest parasites, and entanglement in fishing line debris from intense fishing pressure (Service 1995c).

A study of nests in Oregon identified the following causes of nest failures: pesticides (32 percent), proximity to nearest-neighbor breeding pairs (11 percent), infertile eggs (7 percent),

nestling mortality (3 percent), human disturbance (2 percent), changes in members of a pair (1 percent), and unknown causes (21 percent) (Anthony et al. 1994).

Human recreational use of reservoirs and rivers occupied by bald eagles has been greatly studied (Stalmaster and Kaiser 1998). Territories have been abandoned after there has been disturbance from logging, recreational development, and other human activities near nests of the bald eagle (Thelander 1973). In northwest Washington, feeding activity was found to decline exponentially with increased recreational activity (Stalmaster and Kaiser 1998). Foot traffic caused the greatest flushing distance but boat activities accounted for a greater proportion of the disturbances (Stalmaster and Kaiser 1998). Bald eagles are more likely to flush when approached by a human on foot than when approached by an automobile (Holmes et al. 1993). Spatial buffer zones are commonly used to protect nesting sites from disturbance; however, buffer zones for wintering eagles also could be effective if placed around sensitive foraging areas. In one study, a buffer zone was determined to prevent flushing by approximately 90 percent of the wintering individuals of golden eagle (Holmes et al. 1993). Although this study did not address the bald eagle, presumably establishing a buffer distance for wintering bald eagles is beneficial.

Bald eagles have been shown to be susceptible to collisions with objects including vehicles and powerlines. These impacts have been noted as causing at least 21 percent of the mortalities in one study (Wood et al. 1990). Bald eagles, along with other raptor species, including golden eagle, peregrine falcon, and white-tailed kite, may be directly affected by wind projects if they are injured or killed by spinning turbine blades. Plastic and lead ingestion has also been noted as a significant source of illness and death in bald eagles (Kramer and Redig 1997). Berry et al. (1998) determined that the bald eagle is sensitive to urbanization based on a study conducted in Boulder Open Space in the vicinity of Boulder, Colorado. Eagles were scarce at point count stations in plots with approximately 5 percent to 7 percent developed; this species occurred on only one plot in 15 where urban uses exceeded 5 percent of the plot (Berry et al. 1998). Habitat loss through logging may also threaten the bald eagle.

Conservation needs for the species include continuing to manage pollution from pesticides, including historical sources of DDT, minimizing effects of human disturbance on nesting, foraging, and wintering bald eagles, and working with utility companies and entities operating wind turbines to develop eagle conservation plans that incorporate measures to minimize mortality from bird strikes and electrocution.

Golden Eagle (Aquila chrysaetos)

Status of the Species

Listing Status

The golden eagle (*Aquila chrysaetos*) is not listed under the Act but is federally protected under the Bald and Golden Eagle Protection Act (BGEPA), 16 United States Code (USC) 668 – 668d passed in 1940 to protect the bald eagle and amended in 1962 to include the golden eagle (16 U.S.C. 668a-d). It is also protected under the Federal Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703–712). The golden eagle is a California Species of Concern and is fully protected in the State of California (CDFG 2007).

The Bald and Golden Eagle Protection Act (BGEPA), 16 United States Code (U.S.C.) 668 – 668d, prohibits take of eagles. Take as defined under the BGEPA, includes the actions to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" (16 U.S.C 668c). To disturb a bald or golden eagle means “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best available scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding or sheltering behavior” (50 CFR 22.3). The BGEPA "is not a habitat management law" (Service 2007c), and does not protect habitat per se, other than eagle nests. Therefore, permit coverage for eagles is not required for activities that modify habitat, unless the activities result in take of an eagle under one of the terms in the definition. The Service determined through recent rulemaking that ITPs issued pursuant to the Act and its implementing regulations (16 U.S.C. 1531 et seq.; 50 CFR 17.1 et seq.) may be lawfully issued to cover take under the BGEPA.

In 2008, the Service issued a Final Rule regarding authorization under the BGEPA for take of bald and golden eagles (Service 2008c). This rule, which became effective on June 19, 2008, extended BGEPA take authorization to holders of existing ESA Section 10 permits and allowed take authorization to be extended to future Section 10 ITPs associated with HCPs for multiple species that include bald or golden eagles as Covered Species (50 CFR 22.11). The new regulations state that “a permit that covers take of bald eagles or golden eagles under [Section 10 of ESA and its implementing regulations at 50 CFR Part 17] for purposes of providing prospective or current ESA authorization constitutes a valid permit issued under this part for any take authorized under the permit under part 17 as long as the permittee is in full compliance with the terms and conditions of the permit issued under part 17” (50 CFR 22.11(a)). In general, the statutory and regulatory criteria for issuing ESA incidental take authorization include minimization, mitigation, or other conservation measures that also satisfy the statutory mandate under the BGEPA that authorized take be compatible with the preservation of the bald or golden eagle (Service 2008c). The new regulation provides for revocation of the ITP as applied to bald and golden eagles if the Service determines that activities covered by the ITP are “incompatible with preservation of the bald eagle or golden eagle.”

Species Description

The golden eagle is a large, dark-brown raptor with long, broad wings (Kochert et al. 2002). Golden eagle length ranges from 28 to 33 inches, with a wingspan of 73 to 87 inches. The rear crown, nape, and sides of the neck are golden and the bars on the tail are gray. In adults, the rest of the body is dark brown with lighter rear under-parts and upper wing-coverts. Juveniles are distinguished from adults by their darker color and white at the base of the secondary and inner primary feathers. The sexes are similar in appearance, although females are larger than males on average. Plumage is the same throughout the year (Kochert et al. 2002).

Habitat Affinities

Rangewide, golden eagles occur in open country (e.g., tundra, open coniferous forest, desert, and barren areas), especially in hills and mountainous regions (AOU 1998). Golden eagles typically are not found in heavily forested areas or on the immediate coast and are almost never detected

in urbanized environments (Grinnell and Miller 1944; Garrett and Dunn 1981). Preferred territory sites have a favorable nest site, a dependable food supply, and broad expanses of open country for foraging. Hilly or mountainous country that provides updrafts that facilitate takeoff and soaring are occupied more than flat habitats (Johnsgard 1990). In the interior central Coast Ranges of California, golden eagles are often found in open grasslands and oak savannah, but also occupy oak woodland and open shrub lands (Hunt et al. 1998). Within Southern California, the species prefers grasslands, brush lands (coastal sage scrub and sparse chaparral), deserts, oak savannahs, open coniferous forests, and montane valleys (Garrett and Dunn 1981).

Breeding of the golden eagle is primarily restricted to rugged, mountainous country, with canyons and escarpments (Garrett and Dunn 1981, Johnsgard 1990, Call 1978). Most nests are located on cliffs or trees near forest edges or in small stands near open fields (Bruce et al. 1982; Hunt et al. 1995, 1998). Some nests occur in Douglas-fir (*Pseudotsuga menziesii*), pines (*Pinus* spp.) or other large trees (McGahan 1968), such as several species of oak (*Quercus* spp.), foothill pine (*Pinus sabianiana* and *P. coulteri*), California bay laurel (*Umbellularia californica*), eucalyptus (*Eucalyptus* spp.), and western sycamore (Hunt et al. 1998).

The golden eagle needs a broad expanse of open country for hunting, including grasslands, deserts, savannahs, and early successional stages of forest and shrub habitats (Johnsgard 1990). Foraging takes place over large areas of open chaparral or coastal sage scrub as well. In parts of Idaho, golden eagles have been shown to select areas with abundant and large shrub patches, which provide preferential jackrabbit habitat (Marzluff et al. 1997).

Life History

The golden eagle eats primarily lagomorphs (hairs, rabbits, and pikas) and rodents; it also takes other medium to large mammals, birds, reptiles, and some carrion (Johnsgard 1990; Olendorff 1976). The golden eagle is considered to be an opportunistic forager (Olendorff 1976). In Southern California, the prey of golden eagles is made up predominantly of the California ground squirrel and the Audubon cottontail (*Sylvilagus audubonii*) (Hoechlin 1976). The golden eagle occasionally preys on domestic calves and lambs. Within certain portions of its range, it may compete with ferruginous hawks for small mammals, and with California condors for carrion (Zeiner et al. 1990).

The golden eagle requires a broad, open terrain for hunting. It soars approximately 100 to 300 feet above the ground in search of prey, or makes low, quartering flights, often 20 to 30 feet above ground. Occasionally it searches from a perch and flies directly to the prey (Carnie 1954). Sometimes it pirates food from other predators. Hunting in pairs is apparently common, with one member of the pair chasing the prey to exhaustion and the other swooping down to kill the prey (Terres 1980).

The golden eagle exhibits year-long, diurnal activity (Zeiner et al. 1990). This species spends most of the day perched (78 percent to 85 percent of the day) and the remainder of the day in flight (Collopy and Edwards 1989).

Nest building can occur almost any time during the year (Brown 1976). Pairs may build more than one nest and attend them prior to laying eggs (McGahan 1968). Each pair can have up to 10

nests, but only two to three are generally used in rotation from one year to the next. Some pairs use the same nest each year, while others use alternate nests year after year, and still others apparently nest only every other year. The same nest may even be used by succeeding generations of eagles (Terres 1980).

The golden eagle builds a large platform nest, often 10 feet across and 3 feet in height, of sticks, twigs, and greenery. It breeds from January through August, with a peak in March through July. Courtship begins in December in the San Diego area. The clutch size is one to three eggs, usually two eggs (McGahan 1968). Eggs are laid from mid-January to mid-April (Unitt 2004). The young birds hatch several days apart. The older, stronger eaglets often kill their smaller siblings (Terres 1980). The average incubation period lasts approximately 42 days, and the nestling period ranges from 45 to 81 days (Kochert et al. 2002). Parental care continues into August, and family groups remain together into November (Scott 1985).

Breeding success depends on local prey abundance. A 15-year study of golden eagles in Oregon found a mean of 1.08 young fledged per breeding territory, 1.7 young fledged per successful nest, and 51 percent overall breeding success (Thompson et al. 1982). Sexual maturity is generally reached in about 4 years, and the average lifespan of adults in the wild is approximately 10 years (Brown and Amadon 1968). After the young golden eagles have fledged, they remain in the vicinity of the nest for about 2 weeks (Brown and Amadon 1968). In some populations, they are thought to be dependent on parental assistance for about 3 months after learning to fly, and normally separate from the parents by October. The young often appear near the nest site in the early part of the following breeding season and immature golden eagles sometimes frequent a nest site for several years before they finally breed there.

Golden eagles defend nest areas from conspecifics (i.e., member of the same species) and appear to defend part of their home range; however there can be substantial overlap between the home ranges of adjacent pairs (Scott 1985). The home range of the golden eagle is probably the same as the territory (Zeiner et al. 1990). The size of the home range is related to prey density and availability, and the openness of terrain (Zeiner et al. 1990). Home range size has been estimated to average 7.85 square miles (5,024 acres) in Wyoming (Phillips and Beske 1982; Platt 1984), 8.92 square miles (5,709 acres) in Utah (Smith and Murphy 1973), and an average of 7.85 square miles (5,024 acres) from three studies in Idaho (Dunstan et al. 1978; Collopy and Edwards 1989; Marzluff et al. 1997). Territories remain occupied in years of low prey availability, even when golden eagles do not breed. Territorial boundaries are generally static, changing little from year to year (Marzluff et al. 1997).

Golden eagle home range size, which is probably the same as the territory (Zeiner et al. 1990), has been estimated to average 5,709 acres in Utah (Smith and Murphy 1973) and 8,092 acres in southwestern Idaho (Collopy and Edwards 1989). Radiotelemetry studies of golden eagles in the Snake River Birds of Prey National Conservation Area in Idaho, however, demonstrated that home ranges can be seasonally quite variable, ranging from 0.7 square mile (469 acres) to 32 square miles (20,575 acres) during the breeding season and from 5 square miles (3,384 acres) to 656 square miles (419,900 acres) during the non-breeding season (Marzluff et al. 1997). Golden eagles will often have overlapping nest territories or smaller territories if a particular area has high prey availability and abundant breeding habitat opportunities. Active nest densities averaged 23.8 square miles (15,232 acres) per pair in Wyoming (Phillips and Beske 1984), 25.5

square miles (16,320 acres) in Idaho (Kochert 1972), and 10.8 square miles (6,912 acres) in Alaska (McIntyre and Adams 1999).

Status and Distribution

The golden eagle has a Holarctic distribution (i.e., northern continents), extending as far south as north Africa, Arabia, and the Himalayas in the Old World, and Mexico in North America. It is a partial migrant within this distribution, with the northern breeding birds migrating south in winter, while those of more temperate climates remain all year round (Brown and Amadon 1968). Golden eagles primarily occur in the western regions of North America and breed locally from Alaska southward to northern Baja California and northern Mexico and eastward to the western Great Plains. The species winters from southern Alaska and southern Canada southward through the breeding range (Johnsgard 1990).

This species is sparsely distributed throughout most of California, occupying primarily mountain, foothill, and desert habitats (Zeiner et al. 1990). This species may be more common in Southern California than in northern regions. The species ranges from sea level up to 11,500 ft. amsl (Grinnell and Miller 1944). Golden eagles are mostly resident, but may move down-slope for the winter or upslope after the breeding season. Some individuals migrate into California for the winter (Zeiner et al. 1990). Although the golden eagle was formerly considered common within suitable habitats in California (Grinnell and Miller 1944), the species was more recently judged to be uncommon throughout much of California (Garrett and Dunn 1981). The golden eagle avoids settled areas and, therefore, has almost certainly declined in California within the past century due to loss of large, unfragmented habitat areas (Grinnell and Miller 1944).

The most recent survey of golden eagles across four large Bird Conservation Regions (BCRs) in the West (80 percent of the species' range in the lower 48 states is in these BCRs) provided an estimate of 20,722 golden eagles of all ages across the survey area. The best available survey data we have for golden eagles indicate, at best, a stable population in the four Bird Conservation Regions, with a possible decline in the population of juvenile golden eagles in the southern Rockies. The Service extrapolates those survey data to estimate that there may be 30,000 golden eagles across the United States. However, golden eagle populations are believed to undergo a (roughly) ten-year cycle, so having only four years data (surveys 2006 - 2009) limits the Service's ability to assess the long-term population trend (Service 2011c).

Threats and Conservation Needs

In California, loss of golden eagle foraging and breeding habitat is largely due to the loss of grasslands to agriculture and urbanization. Additional threats to this species are human disturbance of nest areas leading to desertion of the nest in early incubation, urbanization, poaching, and electrocution from high tension wires (Remsen 1978; Thelander 1974). Other sources of direct golden eagle fatalities include wind turbine strikes and lead poisoning (Thelander 1974). Of 61 golden eagles radio-tagged and recovered in the Diablo Range, in western California, from January 1994 to December 1997 (Hunt et al. 1998), 37 percent were killed by turbine strikes, 16 percent by electrocution, and 5 percent by lead poisoning (Hunt et al. 1998). Shootings (2 percent), car strikes (5 percent), botulism (2 percent), territorial fights with

other eagles (5 percent), collision with fences (3 percent), fledging mishaps (10 percent), and other unknown factors (15 percent) account for the remaining bird fatalities.

The golden eagle is particularly sensitive to human disturbance and to land use changes that disrupt natural food supplies and breeding sites. An increase in human disturbance of a nest area and urbanization may result in abandonment of the nest, thereby threatening the species' reproductive success (Thelander 1974). Human developments on ridge tops within view of breeding sites may cause nest abandonment (Camp et al. 1997). In a study of golden eagles in San Diego County, the count of residences was shown to have a significant correlation to the number of abandoned golden eagle territories (Richardson and Miller 1981).

The issue of raptor electrocutions on power lines started receiving serious attention in the early 1970s. Several studies identified how raptors, including golden eagles, were being electrocuted and recommendations have been established to reduce the risk (Olendorff et al. 1981; Avian Power Line Interaction Committee (APLIC) 2006). Single-phase poles, three-phase poles, and pole-mounted transformers all pose an electrocution threat to raptors but can be retrofitted with various devices to reduce the risk.

Conservation needs for the species include conserving foraging and nesting habitat for golden eagles, managing foraging and nesting habitat to minimize disturbance from human activity, and working with utility companies and entities operating wind turbines to develop eagle conservation plans that incorporate measures to minimize mortality from bird strikes and electrocution (Service 2013).

Species-Specific OPs

Bald and Golden Eagles

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following avoidance and minimization and OPs in section 5 of Appendix B: Eagle Conservation Plan for the San Diego Gas & Electric Company of the HCP Amendment (ECP) will be implemented to avoid and/or minimize impacts to bald and golden eagles. The ECP includes the following elements:

Avian Protection Program

In 2005, SDG&E instituted an Avian Protection Program (APP) to reduce the potential for direct mortality of birds by electrocution or collision with electric distribution and transmission lines and poles. In addition to what are termed reactive pole retrofits, which are completed after a bird electrocution, proactive pole retrofits are undertaken by SDG&E in high-priority areas (identified through the APP) where eagles and raptors have a high potential for direct mortality as a result of coming in contact with facilities. As such, proactive pole retrofits can be directed at facilities that pose a higher risk of electrocution to birds.

As a member of APLIC, SDG&E's proactive program to reduce direct mortality by electrocution or collision includes designing new or replacement poles using APLIC recommendations and guidelines to provide appropriate separation between conductors, system neutral, and ground hardware (i.e., long-term mitigation for 30 years) as well as providing equipment covers to

eliminate points of electrical contact (i.e., short-term mitigation for 10 years). From 2016 through 2019, SDG&E proactively retrofitted approximately 4,100 poles (annual average of approximately 1,023 poles) within the service area to reduce or eliminate electrocution risk to birds. Retrofitting of poles also reduces the potential for bird-caused wildfire ignitions (i.e., nesting materials on a pole can ignite or spark, resulting in a nest that can create a fire and fall to the ground, potentially resulting in a wildfire).

In 2020, SDG&E began a pilot program to replace traditional wire conductors with insulated or "covered" conductor to mitigate the risk of wildfires. Although the use of covered conductor was developed for wildfire mitigation, it has the added benefit of eliminating the potential for electrocutions of large birds such as eagles and other raptors so long as the wires remain insulated.[46] SDG&E replaced 2 miles (approximately 36 poles) of conductor in 2020 with covered conductor along a distribution line in the Ramona grasslands, and will continue to install more covered conductor in high fire threat areas in upcoming years. Future target areas for covered conductor replacement are scheduled for rural and backcountry areas that overlap with eagle habitat in SDG&E's service area. The use of covered conductor in these areas is expected to continue to increase in future years, benefiting eagle populations as well as other raptor species. As part of SDG&E's adaptive management, the use of covered conductor could serve as long-term retrofit mitigation with approval from the Service.

Operational Protocols

As part of its existing environmental compliance requirements for its Subregional Plan and its HCP Amendment, SDG&E implements OPs to avoid and minimize impacts in natural areas that support habitat for sensitive species. These include general measures for working in areas of sensitive habitat along with specific recommendations for sensitive species. Many of these general and specific measures are prescribed when working close to or within Eagle Awareness Areas (EAAs)where eagle nests have been documented and may reduce disturbance to courting and nesting eagles. OPs are required of all SDG&E employees and contractors. The following OPs are implemented within sensitive habitat areas and potentially reduce the risk of eagle impacts.

General Behavior for All Field Personnel

1. When environmentally sensitive areas/limits have been established, employees and contract workers shall strictly limit their activities, vehicles, equipment, and construction materials to avoid impacts beyond the delineated limits.

2. Vehicles must be kept on access roads. A 15 miles-per-hour speed limit shall be observed on dirt access roads to allow species to disperse. Vehicles must be turned around in established or designated areas only.

[46] Tree wire is a type of insulated phase conductor (i.e., covered conductor) used on distribution lines to provide protection from momentary contact with tree branches, which would otherwise cause an electric arc. The insulation is sufficient to protect birds from collision-electrocutions, which are caused by phase-to-phase contact when large birds, such as eagles, brush phase conductors while flying between them (APLIC 2012).

3. No wildlife, including rattlesnakes, may be harmed, except to protect life and limb.

4. Firearms shall be prohibited on the ROW except for those used by security personnel.

5. Feeding of wildlife is not allowed.

6. SDG&E personnel are not allowed to bring pets on the ROW in order to minimize harassment or killing of wildlife and to prevent the introduction of destructive domestic animal diseases to native wildlife populations.

7. Parking or driving underneath oak trees is not allowed in order to protect root structures except in established traffic areas.

8. Plant or wildlife species may not be collected for pets or any other reason.

9. Littering is not allowed. SDG&E personnel shall not deposit or leave any food or waste on the ROW or adjacent property.

10. Wildfires shall be prevented or minimized by exercising care when driving and by not parking vehicles where catalytic converters can ignite dry vegetation. SDG&E vehicles shall carry all required fire tools such as water backpack pumps, shovels, and/or fire extinguishers while operating in the field in accordance with SDG&E's Wildland Fire Prevention & Fire Safety Plan. The use of shields, protective mats, or other fire prevention methods shall be used during grinding and welding to prevent or minimize the potential for fire. Smoking may only occur in designated smoking areas or in a 10-foot clearing void of all grass or other vegetation in accordance with SDG&E's Wildland Fire Prevention & Fire Safety Plan or as discussed in the most current internal fire prevention standard and practices.

11. Field crews shall refer environmental issues, including wildlife relocation, dead or sick wildlife, hazardous waste, or questions about avoiding environmental impacts, to the qualified Biologist. Qualified Biologists or experts in wildlife handling may need to be brought in by the qualified Biologist for assistance with wildlife relocations.

Training

12. All SDG&E personnel and contractors working within the project area shall participate in SDG&E's employee training program, which includes annual training, project-specific training, and/as-needed training. Section 6.3.1 of the HCP Amendment further defines education and training. As it relates to eagles, project-specific trainings are those trainings developed that are specific to the Covered Activity and environmental setting where the work is occurring. Training would include discussions on eagle awareness/biology as well as reporting procedure in the event there is an eagle incident or discovery of an

eagle mortality. Training shall also be provided for staff on an as-needed basis throughout the implementation of the HCP Amendment. As-needed training could address implementation, Operational Protocols, Species Specific Protocols, methods for standardizing field work, and other topics

13. Designated SDG&E staff shall conduct selected reviews of SDG&E operations.

No-Disturbance Nest Buffers

During the bald and golden eagle breeding season (December 1 through July 31), SDG&E will establish the following no-disturbance nest buffers, as recommended by Service Regional Guidance (Service 2017a, 2017b), around in-use eagle nests detected within an EAA:

- Bald eagle recommended nest buffers: 1,000 feet for helicopters, aircraft, and Unmanned Aircraft Systems; 660 feet for vehicles and equipment; 330 feet for foot traffic; ½ mile for blasting and other loud, intermittent noises.

- Golden eagle recommended nest buffer: 1 mile for all activities; 2 miles for blasting and other loud, non-regular noise.

SDG&E will limit disturbance to in-use nest areas from O&M activities associated with electric distribution and transmission facilities as follows. SDG&E will use the matrix in Table 14 (Table 6 of the ECP) during implementation of this ECP to guide decisions on implementing the recommended no-disturbance buffers and reducing them as appropriate based on site-specific conditions. Deviations from the Service's recommended buffers will consider the category of the activity (as defined in Section 5.4 of the ECP) and whether the activity within a buffer is (1) visible or within the line of sight of an in-use eagle nest and (2) whether similar activities or disturbances are already occurring within the eagle nest buffer. The approach summarized in Table 1 will promote consistent prescription of avoidance and minimization measures. Buffers would only be reduced if needed to allow work to continue and, in that event, will be reduced only as much as necessary to allow the work. SDG&E may consult with the Service for technical advice as needed.

Activities performed closer to an in-use nest than the Service's recommended buffer may have the potential to cause nest disturbance depending on the intensity and duration of the work. Some activities, including multiple pole replacements, reconductoring, and access road maintenance, have a duration and intensity of disturbance (i.e., noise, vibrations, activity caused by crews and vehicles) that could disturb eagles, while others, including visual inspections, may have no to negligible risk of causing eagle nest disturbance and take.

Activities within Nest Buffers

There may be situations when SDG&E will be required to work within the no-disturbance buffers described in Section 5.3 of the ECP. SDG&E may implement avoidance and minimization measures when activities within a no-disturbance buffer could disturb nesting eagles. To determine when such measures are warranted, SDG&E's standard activities (discussed in Section 2 of the ECP) were grouped into categories based on the intensity and duration of the activity and the anticipated effects, such as noise and visual disturbances from

increasing numbers of personnel on a work site. These activity categories will be reevaluated at each 5-year permit review and renewal.

Table 14. Eagle No-Disturbance Buffer Assessment Matrix

Recommended Bald Eagle No-Disturbance Buffer[1]		
	If there is no similar activity or disturbance within 660 feet of the nest	**If there is similar activity closer than 660 feet from the nest**
If the activity will be visible from the nest	660 feet	660 feet, or as close as other existing and tolerated activities of similar disturbance
If the activity will not be visible from the nest (i.e., no line of sight due to a significant land barrier such as a mountain or canyon wall)	330 feet	330 feet, or as close as other existing tolerated activities of similar disturbance
Recommended Golden Eagle No-Disturbance Buffer[1]		
	If there is no similar activity or disturbance within 1 mile to the nest	**If there is similar activity closer than 1 mile from the nest**
If the activity will be visible from the nest	1 mile	Less than 1 mile, or as close as other existing tolerated activities of similar disturbance
If the activity will not be visible from the nest (i.e., no line of sight due to a significant land barrier such as a mountain or canyon wall)	Less than 1 mile [2]	Less than 1 mile, or as close as other existing tolerated activities of similar disturbance[2]

[1] Buffers based on recommendations by Service Regional Guidance (Service 2017a, 2017b). Similar activities are those where the nature and magnitude of impacts to eagles are similar or comparable to existing activities. See Section 5.4 of the ECP for detail on no-disturbance buffers associated with routine tree trimming activities.
[2] Buffers would only be reduced as much as necessary to allow the work to continue.
Note: Taken from Table 6 of the ECP.

Category 1 Activities

Category 1 Activities are low-intensity activities of short duration (typically, <1 to 2 hours, rarely 3 hours). Given their short duration and minimally disruptive nature, Category 1 Activities, have no to low risk of causing eagle nest disturbance and take. Thus, these activities occur year-round to ensure safe and reliable operation of the electric system and maintain regulatory compliance deadlines.

All vehicles remain on public roads or existing access roads for Category 1 activities. See Section 5.2.1 of the ECP (Operational Protocols, General Behavior of All Field Personnel), Operation Protocol 2. Crews access facilities off public roads or existing access roads in natural areas on foot. To avoid and minimize impacts from Category 1 Activities, they are planned

outside the breeding season whenever feasible. Construction and utility staff are also given annual training on OPs and Best Management Practices (BMPs) to avoid and minimize impacts to eagles. Standard BMPs include procedures for drone and helicopter pilots to abort operations if inspections are distressing to eagles (and other raptors).

- Visual inspections and patrols, including walking on foot and using light vehicles (<1 hour in duration)
    - No ground disturbance
    - No equipment aside from light vehicles, which remain on public roads or existing access roads
- Insulator washing from vehicles (<2 hours in duration)
    - No ground disturbance
    - Ground level washing (away from nests in cliffs/trees)
    - Minimal equipment; water truck with high pressure hose on public roads or existing access roads
- Use of Unmanned Aircraft Systems/drones and helicopters for inspections or insulator washing (<1 hour in duration)
    - No ground disturbance
    - Pre-project planning, follow Operational Protocols, which include:
        - Contractors/pilots review EAAs in SDG&E system
        - For any flight within EAA, inspection routed to Environmental Services
            - Environmental Services professionals review flight path and determine avoidance buffers that may be required at time of flight.
            - If avoidance is not possible, flights may be rescheduled outside eagle breeding season if appropriate.
- Routine vegetation management activities, including pole brushing of fire areas (i.e., typically involves clearing a 10-foot radius around a pole), and wood pole inspections/pole test (typically, 1 to 2 hours in duration)
    - Small crews of two personnel and minimal equipment: light vehicles on public roads or existing access roads, hand and/or handheld power tools
- Minor repair, replacement, and removal of pole equipment for corrective maintenance (typically, <1 to 2 hours in duration)

- No ground disturbance
- Minimal equipment: light vehicles/bucket trucks, hand and/or handheld power tools

To ensure that cumulative impacts to breeding eagles remain insignificant, the below activities are considered Category 1 only where they are: (i) conducted from public roads; or (ii) not accessible from a public road but are less than 2 hours in total duration and occur no more than three times within an EAA during a single breeding season (*infra* Section 5.4.2 of the ECP). Duration means the entire length of the event, including work on different days. For example, if tree trimming occurred 1 hour per day for 5 consecutive days within an EAA, the total duration would be 5 hours and the tree trimming would constitute a Category 2 Activity.

- Routine tree trimming activities that include routine pruning and hazard tree removal.
  - No ground disturbance
  - This work avoids trees where an eagle is nesting. This would only be a potential issue with bald eagles as golden eagles within the ECP Area almost exclusively nest on cliffs.
  - Routine tree trimming activities are considered Category 1 only where they meet the two criteria above and the work locations are greater than ½-mile away from an in-use nest[47]. If routine tree trimming activities occur within ½-mile of an in-use nest, the tree trimming would constitute a Category 2 Activity.

In general, because Category 1 Activities are equivalent to or differ minimally from ambient conditions and are of short duration, human presence outside a vehicle is the primary source of concern for temporarily bothering eagles. The brief, low-intensity activities that compose Category 1 Activities are not expected to impact eagles materially more than ambient conditions. Because these activities occur year-round, are equivalent to or differ minimally from ambient conditions, and require only minutes or a few hours of physical presence, Category 1 Activities are exempt from disturbance buffers in Section 5.3 and follow-up monitoring described in Section 6.1 of the ECP.

Category 2 and Category 3 Activities

Though slightly longer than Category 1 Activities, Category 2 Activities are also of relatively short duration, often taking less than a day to a few days to complete. They are of low to moderate intensity and have a moderate potential to cause eagle nest disturbance and take. These activities will follow the prescribed buffers in Table 14 and are scheduled outside of the eagle breeding season to the maximum extent practicable. Category 2 Activities include:

- Repair, replacement, and removal of direct-bury poles

[47] The ½-mile buffer for routine tree trimming activities will be from the center point of the EAA. A pre-activity survey will be required to determine the status of the nest if work is to be conducted within ½-mile of the center of the EAA, which would constitute a Category 2 Activity if the nest was determined to be in-use.

- Pole insetting
- Replacement and removal of anchors and stub poles
- Wildfire fuels modification and management
- Geotechnical testing and remediation
- Routine tree pruning activities and/or hazard tree removal between ½-mile and 1 mile from an in-use nest that are not accessible by public roads and require more than 2 hours to complete
- Routine tree pruning activities and/or hazard tree removal within ½-mile of an in-use nest

Category 3 Activities are of longer duration, often taking weeks to months, and/or have a higher intensity than Category 1 or 2 Activities. They include:

- New construction
- Foundation/tower repairs, replacements, and removals
- Replacement/removal of conductor
- Preparing staging and work areas
- Access road repair and maintenance
- Fiber optic lines and telecommunications repairs, replacements
- Helicopter-assisted pole/tower maintenance

Category 2 and Category 3 Activities will follow the prescribed buffers in Table 14 and will be scheduled outside of the eagle breeding season to the maximum extent practicable. However, these activities may occur within the prescribed buffers during the eagle breeding season, if necessary, for example, to respond to an emergency, meet compliance obligations, or other requirements. In that event, the below process will be followed:

1. SDG&E will assess whether the activity is within an EAA.
    a. If it is not within an EAA, no minimization measures will apply, and Category 2 or Category 3 Activities may proceed.
    b. If it is within an EAA, SDG&E will assess whether any nests are present within the EAA.

2. After assessment, and if an in-use nest[48] is found within the EAA, the appropriate buffer will be established. See Section 5.3 of the ECP, Table 6 of the ECP.

3. If the proposed activity will occur within the established buffer, SDG&E will determine the outcome of the nest.

4. If a nest is not in-use for any reason (e.g., successfully fledged or failed), no minimization measures will apply, and the Category 2 or Category 3 Activity may proceed. No monitoring will be required to determine nest outcome as detailed in Section 6.1 of the ECP.

    a. Should a nest become in-use while a Covered Activity is ongoing, SDG&E will proceed with the Activity and implement the next step.

5. If a nest is in use, SDG&E may choose to proceed with the Activity and may choose to have a qualified Biologist observe any in-use eagle nests from a vantage point that minimizes disturbance of the nest (including using a blind, scope, or binoculars, as needed). The qualified Biologist may recommend changes to activities to lessen any agitation (i.e., reducing noise, foot traffic) and may recommend stopping work as appropriate (if the eagles show high levels of distress). Section 6.1 of the ECP provides criteria for determining disturbance take based on nest outcome.

Environmental Baseline

Bald Eagle

SDG&E compiled breeding records for golden and bald eagles from various sources, including the Service, CNDDB, and the U.S. Geological Survey, and were documented mainly through surveys conducted by Wildlife Resource Institute, Bloom Biological, and the U.S. Forest Service. A 1-mile polygon was placed around the location of each golden and bald eagle breeding record to create EAAs.

In San Diego County, the greatest amount of bald eagle habitat occurs in the central foothills, southern valley, and central valley ecoregions. In the portion of the Plan Area that overlaps with Orange County, the highest acreage of suitable bald eagle habitat can be found in the Orange County foothill and valley ecoregion. Within the Plan Area, bald eagles typically forage in or near water bodies such as lakes, rivers, and the ocean.

Four bald eagle EAAs have been identified within the Plan Area, all of which are in San Diego County and overlap with the PIZ. These include nesting locations at Corte Madera, Lake Henshaw, and Lake Wohlford, and in the Ramona grasslands. No bald eagles are known to nest in the portion of the Plan Area within Orange County.

[48] As noted in the Glossary of Defined Terms and Section 4.1.1, an *in-use nest* is defined as a "golden eagle nest characterized by the presence of one of more eggs, dependent young, or adult eagles on the nest in the past 10 days during the breeding season" (50 C.F.R. § 22.3) and "breeding begins… with the start of courtship…" (*Programmatic Environmental Impact Statement for the Eagle Rule Revision*, United States Department of the Interior, Fish and Wildlife Service, December 2016).

Golden Eagle

SDG&E compiled breeding records for golden eagles from various sources, including the Service, the CNDDB, and the U.S. Geological Survey, and were documented mainly through surveys conducted by Wildlife Resource Institute, Bloom Biological, and the U.S. Forest Service. A 1-mile polygon was placed around the location of each golden and bald eagle breeding record to create EAAs.

In San Diego County, the three ecoregions with the greatest amount of golden eagle habitat are the southern foothills, northern mountains, and central foothills ecoregions. In the portion of the Plan Area that overlaps with Orange County, golden eagle habitat is mainly found in the Orange County foothill and valley ecoregion.

In total, 164 golden eagle EAAs have been identified within the Plan Area, 117 of which overlap with the PIZ in San Diego County. Three of the 164 EAAs are present within the Plan Area in Orange County but all are more than 2.5 miles north of the PIZ, in the vicinity of Trabuco Canyon. Nesting territories in the Plan Area that also occur within the PIZ include one or more in the following general vicinities (from north to south): San Mateo Canyon, Palomar Mountain, Mendenhall Valley, Aguanga Mountains, Pamo Valley, Lake Henshaw, Bandy Canyon, Iron Mountain, San Vicente Reservoir, El Cajon Mountain, Loveland Reservoir, Bell Bluff, Lyon's Valley, Barrett Reservoir, Lawson's Peak, Morena Butte, Corte Madera Mountain, Glen Cliff/Buckman Springs, and Thing Valley.

The bald and golden eagles are covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- San Diego MHCP Subregional NCCP/HCP
- Western Riverside County MSHCP Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Bald eagles are not known or expected to occur at existing SDG&E mitigation lands, while potential golden eagle habitat occurs at existing SDG&E mitigation lands.

Effects of the Action

Habitat Loss

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously

disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact more than 1.75 acres of a preserve or planned preserve will only be covered if the requirements of a Minor Amendment are met.

Because of the scale and distribution of impacts will remove only a small fraction of any eagle use area (bald and golden eagle home ranges average thousands of acres, as described in the Status of the Species section), habitat loss per se is anticipated to have an insignificant effect on eagle survival and reproduction.

Nest Disturbance, Electrocutions, Collisions, and Nest Removal

The ECP addresses impacts to eagles from nest disturbance, electrocutions, collisions, and nest removal.

Potential Nest Disturbance

SDG&E pre-construction, construction, or O&M activities have the potential to disturb nesting eagles. Such disturbance would amount to take under BGEPA if it causes or is likely to cause the loss of productivity at an eagle nest or nest abandonment. To ameliorate this risk, Service Regional Guidance recommends a 1-mile no-disturbance buffer of in-use[49] golden eagle nests. Regional Guidance suggests that buffers may increase or decrease depending on specific site or activity circumstances (Service 2017a). For bald eagles, Service Regional Guidance (Service 2017b) recommends that most human activity be avoided within 660 feet of in-use eagle nests; helicopter and fixed-wing aircraft activity be avoided within 1,000 feet of in-use nests; and human foot-traffic be avoided within 330 feet of in-use eagle nests.

As described in Section 5 of the ECP, SDG&E will implement numerous eagle impact avoidance and minimization measures, including operating outside the eagle breeding season. In general, SDG&E's implementation of these measures will avoid impacts to nesting eagles to the maximum extent practicable. Nonetheless, in certain limited circumstances, SDG&E activities may affect eagles in the vicinity of the PIZ by agitating or bothering nesting eagles. For example, activities may need to be performed during the breeding season for several reasons, including in response to emergencies, meeting compliance deadlines for inspections and required corrective maintenance, or to address safety concerns. It is also possible that nesting eagles may potentially be stressed by activities occurring near a previously unknown nesting location. In these cases, SDG&E activities within the recommended nesting buffers would have the potential to disturb nesting eagles as defined under BGEPA.

In Sections 4.1 and 4.2 of the ECP, quantitative estimates of the expected amount of take due to nest disturbance and electrocutions were generated for golden eagles and bald eagles based on existing data. While those estimates are considered realistic, additional contingency was added to

[49] An *in-use nest* is defined as a "golden eagle nest characterized by the presence of one of more eggs, dependent young, or adult eagles on the nest in the past 10 days during the breeding season" (50 C.F.R. § 22.3) and "breeding begins… with the start of courtship…" (*Programmatic Environmental Impact Statement for the Eagle Rule Revision*, United States Department of the Interior, Fish and Wildlife Service, December 2016).

the quantitative take estimates to account for eagle take associated with collisions that cannot be estimated and to account for future detections of nest in proximity to activities.

A summary of all incidental take associated with estimated nest disturbance, electrocutions, collisions, and nest removals is provided in Table 15 (Table 5 of the ECP) and represents the total amount of take estimated under the ECP.

Electrocutions and Collisions

Direct fatality of eagles may occur due to electrocution on, or collision with, SDG&E facilities. Electrocution is one of the primary threats to mature eagles, and SDG&E has implemented a pro-active program to reduce the frequency of electrocutions within its service area (see Avian Protection Program above). The ECP models the risk and potential for electrocutions to occur based on the observed frequency of eagle electrocutions with the SDG&E survey area and the estimated percentage of eagle electrocutions that are observed. Collisions with conductors, fiber optic cables, and other less visible wires are another source of injury and mortality, and the ECP includes an estimated number of eagle collisions over the permit term.

Nest Removal

As part of this comprehensive approach to developing the ECP, SDG&E is also requesting approval to remove up to two alternate and two in-use bald eagle nests and up to six alternate and six in-use golden eagle nests at some point over the 30-year eagle permit term. Neither bald eagles nor golden eagles within the ECP Area have historically built nests on SDG&E facilities. It is highly unlikely that an alternate or in-use eagle nest would need to be removed. Nonetheless, authorization to remove such nests could be required as part of future wildfire hardening programs if an alternate or in-use nest were located in a hazard tree as defined in Section 4.1.3 of the ECP, or where old infrastructure is replaced with more durable and fire-resilient infrastructure. It is also possible that a nest will need to be trimmed instead of fully removed to ensure no contact occurs between nest substrate and electrical wire. In the case of any nest removal or trimming, unless there is an emergency involving human health and safety, the removal or trimming would occur after breeding or nesting is complete, whichever happens first. Nest removal and nest trimming would be conducted outside of the breeding season to the extent practicable. The authorization to remove or trim an alternate or in-use nest under an emergency or urgent compliance deadline can be expedited if it is contemplated in this ECP and authorized in the incidental take permit.

A detailed analysis of impacts to golden eagles and bald eagles from covered activities is included in the ECP. These impacts are summarized in Table 15.

Mitigation

Mitigation to offset impacts to golden eagles will be accomplished by retrofitting utility poles to avoid future loss through electrocution (Table 16) (Table 7 from the ECP). The Service's Resource Equivalency Analysis (REA) worksheets were used to calculate the number of short-term or long-term retrofits required to offset estimated impacts. All calculations in this section assume a mitigation ratio of 1.2:1, per the ECP Guidance (Service 2013a), and are in accordance with the 2016 Eagle Rule (Service 2016a, 2016b) (also see Section 6.3 of the ECP). Short-term

retrofits (i.e., plastic covers) provide 10 years of avoided eagle loss, while long-term retrofits (reframing) provide up to 30 years of avoided loss.

Table 15. Estimated Incidental Take to Golden and Bald Eagle

Form of Take	Quantitative Projections		Qualitative Projections (including contingency)		Total	
	Per 5 Years	30-Year Eagle Permit Term	Per 5 Years	30-Year Eagle Permit Term	Per 5 Years	30-Year Eagle Permit Term
Golden Eagle						
Nest Disturbance	6	36	6	36	12	72
Electrocution	4.3	26	0	0	4.3	26
Collision	0	0	2.1	13	2.1	13
Nest Removals[1]	0	0	2	12	2	12
Bald Eagle						
Nest Disturbance	1.1	7	2.3	14	3.5	21
Electrocution	2.1	13	0	0	2.1	13
Collision	0	0	1	6	1	6
Nest Removals[2]	0	0	0.6	4	0.6	4

[1] Up to six alternate and six in-use golden eagle nests to be removed.
[2] Up to two alternate and two in-use bald eagle nests to be removed.
Note: Taken from Table 5 of the ECP.

Table 16. Summary of Estimated Mitigation for Golden Eagles Over 30-Year Permit Period[1]

Form of Take	30-Year Estimated Take	Mitigation Ratio Multiplier	Short-Term Retrofits		Long-Term Retrofits	
			Per Instance of Take	30-Year Eagle Permit Term	Per Instance of Take	30-Year Eagle Permit Term
Nest Disturbance	72	1.2	23.50	1692	10.25	738
Electrocution	26	1.2	35.79	931	15.58	406
Collision	13	1.2	35.79	466	15.58	203
Nest Removal	12	1.2	NA	NA	NA	NA

NA = not applicable
[1] Mitigation for nest disturbance will stay ahead of forecasted impact estimates and will typically be completed within the first year of each 5-year permit period. Mitigation for collisions will be completed throughout each 5-year period and will be based on actual fatalities.
Note: Taken from Table 7 of the ECP.

Mitigation in the form of short-term or long-term retrofits as well as compensatory mitigation for impacts to bald eagles is required when all authorized and permitted take exceeds the annual allotment for the flyway. The ECP Area is within the Pacific Flyway South EMU, which has a bald eagle annual take allotment of 15 (Service 2016a). As of 2020, the authorized take in the Pacific Flyway South EMU is 2.85 out of the 15 allotted eagles per year (Thomas Dietsch, pers. comm. 2020). The estimated bald eagle take associated with SDG&E activities (fewer than two

individuals per year; ECP Section 4.3) will not increase annual take above this threshold. Because SDG&E's estimated take of bald eagles is extremely small and will not exceed the annual allotment for this EMU (Service 2016a, 2016b; 81 Fed. Reg. 91,494), mitigation is not required. In the event of direct fatality of a bald eagle caused by contact with SDG&E facilities, SDG&E will conduct reactive pole retrofitting at the incident pole where the take occurred to ensure no further electrocutions could occur on the pole in question.

In coordination with the Service, SDG&E may contribute compensatory mitigation to San Diego golden eagle conservation by reducing the overall number of short-term retrofits and redirecting a portion of the unit costs of those retrofits to local eagle conservation efforts. All retrofits in the previous sections assume a mitigation ratio of 1.2:1. Of this 1.2:1, up to 0.2:1 of the typical unit cost of a single, short-term retrofit may be proposed in lieu of installing some short-term retrofits by directly supporting San Diego golden eagle conservation.

With the proposed mitigation, the SDG&E HCP Amendment will result in a net increase in golden eagle survival and reproduction within the Plan Area by reducing the risk of electrocution or implementing other Service-approved measures to benefit golden eagle conservation and recovery. Although compensatory mitigation measures specific to bald eagle are not required under the SDG&E HCP Amendment, electrocution risks will also be reduced for bald eagles as a result of the extensive pole retrofits that will be conducted pursuant to the SDG&E HCP Amendment. Further, the level of impacts to bald eagle as a result of the SDG&E HCP Amendment are well below the level at which it would negatively impact the Pacific Flyway South EMU (Thomas Dietsch, pers. comm. 2020), which includes all of the bald eagles in the Plan Area. Therefore, the impacts from nest disturbance, electrocutions, collisions, and nest removal will not result in an appreciable reduction in the numbers, reproduction, or distribution of bald eagles or golden eagles within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, Lighting, Non-Native Species, Predation and Habitat Fragmentation

Bald eagles and golden eagles could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to bald eagles and golden eagles include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, lighting, non-native species invasion and habitat fragmentation.

Changes to hydrology, such as decreasing flows, erosion and sedimentation can remove or alter the foraging habitat of bald eagles. OPs will be implemented to minimize changes to hydrology, erosion, and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). To help prevent leaks and spills, all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas at least 100 feet away from of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States.

Contractor equipment will be checked for leaks prior to operation and repaired as necessary (OP 23).

Project construction and new facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for bald eagles and golden eagles, which could alter bird behavior (e.g., Rich and Longcore 2006). To the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands (OP 21). In addition, if night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded, and directed away from natural habitats and any permanent lighting will be directed away and/or shielded so as not to illuminate native habitats (OP 25).

The ground disturbance and landscaping associated with Covered Activities can facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants can alter the species composition and structure of the habitat, which may make it less suitable for bald eagles and golden eagles.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting bald eagle and golden eagle dispersal/movement corridors that contribute to long-term population viability for the least Bell's vireo. However, no large-scale New Construction is expected that could cause significant habitat fragmentation, and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat in order to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology and water quality, lighting, non-native species, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in bald eagle or golden eagle survival or reproduction beyond baseline conditions.

Effect on Recovery

Although the Service has not prepared recovery plans for bald eagles or golden eagles, it has published extensive information regarding the status of these species and recommended measures to avoid, minimize, and offset potential impacts to each species (Service 2013a, 2016a, 2016b, 2017a, 2017b). The ECP associated with the SDG&E HCP Amendment is consistent with the published guidance by the Service, will result in a net increase in golden eagle survival or reproduction relative to baseline conditions, and will not have a substantive negative effect on bald eagle survival or reproduction. Therefore, the SDG&E HCP Amendment is not anticipated to interfere with recovery of these species.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the bald eagle or golden eagle. We base this conclusion on the following:

1. Bald eagles breed locally from Alaska eastward to Newfoundland and southward locally to Baja California, Sonora, Texas, and Florida. Golden eagles primarily occur in the western regions of North America and breed locally from Alaska southward to northern Baja Czalifornia and northern Mexico and eastward to the western Great Plains. Thus, the action area for HCP Amendment represents only a portion of these species' rangewide distribution.

2. Habitat loss from the SDG&E HCP Amendment is not anticipated to adversely affect survival and reproduction of bald eagles or golden eagles.

3. General and species-specific OPs will reduce the likelihood that individual bald eagles or golden eagles will be killed or injured by Covered Activities.

4. All unavoidable impacts to golden eagles from nest disturbance, electrocution, collisions, and nest removal will be mitigated consistent with the Service's Resource Equivalency Analysis, primarily by retrofitting existing facilities to reduce the risk of electrocution. Compensatory mitigation from nest disturbance, electrocution, collisions, and nest removal is not required for bald eagles because the level of impacts is not anticipated to substantively impact the affected population, but bald eagles will benefit from the proposed measures to retrofit existing facilities to reduce the risk of electrocution.

5. Because Covered Activities habitat loss is anticipated to have an insignificant effect on bald or golden eagle survival and reproduction and anticipated

mortality from Covered Activities will be fully mitigated (for golden eagle) or are not anticipated to substantively impact the affected population (for bald eagle) and the ECP for the SDG&E HCP Amendment includes extensive measures to avoid, minimize, and offset potential impacts to these species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of bald eagles or golden eagles in the Plan Area or rangewide.

Listed Mammals

Stephens' Kangaroo Rat (Dipodomys stephensi)

Status of the Species

Listing Status

The Service listed the Stephens' kangaroo rat as endangered on September 30, 1988 (53 FR 38465). The Service determined at the time of listing that the designation of critical habitat was not prudent; therefore, no critical habitat for Stephens' kangaroo rat has been designated. The Draft Recovery Plan for Stephens' Kangaroo Rat was completed in April 1997 (draft recovery plan, Service 1997b). A 5-year review for Stephens' Kangaroo Rat was completed in July 2011 that recommended a change in the endangered listing status to threatened (Service 2011d). The *Species Report for the Stephens' Kangaroo Rat* was completed in August 2021 (species report, Service 2021f). The Service downlisted the Stephens' kangaroo rat from endangered to threatened on February 17, 2022 (87 FR 8967).

Species Description

The Stephens' kangaroo rat is one of 21 species of kangaroo rats (genus *Dipodomys*) that comprise a distinct group of rodents belonging to the family Heteromyidae (Williams et al. 1993). The Stephens' kangaroo rat is dark brown above, white underneath, and has a black and white tail. Stephens' kangaroo rats weigh about 2.4 ounces (Bleich 1977). Adult body-plus-tail lengths range from 9 to 11 inches, with the tail 1.45 times the length of head and body (Bleich 1977). Characteristics common to all kangaroo rats include external fur-lined cheek pouches, large hind legs, relatively small front legs, long tails, and large heads (Williams et al. 1993). The Stephens' kangaroo rat is similar in appearance to the sympatric Dulzura kangaroo rat (*Dipodomys simulans*) but is paler and can be distinguished from the latter by its smaller ear and broader skull (Grinnell 1922, Lackey 1967a, Price et al. 1994a).

Habitat Affinities

Stephens' kangaroo rats typically inhabit areas characterized by low perennial and annual cover interspersed with large areas of bare ground (Grinnell 1933; Lackey 1967a; Bontrager 1973; Bleich 1973, 1977; Thomas 1975; O'Farrell et al. 1986; O'Farrell and Clark 1987; O'Farrell and Uptain 1989; Price et al. 1994a, 1995; Goldingay and Price 1997). Typical habitat consists predominantly of native and non-native annual herbs and annual and perennial grasses. Many non-native grasses can exclude or otherwise degrade Stephens' kangaroo rat habitat if they build up and develop a thatch (O'Farrell and Uptain 1989), and native grasses that become too dense

may also limit or preclude occupation by Stephens' kangaroo rat (O'Farrell 1990). The only non-native grasses that appear to be conducive to the Stephens' kangaroo rat are common Mediterranean grass (*Schismus barbatus*) and foxtail fescue (*Vulpia myuros*) (O'Farrell 1994, 1997). The Stephens' kangaroo rat is also found in sparse coastal sage scrub, generally when shrub cover is less than 30 percent (O'Farrell and Uptain 1987). Based on a review of O'Farrell and Uptain (1989), the presence of well-drained, friable soils appears to be very important to this species' distribution.

Stephens' kangaroo rat occur in relatively dry inland valleys west of the Peninsular Ranges of southern California, where mean annual rainfall is below 15 inches and highly variable temporally and spatially. The vegetative cover of grassland and coastal sage scrub throughout the range of Stephens' kangaroo rat also varies spatially and temporally from moderate to very sparse due to local rainfall, evaporative conditions, and wildfire frequency. These dynamic vegetative communities influence the short- and long-term suitability of areas for Stephens' kangaroo rat.

Life History

The Stephens' kangaroo rat is primarily granivorous but also consumes some green vegetation and insects (Lowe 1997). Stephens' kangaroo rats forage primarily by scratch-digging, a process by which they harvest seeds intermixed with soil with their forelimbs (Morgan and Price 1992), and the behavior of food caching enables kangaroo rats to survive during extreme seasonal fluctuations in food availability (Morgan and Price 1992, Reichman and Price 1993). Typical of kangaroo rats (French 1993), the Stephens' kangaroo rat can survive for extended periods with little free-water intake (Lackey 1967b).

Some Stephens' kangaroo rats may reproduce within the same year that they are born, but the proportion of Stephens' kangaroo rats that breed within their first year fluctuates with environmental conditions (Price and Kelly 1994). The average litter size for the Stephens' kangaroo rat ranges from 2.7 to 2.8 individuals (Lackey 1967b, Price and Kelly 1994). Gestation is approximated at 30 days (Price and Kelly 1994) and weaning occurs about 18 to 22 days postpartum (Lackey 1967b). The timing of breeding for the Stephens' kangaroo rat is highly variable, with reproduction likely triggered by the growth of vegetation subsequent to winter rain (Reichman and Van de Graaff 1975, McClenaghan and Taylor 1993, Price and Kelly 1994). Reproductive activities peak in spring, but females may remain reproductive until late fall as long as food resources are adequate (McClenaghan and Taylor 1993, Price and Kelly 1994). Extended reproduction can result in multiple litters (as many as five) under very good environmental conditions (Price and Kelly 1994). Prolonged breeding activity is associated with the generally mild climate across the range of the Stephens' kangaroo rat (O'Farrell 1990) combined with high food availability during years with higher than average rainfall (Price and Kelly 1994). Conversely, under poor environmental conditions, Stephens' kangaroo rats may limit reproduction (Burke et al. 1991).

Home ranges of the Stephens' kangaroo rat vary according to habitat features, season, food availability, population density, and sex. Estimates for mean home ranges within a population vary from 0.05 to 0.32 acre (Thomas 1975, Ascanio and Price 1989) with home ranges for males generally being larger than that for females. Burrow depths range between 9 and 18 inches, and

multiple burrow openings may be adjoined. Burrow complexes consist of a network of tunnels connecting multiple entrances (O'Farrell and Uptain 1987) with tunnel pathways corresponding to surface runways. Except during brief periods within the reproductive season, each Stephens' kangaroo rat burrow complex appears to be occupied by a single adult, although burrows of different individuals are often clustered near one another. Stephens' kangaroo rat typically emerge from their burrows soon after sunset and may be active at any time during the night, but they apparently only spend limited time foraging or above ground (Burke et al. 1991).

Price et al. (1994b) found that Stephens' kangaroo rats generally are highly sedentary, but they recorded one instance of an individual moving over 0.6 mile between trapping grids. The median maximum distance moved by an individual Stephens' kangaroo rat between captures was within 96 feet of the initial point of capture. The median distance between first and last monthly home-range centers was 58 feet for individuals captured in 2 or more months. Males were found to be more mobile than females, and lactating females were found to be especially sedentary, but dispersal distances were found to be similar for juveniles and adults. In contrast to Price et al. (1994b), O'Farrell (1994) found that 40 percent of the population was mobile at any one time, and movements in excess of 1,300 feet were found to be relatively common.

Some kangaroo rat species can live up to 7 years in captivity (Price and Kelly 1994); however, definitive information on Stephens' kangaroo rat life span in the wild is lacking. Recent studies have estimated average Stephens' kangaroo rat survivorship to be between 4.5 to 6.6 months, with some individuals persisting for as long as 19 months (McClenaghan and Taylor 1991, Price and Kelly 1994), but these estimates are probably low due to the limited time frame of the studies and the inability to distinguish between actual mortality and emigration. Adults appear to have higher survival rates than subadults (McClenaghan and Taylor 1993, Price and Kelly 1994), but the evidence for differences in survival rate between sexes is inconclusive. Nocturnal raptors, such as barn owls (*Tyto alba*) and long-eared owls (*Asio otus*), appear to be the primary predators of the Stephens' kangaroo rat (Bleich 1977).

Status and Distribution

The historic and current geographic distribution of the Stephens' kangaroo rat coincides with the inland valleys of cismontane San Bernardino, Riverside, and San Diego counties of southern California [Grinnell 1922, Lackey 1967a, Bleich 1973, Bleich and Schwartz 1974, O'Farrell et al. 1986, O'Farrell and Uptain 1989, Dudek and Associates, Inc. (Dudek) 1998, Ogden Environmental and Energy Services Co., Inc. (Ogden) 1998]. Stephens' kangaroo rats usually occur at lower elevations in flat or gently rolling grasslands and are replaced on steeper slopes and shrublands by the Dulzura kangaroo rat (Price and Endo 1989). The entire geographic range of the Stephens' kangaroo rat was estimated to be about 1,108 square miles at the time of its proposed listing in 1987 (Service 1987). The range was updated in 1998 to include populations discovered near Norco and Anza in Riverside County and Guejito Ranch and Ramona in San Diego County, with the range now estimated to be about 1,951 square miles (Service, unpublished Geographic Information system (GIS) information).

Populations of Stephens' kangaroo rat fluctuate markedly from year to year (McClenaghan and Taylor 1993, Price and Endo 1989, Price and Kelly 1994, Barrows 2001), with population declines or increases up to five-fold or more. Population fluctuations appear to be driven by

variability in survival and reproduction that are in turn affected by precipitation (McClenaghan and Taylor 1993, Price and Endo 1989, Price and Kelly 1994, Barrows 2001), natural and anthropogenic habitat disturbances (O'Farrell 1997), and successional habitat changes (O'Farrell and Uptain 1989, Barrows 2001). Naturally occurring fluctuations in abundance make small Stephens' kangaroo rat populations highly susceptible to chance local extirpation (Price and Endo 1989, Goldingay et al. 1997).

Although Stephens' kangaroo rat populations have traditionally been characterized by estimating the extent of occupied habitat and providing a range of densities within occupied habitat, specific population estimates for this species (i.e., the number of Stephens' kangaroo rats present within a given area) can be misleading due to naturally high fluctuations within Stephens' kangaroo rat populations. As of 2010, the total baseline Stephens' kangaroo rat occupied habitat for Riverside and San Diego counties was 54,909 acres (Service 2010c). The density of Stephens' kangaroo rat in occupied areas ranges from less than 1 to greater than 20 individuals per acre (Service 1997b). Habitat conservation and enhancement since the listing of the Stephens' kangaroo rat are likely to have minimized the rate of habitat loss and buffered declines in the Stephens' kangaroo rat population caused by ongoing urban development. Managed and enhanced habitat has the potential to support relatively stable, high density Stephens' kangaroo rat populations (Price et al. 1995). Conserved grasslands that are actively managed to optimize favorable conditions for Stephens' kangaroo rats are likely to support a persistent, stable Stephens' kangaroo rat population (Service 1997b).

The Service's 2021 species report did not re-calculate the amount of occupied habitat but instead developed a habitat suitability model based on the presence of suitable vegetation, detections/observations, elevation, and slope while excluding areas that were urbanized or otherwise unsuitable. Based on this assessment, there are a total of about 131,343 acres of modeled habitat in Riverside County and 51,737 acres in San Diego County (Service), although not all of the modeled habitat is occupied.

Threats and Conservation Needs

The primary cause of the decline of Stephens' kangaroo rat and the primary threat to its continued existence is habitat loss and degradation resulting in highly fragmented habitat, which in turn isolates populations (Service 1997b). The primary factors contributing to this threat include urban development, non-native species, and off-highway vehicle use and removal of habitat disturbance events, such as grazing, that promote succession of grasslands into unsuitable dense vegetation and shrub habitat (Service 2010c). These factors continue to be threats, but they have been reduced by the creation of large-scale conservation areas and management of habitat on military lands, which together constitute about 44 percent of the modeled habitat throughout the range of Stephens' kangaroo rat (Service 2021f). The primary threat to Stephens' kangaroo rat continues to be habitat loss and fragmentation due to development and agriculture, although overall threats have been reduced since the time of listing, primarily due to the conservation and management of Stephens' kangaroo rat habitat that has occurred since listing (Service 2021f).

Conservation needs include conserving remaining unprotected Stephens' kangaroo rat habitat to protect populations and maintain habitat connectivity and managing vegetation (e.g., through

grazing or prescribed burning) to maintain and expand suitable habitat for Stephens' kangaroo rat.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 95 the HCP Amendment will be implemented to avoid and/or minimize impacts to the Stephens' kangaroo rat:

95. Stephens' Kangaroo Rat (*Dipodomys stephensi*)

a. Impacts from Covered Activities where there is a potential for Stephens' kangaroo rat to occur (SKR-Habitat) shall be avoided to the maximum extent possible. Laydown/staging areas shall not be sited in SKR-Habitat.

b. If impacts to SKR-Habitat cannot be avoided, a Biologist shall survey SKR-Habitat that has the potential to be impacted by Covered Activities following current USFWS protocols to determine species presence. If project timing does not allow for surveys, it shall be assumed that all SKR-Habitat to be impacted is occupied.

c. If surveys determine that SKR-Habitat is occupied (or assumed occupied due to lack of survey), temporary, permanent and Wildfire Fuels Management impacts that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, through land acquisition as described in Section 5.5.2.1, with the assumption that impacted habitat contains trace, low, medium, or high density occupancy of SKR, and that the mitigation land will support high density occupancy of SKR. This mitigation shall be approved by USFWS and CDFW prior to Covered Activities occurring within suitable SKR-Habitat.

d. If surveys determine SKR-Habitat is not occupied, Covered Activities and impacts shall be allowed. Impacts to unoccupied SKR-Habitat shall be mitigated per Section 5.5, Table 5.3a.

e. Temporary impact areas within SKR -Habitat shall be re-contoured to mimic the natural landscape when feasible. SDG&E shall determine the approach to re-contouring in consultation with the Stephens' Kangaroo Rat Biologist and the approach shall be described in the PSR.

f. Nighttime construction shall be avoided in and/or adjacent to occupied SKR-Habitat. If critical work during nighttime hours is necessary, a biological monitor shall conduct a clearance survey of the access road and all work areas within 500 feet of occupied SKR-Habitat year-round.

g. SDG&E vehicles shall remain on existing access roads in SKR-Habitat to the maximum extent practicable. See also OP 2 (speed limits).

h. Access route(s) shall be clearly marked with pin flags or similar flagging, which shall be followed by the vehicle driver. Vehicles shall proceed into the work site along the marked and designated overland travel route and back out along the same route.

i. In locations where overland travel is necessary for pole replacement, the pole replacements in SKR-Habitat shall be conducted with the use of a helicopter, if possible. A helicopter shall be used to set the new pole in the pole hole as well as to string in the new conductor.

j. To distribute vehicle weight, plywood boards or alternate material as approved by the Biologist may be used to cover burrows within overland travel routes and work areas through SKR-Habitat.

k. All work within SKR-Habitat shall occur during dry conditions when soil is not wet nor following a significant rainfall event.

l. Except in emergencies, Covered Activities shall not occur off existing access roads when the soil is saturated or after significant rainfall events, as Stephens' kangaroo rat burrows may be more susceptible to collapse and impacts from vehicular traffic.

m. Berms shall not be impacted within SKR-Habitat.

n. SDG&E shall retain a Stephens' kangaroo rat Biologist[50] approved by USFWS and CDFW to review and monitor Covered Activities that result in ground disturbance or vegetation clearing within SKR-Habitat. SDG&E shall submit the proposed Stephens' kangaroo rat Biologist's resume to USFWS and CDFW for approval at least 30 days prior to initiation of Covered Activities within SKR-Habitat. The approved Stephens' kangaroo rat Biologist shall conduct the following activities:

    i. At least 10 days prior to initiating maintenance work within SKR-Habitat, coordinate with USFWS on the implementation of the measures to minimize impacts to Stephens' kangaroo rat.

    ii. Shall provide a tailgate briefing of the specific biological constraints required during Covered Activities to avoid and minimize impacts to Stephens' kangaroo rat.

    iii. Prior to ground disturbance or vegetation clearing within SKR-Habitat, conduct a survey to identify all potential Stephens' kangaroo rat burrows within and surrounding the project footprint and mark each one with a pin flag for avoidance.

[50] The Stephens' kangaroo rat Biologist must have completed at least 40 calendar nights performing small mammal live-trapping surveys and must have handled at least 40 individual Stephens' kangaroo rat. The Stephens' kangaroo rat Biologist must also have experience using exclusion fencing to salvage and exclude small mammals from construction work areas, and/or experience performing small mammal translocations in the wild. If work is occurring on MCBCP, then the Biologist must also be approved by MCBCP.

iv. Prior to ground disturbance or vegetation clearing within SKR-Habitat, evaluate all project areas in SKR-Habitat to determine the best available access routes, which shall avoid or minimize disturbance to occupied SKR-Habitat and lead from the nearest dirt access road or route into the project area.

v. Based on the survey findings, the Stephens' kangaroo rat Biologist may recommend the erection of exclusion fencing and salvage trapping for Stephens' kangaroo rat within discrete work areas (e.g., at drainage improvement work areas and where vegetation will be uprooted) where significant soil disturbance is proposed. Otherwise, the Stephens' kangaroo rat Biologist shall walk a safe distance in front of vegetation trimming personnel, equipment, and any other grading implements or project-related Covered Activities to assist crews in avoiding impacts to burrows potentially occupied by Stephens' kangaroo rat. The Stephens' kangaroo rat Biologist shall have stop-work authority to avoid unauthorized impacts to suitable SKR-Habitat.

vi. When there is potential for direct impacts to Stephens' kangaroo rat from soil disturbance and the Stephens' kangaroo rat Biologist determines that exclusion fencing is warranted, the fencing design and location shall be reviewed and approved by USFWS to ensure that the fencing is of an appropriate height and is appropriately placed; the bottom of the fence is buried at least 12 inches below ground; and it is constructed in a manner that prevents Stephens' kangaroo rat from digging, crawling, or hopping under or over the fence. All fencing shall remain in place during soil-disturbing Covered Activities and it shall be removed under the direction of the Stephens' kangaroo rat Biologist.

vii. For applicable work areas where the erection of exclusion fencing is warranted, the Stephens' kangaroo rat Biologist shall also determine the need to conduct salvage trapping to remove Stephens' kangaroo rat from work areas. A final determination regarding the locations and plans for exclusion trapping shall be made by the Stephens' kangaroo rat Biologist in consultation with USFWS and CDFW, and the Stephens' kangaroo rat Biologist shall submit to USFWS and CDFW for review and approval, a detailed Stephens' kangaroo rat trap and release plan prior to any impacts to SKR-Habitat. Trapping of Stephens' kangaroo rat shall be conducted immediately preceding construction so as to minimize the likelihood that Stephens' kangaroo rats have an opportunity to re-inhabit the disturbance footprint. Trapping shall be conducted for at least 5 nights, with at least 2 consecutive nights of negative results at the end of the trapping session before construction begins. Should exclusion fencing be compromised in such a way that Stephens' kangaroo rat could enter the site during construction, repeat trapping may be conducted at the discretion of the Stephens' kangaroo rat Biologist.

viii. All Stephens' kangaroo rat individuals captured for removal from work areas shall be released into adjacent habitat.

ix. Biological monitoring reports shall be provided to USFWS and CDFW reporting the results of any Stephens' kangaroo rat trapping and salvage efforts. Reports shall be provided upon initiation of efforts, when there is a change in circumstance that affects Stephens' kangaroo rat, and at completion of construction.

x. Check the integrity of all excavation unit covers, soil stockpile tarps, exclusion fencing, and any additional measures meant to exclude the Stephens' kangaroo rat each morning before the start of work and each evening at the culmination of each workday in suitable SKR-Habitat.

xi. Each morning prior to commencement of work, check all equipment in suitable SKR-Habitat underneath and inside wheel wells for wildlife. Any Stephens' kangaroo rat or other animals encountered shall be removed and released in adjacent open habitat away from construction zones.

o. For pole replacement work in SKR-Habitat, the first 12 inches of the pole hole shall be dug by hand, when practicable.

p. Any excavation (i.e., pole holes, trenches, fence posts) in SKR-Habitat shall be done in accordance with the following measures:

i. Excavations shall be backfilled with the excavated native soil or covered each day at the completion of work. Excavations shall be covered using rigid boards or plates, which shall then be covered by a sheet of thick plastic sheeting, the edge of which shall be buried by dirt from the excavation or by gravel/sand bags to prevent or minimize intrusion by rodents or ground-dwelling animals.

ii. Open holes shall be fitted with a ¼-inch hardware cloth "net" located approximately 24 inches below the top of the hole to capture Stephens' kangaroo rat. The use of Sonotubes (i.e., round, concrete forming tubes) in lieu of hardware cloth nets may also be used to restrict wildlife from falling into open holes. Development and utilization of alternate techniques are acceptable with review and approval by USFWS and CDFW.

iii. Excavations shall be checked twice daily (morning and afternoon) to verify no Stephens' kangaroo rat individuals are in the hole or on the net. The number of daily checks may be reduced with approval by USFWS and CDFW. Any Stephens' kangaroo rat present on the net shall be removed and released into surface burrows in the immediate vicinity of the excavation.

iv. Any potential kangaroo rat burrows (note: gopher burrows are very similar in size to Stephens' kangaroo rat burrows) intersected by the dug holes shall be plugged to prevent or discourage access to the inner edge of the pole hole by rodents. Burrows shall be plugged with a circular cut piece of 2-by-4 slightly larger than the diameter of the burrow and secured in place with a rubber mallet.

q. To reduce the potential for direct impacts to Stephens' kangaroo rat, SDG&E access roads within SKR-Habitat shall be maintained by mowing or weed whacking with hand tools where this maintenance method is practicable and successful in maintaining reliable SDG&E vehicle and equipment access to SDG&E Facilities at all times.

r. For new projects, impacts to Stephens' kangaroo rat and SKR-Habitat shall only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Stephens' kangaroo rat habitat. However, not all Modeled Habitat is expected to support Stephens' kangaroo rat occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the Stephens' kangaroo rat Modeled Habitat, there are approximately 52,039 acres in the Plan Area and approximately 574 acres in the PIZ associated with existing SDG&E Facilities (Table 12). There are aliso 6 acres of suitable habitat (included in Modeled Habitat below) present for this species on the Moreno Compressor Station property. In San Diego County, the highest acreages of Stephens' kangaroo rat Modeled Habitat occur in the central foothills, northern mountains, and northern valley ecoregions. This species is not known or expected to in Orange County.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 20 and 4 Stephens' kangaroo rat occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2021 species review for Stephens' kangaroo rat included an analysis of the status of Stephens' kangaroo rat at different locations throughout its range. Each of the records included in the 2021 species review may represent one or more occurrences from the CNDDB. The 2021 species review identified six extant Stephens' kangaroo rat locations in San Diego County including MCBCP, Fallbrook Naval Weapons Station, Lake Henshaw/Warner Springs, Rancho Guejito, and Ramona grasslands. In addition, the Moreno Compressor Station property is within the area of maximum area of occurrences shown in species report.

The Stephens' kangaroo rat is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MHCP Subregional NCCP/HCP
- Western Riverside County MSHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP
- Stephens' Kangaroo Rat HCP

Together, these HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 16,618 acres of Modeled Habitat occur within Preserves and 8,367 acres of Modeled Habitat occur within Proposed Preserves (collectively, 48 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 5 occurrences of Stephens' kangaroo rat recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to on existing SDG&E mitigation lands.

The Plan Area overlaps with all of the conservation planning areas described in the draft recovery plan.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 14.92 acres of Stephens' kangaroo rat Modeled Habitat, which is a fraction of the 52,045 acres of Stephens' kangaroo rat Modeled Habitat in the Plan Area (Table 12). These impacts will include:

- Approximately 4.7 acres of permanent impacts (0.01 percent of Modeled Habitat in the Plan Area);
- Approximately 2.74 acres of temporary impacts (0.01 percent of Modeled Habitat in the Plan Area);
- Approximately 2.48 acres of Wildfire Fuels Management impacts (0.01 percent of Modeled Habitat in the Plan Area); and
- Approximately 5 acres of permanent impacts at the Moreno Compressor Station (0.01 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.04 percent of Stephens' kangaroo rat Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for burrowing owl. However, because Stephens' kangaroo rats are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[51] However, because it is difficult to define a threshold for impacts to

[51] Up to 0.04 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 11 Stephens' kangaroo rat occurrences in the Plan Area. The product of 0.04 percent and 11 is less than one.

occurrences or individuals (e.g., O&M activities could occur within a Stephens' kangaroo rat occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[52]

The suitable Stephens' kangaroo rat habitat around the Moreno Compressor Station Facility occurs within an approximately 180-acre property that consists primarily of former agricultural land that is disced on a regular basis, but dense non-native grassland grows on the property between discing events (ICF International 2014, Aardvark Biological Services, LLC (Aardvark) 2018, Sapphos Environmental, Inc. (Sapphos) 2020). A survey of the estimated project footprint in 2018 documented no Stephens' kangaroo rat (Aardvark 2018). Follow-up trapping was conducted in 2020 along an access road where potential burrows and kangaroo rat sign were observed. The 2020 survey documented a single Stephens' kangaroo rat adjacent to the access road (Sapphos 2020). In summary, the proposed expansion of the Moreno Compressor Station Facility will impact habitat that supports a very low density of Stephens' kangaroo rat, likely along existing roadways, and the project is embedded within a larger property that provides similar quality habitat for Stephens' kangaroo rat.

Occupied Stephens' kangaroo rat habitat is distributed around the Moreno Compressor Station Facility, particularly to the east, south, and west (Sapphos 2020). The expansion of the Moreno Compressor Station Facility would impact about 5 acres of Stephens' kangaroo rat habitat on an approximately 180-acre property. Both the project footprint and the remainder of the property consist of former agricultural land that is disced on a regular basis and likely supports a very low density of Stephens' kangaroo rat. Following project implementation, the great majority of habitat would remain on the property, and higher quality habitat off the property would not be impacted. In addition, Stephens' kangaroo rat would still be able to disperse through the property along and adjacent to existing roads. Thus, the proposed expansion of the Moreno Compressor Station Facility would have a minimal impact on the Stephens' kangaroo rat population in this area or on habitat connectivity.

Impacts from Covered Activities other than the Moreno Compressor Station Facility are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact Stephens' kangaroo rat and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Stephens' kangaroo rat will be evaluated for consistency with the HCP Amendment.

[52] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

Based on the known distribution of Stephens' kangaroo rat within the Plan Area other than the Moreno Compressor Station Facility and their specific habitat requirements (i.e., well-drained, friable soils with low perennial and annual cover interspersed with large areas of bare ground), we anticipate that only limited areas within Modeled Habitat support occurrences of Stephens' kangaroo rat. Therefore, it is likely that substantially less than 14.92 acres of occupied Stephens' kangaroo rat habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some individual Stephens' kangaroo rats will be killed or injured from crushing and trampling within up to 14.92 acres of Stephens' kangaroo rat Tracked Habitat that is impacted in association with the Covered Activities. They may also be trapped in stockpiled soils, holes, and trenches, created by Covered Activities, especially at night when they are active. Management and monitoring activities on mitigation lands could result in minor, temporary loss of Stephens' kangaroo rat habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 95 for Stephens' kangaroo rat are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a 15 miles-per-hour speed limit shall be observed on dirt access roads (OP 2), a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts Stephens' kangaroo rat, as specified in the OP 95 include the following restrictions while in Stephens' kangaroo rat habitat: avoid ground-disturbing activities and stay on roads to the maximum extent practicable; use of helicopters for pole replacement whenever possible if overland travel would otherwise be necessary; place plywood or other material over burrows to prevent collapse when it is necessary to drive over them; conduct work when soil is dry; avoid impacts to berms; conduct relocate individual species to avoid harm; install exclusionary fencing when feasible; avoid night-time construction; cover soil stockpiles, holes and trenches; and survey for and relocate any Stephens' kangaroo rats found in the project area.

Because of the extended time period over which the proposed activity will occur, the dispersed nature of the proposed activities, and fluctuations in the numbers and densities of Stephens' kangaroo rats on a seasonal and annual basis, it is not possible to quantify exactly how many Stephens' kangaroo rats may be subject to capture, handling, and relocation. Regardless, the numbers of Stephens' kangaroo rats relocated should be low due to the limited extent of Covered Activities. We are not limiting the number of Stephens' kangaroo rats that will be moved pursuant to this biological opinion since this is a conservation measure intended to move individuals out of harm's way. However, the number of Stephens' kangaroo rats observed within project footprints will be reported to the Service annually. Although Stephens' kangaroo rats could be killed, injured, or stressed during capture, handling, and relocation, these actions will minimize the likelihood that Stephens' kangaroo rats will be killed or injured during implementation of Covered Activities.

Unavoidable temporary, permanent and Wildfire Fuels Management impacts to Stephens' kangaroo rat Habitat will be mitigated at a 3:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that support high density occupancy of Stephens' kangaroo rat. SDG&E shall provide performance security for full implementation of the HCP Amendment as it pertains to Stephens' kangaroo rat. The performance security shall be a form determined and approved by the Service and CDFW, in the amount of $1,253,280.00. SDG&E shall fully complete all compensatory mitigation obligations for anticipated impacts to Stephens' kangaroo rat habitat outlined in the HCP Amendment (i.e., fully mitigate for 14.92 acres of impacts to Stephens' kangaroo rat habitat as described above) within 18 months of issuance of this HCP or otherwise risk forfeiture of the principal performance security sum.

In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Stephens' kangaroo rat habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Stephens' kangaroo rat within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Stephens' kangaroo rats within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to Stephens' kangaroo rat.

Because Covered Activities will impact a small fraction of the Stephens' kangaroo rat habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Stephens' kangaroo rat within the Plan Area or rangewide.

Effects from Erosion Lighting, Non-Native Species, Predation and Habitat Fragmentation

The Stephens' kangaroo rat could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to Stephens' kangaroo rat include the degradation of habitat outside the footprint of Covered Activities as a result of erosion, lighting, non-native species, predation and habitat fragmentation.

Erosion could adversely impact Stephens' kangaroo rats by creating erosion rills and exposing rocky substrate that is unsuitable for Stephens' kangaroo rats, but measures will be implemented to minimize erosion and runoff (OP 16, 19, 20, 22, 28, 39, and 50).

Project construction and new facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for Stephens' kangaroo rat. Night lighting can modify the behavior of snakes and other nocturnal animals (Lieberman 2002) and may have adverse impacts to Stephens' kangaroo rats and make them more vulnerable to predation. If night work is necessary, night lighting will be of the lowest illumination necessary for operational safety,

selectively placed, shielded and directed away from natural habitats, and any permanent lighting will be directed away and/or shielded so as not to illuminate habitats (OP 25).

The ground disturbance and landscaping associated with Covered Activities may facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants may out-compete and exclude native plants potentially altering the structure of the vegetation, degrading or eliminating upland habitat used by the Stephens' kangaroo rat, and providing food and cover for non-native animals (Bossard et al. 2000). Furthermore, the increased irrigation required by many common landscaping plants may provide suitable conditions for the establishment of introduced Argentine ants (*Linepithema humile*) within the adjacent habitat areas. Argentine ants can build large colonies and eliminate the native ant fauna that is a major food source of the Stephens' kangaroo rat (Ward 1987, Holway 1995, Human and Gordon 1997). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of Stephens' kangaroo rats.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, is expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Stephens' kangaroo rat dispersal/movement corridors that contribute to long-term population viability for Stephens' kangaroo rat. However, no large-scale New Construction is expected that could cause significant habitat fragmentation, and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from erosion, lighting, non-native species, predation and habitat fragmentation due to Covered Activities are not likely to result in a decrease in Stephens' kangaroo rat survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area overlaps with all of the conservation planning areas described in the draft recovery plan. The draft recovery plan identifies the need to preserve, manage, and monitor Stephens' kangaroo rat habitat to help meet the recovery criteria established for each of these conservation planning areas. The upland habitats included in the Plan Area are part of a system that provides important breeding, feeding, and sheltering habitat for the Stephens' kangaroo rat.

The proposed HCP Amendment does not conflict with the goals and objectives of the draft recovery plan. Although the proposed Covered Activities will impact habitat that is used by Stephens' kangaroo rats for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation and in-perpetuity management of occupied Stephens' kangaroo rat habitat. These mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the Stephens' kangaroo rat.

The proposed conservation of suitable Stephens' kangaroo rat habitat, and the associated in-perpetuity management of all conservation areas provided by the HCP Amendment will be consistent with the draft recovery plan strategy to preserve and protect significant populations of the Stephens' kangaroo rat throughout representative portions of its range. Therefore, the breeding, feeding, and sheltering functions degraded or destroyed due to unavoidable impacts to Stephens' kangaroo rat habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the draft recovery plan.

We expect no more than 14.92 acres of Stephens' kangaroo rat Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the Stephens' kangaroo rat habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any Stephens' kangaroo rat population within the Plan Area or rangewide.

<u>Conclusion</u>

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the Stephens' kangaroo rat. We base these conclusions on the following:

1. Impacts will be limited to no more a total of 14.92 acres of Stephens' kangaroo rat Tracked Habitat, which represents about 0.04 percent of Modeled Habitat for the Stephens' kangaroo rat in the Plan Area.

2. Based on the known distribution of the Stephens' kangaroo rat within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of Stephens' kangaroo rats. Therefore, it is likely that substantially less than 14.92 acres of occupied Stephens' kangaroo rats habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual Stephens' kangaroo rats will be harmed by Covered Activities.

4. Impacts to Stephens' kangaroo rat will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the draft recovery plan.

5. Because Covered Activities will affect a small proportion of the Stephens' kangaroo rat habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Stephens' kangaroo rat, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of Stephens' kangaroo rat in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help Stephens' kangaroo rat in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Pacific Pocket Mouse (Perognathus longimembris pacificus)

Status of the Species

Listing Status

The Pacific pocket mouse (*Perognathus longimembris pacificus*) is federally listed as endangered. A recovery plan was published in 1998 (Service 1998c). Five-year reviews completed in 2010 and 2020 recommended no change in listing status. Critical habitat has not been designated for this species.

Species Description

The Pacific pocket mouse is one of many subspecies of the little pocket mouse (*Perognathus longimembris*) and is in the Heteromyidae family, which includes kangaroo rats and pocket mice, and is characterized by fur-lined cheek pouches (Service 1998c). The Pacific pocket mouse is one of the smallest rodents in North America, measuring up to 5.2 inches in length (including the tail), and weighing 7 to 9 grams (Hall 1981). Its dorsal fur ranges from reddish brown to yellow brown to brown on the back, and its ventral fur is whitish.

Habitat Affinities

Historically, Pacific pocket mouse was concentrated in habitat within 2.5 miles of the coast in habitats with fine-grained sandy substrate, including coastal dunes, coastal strands, riverside alluvium, and eroding sandstone (Service 1998c). Vegetation communities occupied by Pacific pocket mouse typically consist of open coastal sage scrub and native grasslands (Service 1998c), but ongoing monitoring efforts have documented that non-native grassland is correlated with increased extirpation and decreased colonization while moderate to high forb cover is positively correlated with Pacific pocket mouse occupancy (Brehme et al. 2018).

Life History

The Pacific pocket mouse hibernates in the winter (Meserve 1972), coming above ground in the spring to begin foraging and breeding. During favorable years, females can have multiple litters, and young of the year can breed in the same season that they were born (Miller and Pavelka 2008). Pacific pocket mice are solitary and non-social; they exhibit intra-specific aggression towards each other, coming together primarily for breeding (Chock et al. 2018).

Status and Distribution

The Pacific pocket mouse is endemic to the immediate coast of southern California from Marina del Rey and El Segundo in Los Angeles County, south to the vicinity of the Mexican border in San Diego County (Hall 1981, Williams 1986, Erickson 1993). Since being listed as endangered in 1994, four populations of Pacific pocket mouse have been documented, including three populations (North San Mateo, South San Mateo, and Santa Margarita) on Camp Pendleton and one (Dana Point) in the City of Dana Point, Orange County. Despite extensive survey efforts that have been performed throughout its historical range since listing, no additional occurrences of Pacific pocket mouse have been found, and monitoring suggests the North San Mateo Pacific pocket mouse population has become extirpated (Brehme *et al*. 2012; Brehme *et al*. 2014).

Additionally, a captive breeding program was initiated by the San Diego Zoo Wildlife Alliance (Shier and Swaisgood 2020) and since 2016, Pacific pocket mice from the captive population have been introduced to Laguna Coast Wilderness Park in Orange County to try to create an additional population within the species' historic range. This effort has been challenged by poor to no overwinter survivorship of the released animals during some years but has also achieved successful reproduction of released animals during several years. Over the last 2 years, there has been good reproduction and relatively high over-winter survivorship of both released and wild born Pacific pocket mouse.

As described in the most recent 5-year review for Pacific pocket mouse (Service 2020e), the estimated habitat use for all populations on MCBCP was the lowest estimate of habitat use since monitoring began in 2012 (Brehme et al. 2019) and had declined by 65 percent since its peak in 2016 (Brehme et al. 2019). The Pacific pocket mouse population at Dana Point has undergone dramatic fluctuations in size in recent years. In 2017 a comprehensive live-trapping effort detected just 6 individuals (Miller 2017), but since then the population has rebounded, with 77 individuals detected and approximately 72 percent of available habitat estimated to be used by

Pacific pocket mouse during 2020; possibly in response to increased habitat management efforts (Brehme et al. 2020).

Genetic analyses indicate each of the extant populations has small effective population sizes (i.e., the number of individuals in a population that contribute genes to the next generation; Ne) (Wilder et al. 2020). The estimated effective population sizes at Dana Point, South San Mateo and Santa Margarita are respectively Ne=3.3, Ne= 25.0, and Ne=50.6 (Wilder et al. 2020). This suggests each of these populations is threatened by small population size, potential for inbreeding depression, and loss of genetic variation over time (Frankham et al. 2014).

Threats and Conservation Needs

The most recent 5-year review for Pacific pocket mouse identified the following threats for Pacific pocket mouse: project construction, military training activities, fire management practices, fire breaks and fuel breaks, road and utility maintenance, recreation activities and habitat disturbances, small population size, habitat fragmentation, non-native species, and climate change (Service 2020e). In addition, maturation of closed canopy coastal sage scrub can eliminate the open sandy areas, so in the absence of periodic fire, manual management of native vegetation is likely needed to maintain suitable habitat for Pacific pocket mouse (Brehme et al. 2020). The most immediate threats for Pacific pocket mouse likely include ongoing military training activities within about 300 acres of the Santa Margarita population, the need for continued use of prescribed fire to maintain open habitat in the Santa Margarita population, and the need for continued manual thinning of native and non-native vegetation in the Dana Point and South San Mateo populations.

Conservation needs for the species include managing non-native vegetation and controlling large native shrubs through fire and manual control, minimizing impacts from military training activities and other human disturbance, maintaining genetic health of Pacific pocket mouse populations, reintroducing Pacific pocket mouse into portions of its former range, and maintaining the captive breeding population of Pacific pocket mouse to facilitate genetic health management and reintroduction efforts (Service 2020e).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 97 the HCP Amendment will be implemented to avoid and/or minimize impacts to the Pacific pocket mouse:

97. Pacific Pocket Mouse (*Perognathus longimembris pacificus*)

    a. Impacts from Covered Activities to Pacific pocket mouse habitat (PPM-Habitat) shall be avoided through project design considerations, to the maximum extent practicable. PPM-Habitat is defined as Mapped Areas by the MCBCP in coordination with USFWS, and any other occupied areas found outside of MCBCP in the future. Mapped Areas of suitable habitat that comprise PPM-Habitat do not include areas of hardscape (i.e., concrete pads, paved roads, Facilities), existing and maintained access roads, and established work areas associated with SDG&E Facilities. If MCBCP or USFWS provides SDG&E with updated information on Pacific pocket mouse

populations, SDG&E shall coordinate, as needed, with MCBCP and USFWS to incorporate the updated information on Pacific pocket mouse populations into PPM-Habitat, including potential expansion or contractions of the PPM-Habitat. For areas outside of MCBCP that are within approximately 2.5 miles of the coast in habitats with fine-grained sandy substrate, including coastal dunes, coastal strands, riverside alluvium, and eroding sandstone, SDG&E shall coordinate with the USFWS to determine if habitat assessments and/or surveys for Pacific pocket mouse are needed. PPM-Habitat shall also be updated to include any additional Pacific pocket mouse populations found outside MCBCP.

b. Permanent impacts to PPM-Habitat that cannot be avoided shall be mitigated by a one-time in-lieu-fee payment of $592,950. This in-lieu-fee payment must occur prior to Covered Activities within PPM Habitat and shall be used to fund actions approved by the USFWS to mitigate unavoidable permanent impacts to PPM-Habitat. SDG&E shall provide funds to an in-lieu-fee sponsor, acting on behalf of SDG&E and approved by the Service, for the conservation and recovery of Pacific pocket mouse.

c. Temporary impact areas within PPM-Habitat shall be re-contoured to mimic the natural landscape when feasible. SDG&E shall determine the approach to re-contouring in consultation with the Pacific pocket mouse Biologist and the approach shall be described in the PSR.

d. Ground disturbance or vegetation clearing Covered Activities in PPM-Habitat shall be avoided to the maximum extent possible. Laydown/staging areas shall not be sited in PPM-Habitat.

e. Ground disturbance or vegetation clearing Covered Activities in PPM-Habitat shall be initiated when Pacific pocket mouse are active (April 15 through September 15). If ground disturbance or vegetation clearing Covered Activities cannot be initiated within this period, SDG&E shall coordinate with MCBCP Environmental Security and USFWS to determine if additional conservation measures are necessary.[53] Work during this period shall not be initiated until approved by MCBCP and USFWS.

f. Nighttime construction shall be avoided in and/or adjacent to occupied PPM-Habitat. If critical work during nighttime hours is necessary, a biological monitor shall conduct a clearance survey of the access road and work areas within 500 feet of occupied PPM-Habitat year-round.

g. Berms along the sides of access roads shall not be impacted within PPM-Habitat. All vehicles shall remain within the road prism during vegetation clearing and routine road maintenance. Overhanging vegetation on the berms shall be trimmed using hand tools and Pacific pocket mouse burrows shall be avoided.

[53] Should Pacific pocket mouse occur outside of MCBCP in the future, then SDG&E will coordinate directly with USFWS.

h. SDG&E vehicles shall remain on existing access roads in PPM-Habitat to the maximum extent practicable. See also OP 2 (speed limits).

i. Access route(s), including footpaths, shall be clearly marked with pin flags or similar flagging, which shall be followed by the vehicle driver. Vehicles shall proceed into the work site along the designated overland travel route and back out along the same route.

j. To distribute vehicle weight, plywood boards or alternate material as approved by the Biologist may be used to cover burrows within overland travel routes and work areas through PPM-Habitat.

k. For pole replacement work in PPM-Habitat, the first 12 inches of the pole hole shall be dug by hand, when practicable.

l. For ground disturbance or vegetation clearing occurring within PPM-Habitat, spoil piles left overnight shall be covered with tarps or plastic with the edges sealed with sandbags, bricks, or 2-by-4s to prevent Pacific pocket mouse from burrowing. Excavations shall be backfilled with the native soil or covered each day with material (e.g., plywood or solid metal grates with the edges sealed with sandbags, bricks, or 2-by-4s) that is sufficient to prevent Pacific pocket mouse from falling into excavations.

m. Any potential Pacific pocket mouse burrows intersected by the dug holes shall be plugged with a circular cut piece of 2-by-4 slightly larger than the diameter of the burrow and secured in place with a rubber mallet, to prevent or discourage access to the inner edge of the pole hole.

n. To reduce the potential for direct impacts to Pacific pocket mouse, SDG&E access roads within PPM-Habitat shall be maintained by mowing or weed whacking with hand tools where this maintenance method is practicable and successful in maintaining reliable SDG&E vehicle and equipment access to SDG&E Facilities at all times.

o. All work within PPM-Habitat shall occur during dry conditions when soil is not wet and susceptible to compaction from high moisture content. Because soil compaction potential is greatest when soil moisture is at or exceeds field capacity, as a general rule of thumb, work shall be avoided in wet soil conditions and within 72 hours of 0.5 inch of rainfall, unless someone familiar with soil texture analysis has probed the soil in the work areas and determined it to be sufficiently dry to support Covered Activities without an increased risk of soil compaction.

p. SDG&E shall retain a Pacific pocket mouse Biologist[54] approved by USFWS to review and monitor ground disturbance or vegetation clearing within PPM-Habitat. SDG&E shall submit resumes of qualified Pacific pocket mouse Biologists annually to USFWS, for approval prior to initiation of ground disturbance or vegetation clearing within PPM-Habitat. USFWS-approved Pacific pocket mouse Biologist shall be approved by MCBCP Environmental Security at least 15 days prior to the initiation of ground disturbance or vegetation clearing within PPM-Habitat. The Pacific pocket mouse Biologist shall be provided with a copy of this consultation. The Pacific pocket mouse Biologist shall be available during preconstruction and construction phases to address protection of sensitive biological resources, monitor ongoing work, and maintain communications with construction personnel to facilitate the appropriate and lawful management of issues relating to biological resources. The Pacific pocket mouse Biologist shall report any non-compliance issues to the SDG&E or contractor crew foreman/supervisor such that work can be halted if necessary and discussed with USFWS to ensure the proper implementation of species and habitat protection measures. SDG&E shall report all non-compliance issues to USFWS within 1 business day of being informed of the incident. The Pacific pocket mouse Biologist shall conduct the following activities that shall be addressed ahead of time in the PSR and approved by SDG&E:

i. At least 10 days prior to initiating ground disturbance or vegetation clearing within PPM-Habitat, the Pacific pocket mouse Biologist shall coordinate with MCBCP Environmental Security and USFWS on the implementation of the measures to minimize impacts to Pacific pocket mouse.

ii. Provide a tailgate briefing of the specific biological constraints required during Covered Activities to avoid and minimize impacts to Pacific pocket mouse.

iii. Prior to ground disturbance or vegetation clearing within PPM-Habitat, the approved Pacific pocket mouse Biologist shall conduct a survey to identify all potential Pacific pocket mouse burrows within and surrounding the project footprint and mark each one with a pin flag for avoidance.

iv. Prior to ground disturbance or vegetation clearing within PPM-Habitat, evaluate all project areas in habitat to determine the best available access routes that shall avoid or minimize disturbance to PPM-Habitat. Based on the survey findings, the Pacific pocket mouse Biologist may recommend the erection of exclusion fencing and salvage trapping for Pacific pocket mouse within discrete work areas where significant soil disturbance is proposed. Otherwise, the Pacific pocket mouse Biologist shall walk a safe distance in front of vegetation trimming personnel, equipment, and any other grading

[54] The Pacific pocket mouse Biologist will have completed at least 40 calendar nights performing small mammal live-trapping surveys, and will have handled at least 40 individual Pacific pocket mouse or individuals from another subspecies of *Perognathus longimembris*. The Pacific pocket mouse Biologist must also have experience using exclusion fencing to salvage and exclude small mammals from construction work areas, and/or experience performing small mammal translocations in the wild.

implements or project-related Covered Activities to assist crews in avoiding impacts to burrows potentially occupied by Pacific pocket mouse. The Pacific pocket mouse Biologist shall have stop-work authority to avoid unauthorized impacts to PPM-Habitat.

v. When there is potential for direct impacts to Pacific pocket mouse from ground disturbance or vegetation clearing and the Pacific pocket mouse Biologist determines that exclusion fencing is warranted, the fencing design and location shall be reviewed and approved by USFWS to ensure that the fencing is of an appropriate height and is appropriately placed; the bottom of the fence is buried 6–12 inches below ground; and it is constructed in a manner that prevents Pacific pocket mouse from digging, crawling, or hopping under or over the fence. All fencing shall remain in place during ground disturbance or vegetation clearing Covered Activities, and it shall be removed under the direction of the Pacific pocket mouse Biologist.

vi. For applicable work areas where the Pacific pocket mouse Biologist determines that the erection of exclusion fencing is warranted, the Pacific pocket mouse Biologist shall also determine the need to conduct salvage trapping to remove Pacific pocket mouse from work areas where there is a potential for direct impacts to Pacific pocket mouse. A final determination regarding the locations and plans for exclusion trapping shall be made by SDG&E and the Pacific pocket mouse Biologist in consultation with USFWS. SDG&E shall submit these plans in the PSR submittal to USFWS for review and approval including, if applicable, a detailed Pacific pocket mouse trap and release plan prior to any impacts to occupied PPM-Habitat. Trapping of Pacific pocket mouse shall be conducted immediately preceding construction so as to minimize the likelihood that Pacific pocket mice have an opportunity to re-inhabit the disturbance footprint. Trapping shall be conducted for at least 5 nights, with at least 2 consecutive nights of negative results at the end of the trapping session before construction begins.

vii. Each morning prior to commencement of work, check underneath all equipment for wildlife. Any Pacific pocket mouse or other animals encountered shall be removed and released in adjacent open habitat away from construction.

viii. Check the integrity of all excavation unit covers, soil stockpile tarps, and any additional measures meant to exclude the Pacific pocket mouse each morning before the start of work and each evening at the culmination of each workday in PPM-Habitat.

ix. Pacific pocket mouse captured from work areas shall either be donated to a pocket mouse captive breeding program, if one is in place, or released by the Pacific pocket mouse Biologist in consultation with USFWS.

x. Biological monitoring reports shall be provided to USFWS reporting the results of any Pacific pocket mouse trapping and salvage efforts. Reports shall be provided upon initiation of efforts, when there is a change in circumstance that affects Pacific pocket mouse, and at completion of construction.

q. For new projects, impacts to Pacific pocket mouse and PPM-Habitat shall only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5**.**

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Pacific pocket mouse habitat. However, not all Modeled Habitat is expected to support Pacific pocket mouse occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the Pacific pocket mouse Modeled Habitat, there are approximately 2,557 acres present within the Plan Area and approximately 183 acres within the PIZ associated with existing SDG&E Facilities on MCBCP (Table 12). While the PIZ buffer overlaps with the Dana Point Headlands, the SDG&E Facilities at this location are electric distribution lines within existing developed areas. Therefore, no impacts to Pacific pocket mouse and its habitat are expected at the Dana Point Headlands.

Since listing, four populations of Pacific pocket mouse have been documented, including three populations (North San Mateo, South San Mateo, and Santa Margarita) on Camp Pendleton, San Diego County, and one (Dana Point Headlands) in the City of Dana Point, Orange County. All these populations are within the Plan Area. Despite extensive survey efforts that have been performed throughout its historical range since listing, no additional occurrences of Pacific pocket mouse have been found, and monitoring suggests the North San Mateo Pacific pocket mouse population has become extirpated (Brehme *et al*. 2012; Brehme *et al*. 2014). This species is not known or expected to occur on the Moreno Compressor Station property or existing SDG&E mitigation lands.

The Pacific pocket mouse is not covered by any other existing regional HCPs. Therefore, there is no Modeled Habitat present within Preserves or Proposed Preserves associated with regional conservation efforts within the Plan Area.

The Plan Area includes all four known populations of Pacific pocket mouse on the Dana Point Headlands and MCBCP (including the North San Mateo Pacific pocket mouse population that has likely become extirpated) identified in the recovery plan (Service 1998c).

Effects of the Action

Because no impacts to Pacific pocket mouse and its habitat are expected at Dana Point Headlands, and no other populations are known or likely to occur outside of MCBCP, this analysis only includes Pacific pocket mouse Modeled Habitat and occurrences on MCBCP.

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 2.37 acres Pacific pocket mouse Modeled Habitat, which is a fraction of the 2,557 acres of Pacific pocket mouse Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 1.5 acres of permanent impacts (0.06 percent of Modeled Habitat in the Plan Area); and

- Approximately 0.87 acre of temporary impacts (0.03 percent of Modeled Habitat in the Plan Area).

Wildfire Fuels Management is not expected to occur in areas of Pacific pocket mouse Modeled Habitat.

This impact represents about 0.09 percent of Pacific pocket mouse Modeled Habitat within the Plan Area on MCBCP. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for and is known to be occupied by Pacific pocket mouse. The impacts will occur in the North San Mateo, South San Mateo, and Santa Margarita PPM occurrences. However, because it is difficult to define a threshold for impacts to occurrences or individuals (e.g., O&M activities could occur within a Pacific pocket mouse occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[55]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact Pacific pocket mouse and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Pacific pocket mouse will be evaluated for consistency with the HCP Amendment.

We anticipate that some individual Pacific pocket mouse will be killed or injured from crushing and trampling within up to 2.37 acres of Pacific pocket mouse Tracked Habitat that is impacted in association with the Covered Activities. They may also be trapped in stockpiled soils, holes, and trenches, created by Covered Activities, especially at night when they are active.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 97 for Pacific pocket mouse are anticipated to avoid,

[55] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a 15 miles-per-hour speed limit shall be observed on dirt access roads (OP 2), a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific measures that will avoid or minimize impacts to Pacific pocket mouse habitat, as specified in the OP 97 include the following restrictions while in Pacific pocket mouse habitat: avoid impacts to the extent feasible through project design considerations; laydown/staging areas shall not be sited in PPM-Habitat; ground disturbance or vegetation clearing Covered Activities in PPM-Habitat shall be initiated when Pacific pocket mouse are active (April 15 through September 15). If ground disturbance or vegetation clearing Covered Activities cannot be initiated within this period, SDG&E shall coordinate with MCBCP Environmental Security and the Service to determine if additional conservation measures are necessary.[56] Work during this period shall not be initiated until approved by MCBCP and the Service. In addition, SDG&E will avoid berms along the sides of access roads; mark all access routes; cover burrows with plywood boards or alternate material; dig the first 12 inches of pole holes by hand, when practicable; cover soil stockpiles, holes, and trenches; plug burrows intersected by the dug holes; maintain access roads by mowing or weed whacking with hand tools; perform work during dry conditions when soil is not wet and susceptible to compaction; conduct biological monitoring; trap and relocate individuals to avoid harm; install exclusionary fencing when warranted; avoid night-time construction; and survey for and relocate any Pacific pocket mice found in the project area.

Because of the extended time period over which the proposed activity will occur, the dispersed nature of the proposed activities, and fluctuations in the numbers and densities of Pacific pocket mice on a seasonal and annual basis, it is not possible to quantify exactly how many Pacific pocket mice may be subject to capture, handling, and relocation. Regardless, the numbers of Pacific pocket mice relocated should be low due to the limited extent of construction activities. We are not limiting the number of Pacific pocket mice that will be moved pursuant to this biological opinion since this is a conservation measure intended to move individuals out of harm's way. However, the number of Pacific pocket mice observed within project footprints will be reported to the Service annually. Although Pacific pocket mice could be killed, injured, or stressed during capture, handling, and relocation, these actions will minimize the likelihood that Pacific pocket mice will be killed or injured during implementation of Covered Activities.

Unavoidable temporary impacts to Pacific Pocket Mouse Modeled Habitat will be restored onsite through the R/E Program. Because mitigation through conservation in perpetuity is not possible on MCBCP, unavoidable permanent impacts to Pacific pocket mouse Modeled Habitat will be mitigated through an in-lieu fee that will be used to benefit the Pacific pocket mouse (e.g., funding the captive breeding program, reestablishing or expanding new Pacific pocket mouse populations, and/or enhancing habitat within existing Pacific pocket mouse populations).

Because Covered Activities will impact a small fraction of Pacific pocket mouse habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate

[56] Should Pacific pocket mouse occur outside of MCBCP in the future, then SDG&E will coordinate directly with the USFWS.

anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of the Pacific pocket mouse within the Plan Area or rangewide.

Effects from Erosion, Lighting, Non-Native Species, Predation, Fire and Habitat Fragmentation

The Pacific pocket mouse could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to Pacific pocket mouse include the degradation of habitat outside the footprint of Covered Activities as a result of erosion, lighting, non-native species, predation, fire and habitat fragmentation.

Erosion could adversely impact Pacific pocket mice by creating erosion rills and exposing rocky substrate that is unsuitable for Pacific pocket mice, but measures will be implemented to minimize erosion and runoff (OP 16, 19, 20, 22, 28, 39, and 50).

Project construction and new facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for Pacific pocket mouse. Night lighting can modify the behavior of snakes and other nocturnal animals (Lieberman 2002) and may have adverse impacts to the Pacific pocket mouse. If night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded and directed away from natural habitats, and any permanent lighting will be directed away and/or shielded so as not to illuminate habitats (OP 25),

The ground disturbance and landscaping associated with Covered Activities may facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants may out-compete and exclude native plants potentially altering the structure of the vegetation, degrading or eliminating upland habitat used by the Pacific pocket mouse, and providing food and cover for non-native animals (Bossard et al. 2000). Furthermore, the increased irrigation required by many common landscaping plants may provide suitable conditions for the establishment of introduced Argentine ants (*Linepithema humile*) within the adjacent habitat areas. Argentine ants can build large colonies and eliminate the native ant fauna that is a major food source of the Pacific pocket mouse (Ward 1987, Holway 1995, Human and Gordon 1997). In addition, human activity in the project area during construction may result in accumulation of trash and food, attracting predators of the Pacific pocket mouse.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species. The restoration of temporary impact areas is expected to minimize the spread of non-native plants. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not

include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not deposit or leave any food or waste at project sites (OP 9).

Approximately 64 percent of the Plan Area is in "High Fire Threat Districts" (HFTDs). The HFTD consists of Tier 2 areas, "where there is an elevated risk for destructive utility associated wildfires," and Tier 3 areas, "where there is an extreme risk for destructive utility associated wildfires." The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds, coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing facilities (e.g., electric lines) and O&M of these facilities are potential wildlife ignition sources and wildfire ignition sources may increase with construction of new facilities. In addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. An increase in fire frequency could suppress plant seed production, which is an important food resource for the Pacific pocket mouse, and also reduce structural plant cover that is needed for predator avoidance. However, periodic wildfires can also remove dense non-native grasses and dead plant material, increasing habitat suitability for Pacific pocket mouse (Brehme et al. 2017).

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007, after San Diego experienced some of the most destructive wildfires in the county's history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have developed and implemented programs to enhance situational awareness, which has increased SDG&E's ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment) and Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities (Section 8.5, pages 8 to16). For example, SDG&E will regularly maintain fire protection areas around facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas and equipping vehicles with shovels and fire extinguishers. Based on SDG&E's increased ability to monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP 10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Pacific pocket mouse dispersal/movement corridors that contribute to long-term population viability for the Pacific pocket mouse. However, no large-scale New Construction is expected that could cause significant habitat fragmentation, and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads. To the extent feasible and practicable, new Facilities will also be sited to avoid habitat to minimize fragmentation and disruption of wildlife movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat.

Based on the above, potential adverse effects from erosion, lighting, non-native species, predation, fire and habitat fragmentation due to Covered Activities are not likely to result in a decrease in Pacific pocket mouse survival or reproduction beyond baseline conditions.

Effects from Noise and Vibration

Use of heavy equipment during road maintenance and other Covered Activities could generate noise and vibrations that could detrimentally affect Pacific pocket mice in the surrounding habitat. Vibrations created by such equipment attenuate through the soil at various frequencies and can be transferred to the bodies of animals that reside underground. Laboratory studies show that the effects of low frequency vibrations on small mammals can include effects such as increased stress and ulcer formation in adult rodents and increased congenital malformation and reduced birth weight of pups (Sackler and Weltman 1966; Bantle 1971; Toraason et al. 1980; Seidel and Griffin 1998; Rubin et al. 2007). However, we do not have a detailed understanding of the potential effects from short term construction-related vibrational impacts on rodents in natural systems.

Our best information regarding potential effects to Pacific pocket mouse from construction related noise and vibration comes from observations made during implementation of the MCBCP Pacific pocket mouse monitoring program. One such observation was made at South San Mateo during 2012, when a large bulldozer graded a fire break through habitat that was being monitored for Pacific pocket mouse at the time of grading. Immediately prior to this incident, monitoring documented Pacific pocket mice at 30 locations about 200 feet of the grading footprint, but monitoring following the impact failed to detect use of the fire break and surrounding area by Pacific pocket mice for five years following the impact (Brehme and Fisher 2012; Brehme et al. 2014; Brehme et al. 2017; Brehme et al. 2018). Thus, although the manner that Pacific pocket mice were harmed by noise and vibration from the grading incident is unclear (e.g., possible burrow collapse and immediate death or injury, or flight and displacement from the area), loss of Pacific pocket mouse activity in this area suggests that they were directly harmed within an area that extended beyond the immediate soil disturbance footprint. However, other observations of Pacific pocket mouse utilizing habitat adjoining the location of grading impacts immediately following grading events have not revealed such long term habitat abandonment (Brehme 2014; Brehme et al. 2018), and suggests the severity and duration of these impacts could vary in association with soil type, equipment used, duration of disturbance, and status and activity of the Pacific pocket mouse population at the time of impact (Service 2019e). Because most Covered Activities are anticipated to have substantially less noise and vibration than the road grading

observed in 2012, we have estimated that noise and vibration effects will extend about 100 feet from the SDG&E access roads within the two Pacific pocket mouse populations on Camp Pendleton. Because we do not know where the expected 1.5 acres of permanent impacts to Pacific pocket mouse Modeled Habitat will occur, we used a hypothetical 1.5-acre segment of a 40-foot-wide road buffered by 100-feet on all sides to estimate that noise and vibration would affect about 8.55 acres of Pacific pocket mouse Modeled Habitat, representing about 0.33 percent of the 2,557 acres of Pacific pocket mouse Modeled Habitat on Camp Pendleton.

Thus, we anticipate that noise and vibration from Covered Activities will harm Pacific pocket mice within habitat up 100 feet from the project footprint, but that the number of Pacific pocket mice and the amount of habitat affected in this manner will vary based on the nature of the activity, with activities such as vegetation trimming resulting in little to no effects from noise and vibration and activities such as road grading with heavy equipment resulting in more substantive impacts. Because these activities will generally be conducted within small geographic areas and will occur periodically for the duration of the permit term, we anticipate that noise and vibration from Covered Activities will impact a small percentage of the individuals within each affected population and will not result in an appreciable reduction in the numbers, reproduction, or distribution of the Pacific pocket mouse within the Plan Area or rangewide.

Because mitigation through conservation in perpetuity is not possible on MCPBCP, unavoidable noise and vibration impacts to Pacific pocket mouse Modeled Habitat will be mitigated through an in-lieu fee that will be used to benefit the Pacific pocket mouse (e.g., funding the captive breeding program, reestablishing or expanding new Pacific pocket mouse populations, and/or enhancing habitat within existing Pacific pocket mouse populations).

Effect on Recovery

The Plan Area includes all four known populations of Pacific pocket mouse on the Dana Point Headlands and MCBCP (including the North San Mateo Pacific pocket mouse population that has likely become extirpated) identified in the recovery plan (Service 1998c). To achieve the recovery goals for the Pacific pocket mouse, the recovery plan identifies the need to: stabilize the existing populations by protecting currently occupied habitat, including searching for additional populations; and establishing additional populations through: 1) natural colonization/ recolonization into nearby and adjacent habitats, coupled with habitat management in these areas, and 2) translocation and/or the release of captive-bred individuals. The upland habitats included in the Plan Area are part of a system that provides important breeding, feeding, and sheltering habitat for the Pacific pocket mouse.

The proposed HCP Amendment does not conflict with the goals and objectives of the recovery plan. As discussed above, no impacts to Pacific pocket mouse are expected at Dana Point Headlands. Although the proposed Covered Activities will impact habitat on MCBCP used by the Pacific pocket mouse for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be offset through payment of an in-lieu fee that will be used to benefit the Pacific pocket mouse. In addition, the R/E Program will ensure that temporary impact areas are restored

for use by this species. Thus, the in-lieu fee and restoration are expected to support recovery of the Pacific pocket mouse.

We expect no more than 10.92 acres (2.37 acres direct and 8.55 acres from noise and vibration) of Pacific pocket mouse Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the Pacific pocket mouse occupied habitat and populations in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any Pacific pocket mouse population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the Pacific pocket mouse and will not result in the destruction or adverse modification of its critical habitat. We base these conclusions on the following:

1. Impacts will be limited to no more a total of 10.92 acres (2.37 acres direct and 8.55 acres from noise and vibration) Pacific pocket mouse Tracked Habitat, which represents about 0.42 percent of Modeled Habitat for the Pacific pocket mouse in the Plan Area.

2. General and species-specific OPs will reduce the likelihood that Pacific pocket mouse individuals will be harmed by Covered Activities.

3. Impacts to Pacific pocket mouse will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated by an in-lieu fee that will be used to benefit and support the recovery of this species.

4. Because Covered Activities will affect a small proportion of the Pacific pocket mouse Modeled Habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of Pacific pocket mouse in the Plan Area or rangewide.

Listed Plants

San Diego Thornmint (Acanthomintha ilicifolia)

Status of the Species

Listing Status

The Service listed San Diego thornmint (*Acanthomintha ilicifolia*) as threatened on October 13, 1998 (63 FR 54938). A 5-year review for San Diego thornmint was completed in August 2022

(Service 2022c). Critical habitat was designated for this species on August 26, 2008 (73 FR 50496). A recovery plan has not been prepared.

Species Description

San Diego thornmint is an annual member of the mint family. It is a low annual, with stems branching from the base. This plant ranges in height from 2 to 6 inches and has white, two-lipped, tubular flowers with rose-colored markings on the lower lip (Jokerst 1993). Members of this genus have paired leaves and several sharp, spiny bracts (modified leaves) below whorled flowers. San Diego thornmint can be distinguished from other members of its genus by its flower, which has hairless anthers and style. The tubular, two-lipped corollas (petals) are white with rose markings on the lower lip. The only other *Acanthomintha* species occurring in southern California (*A. obovata*) has four fertile, woolly, or pubescent anthers and is known from north Ventura County (Bittman 1991).

Habitat Affinities

San Diego thornmint usually occurs on heavy clay soils in open areas surrounded by shrubby vegetation. These openings are generally found within coastal sage scrub, chaparral, and native grassland of coastal San Diego County and south to San Telmo in northern Baja California, Mexico (Beauchamp 1986, Reiser 1996). San Diego thornmint is frequently associated with gabbro soils, which are derived from igneous rock, and gray calcareous clays derived from soft calcareous sandstone (Oberbauer and Vanderwier 1991a). The soils derived from gabbro substrates are red to dark brown clay soils, and those derived from soft calcareous sandstone are gray clay soils. San Diego thornmint occurs on isolated patches of these clay soils known as "clay lenses."

In San Diego County, California, and northern Baja California, Mexico, clay lenses are known to support a variety of narrow endemic (restricted to a specific geographic area) plants. Clay lenses tend to have an open or unpopulated look because many common species cannot tolerate living on these clay soils. Clay lenses are typically devoid of woody, perennial shrubs and instead are inhabited by forbs, native grasses, and geophytes (perennial plants propagated by buds on underground bulbs, tubers, or corms, such as lilies, iris, and onions) (Oberbauer and Vanderwier 1991a). Due to the absence of most common native vegetation from clay lenses, the areas where San Diego thornmint occurs appear as open areas surrounded by areas populated by denser vegetation. Native plant species that characterize the vegetation found with San Diego thornmint on clay lenses include erect evax (*Hesperevax sparsiflora* var. *sparsiflora*), Palmer's grappling-hook (*Harpagonella palmeri*), bindweed (*Convolvulus simulans*), mock parsley (*Apiastrum angustifolium*), and small flowered microseris (*Microseris douglasii* ssp. *platycarpha*) (Bauder *et al*. 1994, McMillan 2006).

Clay lenses generally form on gentle slopes. An analysis of 20 sites where San Diego thornmint was observed found that the slopes range from 0 to 25 degrees, with the majority of the sites having slopes below 20 degrees (Bauder *et al*. 1994). This study found that many thriving, natural populations were on slopes that faced southeast, south, southwest, and west (Bauder *et al*. 1994). The known populations of San Diego thornmint range in elevation from sea level to 3,000 feet. San Diego thornmint occurs on soils mapped as Las Posas, Olivenhain, Redding,

Huerhuero, Altamont, Cieneba, and Linne (Service GIS database; soils described by Bowman 1973).

The Conservation Biology Institute (CBI), in association with the CDFW and the San Diego Management and Monitoring Program (SDMMP), conducted a study to characterize the soil chemistry and other attributes that define suitable habitat for San Diego thornmint. This study found that the clay soil that San Diego thornmint is restricted to must be particularly low in sand and metal content (Conservation Biology Institute (CBI) 2018). While San Diego thornmint does occur on gabbroic soils, which tend to be metal-rich, these soils weather easily (Medeiros et al. 2015). Therefore, CBI concluded that it is the weathering properties, rather than the chemical content, that promotes the occurrence of San Diego thornmint on gabbroic clays (CBI 2018). Overall, the soil variables influencing San Diego thornmint presence are: (1) clay presence (42–52 percent), (2) low sand content (25–35 percent), and (3) low metal content.

Life History

The texture and structure of the clay lenses are essential for supporting the seedling establishment and growth of San Diego thornmint. This soil provides many small pockets and deeper fissures where seeds from San Diego thornmint become lodged as they fall from decomposing plants (Bauder and Sakrison 1999). The seeds stay in the soils until the temperatures become cooler in the winter months and the soil becomes saturated with the winter rains (Bauder and Sakrison 1997). The seedlings then germinate and grow to mature plants. These plants do best when they are not crowded or shaded by other plants (Bauder and Sakrison 1999). The loose, crumbly texture of the soil provides the proper substrate to hold the seed bank and allow for root growth.

San Diego thornmint flowers from April to May (Munz 1974, Bittman 1991) and remains erect and retains its distinct shape well into the dry season (Reiser 1996). San Diego thornmint is an outcrosser that is insect pollinated and may rely on animal vectors, in part, for seed dispersal. While this annual can be raised from seed, suitable friable clay microhabitats are uncommon and place strict limitations on the establishment of new populations (Reiser 1996).

The breeding system of San Diego thornmint has not been studied, but it has been determined that other members of the genus *Acanthomintha* are self-compatible.

Klein (2009) conducted flower observations to determine potential pollinators of San Diego thornmint. The most effective pollinators observed were bees from the Apidae and Halictidae families (Klein 2009). Klein also determined that the most effective pollinators were 0.24 inches or smaller, and it is unlikely that San Diego thornmint is pollinated by a specialist or specialists (Klein 2009).

Status and Distribution

San Diego thornmint is a clay soil endemic (Beauchamp 1986, Bittman 1991) found only in San Diego County, California south to San Telmo in northern Baja California, Mexico. In San Diego County, the species is known from 36 extant occurrences. The occurrences are located across the county from Oceanside and San Marcos south to Sweetwater and Otay Mesa, and east to Ramona and Alpine (Beauchamp 1986, Service 2022c). As of 2022, there are 25 documented

occurrences, including 12 extant, 9 presumed extant, 1 possibly extirpated, and 3 extirpated (Service 2022c).

Populations of this species range from just a few individuals to several thousand plants. The majority of the known populations range from 50 to 2,000 plants. The abundance of standing individuals of San Diego thornmint fluctuates annually at each occurrence. At occurrences surveyed over a number of years, the size of an occurrence can differ by an order of magnitude (City of San Diego 2005). Additionally, a uniform surveying methodology has not been used throughout the species range, and occurrences have not been surveyed consistently on an annual basis. Therefore, the abundance of San Diego thornmint is difficult to compare between sites and over time. Nonetheless, there are four populations that stand out as the largest, each having greater than 25,000 plants.

These four large populations of San Diego thornmint are located at Sycamore Canyon, Slaughterhouse Canyon, Viejas and Poser Mountains, and Hollenbeck Canyon and represent approximately 75 percent of the estimated total number of individuals of this species. These four populations are vital for recovery of this species and occur within large blocks of conserved open space that are less likely to be impacted by edge effects associated with the smaller populations in highly urbanized areas. The conservation of these large populations helps ensure persistence of the species across its range and supports the overall recovery of this species. Smaller populations of San Diego thornmint are also known from the southeast portion of the City of Carlsbad, the Manchester Avenue Mitigation Bank, Los Peñasquitos Canyon, Sabre Springs, McGinty Mountain San Marcos, Poway, the Lake Hodges area, El Capitan, and Jamul (Service GIS database).

Threats and Conservation Needs

Currently, the greatest threat to San Diego thornmint is the threat to its habitat caused by non-native plant species. When exotic plant species become established, they can out-compete San Diego thornmint for light, water, nutrients, and space. San Diego thornmint often grows larger and at a higher density when competition with exotic weeds is reduced (Bauder and Sakrison 1999).

To a lesser degree, the threats associated with the proximity to urbanized areas and recreational activities still impact this species. At a limited number of sites, activities such as discing, mowing, and off-road vehicle activity impact occurrences of San Diego thornmint. Fire also poses a potential threat to this species' habitat. Threats to San Diego thornmint from direct loss of habitat to development have been minimized, as 71 percent (Service 2009c) of the known occurrences are on conserved lands.

Conservation needs include protecting, managing, and monitoring habitat supporting known extant populations. Although we cannot predict the exact effects of climate, it is likely that climate change will exacerbate identified threats and may introduce new additional threats. Monitoring changing climate (spatial and temporal shifting of temperature and precipitation) would improve management for a plant such as San Diego thornmint given its narrow habitat requirements and high sensitivity to stressors.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to San Diego thornmint:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts. Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied San Diego thornmint habitat. However, not all Modeled Habitat is expected to support San Diego thornmint occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on San Diego thornmint Modeled Habitat, there are approximately 43,598 acres in the Plan Area and approximately 4,960 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of San Diego thornmint Modeled Habitat occur in the north coast, the northern valley, and central coast ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 70 and 36 San Diego thornmint occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2010 5-year review for San Diego thornmint included an analysis of the status of San Diego thornmint at different locations throughout its range. Each of the records included in the 2010 5-year review may represent one or more occurrences from the CNDDB. The 2010 5-year review identified ten regional locations in San Diego County that support San Diego thornmint including Camp Pendleton, Carlsbad, San Marcos, Ramona, Del Mar Mesa, Carmel Mountain, Mira Mesa, MCAS Miramar, Otay Lakes, and Otay Mesa. In 2003, the City of San Diego conducted a study that documented 28 occurrences within their jurisdiction (City of San Diego 2004), and surveys on MCAS Miramar since 1993 have documented San Diego thornmint within 20 vernal pool complexes (Black 2004).

San Diego thornmint is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- San Diego MHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 15,180 acres of Modeled Habitat occur within Preserves, and 2,538 acres of Modeled Habitat occur within Proposed Preserves (collectively, 40 percent of all Modeled Habitat) associated with these HCPs within the Plan Area. In addition, 56 occurrences of San Diego thornmint recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species has a moderate potential to occur on SDG&E's Cielo and Willow Glen mitigation lands and has a high potential to occur on the Otay Lakes mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 85.64 acres of San Diego thornmint Modeled Habitat, which is a fraction of the 43,598 acres of San Diego thornmint Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 40.58 acres of permanent impacts (0.09 percent of Modeled Habitat in the Plan Area);

- Approximately 23.66 acres of temporary impacts (0.05 percent of Modeled Habitat in the Plan Area); and

- Approximately 21.40 acres of Wildfire Fuels Management impacts (0.05 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.19 percent of San Diego thornmint Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for San Diego thornmint. However, because San Diego thornmint is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[57] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied San Diego thornmint habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[58]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact San Diego thornmint and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to San Diego thornmint will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of San Diego thornmint within the Plan Area and its specific habitat requirements (i.e., sandy loam or clay soils; upper flood terraces), we anticipate that only limited areas within Modeled Habitat support occurrences of San Diego thornmint. Therefore, it is likely that substantially less than 85.64 acres of occupied San Diego thornmint habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

[57] Up to 0.19 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 70 San Diego ambrosia occurrences in the Plan Area. The product of 0.19 percent and 33 is less than one.
[58] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

We anticipate that some individual San Diego thornmint will be killed or injured within up to 85.64 acres of San Diego thornmint Tracked Habitat that is impacted in association with the Covered Activities. San Diego thornmint could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of San Diego thornmint habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for narrow endemic plants are anticipated to avoid, minimize, and mitigate the direct impacts to San Diego thornmint associated with Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to San Diego thornmint habitat, as specified in OP 76 include: 1) when work occurs within a known or potential area of occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts, and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to San Diego thornmint occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to San Diego thornmint occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of San Diego thornmint habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual San Diego thornmint within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of San Diego thornmint within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to San Diego thornmint.

Because Covered Activities will impact a small fraction of San Diego thornmint habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate

anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of San Diego thornmint within the Plan Area or rangewide.

Effects from Non-Native Plants, Fire, and Habitat Fragmentation

San Diego thornmint could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to San Diego thornmint include the degradation of habitat outside the footprint of Covered Activities as a result non-native plants, fire, and habitat fragmentation.

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat necessary for San Diego thornmint. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of San Diego thornmint.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Approximately 64 percent of the Plan Area is in "High Fire Threat Districts" (HFTDs). The HFTD consists of Tier 2 areas, "where there is an elevated risk for destructive utility associated wildfires," and Tier 3 areas, "where there is an extreme risk for destructive utility associated wildfires." The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds, coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing Facilities (e.g., electric lines) and O&M of these Facilities are potential wildlife ignition sources and wildfire ignition sources may increase with construction of new Facilities. In addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. The primary

concern with frequent megafires is the plant mortality associated with these extensive and intense events which may kill individual plants and thereby potentially precludes recolonization of burned areas containing San Diego thornmint.

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007, after San Diego experienced some of the most destructive wildfires in the county's history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have developed and implemented programs to enhance situational awareness, which has increased SDG&E's ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment) and Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities (Section 8.5, pages 8 to16). For example, SDG&E will regularly maintain fire protection areas around Facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas and equipping vehicles with shovels and fire extinguishers. Based on SDG&E's increased ability to monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP 10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting San Diego thornmint dispersal that contributes to long-term population viability for San Diego thornmint. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat in order to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from non-native plants, fire, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in San Diego thornmint survival or reproduction beyond baseline conditions.

Effect of Recovery

Conservation and recovery of San Diego thornmint is largely being accomplished through the development and implementation of regional NCCP/HCP planning efforts in San Diego County. The entire range of San Diego thornmint is covered by these efforts. Three regional NCCP/HCPs covering San Diego thornmint are now in place. Although these NCCP/HCPs allow for minimal impacts to San Diego thornmint through destruction of habitat, these plans also regulate and mitigate such actions. These NCCP/HCPs are making substantial contributions to the conservation of San Diego thornmint by creating a network of managed preserves with core habitat areas that are linked across the broader landscape.

Implementation of the HCP Amendment is consistent with the Service's efforts to recover San Diego thornmint through regional NCCP/HCP planning efforts in San Diego County. The Plan Area for the SDG&E's subregional plan overlaps and is compatible with several of the broader NCCP/HCPs within the region. Although the proposed Covered Activities will impact habitat that is used by San Diego thornmint for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts to San Diego thornmint occupied habitat will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to be integral to our ongoing NCCP/HCP regional planning efforts and thus support recovery of San Diego thornmint.

We expect no more than 85.64 acres of San Diego thornmint Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of San Diego thornmint habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to the species, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any coastal San Diego thornmint population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of San Diego thornmint. We base this conclusion on the following:

1. Impacts will be limited to no more than 85.64 acres of San Diego thornmint Tracked Habitat, which represents about 0.19 percent of Modeled Habitat for San Diego thornmint in the Plan Area.

2. Based on the known distribution of San Diego thornmint within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of San Diego thornmint. Therefore, it is likely that substantially less than 85.64 acres of occupied San Diego thornmint habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual San Diego thornmint will be harmed by Covered Activities.

4. Impacts to San Diego thornmint will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

5. Because Covered Activities will affect a small proportion of San Diego thornmint habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by San Diego thornmint, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any San Diego thornmint population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain San Diego thornmint in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

San Diego Ambrosia (Ambrosia pumila)

Status of the Species

Listing Status

The Service listed the San Diego ambrosia (*Ambrosia pumila*) as endangered on July 2, 2002 (67 FR 44372). A recovery plan has not been developed for this species. The most recent 5-year review for San Diego ambrosia was completed in August 2021 and recommended no change in the listing status (Service 2021g).

Species Description

San Diego ambrosia is a clonal, perennial herb in the Asteraceae (sunflower) family that arises from a branched system of rhizome-like roots (Service 1999b). This rhizomatous perennial habit results in groupings of aerial stems, often termed clones, that are, or at least were at one time, all attached to one another. The aerial stems are 2 to 12 inches, rarely to 20 inches, tall and densely covered with short hairs. The leaves are 3 to 4 times pinnately divided into many small segments and are covered with short, soft, gray-white, appressed hairs. This species is wind-pollinated and flowers from May through October with separate male and female flower clusters (heads) on the same plant. The male flowers are yellow to translucent and are borne in clusters on terminal racemes (flower stalks). The female flowers have no petals and are yellowish-white. Female flowers are in clusters in the axils of the leaves below the male flower clusters (Nuttall 1840, Gray 1882, Munz 1935, Keck 1959a, Ferris 1960, Munz 1974, Beauchamp 1986, Payne 1993).The fruiting heads are enclosed by cup-like structures that have no spines, although some reports note a few vestigial spines. *Ambrosia pumila* may be distinguished from other species of *Ambrosia* in the area by its leaves, which are twice divided, involucres (cup-like structures) lacking hooked spines, and lack of longer stiff hairs on the stems and leaves (Service 1999b).

Habitat Affinities

San Diego ambrosia occurs in open habitats in coarse substrates near drainages and in upland areas on clay slopes. These habitats are usually associated with sandy alluvium or riverwash type soils. Ambrosia also occurs in a variety of associations dominated by sparse grasslands or marginal wetlands, such as river terraces, pools, and alkali playas (Munz 1974, Reiser 1994). Reiser (1994) noted that San Diego ambrosia may also occur in creek beds and willow woodlands lacking tree canopies. Dudek (2003) found San Diego ambrosia in sandy loam textured soils that were moderately acidic (pH ranging from 4.48 to 5.77) and low in salinity. San Diego ambrosia generally occurs at low elevations (i.e., less than 600 feet in San Diego County) (Payne 1996). Commonly associated species include native and non-native grasses (*Nasella* spp., *Avena* spp., and *Bromus* spp.), yellow star-thistle (*Centaurea melitensis*), western ragweed (*Ambrosia psilostachya*), fascicled tarweed (*Hemizonia fasciculate*), graceful tarplant (*Holocarpha virgate*), saltgrass (*Distichlis spicata*), and dove weed (*Eremocarpus setigerus*).

Life History

San Diego ambrosia is a clonal, herbaceous perennial plant species in the family *Asteraceae* (Munz 1974). Other than its clonal growth, the life history strategies of this species are largely unknown. San Diego ambrosia is sensitive to seasonal conditions and variations causing the amount of above ground mass to fluctuate from year to year. Flowers are generally present from May through October (Munz 1974).

Because the male flowers are downward facing and positioned above the female flowers, some suggest that San Diego ambrosia is self-compatible. However, wind pollinated species typically have the male flowers above the female flowers, and no self-compatibility studies have been conducted to clearly demonstrate that the species can self-pollinate. In addition, because most *Ambrosia* species are wind pollinated, San Diego ambrosia is thought to be wind pollinated (Payne 1996).

Genetic research confirms the presence of multiple stems of multiple genotypes at nine plots across three populations in San Diego and western Riverside counties (McGlaghlin and Friar 2007). Researchers found 31 distinct genotypes across the three populations sampled. Their findings suggest that sexual reproduction has occurred sometime in the past and that closely associated stems within an occurrence are not always clones of a single genotype but can consist of distinct genotypes. Based on the genetics study and seed viability studies by Dudek (2000) and Corona-Bennett et al. (2003), sexual reproduction likely occurs infrequently, with the timing and extent of this sexual reproduction unknown.

Propagation in clonal perennials is thought to be primarily through extensions of rhizome-like root structures. The species propensity to spread asexually suggests that local population expansion may be by rhizome-like structures while speculation is that longer distance dispersal may have been by flood disturbance (Dudek 2000). Because of the clonal nature of San Diego ambrosia's growth, it is not possible to directly determine the number of genetically distinct plants present in an area simply by counting stems (McGlaughlin and Friar 2007). McGlaughlin and Friar's (2007) analysis of clonality in San Diego ambrosia determined that the aerial stem-to-genet ratio is roughly 10-to-1 on average [about 1 genet for every 10 aerial stems counted in a

patch (cluster of stems)]. A patch constitutes a spatially distinct cluster of stems within an occurrence, whereas an occurrence constitutes a group of individuals separated from the next nearest group of individuals by a distance greater than or equal to 0.25 mile.

Status and Distribution

San Diego ambrosia is endemic (occurs only within a very small geographic area) to southern California and northern Baja California, Mexico. This species is distributed from western Riverside County and western San Diego County, California, south in widely scattered populations along the west coast of Baja California, Mexico (Munz 1974, Reiser 1994). Additional populations occur in the central highlands of Baja California in the vicinity of Laguna Chapala near Catavina (Burrascano 1997). The complex of populations near Laguna Chapala reportedly contains the largest number of individuals. The status of populations between Cabo Colonet and the United States border are less certain and are rapidly disappearing due to recreational uses, development, and agricultural conversion.

At listing, 15 native occurrences of San Diego ambrosia were considered extant in the United States: 3 in Riverside County and 12 in San Diego County (Service 2002c). In the 2021 5-year reviews, we estimated that there are currently 40 occurrences in the United States: 7 in Riverside County, 32 in San Diego County (including 11 extant translocations), and 1 in Los Angeles County (Service 2021g). In addition, the species is known from three geographic areas in northern Baja California, Mexico and two records from southern Baja California.

Threats and Conservation Needs

The 2002 listing rule identified potential threats to San Diego ambrosia from: 1) development, including utility and highway construction, 2) nonnative plants, 3) mowing/discing; 4) trampling and grazing, and 5) inadequate regulatory mechanisms (Service 2002c). The 2010 5-year review identified habitat fragmentation and climate change as additional threats to the species and that grazing was no longer a threat (Service 2010d). We no longer consider inadequate regulatory mechanisms to be a threat (Service 2021g).

Conservation needs include protecting, managing, and monitoring habitat supporting known extant populations. At the 2010 5-year review, some degree of conservation was afforded to 11 of 16 occurrences of San Diego ambrosia (Service 2010d). Of the 26 extant, natural occurrences of San Diego ambrosia in the United States, only 6 are completely conserved, and 9 are partially conserved (Service 2021g). The remaining 11 occurrences are not conserved and are more vulnerable to habitat loss from urban development. Protections afforded under the approved, regional HCPs (MSCP, MHCP, MSHCP) have decreased but not eliminated major habitat loss and alteration. Currently approved HCPs afforded protection to 11 natural occurrences and 6 translocations through direct conservation of habitat or a regulatory framework to address impacts. Overall, 41 percent (78.4 of 191.8 acres) of occupied habitat (natural, extant records) is considered conserved, typically with some degree of management including 15.1 of 54.4 acres (28 percent) in Riverside County and 63.4 of 137.4 acres (46 percent) in San Diego County (Service 2021g). However, the proportion of known occurrences preserved is unchanged since the 2010 5-year review, despite a 73 percent increase in occurrences. None of the record in Baja California, Mexico is conserved or provided regulatory protection.

A 2012 study evaluated strategies for managing nonnative annual plants in San Diego ambrosia occupied habitat (Hasselquist et al. 2012). Mowing, hand-pulling, and post-emergence grass-specific herbicide (Fusilade II) applications were evaluated for effectiveness at two grassland sites in San Diego County dominated by nonnative grasses (Mission Trails) and nonnative herbs (San Diego National Wildlife Refuge). The study found an increase in San Diego ambrosia stems when nonnative plant species were controlled, documenting that nonnative species compete for resources and space (Hasselquist et al. 2012). Hand-pulling was most effective in increasing San Diego ambrosia cover and reducing nonnative plant cover; the results were hypothesized to be related to competitive release and the fact that the species response was favorable to disturbance. The authors were not certain if the reduced effectiveness of mowing and herbicide treatments were confounded by the increased litter remaining in plots after treatment that can reduce sunlight at the soil surface and recruitment. Fusilade II was also effective in controlling nonnative *Erodium sp*., although it is not a grass species.

Conservation needs for the species including developing a habitat suitability model and conducting additional surveys on potentially suitable habitat to identify any occurrences that are currently unknown, conserving known populations that are currently unprotected, restoring and enhancing habitat supporting San Diego ambrosia, conducting research into the life history of San Diego ambrosia to inform future rearing and translocation efforts, and developing a translocation program that maintains genetic diversity and expands the number and distribution of San Diego ambrosia (Service 2021g).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to the San Diego ambrosia:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts. Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied San Diego ambrosia habitat. However, not all Modeled Habitat is expected to support San Diego ambrosia occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the San Diego ambrosia Modeled Habitat, there are approximately 9,687 acres in the Plan Area and approximately 677 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of San Diego ambrosia Modeled Habitat occur in the northern valley, the central valley, and the southern coast ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 33 and 26 San Diego ambrosia occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2021 5-year review for San Diego ambrosia included an analysis of the status of San Diego ambrosia at different locations throughout its range. Each of the records included in the 2021 5-year review may represent one or more occurrences from the CNDDB. The 2021 5-year review identified 32 San Diego ambrosia occurrences in San Diego County (including 11 extant translocations) centered in the City of Santee and Mission Trails Regional Park and extending north to Highway 76 in the City of Bonsall, east to El Cajon, and south to Chula Vista. Known populations occur at the Seacliff Preserve, Westminster Preserve, Vista de la Valle Preserve, and Jeffries Ranch Preserve in the City of Oceanside. Populations also occur north and south of Olive Hill Road, along SR 76 near Calle de Vuelta, on the southwest quadrant of Via Rancho Parkway and I-15, west of The Crosby at Rancho Santa Fe, west of Gillespie Field, and along Forester Creek in the County of San Diego. Two occurrences exist in Los Peñasquitos Canyon Preserve and Mission Trails Regional Park in the City of San Diego.
San Diego ambrosia is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- San Diego MHCP Subregional NCCP/HCP

- Western Riverside County MSHCP Subregional NCCP/HCP

- SDCWA Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 3,518 acres of Modeled Habitat occur within Preserves, and 893 acres of Modeled Habitat occur within Proposed Preserves (collectively, 46 percent of all Modeled Habitat) associated with these HCPs within the Plan Area. In addition, 18 occurrences of San Diego ambrosia recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 11.69 acres of San Diego ambrosia Modeled Habitat, which is a fraction of the 9,687 acres of San Diego ambrosia Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 5.54 acres of permanent impacts (0.06 percent of Modeled Habitat in the Plan Area);

- Approximately 3.23 acres of temporary impacts (0.03 percent of Modeled Habitat in the Plan Area); and

- Approximately 2.92 acres of Wildfire Fuels Management impacts (0.03 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.12 percent of San Diego ambrosia Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for San Diego ambrosia. However, because San Diego ambrosia is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[59] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied San Diego

[59] Up to 0.12 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 33 San Diego ambrosia occurrences in the Plan Area. The product of 0.12 percent and 33 is less than one.

ambrosia habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[60]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact San Diego ambrosia and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to San Diego ambrosia will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of San Diego ambrosia within the Plan Area and its specific habitat requirements (i.e., sandy loam or clay soils; upper flood terraces), we anticipate that only limited areas within Modeled Habitat support occurrences of San Diego ambrosia. Therefore, it is likely that substantially less than 11.69 acres of occupied San Diego ambrosia habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some individual San Diego ambrosia will be killed or injured within up to 11.69 acres of San Diego ambrosia Tracked Habitat that is impacted in association with the Covered Activities. San Diego ambrosia could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities. Management and monitoring activities on mitigation lands could result in minor, temporary loss of San Diego ambrosia habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for narrow endemic plants are anticipated to avoid, minimize, and mitigate the direct impacts to San Diego ambrosia associated with Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to San Diego ambrosia habitat, as specified in the OP 76 include: 1) when work occurs within a known or potential area of occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as

[60] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

needed and monitor Covered Activities to ensure avoidance of impacts, and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to San Diego ambrosia occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to San Diego ambrosia occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of the existing/future mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of San Diego ambrosia habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual San Diego ambrosia within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of San Diego ambrosia within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the San Diego ambrosia.

Because Covered Activities will impact a small fraction of the San Diego ambrosia habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of San Diego ambrosia within the Plan Area or rangewide.

Effects from Changes to Hydrology, Erosion, Sedimentation, Non-Native Plants, and Habitat Fragmentation

The San Diego ambrosia could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to San Diego ambrosia include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology, erosion, non-native plant invasion, and habitat fragmentation.

San Diego ambrosia occurrences are usually found on the upper terraces of rivers/streams or near the margins of vernal pools, where under natural conditions, they would likely be subjected to inundation during large-scale flooding events (McGlaughlin and Friars 2007). However, if San Diego ambrosia is dependent on these periodic flooding events for some aspect of its life history (e.g., seed germination, dispersal) or control of competing plants, changing the flooding regimes of associated waterways could also impact this species. Erosion and sedimentation from increased flooding events could also impact San Diego ambrosia. OPs will be implemented to minimize increased changes to hydrology and increased erosion and sedimentation (OP 16, 19,

20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands and narrow endemic populations (OP 21).

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat necessary for San Diego ambrosia. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of the San Diego ambrosia.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting San Diego ambrosia dispersal that contributes to long-term population viability for the San Diego ambrosia. However, no large-scale New Construction is expected that could cause significant habitat fragmentation, and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat in order to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology, erosion, sedimentation, non-native plants, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in San Diego ambrosia survival or reproduction beyond baseline conditions.

Effect of Recovery

Conservation and recovery of the San Diego ambrosia is largely being accomplished through the development and implementation of regional NCCP/HCP planning efforts in San Diego County. The entire range of the San Diego ambrosia is covered by these efforts. Four regional

NCCP/HCPs covering the San Diego ambrosia are now in place, and one more is in development. Although these NCCP/HCPs allow for minimal impacts to San Diego ambrosia through destruction of habitat, these plans also regulate and mitigate such actions. These NCCP/HCPs are making substantial contributions to the conservation of San Diego ambrosia by creating a network of managed preserves with core habitat areas that are linked across the broader landscape.

Implementation of the HCP Amendment is consistent with the Service's efforts to recover the San Diego ambrosia through regional NCCP/HCP planning efforts in San Diego County. The Plan Area for the SDG&E's subregional plan overlaps and is compatible with several of the broader NCCP/HCPs within the region. Although the proposed Covered Activities will impact habitat that is used by San Diego Ambrosia for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable, and unavoidable impacts to San Diego ambrosia occupied habitat will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to be integral to our ongoing NCCP/HCP regional planning efforts and to result in a no "net loss" of habitat and support recovery of the San Diego ambrosia.

We expect no more than 11.69 acres of San Diego ambrosia Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the San Diego ambrosia habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any coastal San Diego ambrosia population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the San Diego ambrosia. We base this conclusion on the following:

1. Impacts will be limited to no more than 11.69 acres of San Diego ambrosia Tracked Habitat, which represents about 0.12 percent of Modeled Habitat for the San Diego ambrosia in the Plan Area.

2. Based on the known distribution of San Diego ambrosia within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of San Diego ambrosia. Therefore, it is likely that substantially less than 11.69 acres of occupied San Diego ambrosia habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual San Diego ambrosia will be harmed by Covered Activities.

4. Impacts to San Diego ambrosia will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

5. Because Covered Activities will affect a small proportion of the San Diego ambrosia habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by San Diego ambrosia, and the implementation of measures to avoid, minimize, and mitigate anticipate impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any San Diego ambrosia population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain San Diego ambrosia in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Del Mar Manzanita (Arctostaphylos glandulosa ssp. crassifolia)

Status of the Species

Listing Status

Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*) is federally listed as endangered. A 5-year review for the species was completed in 2010 (Service 2010e). Critical habitat has not been designated and there is no recovery plan for this species.

Species Description

Del Mar manzanita is a shrub in the heath family (Ericaceae). It grows to about 1.2 meters in height and is smaller than other subspecies of *A. glandulosa*, which can grow up to 2.5 meters in height (Service 1996b). It has smooth red bark, dark gray-green leaves that are thick and leathery, and clusters of white-pink flowers (Service 2010e).

The *Arctostaphylos* genus is known for its complex patterns of morphological variation that have challenged taxonomists for many years (Keeley et al. 2007, Keeley et al. 2017). These complexities, along with possible hybridization and introgression of *A. glandulosa* (Eastwood manzanita), have led to difficulties in determining defining characteristics and range of *A. g. crassifolia* (Keeley et al. 2007). While the taxonomic classification and nomenclature of *A. g. crassifolia* has remained the same since listing, two genetic studies were completed since the 2010 5-year review (Burge et al. 2018, Huang et al. 2020). These two studies provide additional insight on the *A. glandulosa* species complex, including *A. g. crassifolia*.

One of the recent studies aimed to test whether plants identified as *A. g. crassifolia* using morphological criteria (fruit characteristics were not used because individuals were not fruiting at the time the study was conducted) would also group together by genetic similarity (Burge et al. 2018). Analyses suggested that plant morphology is a reliable predictor of underlying genetic groups but that there is only a weak association between genetic groups and the taxonomic

names assigned based on current morphological circumscriptions (Burge et al. 2018). When genetic analysis included only individuals identified as putative *A. g. crassifolia*, plants from the type locality and nearby coastal locations in northwestern San Diego County formed one genetic group while plants from more distant locations, including samples from MCAS Miramar and coastal Baja California (Mexico), form an incohesive second group (Burge et al. 2018). The authors emphasized the need for more reliable circumscriptions for *A. glandulosa* subspecies identification and that broader sampling is needed to determine the taxonomic limits of *A. glandulosa* subspecies (Burge et al. 2018).

Another recent study (Huang et al. 2020) examined the environmental and genetic differentiation among 8 of the 10 recognized subspecies of *A. glandulosa*. One of the main conclusions of the study was that genetic structure (i.e., differentiation) in *A. glandulosa* reflects geographic distribution of sampled individuals more so than current subspecies designations (Huang et al. 2020). The analyses did not detect ecological differentiation among subspecies and identified genetic differentiation in only *A. g. gabrielensis* (Huang et al. 2020). While genetic differentiation was not supported in *A. g. crassifolia* (or in the other six analyzed subspecies), *A. g. crassifolia* samples all grouped together in one of the analyses (Huang et al. 2020) suggesting that additional analyses could support genetic differentiation of the subspecies. Huang et al. (2020) suggests that recognition of *A. g. crassifolia* as a distinct subspecies should be reconsidered, but the authors also caution that limitations in their analyses prevent strong conclusions. The authors also suggest that sequencing an *Arctostaphylos* genome and much more in-depth sampling across the range of *A. glandulosa* and inclusion of potential progenitor species in analyses may be needed (Huang et al. 2020).

Habitat Affinities

Del Mar manzanita is typically found in southern maritime chaparral, including areas with mesa topography with sandy patches and sandstone terraces and bluffs (Service 2010e). Southern maritime chaparral is a chaparral community in the coastal fog belt of southern California and northern Baja California (Oberbauer et al. 2008).

Life History

Del Mar manzanita is a perennial evergreen shrub with self-incompatible flowers that bloom in late winter to early spring and are pollinated by a variety of insects (Service 2010e). The flowers produce a small, spherical fruit with an average of six seeds per fruit (Service 2010e). Del Mar manzanita seeds require fire to germinate (Keeley 1991).

Del Mar manzanita can also crown-sprout from burls at the base of the plant that contain undeveloped branch buds that sprout following fire or other sources of disturbance that remove the above-ground branches (Keeley 1992). Because of their resilience following fire and other sources of disturbance, Del Mar manzanita can be very long-lived (Keeley et al. 2007).

Status and Distribution

In 1996, when the species was listed, 17 occurrences were known which supported 9,400 to 10,300 individuals (Service 1996b). Currently, 50 occurrences in the United States are considered extant or presumed extant, and we have no current population estimates (Service

2010e). The species range extends from the City of Carlsbad south along the coast to Torrey Pines State Reserve, east to MCAS Miramar, and southeast to Mission Trails Regional Park in San Diego County, California. The status of Del Mar manzanita in Mexico is not well documented. Prior to 1982, the species was reported from five localities in northwestern Baja California, Mexico, from the border just east of Tijuana, south 25 miles to Cerro el Coronel and Mesa Descanso. The listing rule states that while little is known about these occurrences, this region in Mexico was severely impacted by the same factors (urban and agricultural development) that had been affecting the United States populations (Service 1996b). Currently, we have no additional information about these occurrences, and no new occurrences have been reported from Mexico.

Threats and Conservation Needs

The primary threats to Del Mar manzanita are development (at 31 of the 50 identified occurrences) and altered fire regime (Service 2010e). Del Mar manzanita requires fire for seeds to germinate, and because most of the remaining occurrences are in small, isolated populations in close proximity to development, they have been protected from fires that have impacted much of the undeveloped open space in southern California, leading to low recruitment in many of the populations (Service 2010e).

The primary conservation needs for the species include conserving and protecting the occurrences that are not currently protected and managing conserved sites, including controlling invasion by non-native plant species and facilitating recruitment.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to Del Mar manzanita:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts. Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Del Mar manzanita habitat. However, not all Modeled Habitat is expected to support Del Mar manzanita occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the Del Mar manzanita Modeled Habitat, there are approximately 4,436 acres in the Plan Area and approximately 859 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the only acreages of Del Mar manzanita Modeled Habitat occur in the central and north coast ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 40 and 25 Del Mar manzanita occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2010 5-year review for Del Mar manzanita included an analysis of the status of Del Mar manzanita at different locations throughout its range. Each of the records included in the 2021 5-year review may represent one or more occurrences from the CNDDB. The 2010 5-year review identified a total of 46 Del Mar manzanita records in San Diego County distributed from Carlsbad south to City of Carlsbad south along the coast to Torrey Pines State Reserve, east to MCAS Miramar, and as far south as Mission Trails Regional Park. Currently, 32 of the 50 occurrences of Del Mar manzanita are located within 6 miles of the coast. The remaining 18 occurrences are located between 6 and 13 miles away from the coast and on either different soils or in different vegetation types than the typical sandstones and maritime chaparral. These occurrences can be grouped into three distinct areas near San Marcos, near Lake Hodges, and near MCAS Miramar Del Mar manzanita is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- San Diego MHCP Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and

fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 2,955 acres of Modeled Habitat occur within Preserves, and 313 acres of Modeled Habitat occur within Proposed Preserves (collectively, 74 percent of all Modeled Habitat) associated with these HCPs within the Plan Area. In addition, 28 occurrences of Del Mar manzanita recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 14.82 acres of Del Mar manzanita Modeled Habitat, which is a fraction of the 4,436 acres of Del Mar manzanita Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 7.02 acres of permanent impacts (0.16 percent of Modeled Habitat in the Plan Area);
- Approximately 4.1 acres of temporary impacts (0.09 percent of Modeled Habitat in the Plan Area); and
- Approximately 3.7 acres of Wildfire Fuels Management impacts (0.08 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.33 percent of Del Mar manzanita Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for Del Mar manzanita. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for Del Mar manzanita. However, because Del Mar manzanita is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[61] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied Del Mar manzanita habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts

[61] Up to 0.33 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 40 San Diego ambrosia occurrences in the Plan Area. The product of 0.33 percent and 40 is less than one.

will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[62]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact Del Mar manzanita and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Del Mar manzanita will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of Del Mar manzanita within the Plan Area and its specific habitat requirements (i.e., sandy loam or clay soils; upper flood terraces), we anticipate that only limited areas within Modeled Habitat support occurrences of Del Mar manzanita. Therefore, it is likely that substantially less than 14.82 acres of occupied Del Mar manzanita habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some individual Del Mar manzanita will be killed or injured within up to 14.82 acres of Del Mar manzanita Tracked Habitat that is impacted in association with the Covered Activities. Del Mar manzanita could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities. Management and monitoring activities on mitigation lands could result in minor, temporary loss of Del Mar manzanita habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for narrow endemic plants are anticipated to avoid, minimize, and mitigate the direct impacts to Del Mar manzanita associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to Del Mar manzanita habitat, as specified in the OP 76 include: 1) when work occurs within a known or potential area of occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts; and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as

[62] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to Del Mar manzanita occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to Del Mar manzanita occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of the mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Del Mar manzanita habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Del Mar manzanita within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Del Mar manzanita within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to Del Mar manzanita.

Because Covered Activities will impact a small fraction of Del Mar manzanita habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Del Mar manzanita within the Plan Area or rangewide.

Effects from Non-Native Plants, Fire, and Habitat Fragmentation

The Del Mar manzanita could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to Del Mar manzanita include the degradation of habitat outside the footprint of Covered Activities as a result of non-native plants, fire, and habitat fragmentation.

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat necessary for Del Mar manzanita. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of the Del Mar manzanita.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for*

Transportation and Utility Corridors – California Invasive Plant Council (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Approximately 64 percent of the Plan Area is in "High Fire Threat Districts" (HFTDs). The HFTD consists of Tier 2 areas, "where there is an elevated risk for destructive utility associated wildfires," and Tier 3 areas, "where there is an extreme risk for destructive utility associated wildfires." The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds, coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing Facilities (e.g., electric lines) and O&M of these Facilities are potential wildlife ignition sources and wildfire ignition sources may increase with construction of new Facilities. In addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. Fires that occur too frequently may threaten the species because if resprouting plants are burned again before they are able to adequately replenish stores in the burls or sufficient seeds for their seed bank leaving the long term persistence of the plants in doubt. When fires are too frequent, nonnatives (especially grasses) can invade frequently burned areas and outcompete natives. However, populations of Del Mar manzanita are also threatened by suppression of fire events that is too long to maintain a healthy southern maritime chaparral habitat (Service 1996b).

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007, after San Diego experienced some of the most destructive wildfires in the county's history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have developed and implemented programs to enhance situational awareness, which has increased SDG&E's ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment) and Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities (Section 8.5, pages 8 to16). For example, SDG&E will regularly maintain fire protection areas around Facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas

and equipping vehicles with shovels and fire extinguishers. Based on SDG&E's increased ability to monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP 10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Del Mar manzanita dispersal that contributes to long-term population viability for Del Mar manzanita. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat in order to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to non-native plants, fire, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in Del Mar manzanita survival or reproduction beyond baseline conditions.

Effect of Recovery

Conservation and recovery of Del Mar manzanita is largely being accomplished through the development and implementation of regional NCCP/HCP planning efforts in San Diego County. The entire range of Del Mar manzanita is covered by these efforts. Two regional NCCP/HCPs covering Del Mar manzanita are now in place, and one more is in development. Although these NCCP/HCPs allow for minimal impacts to Del Mar manzanita through destruction of habitat, these plans also regulate and mitigate such actions. These NCCP/HCPs are making substantial contributions to the conservation of Del Mar manzanita by creating a network of managed preserves with core habitat areas that are linked across the broader landscape.

Implementation of the HCP Amendment is consistent with the Service's efforts to recover Del Mar manzanita through regional NCCP/HCP planning efforts in San Diego County. The Plan Area for the SDG&E's subregional plan overlaps and is compatible with several of the broader NCCP/HCPs within the region. Although the proposed Covered Activities will impact habitat that is used by Del Mar manzanita for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts to Del Mar manzanita occupied habitat will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to be integral to our ongoing NCCP/HCP regional planning efforts and thus support recovery of Del Mar manzanita.

We expect no more than 14.82 acres of Del Mar manzanita Tracked Habitat will be impacted. Because HCP Amendment will affect a fraction of Del Mar manzanita habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to the species, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any coastal Del Mar manzanita population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of Del Mar manzanita. We base this conclusion on the following:

1. Impacts will be limited to no more than 14.82 acres of Del Mar manzanita Tracked Habitat, which represents about 0.33 percent of Modeled Habitat for Del Mar manzanita in the Plan Area.

2. Based on the known distribution of Del Mar manzanita within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of Del Mar manzanita. Therefore, it is likely that substantially less than 14.82 acres of occupied Del Mar manzanita habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual Del Mar manzanita will be harmed by Covered Activities.

4. Impacts to Del Mar manzanita will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

5. Because Covered Activities will affect a small proportion of Del Mar manzanita habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Del Mar manzanita, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any Del Mar manzanita population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain Del Mar manzanita in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Encinitas Baccharis (Baccharis vanesae)

Status of the Species

Listing Status

The Encinitas baccharis was listed as federally threatened on October 7, 1996 (61 FR 52370). Critical habitat has not been designated for this species. There is no recovery plan for the Encinitas baccharis. In August 2021, the Service completed a 5-year review addressing the status of the Encinitas baccharis (Service 2021h). The 5-year review recommended no change in the status of the Encinitas baccharis.

Species Description

Encinitas baccharis is a slender-stemmed shrub that grows 1.6 to 4.3 feet tall. It is a member of the Asteraceae family. Staminate (male) flower heads contain clusters of 15 to 22 whitish florets, and pistillate (female) flower heads contain about 25 whitish florets (Sundberg 1993). The dark green leaves are 0.04 to 1.77 inches long, thread-like, and narrower in width than the portion of the twig adjacent to the leaf (Sundberg 1993). It is distinguished from other *Baccharis* species by filiform leaves and phyllaries that reflex at maturity (Beauchamp 1980). In addition, most sympatric *Baccharis* species are found in riparian or disturbed areas, but Encinitas baccharis is typically found in mature (closed canopy) chaparral areas (Beauchamp 1980).

Milano and Vandergast (2018) studied Encinitas baccharis population genetics using samples from 11 occurrences in San Diego County. They did not find distinct genetic clusters of Encinitas baccharis, indicating that gene flow is occurring between occurrences (Milano and Vandergast 2018). This could mean that seeds are dispersing over long distances, or that there are additional Encinitas baccharis populations that have not been documented (Milano and Vandergast 2018). Milano and Vandergast (2018) also reported that inbreeding was effectively zero and that genetic diversity was low but consistent within sampled sites.

Habitat Affinities

Encinitas baccharis are found primarily in southern maritime and mixed chaparral vegetation communities below 2,890 feet from the coast to the City of Poway (61 FR 52370). Encinitas baccharis was previously thought to be restricted to sandstone soils in southern maritime chaparral and southern mixed chaparral. A small population of Encinitas baccharis was found on outcrops of andesite rock among *Dudleya viscida* (sticky dudleya) surrounded by a dense chaparral dominated by *Ceanothus spinosus*, *C. crassifolius* (hoaryleaf ceanothus), and *Adenostema fasciculatum* (chamise) in the San Mateo Canyon Wilderness in northern San Diego County (Boyd et al. 1992). In 2011, Encinitas baccharis was discovered in the Elfin Forest/Lake Hodges region of San Diego County growing on a wet site under a dense canopy of *Quercus berberidifolia* (scrub oak) and *Toxicodendron diversilobum* (poison oak) in a coast live oak woodland (Korey Klutz, pers. comm. 2010; CNDDB 2011).

Encinitas baccharis has been observed to occur on the following soil types: Cieneba series, Corralitos loamy sand alluvial Huerhuero, San Miguel Exchequer, granitic, andesite rock outcrops, and soils derived from acid igneous rock (CNDDB 2011). Encinitas baccharis can be

found on all slope aspects including both south-facing and north-facing slopes and just above riparian vegetation near streams (CNDDB 2011; Service 2011e).

Encinitas baccharis is probably pollinated by both wind and insects. Steffan (1997) collected native wasps, flies, beetles, and true bugs (from the order Hemiptera) from *Baccharis pilularis* (coyote bush), a related species that has flowers similar to Encinitas baccharis and which also occurs in the same chaparral habitat. Baccharis species in San Diego County and central California are pollinated by sphecid, vespid, and ichneumonoid wasps, mordellid beetles, native bees in the genera Dialictus and Hylaeus, and muscoid flies (Moldenke 1976). It is likely necessary to maintain adequate conditions for pollinating insects to sustain the full reproductive potential of the species at each of the occurrences.

Life History

Encinitas baccharis is dioecious, meaning individual plants have either male or female flowers. This species is thought to be pollinated by both wind and insects. Observations suggest that Encinitas baccharis is not able to compete with taller, leafier shrubs such as Manzanita (*Arctostaphylos* spp.) and ceanothus (*Ceanothus* spp.) or that it is a short-lived plant (KEA Environmental, Inc. 1999). This species resprouts readily from fire and may require disturbance to establish and maintain populations. Most Baccharis species appear to depend on disturbances, such as stream and gully erosion, landslides, or as in the case of Encinitas baccharis, fires, for colonization and population recruitment opportunities. The type of disturbance relied upon varies from species to species. The blooming period for Encinitas baccharis is between August and November [California Native Plant Society (CNPS) 2001].

Status and Distribution

Most observations are concentrated in west-central San Diego County between the cities of Encinitas and Poway, but this species has been observed as far south as Otay Mountain, north to the San Mateo Wilderness and east to the community of Alpine. Urban development has been the cause of known population extirpations, either directly through habitat destruction or indirectly through small population size and isolation.

Threats and Conservation Needs

The major threat at time of listing was habitat loss; however, state and federal regulations since that time have somewhat reduced this threat, and regional conservation plans have protected 10 of the largest occurrences from the threat of development. Nonetheless, some occurrences remain threatened by planned development. Additional threats include habitat fragmentation resulting in the possible loss of insect pollinators and/or in the reproductive isolation of individual plants, crown removal as a part of fuel reduction actions, trampling or disturbance from trails, and competition from invasive non-native plant species (Service 2021h). New threats that have become apparent since listing include the lack of reproductive output and seedling establishment, possible heavy insect predation on the species' flowers and seeds, unbalanced gender ratios, and demographic senescence.

Although evidence of genetic diversity and reproductive output were documented, it is unclear whether imbalanced sex ratios could be reducing Encinitas baccharis resiliency across the species range, so we do not have information about the overall magnitude of this potential threat.

Conservation needs for the species include working with SDMMP to develop a rare plant management plan that addresses species such as Encinitas baccharis, working with landowners outside of the area addressed by SDMMP to survey for Encinitas baccharis within suitable habitat, managing Encinitas baccharis populations to control the threats identified above (e.g., control non-native vegetation), collecting seed from Encinitas baccharis to establish a conservation seed bank, and working with SDMMP to develop a seed banking and bulking plan (Service 2021h).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to the Encinitas baccharis:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts. Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied the Encinitas baccharis habitat. However, not all Modeled Habitat is expected to support Encinitas baccharis occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the Encinitas baccharis Modeled Habitat, there are approximately 46,670 acres in the Plan Area and approximately 1,600 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of Encinitas baccharis Modeled Habitat occur in the northern valley, the central valley, and the southern coast ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 24 and 13 Encinitas baccharis occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2021 5-year review for Encinitas baccharis included an analysis of the status of Encinitas baccharis at different locations throughout its range. Each of the records included in the 2021 5-year review may represent one or more occurrences from the CNDDB. The 2021 5-year review identified 30 extant occurrences of Encinitas baccharis records in San Diego County. Occurrences extend from Carlsbad to eastward to Alpine.

Encinitas baccharis is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- San Diego MHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 23,398 acres of Modeled Habitat occur within Preserves, and 6,725 acres of Modeled Habitat occur within Proposed Preserves (collectively, 64 percent of all Modeled Habitat) associated with these HCPs within the Plan Area. In addition, 21 occurrences of Encinitas baccharis recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 27.62 acres of Encinitas baccharis Modeled Habitat, which is a fraction of the 46,670 acres of Encinitas baccharis Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 13.09 acres of permanent impacts (0.03 percent of Modeled Habitat in the Plan Area);
- Approximately 7.63 acres of temporary impacts (0.02 percent of Modeled Habitat in the Plan Area); and
- Approximately 6.9 acres of Wildfire Fuels Management impacts (0.01 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.06 percent of Encinitas baccharis Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for Encinitas baccharis. However, because Encinitas baccharis is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[63] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied Encinitas baccharis habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[64]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact Encinitas baccharis and its habitat will only be covered if the

[63] Up to 0.06 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 24 San Diego ambrosia occurrences in the Plan Area. The product of 0.06 percent and 24 is less than one.
[64] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

requirements of a Minor Amendment are met, at which time potential impacts to Encinitas baccharis will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of Encinitas baccharis within the Plan Area and its specific habitat requirements (i.e., sandstone soils; southern maritime chaparral), we anticipate that only limited areas within Modeled Habitat support occurrences of Encinitas baccharis. Therefore, it is likely that substantially less than 27.62 acres of occupied Encinitas baccharis habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some individual Encinitas baccharis will be killed or injured within up to 27.62 acres of Encinitas baccharis Tracked Habitat that is impacted in association with the Covered Activities. Encinitas baccharis could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities. Management and monitoring activities on mitigation lands could result in minor, temporary loss of Encinitas baccharis habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for narrow endemic plants are anticipated to avoid, minimize, and mitigate the direct impacts to Encinitas baccharis associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to Encinitas baccharis habitat, as specified in the OP 76 include: 1) when work occurs within a known or potential area of occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts, and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to Encinitas baccharis occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to Encinitas baccharis occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.3a and 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Encinitas baccharis habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Encinitas baccharis within occupied habitat. However, the conservation of the mitigation lands will contribute to the

long-term viability of the species by securing and managing habitat to support core occurrences of Encinitas baccharis within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the Encinitas baccharis.

Because Covered Activities will impact a small fraction of the Encinitas baccharis habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Encinitas baccharis within the Plan Area or rangewide.

Effects from Non-Native Plants, Fire and Habitat Fragmentation

The Encinitas baccharis could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to Encinitas baccharis include the degradation of habitat outside the footprint of Covered Activities as a result of non-native plants, fire and habitat fragmentation.

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat necessary for Encinitas baccharis. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of the Encinitas baccharis.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Approximately 64 percent of the Plan Area is in "High Fire Threat Districts" (HFTDs). The HFTD consists of Tier 2 areas, "where there is an elevated risk for destructive utility associated wildfires," and Tier 3 areas, "where there is an extreme risk for destructive utility associated wildfires." The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds,

coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing facilities (e.g., electric lines) and O&M of these facilities are potential wildlife ignition sources and wildfire ignition sources may increase with construction of new facilities. In addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. The primary concern with frequent megafires is the plant mortality associated with these extensive and intense events which may kill individual plants and thereby potentially precludes recolonization of burned areas Encinitas baccharis. However, Encinitas baccharis appears to respond positively to fire or other conditions that lead to periodically open areas in chaparral stands with increased flowering and seedling establishment (Service 2010e).

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007, after San Diego experienced some of the most destructive wildfires in the county's history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have developed and implemented programs to enhance situational awareness, which has increased SDG&E's ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment) and Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities (Section 8.5, pages 8 to16). For example, SDG&E will regularly maintain fire protection areas around facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas and equipping vehicles with shovels and fire extinguishers. Based on SDG&E's increased ability to monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP 10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Encinitas baccharis dispersal that contributes to long-term population viability for the Encinitas baccharis. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to

provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat in order to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from non-native plants, fire and habitat fragmentation due to Covered Activities are not likely to result in a decrease in Encinitas baccharis survival or reproduction beyond baseline conditions.

Effect of Recovery

Conservation and recovery of the Encinitas baccharis is largely being accomplished through the development and implementation of regional NCCP/HCP planning efforts in San Diego County. The entire range of the Encinitas baccharis is covered by these efforts. Three regional NCCP/HCPs covering the Encinitas baccharis are now in place. Although these NCCP/HCPs allow for minimal impacts to Encinitas baccharis through destruction of habitat, these plans also regulate and mitigate such actions. These NCCP/HCPs are making substantial contributions to the conservation of Encinitas baccharis by creating a network of managed preserves with core habitat areas that are linked across the broader landscape.

Implementation of the HCP Amendment is consistent with the Service's efforts to recover the Encinitas baccharis through regional NCCP/HCP planning efforts in San Diego County. The Plan Area for the SDG&E's subregional plan overlaps and is compatible with several of the broader NCCP/HCPs within the region. Although the proposed Covered Activities will impact habitat that is used by the Encinitas baccharis for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts to Encinitas baccharis occupied habitat will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to be integral to our ongoing NCCP/HCP regional planning efforts and thus support recovery of the Encinitas baccharis.

We expect no more than 27.62 acres of Encinitas baccharis Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the Encinitas baccharis habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to the species, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any coastal Encinitas baccharis population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the Encinitas baccharis. We base this conclusion on the following:

1. Impacts will be limited to no more than 27.62 acres of Encinitas baccharis Tracked Habitat, which represents about 0.06 percent of Modeled Habitat for the Encinitas baccharis in the Plan Area.

2. Based on the known distribution of Encinitas baccharis within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of Encinitas baccharis. Therefore, it is likely that substantially less than 27.62 acres of occupied Encinitas baccharis habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual Encinitas baccharis will be harmed by Covered Activities.

4. Impacts to Encinitas baccharis will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

5. Because Covered Activities will affect a small proportion of the Encinitas baccharis habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Encinitas baccharis, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any Encinitas baccharis population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain Encinitas baccharis in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Thread-Leaved Brodiaea (Brodiaea filifolia)

Status of the Species

Listing Status

The Service listed thread-leaved brodiaea (*Brodiaea filifolia*) as threatened on October 13, 1998 (63 FR 54975). The Service published a final rule designating critical habitat for thread-leaved brodiaea on December 13, 2005 (70 FR 73820) and finalized a rule re-designating thread-leaved brodiaea critical habitat on February 8, 2011 (76 FR 6848).

In August 2009, the Service completed a 5-year review addressing the status of thread-leaved brodiaea (Service 2009d). Because both rangewide and localized threats to thread-leaved brodiaea remained, we recommended no change to the listing status of the species. An updated 5 year review is expected to be completed in 2023.

Species Description

Thread-leaved brodiaea is a perennial herb that produces leaves and flower stalks from dark-brown, fibrous-coated corms (underground bulb-like storage stem). The flower stalks (scapes) are 8 to 16 inches tall. The leaves are basal, narrow, and shorter than the scape. The tubular flowers are 0.4 to 0.5 inch long and are arranged in a loose umbel. The six perianth (collective term for sepals and petals) segments are violet with their tips spreading. The broad and notched anthers are 0.1 to 0.2 inch long. The fruit is a capsule (Munz 1974, Keator 1993). Thread-leaved brodiaea can be distinguished from the other species of *Brodiaea* that occur within its range (*B. orcuttii, B. jolonensis,* and *B. terrestris* ssp. *kernensis*) by its narrow, pointed staminodia (characteristic sterile stamens), rotate perianth lobes (i.e., a saucer-shaped flower), and a thin perianth tube, which is subsequently split by developing fruit (Niehaus 1971, Munz 1974). The flowering period extends from March to June (CNPS 2001).

Habitat Affinities

Thread-leaved brodiaea occurs in herbaceous plant communities such as valley needlegrass grassland, valley sacaton grassland, non-native grassland, alkali playa, southern interior basalt vernal pools, San Diego mesa hardpan vernal pools, and San Diego mesa claypan vernal pools (Holland 1986). They may also grow in interstitial areas (narrow bands of habitat surrounded by other vegetation) in association with coastal sage scrub in some locations (Service 2005b). These herbaceous communities occur in open areas on clay soils, soils with a clay subsurface, or clay lenses within loamy, silty loam, loamy sand, silty deposits with cobbles, or alkaline soils and may range in elevation from 100 feet to 2,500 feet, depending on soil series (Service 2009d).

Life History

The annual growth cycle of thread-leaved brodiaea begins in late summer with the growth of three to five leaves from each corm (Niehaus 1971, Keator 1993). When conditions are suitable, a solitary flower stalk may emerge from a mature corm, reaching the soil surface in January (Niehaus 1971). The corms function similarly to bulbs in storing water and nutrients during the dormant season (Smith 1997). While corms and vegetatively produced cormlets are the principal means of perpetuation from one growing season to another (Niehaus 1971), the species also sets seeds. Upon maturity, the three segments of the vertically oriented capsules split apart, revealing many small (0.08 to 0.10 inch) black seeds (Munz 1974). The seeds are then dispersed as wind rattles the capsules and releases the seeds (Smith 1997).

Clay soils dry out and exhibit surface cracks as moisture is depleted prior to the next rainy season. The seeds are released to fall to the ground, either on the surfaces or into the cracks in the soil. In this manner some seeds are dispersed into several horizons in the soil. With the fall and winter rains, the clay matrix hydrates, softens, expands, and the cracks close up. Seedlings at first only produce leaves and a specialized root. Thread-leaved brodiaea seedlings are equipped with a specialized, succulent contractile root. This organ, lost by mature corms, facilitates the seasonal downward movement of the young plant (Niehaus 1971). The contractile root swells with moisture in the wet season, creating space below the developing cormlet. As the soil dries the contractile root dries and shrinks longitudinally, drawing the young cormlet downward in the soil. This process continues to a point at which the soil moisture is adequate to keep the

contractile root from shrinking, resulting in the location of the corm in the appropriate soil horizon for survival. Cormlets produced annually from existing older corms also produce contractile roots, which draw them laterally away from the parent corm (Niehaus 1971).

All species of *Brodiaea* examined so far are self-incompatible (incapable of producing seeds with pollen from flowers on the same plant or from flowers of plants with the same allele, or different form of a gene, at the self-incompatibility gene locus/loci), so pollination between individuals must take place to produce seed (Niehaus 1971). Dispersal of seeds from an individual is likely localized, leading to patches of plants with the same self-incompatible alleles. This means that effective pollination for seed set requires pollen dispersal over a distance between plants with different self-incompatible alleles. Members of the genus *Brodiaea* reportedly rely on tumbling flower beetles (Mordellidae, Coleoptera) and sweat bees (Halictidae, Hymenoptera) for cross-pollination (Niehaus 1971). The home ranges and species fidelity of these pollinators is not known. Bell and Rey (1991) report that native bees observed pollinating thread-leaved brodiaea on the Santa Rosa Plateau in Riverside County included *Bombus californicus* (Apidae, Hymenoptera), *Hoplitus* sp. (Megachilidae, Hymenoptera), *Osmia* sp. (Megachilidae, Hymenoptera), and an unidentified Anthophorid (digger-bee) (Bell and Rey 1991). Anthophoridae and Halictidae are reported to be important pollinators of thread-leaved brodiaea at a study site in Orange County (Glenn Lukos Associates 2004). Alternative pollen source plants may be necessary for the persistence of these insects when thread-leaved brodiaea is not in flower seasonally or annually because of poor environmental conditions.

Status and Distribution

Thread-leaved brodiaea is known to occur within 68 extant (or presumed extant) locations within Los Angeles, San Bernardino, Riverside, Orange, and San Diego counties (Service 2009e). Although we are not aware of any methodology to accurately estimate the overall abundance of brodiaea across its entire range, a minimum estimate based on all information available since its listing in 1998 indicate that several million brodiaea individuals are distributed across the 68 identified locations (Service 2009d). Currently, the largest natural occurrences of thread-leaved brodiaea are on the Santa Rosa Plateau in Riverside County, the San Dimas/Gordon Highlands occurrence in Los Angeles County, the Cristianitos Canyon/Lower Gabino Canyon occurrence in Orange County, and the Rancho Carrillo and Upham occurrences in San Diego County.

Threats and Conservation Needs

Thread-leaved brodiaea are primarily threatened by habitat loss through urban development, alteration of hydrological conditions and channelization, and discing. Additionally, competition from invasive, non-native plants impacts at least 15 of the known occurrences. Unauthorized off-highway vehicle use, grazing, and manure dumping threaten specific occurrences of thread-leaved brodiaea, and while they are not rangewide threats to the species, these threats hinder recovery of the species (Service 2009d).

Conservation needs of the species include conserving large extant populations that are currently unprotected, managing threats (particularly non-native grasses and other non-native annual species) on existing conserved lands, and additional research into the biology and ecology of thread-leaved brodiaea to inform future conservation efforts (Service 2009d).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to thread-leaved brodiaea:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts. Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied thread-leaved brodiaea habitat. However, not all Modeled Habitat is expected to support thread-leaved brodiaea occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on thread-leaved brodiaea Modeled Habitat, there are approximately 8,424 acres in the Plan Area and approximately 1,090 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of thread-leaved brodiaea Modeled Habitat occurs in the northern and central

valley ecoregions. In the Plan Area in Orange County, the highest acreage of thread-leaved brodiaea Modeled Habitat occurs in the foothill and valley ecoregions. This species is not known to or expected to occur on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 106 and 50 thread-leaved brodiaea occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2009 5-year review for thread-leaved brodiaea included an analysis of the status of thread-leaved brodiaea at different locations throughout its range. Each of the records included in the 2009 5-year review may represent one or more occurrences from the CNDDB. The 2009 5-year review identified 49 thread-leaved brodiaea occurrences in San Diego County (mainly in Carlsbad, Oceanside, San Marcos, and Camp Pendleton. The 2009 5-year review also identified 13 thread-leaved brodiaea occurrences in the Plan Area in southern Orange County.

Thread-leaved brodiaea is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- San Diego MHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP
- Orange County Southern Subregion HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 944 acres of Modeled Habitat occur within Preserves, and 181 acres of Modeled Habitat occur within Proposed Preserves (collectively, about 13 percent of all Modeled Habitat) associated with these HCPs within the Plan Area. In addition, 39 occurrences of thread-leaved brodiaea recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known to or expected to occur on SDG&E's existing mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 18.83 acres of thread-leaved brodiaea Modeled Habitat, which is a fraction of the 8,424 acres of thread-leaved brodiaea Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 8.92 acres of permanent impacts (0.03 percent of Modeled Habitat in the Plan Area);

- Approximately 5.2 acres of temporary impacts (0.06 percent of Modeled Habitat in the Plan Area); and

- Approximately 4.71 acres of Wildfire Fuels Management impacts (0.06 percent of Modeled Habitat in the Plan Area).

This represents about 0.15 percent of thread-leaved brodiaea Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for thread-leaved brodiaea. However, because thread-leaved brodiaea is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[65] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied thread-leaved brodiaea habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[66]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact thread-leaved brodiaea and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to thread-leaved brodiaea will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of thread-leaved brodiaea within the Plan Area and its specific habitat requirements (i.e., clay soils), we anticipate that only limited areas within Modeled Habitat support occurrences of thread-leaved brodiaea. Therefore, it is likely that substantially less than 18.83 acres of occupied thread-leaved brodiaea habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some thread-leaved brodiaea will be killed or injured within up to 18.83 acres of Tracked Habitat as a result of habitat loss/degradation in association with Covered Activities.

[65] Up to 0.15 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 106 thread-leaved brodiaea occurrences in the Plan Area. The product of 0.15 percent and 106 is less than one.
[66] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

Thread-leaved brodiaea could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities. Management and monitoring activities on mitigation lands could result in minor, temporary loss of habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for narrow endemic plants are anticipated to avoid, minimize, and mitigate the direct impacts to thread-leaved brodiaea associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to thread-leaved brodiaea habitat, as specified in the OP 76 include: 1) when work occurs within a known or potential area of occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts, and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to thread-leaved brodiaea occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to thread-leaved brodiaea occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of the mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of thread-leaved brodiaea habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual thread-leaved brodiaea within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of thread-leaved brodiaea within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to thread-leaved brodiaea.

Because Covered Activities will impact a small fraction of thread-leaved brodiaea habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of thread-leaved brodiaea within the Plan Area or rangewide.

Effects from Changes to Hydrology, Erosion, Sedimentation, Non-Native Plants, and Habitat Fragmentation

Thread-leaved brodiaea could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to thread-leaved brodiaea include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology, erosion, sedimentation, non-native plants, and habitat fragmentation.

Alteration of site hydrology as a result of urbanization potentially threatens thread-leaved brodiaea, which requires moist clay soils to facilitate seedling and cormlet disposition to an appropriate soil depth, and corm persistence through seedling and adult phases of flowering and fruit set (Service 2009d). Development projects upslope and adjacent to thread-leaved brodiaea occurrences may dewater the site, interfering with these processes. Conversely, water runoff from nearby developments may inundate thread-leaved brodiaea occurrences with excessive amounts of water, eroding soils, depositing sediments, and drowning plants. Measures will be implemented to minimize changes to hydrology and erosion and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from narrow endemic populations (OP 21).

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat necessary for thread-leaved brodiaea. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of thread-leaved brodiaea.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting thread-leaved brodiaea dispersal that contributes to long-term population viability for thread-leaved brodiaea. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant

fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology, erosion, sedimentation, non-native plants, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in thread-leaved brodiaea survival or reproduction beyond baseline conditions.

Effect of Recovery

Conservation and recovery of thread-leaved brodiaea is largely being accomplished through the development and implementation of regional NCCP/HCP planning efforts in Orange and San Diego counties. Most of the range of thread-leaved brodiaea is covered by these efforts. Four regional NCCP/HCPs covering thread-leaved brodiaea are now in place. Although these NCCP/HCPs allow for minimal impacts to thread-leaved brodiaea through destruction of habitat, these NCCP/HCPs also regulate and mitigate such actions. These plans are making substantial contributions to the conservation of thread-leaved brodiaea by creating a network of managed preserves with core habitat areas that are linked across the broader landscape.

Implementation of the HCP Amendment is consistent with the Service's efforts to recover thread-leaved brodiaea through regional NCCP/HCP planning efforts in Orange and San Diego counties. The Plan Area for the SDG&E's subregional plan overlaps and is compatible with several of the broader NCCP/HCPs within the region. Although the proposed Covered Activities will impact habitat that is used by thread-leaved brodiaea for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts to thread-leaved brodiaea occupied habitat will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to be integral to our ongoing NCCP/HCP regional planning efforts and thus support recovery of thread-leaved brodiaea

We expect no more than 18.83 acres of thread-leaved brodiaea Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of thread-leaved brodiaea habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to the species, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any coastal thread-leaved brodiaea population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological

opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of thread-leaved brodiaea. We base this conclusion on the following:

1. The current range of thread-leaved brodiaea includes Los Angeles, San Bernardino, Riverside, Orange, and San Diego Counties; thus, the action area for HCP Amendment represents only a portion of the species' rangewide distribution.

2. Impacts will be limited to no more than 18.83 acres of thread-leaved brodiaea Tracked Habitat, which represents about 0.15 percent of Modeled Habitat for thread-leaved brodiaea in the Plan Area.

3. Based on the known distribution of thread-leaved brodiaea within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of thread-leaved brodiaea. Therefore, it is likely that substantially less than 18.83 acres of occupied thread-leaved brodiaea habitat will be impacted.

4. General and species-specific OPs will reduce the likelihood that individual thread-leaved brodiaea will be harmed by Covered Activities.

5. Impacts to thread-leaved brodiaea will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that benefit this species.

6. Because Covered Activities will affect a small proportion of thread-leaved brodiaea habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by thread-leaved brodiaea, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any thread-leaved brodiaea population in the Plan Area or rangewide.

7. Long-term management and monitoring of mitigation lands will help sustain thread-leaved brodiaea in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Salt marsh bird's-beak (Chloropyron maritimum ssp. Maritimum) (Cordylanthus maritimus ssp. maritimus)

Status of the Species

Listing Status

The Service listed the salt marsh bird's-beak as endangered September 1978 (43 FR 44810–44812). The *Salt Marsh Bird's-beak (Cordylanthus maritimus subsp. maritimus) Recovery Plan*

("recovery plan") was completed in 1985 (Service 1985b). A 5-year review for Salt marsh bird's-beak was completed August 31, 2020 (Service 2020f). No critical habitat has been designated for this species.

Species Description

Salt marsh bird's-beak is an annual plant in the Orobanchaceae (broom rape family). Specimens are branched and may be up to 16 inches tall with numerous flowers arranged on flower stalks termed spikes (Service 2009f).

Salt marsh bird's-beak is hemiparasitic (deriving some of their physiological needs from a host plant) and a halophyte (a plant tolerating or thriving in alkaline soils) (Service 2009f). Most plants are capable of manufacturing food in their green, photosynthetic tissues, while absorbing water and dissolved nutrients through their roots. Parasitic plants that require host plants to fulfill both of these functions are termed holoparasites, while those that have green photosynthetic tissues and only require hosts to facilitate uptake of water and dissolved nutrients are termed hemiparasites (Service 2009f).

Habitat Affinities

Salt marsh bird's-beak currently occurs in coastal salt marshes from northern Baja California, Mexico to San Luis Obispo County, California (Chuang and Heckard 1973). Coastal salt marsh habitat is commonly divided into three or more zones based either on physical features, including tidal patterns, or based on the kinds of plants occurring in the different zones (Service 2009f). The latter method may be more reliable because it reflects the long-term patterns and processes that otherwise might not be observed during a monitoring study. Salt marsh bird's-beak habitat is classified as middle littoral by Purer (1942), who placed salt marsh bird's-beak specifically toward the upper end of this region. The middle littoral zone is defined as the marshland located above the level of the vegetation bathed by the twice-daily high tides, but below the upper littoral zone, where the ground is covered by water only during very high tides and storm tides (Service 1985b). There have been no description of historical inland occurrences (Service 2009f).

Salt marsh bird's-beak and most other species restricted to salt marsh habitats are potentially impacted by factors that alter the salinity and/or duration of inundation of their habitat. Daily and seasonal changes in salinity and inundation are associated with normal tidal flows. The marsh soils are predominantly clay and silt (Zedler et al. 1980). The upper elevation of all salt marshes, where salt marsh bird's-beak is often found, becomes desiccated in summer. Salinity is higher in the summer when there is less rainfall and surface runoff, compared to winter months (Zedler et al. 1980). Salinity may be lower in those estuaries where the mouth is blocked from the ocean tides and fresh water builds up in the marsh (Zedler et al. 1980). Salinity of the water at the time of germination usually cannot exceed 12 parts per thousand (Newman 1981).

Life History

Each flower may produce 10-40 seeds (Chuang and Heckard 1993). Seeds germinate generally over a 3- to 5-week period in March or April and may be followed by a high mortality rate after 4 to 6 weeks (Dunn 1987). In a study, a higher percentage of Salt marsh bird's-beak seeds germinated in freshwater under conditions of 16 hours of light and 8 hours of dark (Dunn 1987).

This may indicate that germination in the halophytic taxa of *Cordylanthus* during dry cycles is limited by the amount of rainfall or surface flow of fresh water at seed bed sites.

The flowering period for salt marsh bird's-beak occurs between May and October (Munz 1974; Naval Base Ventura County Point Mugu 2003). Individual plants senesce in late July after flowering and setting seed (Dunn 1987). Thus, like most plants termed "annuals" they complete their life cycle in substantially less than one year. The flowers are self-compatible and are pollinated by various bees including *Bombus pennsylvanicus sonorous*, *Anthidium edwardsii*, and *Melissodes tepida timberlakei* (Lincoln 1985). These are ground nesting bees (Lincoln 1985) and, as such, require adequate nesting grounds. In a report conducted on the Point Magu population of salt marsh bird's-beak, it was found the mean seed set per flower is about 5.6 to 14.2 for three sites (Lincoln 1985).

Status and Distribution

Salt marsh bird's-beak is found in nine coastal marsh complexes across the species' range. Seven marsh complexes are in the United States (Morro Bay, Carpinteria Salt Marsh, Ormond Beach/Mugu Lagoon, Upper Newport Bay, San Diego River Mouth, San Diego Bay (including Sweetwater Marsh), and Tijuana Estuary. Two marsh complexes are in Baja California, Mexico: Estero Punta Banda, and Bahía de San Quintín (Service 2009f).

Salt marsh bird's-beak was introduced at the Huntington Beach Wetlands in 2015 and 2016 (Zahn 2017). Plants were reported in three subsequent years (2017, 2019, and 2020) and are reproducing and dispersing on site (Tidal Influence 2019; Eric Zahn, pers. comm. 2020). However, the location is not yet considered an established population (Tidal Influence 2019), and additional monitoring is needed. So, although salt marsh bird's-beak currently occurs at Huntington Beach Wetlands, it is not included when calculating the current distribution of the species.

Threats and Conservation Needs

Threats to salt marsh bird's-beak include habitat loss, altered hydrology in suitable habitat, unauthorized off-highway vehicle (OHV) use, and competition with nonnative plants. Surrounding urbanization at many marshes reduces the area available for horizontal marsh migration, increasing marsh vulnerability to sea level rise (Callaway and Zedler 2004, Fong and Kennison 2010, Rosencranz et al. 2018, and Thorne et al. 2018).

Nonnative plants can affect native plants by directly competing for resources, and by altering biotic interactions. There is uncertainty about the intensity of effects to salt marsh bird's-beak and habitat from nonnative species, but there is evidence that a nonnative annual (*Parapholis incruvata)* is a less effective host (a "pseudo-host") for salt marsh bird's-beak than a native host (*Distichlis spicata)* (Fellows and Zedler 2005). If nonnative species reduce the resources available for salt marsh bird's-beak growth and reproduction, reduced input to the seed bank over time could reduce the species population resiliency.

Although we cannot predict the exact effects of climate change on salt marsh bird's-beak, it is likely that it will exacerbate some identified threats and may introduce new additional threats such as sea-level rise. Projections reveal likely increase marsh inundation frequency and

duration, reducing the amount of high marsh habitat within Pacific coastal estuaries as a result of sea level rise, increased temperature, and more frequent and intense storms and droughts (Thorne et al. 2018).

Conservation needs of the species include continuing to work with partners to expand the current distribution of salt marsh bird's-beak, including augmentation of existing populations and reintroduction efforts; conducting genetic research to resolve taxonomic questions about the distribution of the listed entity, especially at Morro Bay; removing non-native Limonium from occupied marshes; conducting additional research into salt marsh bird's-beak seed tolerance to solarization when treating Limonium; engaging stakeholders and species experts in salt marsh bird's-beak sea-level rise planning; and conducting additional research into environmental covariates important for salt marsh bird's-beak distribution and abundance (Service 2020f).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to the salt marsh bird's-beak:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts. Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied salt marsh bird's-beak habitat. However, not all Modeled Habitat is expected to support salt marsh bird's-beak occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the salt marsh bird's-beak Modeled Habitat, there are approximately 659 acres in the Plan Area and approximately 29 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of salt marsh bird's-beak Modeled Habitat occurs exclusively in the southern coast ecoregion. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 6 and 3 salt marsh bird's-beak occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2020 5-year review for salt marsh bird's-beak included an analysis of the status of salt marsh bird's-beak at different locations throughout its range. Each of the records included in the 2020 5-year review may represent one or more occurrences from the CNDDB. The 2020 5-year review identified records of salt marsh bird's beak at three San Diego County coastal marsh complexes: San Diego River Mouth, San Diego Bay (including Sweetwater Marsh) and Tijuana Estuary.

Salt marsh bird's-beak is covered by the following existing regional HCP that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)

This HCP forms a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 633 acres of Modeled Habitat occur within Preserves (96 percent of all Modeled Habitat) associated with this HCP within the Plan Area. No Modeled Habitat occurs within Proposed Preserves. In addition, five occurrences of salt marsh bird's-beak recorded in the CNDDB databases are located within Preserves in the Plan Area (CDFW 2023). There is no suitable habitat for this species on existing SDG&E mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 0.38 acre of salt marsh bird's-beak Modeled Habitat, which is a fraction of the 659 acres of salt marsh bird's-beak Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 0.24 acre (or 0.04 percent of Modeled Habitat in the Plan Area) of permanent impacts; and

- Approximately 0.14 acre (or 0.02 percent of Modeled Habitat in the Plan Area) of temporary impacts.

Wildfire Fuels Management is not expected to occur in areas of salt marsh bird's-beak Modeled Habitat.

This impact represents about 0.06 percent of salt marsh bird's-beak Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for salt marsh bird's-beak. However, because salt marsh bird's-beak is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[67] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied salt marsh bird's-beak habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[68]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact salt marsh bird's-beak and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to salt marsh bird's-beak will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of salt marsh bird's-beak within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of salt marsh bird's-beak. Therefore, it is likely that substantially less than 0.38 acre of occupied salt marsh bird's-beak habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some salt marsh bird's-beak could be impacted within up to 0.38 acre of Tracked Habitat that is impacted in association with the Covered Activities. Salt marsh bird's-

[67] Up to 0.06 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 6 salt marsh bird's-beak occurrences in the Plan Area. The product of 0.06 percent and 6 is less than one.
[68] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

beak could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities. Management and monitoring activities on mitigation lands could result in minor, temporary loss of habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for the salt marsh bird's-beak are anticipated to avoid, minimize, and mitigate the direct impacts associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to salt marsh bird's-beak habitat, as specified in the OP 76 include: 1) when work occurs within a known or potential area of occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts, and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to salt marsh bird's-beak occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to salt marsh bird's-beak occupied habitat will be mitigated at a 2:1 to 4:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through measures that will benefit the species. In perpetuity monitoring and management of the existing/future mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of salt marsh bird's-beak habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual salt marsh bird's-beak within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of salt marsh bird's-beak within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the salt marsh bird's-beak.

Because Covered Activities will impact a small fraction of the salt marsh bird's-beak habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of salt marsh bird's-beak within the Plan Area or rangewide.

Effects from Changes to Hydrology, Erosion, Sedimentation, Non-Native Plants and Habitat Fragmentation

The salt marsh bird's-beak could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to salt marsh bird's-beak include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology, erosion, sedimentation, non-native plants and habitat fragmentation.

Salt marsh bird's-beak currently occurs in coastal salt marshes from northern Baja California, Mexico to San Luis Obispo County, California (Chuang and Heckard 1973, p. 146). The hydrology of natural salt marshes is determined by the intertidal elevation of the site, the precipitation in the area, and stream flow (Kuhn and Zedler 1997, p. 391). Changes in hydrology and increased erosion and sedimentation could potentially have a significant impact on salt marsh bird's-beak. Measures will be implemented to minimize changes in hydrology and increased erosion and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands and narrow endemic populations (OP 21).

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat necessary for salt marsh bird's-beak. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of the salt marsh bird's-beak.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting salt marsh bird's-beak dispersal that contributes to long-term population viability for the salt marsh bird's-beak. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and

unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat in order to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology, erosion, sedimentation, non-native plants and habitat fragmentation due to Covered Activities are not likely to result in a decrease in salt marsh bird's-beak survival or reproduction beyond baseline conditions.

Effect of Recovery

Conservation and recovery of the salt marsh bird's-beak is largely being accomplished through the development and implementation of regional NCCP/HCP planning efforts San Diego County. The entire range of the of salt marsh bird's-beak is covered by these efforts. One regional NCCP/HCP covering the salt marsh bird's-beak is now in place. Although this NCCP/HCP allows for minimal impacts to salt marsh bird's-beak through destruction of habitat, this plan also regulates and mitigates such actions. This NCCP/HCP is making substantial contributions to the conservation of salt marsh bird's-beak by creating a network of managed preserves with core habitat areas that are linked across the broader landscape.

Implementation of the HCP Amendment is consistent with the Service's efforts to recover the salt marsh bird's-beak regional NCCP/HCP planning efforts San Diego County. Although the proposed Covered Activities will impact habitat that is used by the salt marsh bird's-beak for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts to salt marsh bird's-beak occupied habitat will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to be integral to our ongoing NCCP/HCP regional planning efforts and to result in a no "net loss" of habitat and support recovery of the salt marsh bird's-beak.

We expect no more than 0.38 acre of salt marsh bird's-beak Tracked Habitat will be impacted. Because HCP Amendment will affect a fraction of the salt marsh bird's-beak habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to the species, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any salt marsh bird's-beak population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as

described in the HCP Amendment is not likely to jeopardize the continued existence of the salt marsh bird's-beak. We base this conclusion on the following:

1. Impacts will be limited to no more than 0.38 acre of salt marsh bird's-beak Tracked Habitat, which represents about 0.06 percent of Modeled Habitat for the salt marsh bird's-beak in the Plan Area.

2. Based on the known distribution of salt marsh bird's-beak within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of salt marsh bird's-beak. Therefore, it is likely that substantially less than 0.38 acre of occupied salt marsh bird's-beak habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual salt marsh bird's-beak will be harmed by Covered Activities.

4. All impacts to salt marsh bird's-beak will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

5. Because Covered Activities will affect a small proportion of the salt marsh bird's-beak habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by salt marsh bird's-beak, and the implementation of measures to avoid, minimize, and mitigate anticipate impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any salt marsh bird's-beak population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain salt marsh bird's-beak in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Orcutt's Spineflower (Chorizanthe orcuttiana)

Status of the Species

Listing Status

Orcutt's spineflower (*Chorizanthe orcuttiana*)was listed as endangered in October 1996 (61 FR 52370). A recovery plan has not been prepared, and no critical habitat has been designated. A 5-year review for Orcutt's spineflower was completed in 2014 and 2021 (Service 2014b and 2021). The 5-year reviews recommended no change in the status of the Orcutt's spineflower.

Species Description

Orcutt's spineflower is a small (1-15 cm) annual plant endemic to San Diego County, California. The clustered flowers are small and each produces a single seed (Service 2021i). The leaves are

typically simple and entire, often forming a basal rosette (Bauder et al. 2010). This species is a member of the Polygonaceae (Buckwheat) family.

Habitat Affinities

Orcutt's spineflower is endemic to San Diego County and is primarily restricted to weathered sandstone bluffs or loose sandy soils in association vegetation described historically as coastal or southern maritime chaparral (Hogan et al. 1996, Service 1996b, Bauder 2000b). Coastal stands of chaparral with *Adenostoma fasciculata* var. *obtusifolium* (chamise), *Ceanothus verrucosus* (wart-stemmed ceanothus), *Arctostaphylos glandulosa subsp. crassifolia* (Del Mar manzanita), *Quercus dumosa* (Nuttall's scrub oak), *Baccharis vanessae* (Encinitas Baccharis), and *Comarostaphylis diversifolia subsp. diversifolia* (summer holly) were indicative of southern maritime chaparral (Hogan et al. 1996).

The soil types examined from verified occurrences of Orcutt's spineflower were dominated (mean 90 percent), by the sand fraction with moderate acidity, low organic content, and nitrate nitrogen (Bauder 2000b). The predominant soil type appears to be consistent with the characteristics of Carlsbad Series gravelly loamy sand (Bowman 1973). The soils are moderately well drained to well drained, slightly acid, derived from ferruginous sandstone, and often contain iron concretions (Bowman 1973).

There are 3,049 acres of habitat identified as southern maritime chaparral in San Diego County (Service 2013b, GIS data). Currently 1,969 acres are conserved. Most of this acreage is not known to be occupied by Orcutt's spineflower but may support as yet undetected occurrences or be suitable for recovery actions. The historical extent of occupancy by Orcutt's spineflower is unknown. The occurrences are small patches, often with constricted connectivity to adjacent patches.

Life History

This species is likely a winter annual, germinating after first significant fall rains (Kluse & Doak 1999). The vegetative plants form a small rosette of leaves from which the flower stalks develop in the spring. Orcutt's spineflower may be a predominantly selfing species with some low level of outcrossing based on genetic assessments of material from Point Loma (Truesdale 2010). Flowering and fruiting occur by late April. Seeds do not appear to have any specialized dispersal mechanism, although the involucres surrounding groups of flowers could be carried by an animal. Germination usually takes place over a period of time and seasonal weather patterns could lead to two or more germination events (Bauder et al. 2010).

Status and Distribution

Orcutt's spineflower is extremely rare and was thought to be extinct for a time (Reveal and Hardham 1989). The known historical range of Orcutt's spineflower remains the same as it was at the time of listing. We currently consider there to be five extant occurrences (one of these is presumed extant) and nine extirpated occurrences (four of these are presumed extirpated or too vague to map) (Service 2021i). These occurrences range from Oak Park in Encinitas to Point Loma Naval Base. However, several occurrences have not been surveyed for 10 years or more.

All of the known occurrences of this species are within 6 miles of the Pacific Ocean at elevations less than 328 feet above mean sea level.

Population trend data for an annual plant may be misleading, and Orcutt's spineflower is a naturally rare species. Differences in plant numbers of Orcutt's spineflower fluctuate within years and differ between years due to total seasonal precipitation and likely the pattern of rainfall (Bauder et al. 2010).

Threats and Conservation Needs

Urban and recreation development, erosion, invasive nonnative plants, and fire regime are the major threats to this species. Unchecked invasive growth of native plants, likely due to lack of browsing and natural fire regimes, has led to a decrease in open, suitable habitat for the species. Encroaching native plants and invasive nonnative plants both pose threats to Orcutt's spineflower. *Muhlenbergia rigens* (deergrass), a native grass, was removed from some of the habitat at Oak Crest Park because of its potential to crowd out and shade otherwise suitable habitat for Orcutt's spineflower (Bauder 2000b). Fire likely contributes to maintenance of natural open spaces for annual and herbaceous perennial plants associated with these habitats, but it is not likely to be the only factor in maintenance of suitable habitat for Orcutt's spineflower (Service 2021i).

Conservation needs include managing extant populations to minimize the threats identified above, continued collection of information to inform management, and reintroduction into areas of suitable habitat that are currently unoccupied (Service 2021i).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to the Orcutt's spineflower:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts.

Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Orcutt's spineflower habitat. However, not all Modeled Habitat is expected to support Orcutt's spineflower occurrences (i.e., Occupied Habitat) and Occupied Habitat may occur outside of Modeled Habitat. Based on the Orcutt's spineflower Modeled Habitat, there are approximately 1,848 acres in the Plan Area and approximately 321 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, Orcutt's spineflower Modeled Habitat occurs only in the central coast ecoregion. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 10 and 4 Orcutt's spineflower occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2021 5-year review for Orcutt's spineflower included an analysis of the status of Orcutt's spineflower at different locations throughout its range. Each of the records included in the 2021 5-year review may represent one or more occurrences from the CNDDB**.** The 2021 5-year review identified a total of 21 Orcutt's spineflower records in San Diego County, including 9, extant, 9 extirpated, 1 possibly extirpated, and 2 introduced research sites (Service 2021i). The species range is extremely limited and confirmed extant occurrence locations as of 2021 are: Oakcrest Park, Gonzales Canyon, Torrey Pines State Natural Reserve, Crest Canyon, Sorrento Hills, Point Loma Nazarene College, Point Loma west of Cabrillo Memorial Drive, and U.S. Naval Base Point Loma research sites.

Orcutt's spineflower is covered by the following existing regional HCP that overlap the Plan Area:

- San Diego MHCP Subregional NCCP/HCP

Although Orcutt's spineflower is not covered, the following existing regional HCP also overlaps the Plan Area:

- San Diego MSCP Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 1,127 acres of Modeled Habitat occur within Preserves, and 94 acres of Modeled Habitat occur within Proposed Preserves (collectively, 66 percent of all Modeled Habitat) associated with this HCP within the Plan Area. In addition, 7 occurrences of Orcutt's spineflower recorded in the CNDDB databases are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

Orcutt's spineflower is also addressed in the Integrated Natural Resources Management Plan (INRMP) for Naval Base Point Loma and the Point Loma Ecological Conservation Area (PLECA) that overlap the Plan Area. While the IRNMP and PLECA do not establish preserve areas, they do provide for conservation actions (e.g., research, surveys, fire management, population expansion, and habitat restoration and enhancement) that benefit Occutt's spineflower.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 5.53 acres of Orcutt's spineflower Modeled Habitat, which is a fraction of the 1,848 acres of Orcutt's spineflower Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 2.62 acres (or 0.14 percent of Modeled Habitat in the Plan Area) of permanent impacts;

- Approximately 1.53 acres (or 0.08 percent of Modeled Habitat in the Plan Area) of temporary impacts; and

- Approximately 1.38 acres (or 0.07 percent of Modeled Habitat in the Plan Area) of Wildfire Fuels Management impacts.

This represents about 0.29 percent of Orcutt's spineflower Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for Orcutt's spineflower. However, because Orcutt's spineflower is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[69] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied Orcutt's spineflower habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[70]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact Orcutt's spineflower and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Orcutt's spineflower will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of Orcutt's spineflower within the Plan Area and its specific habitat requirements (i.e., weathered sandstone bluffs or loose sandy soils in coastal or southern maritime chaparral), we anticipate that only limited areas within Modeled Habitat support occurrences of Orcutt's spineflower. Therefore, it is likely that substantially less than 5.53 acres of occupied Orcutt's spineflower habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some Orcutt's spineflower will be killed or injured within up to 5.53 acres of Tracked Habitat as a result of habitat loss/degradation in association with Covered Activities. Orcutt's spineflower could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities. Management and monitoring activities on mitigation lands could result in minor, temporary loss of habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for the narrow endemic plants are anticipated to avoid, minimize, and mitigate the direct impacts to Orcutt's spineflower associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to Orcutt's spineflower habitat, as specified in the OP 76 include: 1) when work occurs within a known or potential area of

[69] Up to 0.29 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 10 Orcutt's spineflower occurrences in the Plan Area. The product of 0.29 percent and 10 is less than one.
[70] See "*Description of the Proposed Action*" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts; and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to Orcutt's spineflower occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to Orcutt's spineflower occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Orcutt's spineflower habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Orcutt's spineflower within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Orcutt's spineflower within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the Orcutt's spineflower.

Because Covered Activities will impact a small fraction of the Orcutt's spineflower habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Orcutt's spineflower within the Plan Area or rangewide.

Effects from Changes to Hydrology, Erosion, Sedimentation, Non-Native Plants, and Habitat Fragmentation

The Orcutt's spineflower could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to Orcutt's spineflower include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology, erosion, sedimentation, non-native plants, and habitat fragmentation.

Orcutt's spineflower is primarily restricted to weathered sandstone bluffs or loose sandy soils in association vegetation described historically as coastal or southern maritime chaparral (Hogan et al. 1996, Service 1996b, Bauder 2000b). Orcutt's spineflower habitat is susceptible to erosion and sedimentation through things such as drainage outflow from culverts (Service 2014c).

Changes to hydrology has potential to increase existing erosion and sedimentation control challenges or create new ones. Measures will be implemented to minimize changes to hydrology and increased erosion and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands and narrow endemic populations (OP 21).

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat necessary for Orcutt's spineflower. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of the Orcutt's spineflower.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Orcutt's spineflower dispersal that contributes to long-term population viability for the Orcutt's spineflower. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology, erosion, sedimentation, non-native plants, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in Orcutt's spineflower survival or reproduction beyond baseline conditions.

Effect of Recovery

Conservation and recovery of the Orcutt's spineflower is largely being accomplished through the development and implementation of regional NCCP/HCP planning efforts in San Diego County. In addition, the INRMP for Naval Base Point Loma and PLECA provide for conservation actions that support recovery of Orcutt's spineflower. The entire range of the Orcutt's spineflower is covered by these efforts. Two regional NCCP/HCPs that cover or preserve land that is occupied by the Orcutt's spineflower are now in place. Although these NCCP/HCPs allow for minimal impacts to Orcutt's spineflower through destruction of habitat, these NCCP/HCPs also regulate and mitigate such actions. These NCCP/HCPs are making substantial contributions to the conservation of Orcutt's spineflower by creating a network of managed preserves with core habitat areas that are linked across the broader landscape and/or provide for conservation actions that benefit Orcutt's spineflower.

Implementation of the HCP Amendment is consistent with the Service's efforts to recover the Orcutt's spineflower through regional NCCP/HCP planning efforts in San Diego County. The Plan Area for the SDG&E's subregional plan overlaps and is compatible with two of the broader NCCP/HCPs, an INRMP, and the PLECA, within the region. Although the proposed Covered Activities will impact habitat that is used by the Orcutt's spineflower for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts to Orcutt's spineflower occupied habitat will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to be integral to our ongoing NCCP/HCP regional planning and INRMP and PLECA conservation efforts and thus support recovery of the Orcutt's spineflower.

We expect no more than 5.53 acres of Orcutt's spineflower Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of Orcutt's spineflower habitat and population in the Plan Area, and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to the species, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any coastal Orcutt's spineflower population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the Orcutt's spineflower. We base this conclusion on the following:

1. Impacts will be limited to no more than 5.53 acres Orcutt's spineflower Tracked Habitat, which represents about 0.29 percent of Modeled Habitat for the Orcutt's spineflower in the Plan Area.

2. Based on the known distribution of Orcutt's spineflower within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of Orcutt's spineflower. Therefore, it is likely that substantially less than 5.53 acres of occupied Orcutt's spineflower habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual Orcutt's spineflower will be harmed by Covered Activities.

4. Impacts to Orcutt's spineflower will be avoided to the maximum extent practicable and all unavoidable impacts will be mitigated at mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

5. Because Covered Activities will affect a small proportion of the Orcutt's spineflower habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Orcutt's spineflower and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any Orcutt's spineflower population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain Orcutt's spineflower in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Otay Tarplant (Deinandra conjugens)

Status of the Species

Listing Status

The Service listed Otay tarplant (*Deinandra conjugens*) as threatened in October 1998 (63 FR 5438). Otay tarplant recovery plan was completed in December 2004 (Service 2004c). Critical habitat was designated December 2002 (67 FR 76030). In June 2009, the Service completed a 5-year review addressing the status of Otay tarplant (Service 2009g) that recommended no change in the status of Otay tarplant. An updated 5-year review is expected to be completed in 2023.

Species Description and Critical Habitat Description

Otay tarplant is an annual herbaceous plant in the Asteraceae (sunflower) family. Individual plants are less than 16 inches tall, with lobed leaves and yellow flowers arranged in heads of 8 to 10 ray flowers and 13 to 21 disk flowers. It has a branching stem with deep green or gray-green leaves covered with soft, shaggy hairs.

Otay tarplant occurs within the range of *Deinandra fasciculata* [= *H. fasciculata*] (fasciculated tarplant) and *Deinandra paniculata* [= *H. paniculata*] (San Diego tarplant). Otay tarplant can be

distinguished from other members of the genus by its ridged phyllaries, black anthers (part of the flower that produces pollen), and the number of disk and ray flowers. The disk and ray flowers each produce different types of fruits (heterocarpy), which has been correlated to differential germination responses (Tanowitz et al. 1987).

Critical habitat for Otay tarplant encompasses approximately 6,330 acres in San Diego County in the following three units: Unit 1: Sweetwater/Proctor Valley Unit; Unit 2: Chula Vista Unit; and Unit 3: Otay Valley/Big Murphy's Unit (Service 2002d).

PBFs of Otay tarplant critical habitat consist of, but are not limited to, soils with a high clay content (generally greater than 25 percent) (or clay intrusions or lenses) that are associated with grasslands, open coastal sage scrub, or maritime succulent scrub communities between 80 and 1,000 feet elevation (Bauder et al. 2002a; CNDDB 2002, as cited in Service 2002d).

Please refer to the final critical habitat rule (67 FR 76030) for detailed information on the units, including their sizes, locations, and special management considerations.

Habitat Affinities

The presence of Otay tarplant is strongly correlated with clay soils, subsoils, or lenses (isolated area of clay soil) (Bauder *et al*. 2002a). Such soils typically support grasslands, but they may also support some woody vegetation. Much of the area with clay soils and subsoils within the historical range of Otay tarplant likely was once vegetated with native grassland, open coastal sage scrub, and maritime succulent scrub, which provided suitable habitat for Otay tarplant. Based on GIS analysis, most current and historical Otay tarplant occurrences are found on clay soils or lenses in one of the following soil series: Diablo, Olivenhain, Linne, Salinas, Huerhuero, Auld, Bosanko, Friant, and San Miguel-Exchequer rocky silt loams (Bauder *et al*. 2002a). Otay tarplant is also strongly associated with particular vegetation types. The species is found in vegetation communities classified as, but not limited to, grasslands, open coastal sage scrub, and maritime succulent scrub, as well as the margins of some disturbed sites and cultivated fields (Service 2002d).

Life History

Otay tarplant, as with most other tarplants, is sporophytically self-incompatible (Keck 1959b, Service 2004c). Gene flow among plant populations through pollination is important for the long-term survival of self-incompatible species (Ellstrand 1992). Gene flow in Otay tarplant is achieved through pollen movement among occurrences and is critical to maintaining genetic diversity between extant populations and within the species. Seed dispersal can also facilitate limited gene flow in contiguous habitat areas. Some of the smaller populations of Otay tarplant are believed to be essential to the survival and conservation of the species because they may be strategically located between larger populations, facilitating gene flow among them, and may contain unique frequencies of self-incompatible alleles. Conservation of these populations may be critical to maintaining genetic diversity in Otay tarplant (Service 2004c).

Likely pollinators of Otay tarplant include, but are not limited to, bee flies (*Bombylliidae*), hover flies (*Syrphidae*), digger bees (*Apidae*), carpenter and cuckoo bees (*Anthophoridae*), leaf mason

and leaf cutting bees (*Megachilidae*), and metallic bees (*Halictidae*) (Krombein et al. 1979, Bauder et al. 2002a).

Otay tarplant fruits are each one-seeded and are likely to be dispersed by small to large-sized mammals and birds based on the sticky nature of the remaining flower parts that are attached to the fruits and the discontinuous distribution of other tarplants (Service 2004c). Potential seed/fruit dispersal organisms known to occur in the region include, but are not limited to, mule deer (*Odocoileus hemionus*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus bennettii*), bobcat (*Felis rufus*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), and various small land birds.

A seed bank (a reserve of dormant seeds, generally found in the soil) is important for year-to-year and long-term survival of many annual or short-lived perennial species, including Otay tarplant (Rice 1989, Given 1994). The extent and nature of the seed bank can influence the number and location of standing tarplant in a population. Additional factors, including the amount and timing of rainfall, temperature, and soil conditions also influence germination. As a result, the extent and distribution of observable, standing plants may not coincide with the full extent of the seed bank.

Status and Distribution

Otay tarplant has a narrow geographic and elevational range that is restricted to southwestern San Diego County, California, and adjacent Baja California, Mexico. There are currently 34 extant occurrences distributed discontinuously in southwestern San Diego County, California (Service 2009g).

The number and location of standing plants in a population of an annual species, varies each year due to a number of factors, including the amount and timing of rainfall, temperature, soil conditions, and the extent and nature of the seed bank. Large annual fluctuations in the number of standing plants of Otay tarplant in a given population have been documented. Population size has ranged from 1 to over 5,400 standing plants at a site on northwest Otay Mesa (City of San Diego 1999, CDFG 2002, as cited in Service 2002d), from approximately 100 to 50,000 at a site in Rice Canyon (CDFG 2002, as cited in Service 2002d), and from approximately 280,000 to 1.9 million at San Miguel Ranch South (Merkel 1999, CDFG 2002, as cited in Service 2002d). In any given year, the observable plants in a population are only the portion of the individuals from the seed bank that germinated that year. The spatial distribution of a standing population of annual plants is generally the result of the spatial distribution of the micro-environmental conditions conducive to seed germination and growth of the plants.

Threats and Conservation Needs

Development and agriculture, invasion of non-native species, and habitat fragmentation and degradation have resulted in the loss of suitable habitat across the species' range. Otay tarplant's annual habit and self-incompatible breeding system potentially create additional threats from population fluctuations, reduced populations of pollinators, and a decline in genetic variation. Maintenance of the genetic variability within the species, through cross-pollination, may be

critical to long-term survival. The extensive fragmentation of remaining populations may exacerbate these threats by reducing connectivity between populations and potentially limiting suitable pollinators, and hence gene flow between populations (Service 2004c, 2009).

Although we cannot predict the exact effects of climate change on Otay tarplant, it is likely that it will exacerbate identified threats and may introduce new additional threats. Five factors associated with a changing climate that may affect the long-term viability of Otay tarplant occurrences in its current habitat configuration include: 1) drier conditions may result in a lower percent germination and smaller population sizes; 2) higher temperatures may inhibit germination; 3) a shift in the timing of the annual rainfall may favor non-native species; 4) the timing of pollinator life-cycles may become out-of sync with timing of flowering; and 5) drier conditions may result in increased fire frequency, making the ecosystems in which Otay tarplant currently grows more vulnerable to the threats of subsequent erosion and non-native/native plant invasion. In a changing climate, conditions could also change in a way that would allow both native and non-native plants to invade the habitat where Otay tarplant occurs.

Conservation needs include the development and implementation of effective invasive species management actions for all conserved occurrences of Otay tarplant and to identify and monitor measures for indicating species status that are separable or insulated from natural annual population expressions (Service 2009g).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to Otay tarplant:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts. Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Otay tarplant habitat. However, not all Modeled Habitat is expected to support Otay tarplant occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on Otay tarplant Modeled Habitat, there are approximately 2,075 acres in the Plan Area and approximately 370 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of Otay tarplant Modeled Habitat occur in the southern valley and southern coast ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 39 and 32 Otay tarplant occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2009 5-year review for Otay tarplant included an analysis of the status of Otay tarplant at different locations throughout its range. Each of the records included in the 2009 5-year review may represent one or more occurrences from the CNDDB. The 2009 5-year review identified 34 extant Otay tarplant in San Diego County found primarily in south San Diego County including Otay Mesa/Moody Canyon, Dennery Canyon, Otay River Valley, Johnson Canyon, Salt Creek, Proctor Valley, Bonita Meadows/Trimark, Rice Canyon, Rancho Jamul Ecological Reserve, Mother Miguel grasslands, and Sweetwater Reservoir (Service 2009g)

Otay tarplant is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment

and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 704 acres of Modeled Habitat occur within Preserves, and 105 acres of Modeled Habitat occur within Proposed Preserves (collectively, 39 percent of all Modeled Habitat) associated with these HCPs within the Plan Area. In addition, 31 occurrences of Otay tarplant recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E Cielo mitigation lands but has a moderate potential to occur on the Willow Glen and Otay Lakes mitigation lands.

The Plan Area and PIZ include a total of approximately 6,333 acres and 770 acres (672 acres with PBFs), respectively, in Units 1a-e, 2a-h and 3a-c of designated critical habitat for the Otay tarplant. Unit 1 contains populations in the northern and eastern extent of this species' historical distribution which are essential to the conservation of the species, and these populations can likely maintain genetic connectivity within and among themselves and with Units 2 and 3. Unit 2 contains populations in the western extent of this species' distribution, which although currently isolated from each other, may contain significant amounts of genetic diversity and are, therefore, essential to the conservation of the species. Unit 3 contains populations in the southern and eastern portions of this species' distribution that are essential to the conservation of the species, and may have connectivity with populations in northwestern Baja California, Mexico. Critical habitat within the Plan Area includes all PBFs essential for the conservation of the Otay tarplant and may require special management considerations or protection.

The Plan Area also includes all the known populations of Otay tarplant identified in the recovery plan (Service 2004c).

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 6.38 acres of Otay tarplant Modeled Habitat, which is a fraction of the 2,075 acres of Otay tarplant Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 3.02 acres of permanent impacts (or 0.15 percent of Modeled Habitat in the Plan Area);

- Approximately 1.76 acres of temporary impacts (or 0.08 percent of Modeled Habitat in the Plan Area); and

- Approximately 1.6 acres of Wildfire Fuels Management impacts (or 0.08 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.31 percent of Otay tarplant Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for Otay tarplant. However, because Otay tarplant is not uniformly distributed

within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[71] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied Otay tarplant habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[72]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact Otay tarplant and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Otay tarplant will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of Otay tarplant within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of Otay tarplant. Therefore, it is likely that substantially less than 6.38 acres of occupied Otay tarplant habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some individual Otay tarplant will be killed or injured within up to 6.38 acres of Otay tarplant Tracked Habitat that is impacted in association with Covered Activities. Otay tarplant could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities.

Management and monitoring activities on mitigation lands could result in minor, temporary loss of Otay tarplant habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for narrow endemic plants are anticipated to avoid, minimize, and mitigate the direct impacts to Otay tarplant associated with Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag

[71] Up to 0.31 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 31 Otay tarplant occurrences in the Plan Area. The product of 0.31 percent and 31 is less than one.
[72] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to Otay tarplant habitat, as specified in the OP 76 include: 1) when work occurs within a known or potential area of occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts; and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to Otay tarplant occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to Otay tarplant occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Otay tarplant habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Otay tarplant within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Otay tarplant within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to Otay tarplant.

Because Covered Activities will impact a small fraction of Otay tarplant habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Otay tarplant within the Plan Area or rangewide.

Effects from Non-Native Plants and Habitat Fragmentation

Otay tarplant could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to Otay tarplant include the degradation of habitat outside the footprint of Covered Activities as a result of non-native plants and habitat fragmentation.

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat

necessary for Otay tarplant. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of Otay tarplant.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Otay tarplant dispersal that contributes to long-term population viability for Otay tarplant. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat in order to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from non-native plants and habitat fragmentation due to Covered Activities are not likely to result in a decrease in Otay tarplant survival or reproduction beyond baseline conditions.

Effects to Critical Habitat

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 11.59 acres of Otay tarplant critical habitat with PBFs within Units1a-e, 2a-h and 3a-c, which is a fraction of the 6,333 acres Otay tarplant critical habitat within the Plan Area. These impacts will include:

- Approximately 5.49 acres of permanent impacts (0.09 percent of critical habitat in the Plan Area);

- Approximately 3.2 acres of temporary impacts (0.05 percent of critical habitat in the Plan Area); and

- Approximately 2.9 acres of Wildfire Fuels Management impacts (0.05 percent of critical habitat in the Plan Area).

This impact represents about 0.19 percent of the overall Otay tarplant critical habitat designation. Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ. Therefore, direct impacts to each critical habitat unit are also expected to be minor. Potential adverse effects of non-native plants and habitat fragmentation due to Covered Activities could also impact Otay tarplant critical habitat.

Impacts to Otay tarplant critical habitat will be avoided, if possible, during the planning process. If permanent impacts to critical habitat cannot be avoided, then SDG&E will first attempt to mitigate with credits in the existing mitigation lands that have critical habitat for the same species or acquire other lands that are designated as critical habitat. If no critical habitat is available from the existing or additional acquired mitigation lands, SDG&E will acquire, restore, and/or enhance mitigation land that will benefit Otay tarplant and/or its critical habitat, with the concurrence of Service (Section 5.4.2 of the HCP Amendment). In addition, any new Facility that would impacts more than 1.75 acres of critical habitat would require a Minor Amendment.

For the same reasons discussed in the species-specific analysis above, potential adverse effects from non-native plants and habitat fragmentation due to Covered Activities are not likely to result in a decrease in functioning of Otay tarplant critical habitat beyond baseline conditions.

Based on the above, we do not expect Covered Activities to impair the functions of Units1a-e, 2a-h, and 3a-c, and the overall Otay tarplant critical habitat designation, as sufficient areas will remain within the Plan Area to support genetic diversity and connectivity that contribute to long-term population viability for Otay tarplant.

Effect on Recovery

Conservation and recovery of Otay tarplant is largely being accomplished through the development and implementation of regional NCCP/HCP planning efforts in San Diego County. The entire range of Otay tarplant is covered by these efforts. Two regional NCCP/HCPs covering Otay tarplant are now in place. Although these NCCP/HCPs allow for minimal impacts to Otay tarplant through destruction of habitat, these plans also regulate and mitigate such actions. These NCCP/HCPs are making substantial contributions to the conservation of Otay tarplant by creating a network of managed preserves with core habitat areas that are linked across the broader landscape.

Implementation of the HCP Amendment is consistent with the Service's efforts to recover Otay tarplant through regional NCCP/HCP planning efforts in San Diego County. The Plan Area for the SDG&E's subregional plan overlaps and is compatible with several of the broader NCCP/HCPs within the region. Although Covered Activities will impact habitat that is used by Otay tarplant for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until

2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts to Otay tarplant occupied habitat will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to be integral to our ongoing NCCP/HCP regional planning efforts and thus support recovery of Otay tarplant.

We expect no more than 6.38 acres of Otay tarplant Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the Otay tarplant habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to the species, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any coastal Otay tarplant population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of Otay tarplant. We base this conclusion on the following:

1. Impacts will be limited to no more than 6.38 acres of Otay tarplant Tracked Habitat, which represents about 0.31 percent of Modeled Habitat for Otay tarplant in the Plan Area.

2. Based on the known distribution of Otay tarplant within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of Otay tarplant. Therefore, it is likely that substantially less than 6.38 acres of occupied Otay tarplant habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual Otay tarplant will be harmed by Covered Activities.

4. Covered Activities could result in the loss of PBFs within up to 11.59 acres of Otay tarplant critical habitat, which represents only 0.19 percent of the overall designation.

5. Loss of PBFs from Covered Activities within small project footprints distributed throughout the Plan Area are not expected to impair the function of the overall critical habitat designation, as sufficient areas will remain within the Plan Area to support genetic diversity and connectivity that contribute to long-term population viability for Otay tarplant.

6. Impacts to Otay tarplant and its critical habitat will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at existing or acquired mitigation lands that are occupied or have critical habitat or through the R/E Program or measures that will benefit this species or its critical habitat. This mitigation will ensure that habitat functions will be conserved and replaced

and are consistent with the overall habitat protection and management goals outlined in the recovery plan.

7. Because Covered Activities will affect a small proportion of Otay tarplant habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Otay tarplant, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any Otay tarplant population in the Plan Area or rangewide.

8. Long-term management and monitoring of mitigation lands will help sustain Otay tarplant in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

San Diego Button-Celery (Eryngium aristulatum var. parishii)

Status of the Species

Listing Status

San Diego button-celery (*Eryngium aristulatum var. parishii*) was listed as endangered on August 3, 1993 (58 FR 41384). Critical habitat has not been designated for this species. The *Recovery Plan for Vernal Pools of Southern California* (recovery plan, Service 1998a) addresses the San Diego button-celery and the *Recovery Plan Clarification for the Vernal Pools of Southern California* (clarification, Service 2019a) includes recover criteria clarification. A 5-Year Review for San Diego button-celery was completed in 2010 (Service 2010f) and recommended no change in listing status.

Species Description

San Diego button-celery is a biennial or longer-lived perennial gray-green herb that has a storage tap-root. It has a spreading shape and reaches a height of 16 inches (Constance 1993). The stems and lanceolate leaves give the plant a prickly appearance. San Diego button-celery is one of three varieties of *Eryngium aristulatum* (Constance1993). San Diego button-celery is separated from *Eryngium aristulatum* var. *aristulatum* (common) by having styles in fruit that are about the same length as the calyx (outer whorl of protective structures around the flower) and is separated from *Eryngium aristulatum* var. *hooveri* (Hoover's button-celery) by having bracelets (modified leaves) without callused margins (Constance 1993).

Some populations once identified as San Diego button-celery on Camp Pendleton are in fact *Eryngium pendletonensis* (Pendleton's eryngium; Marsden and Simpson 1999). San Diego button-celery is distinguished from *Eryngium pendletonensis* by a combination of leaf and flower characteristics (Marsden and Simpson 1999).

Habitat Affinities

San Diego button-celery is a vernal pool obligate taxon. Vernal pools are ephemeral wetlands that occur from southern Oregon through California into northern Baja California, Mexico (Service 1998a). They require a unique combination of climatic, topographic, geologic, and evolutionary factors for their formation and persistence. They form in regions with Mediterranean climates where shallow depressions fill with water during fall and winter rains and then dry up when the water evaporates in the spring (Collie and Lathrop 1976; Holland 1976; Holland and Jain 1977, 1988; Thorne 1984).

Downward percolation of water within the pools is prevented by an impervious subsurface layer consisting of claypan, hardpan, or volcanic stratum (Holland 1976, 1988a). Seasonal inundation makes vernal pools too wet for adjacent upland plant species adapted to drier soil conditions, while rapid drying during late spring makes pool basins unsuitable for typical marsh or aquatic species that require a more persistent source of water. Zedler (1987) hypothesizes that the patchy distribution of button-celery may be attributed to the extreme desiccation, which vernal pools undergo in summer, and therefore, the species favors pools with deep clay subsoil that do not dry as rapidly or as completely as those with shallower or more coarsely textured soils.

For convenience of reference, groups of vernal pools are sometimes referred to as vernal pool complexes that may include two to several hundred individual vernal pools (Keeler-Wolf et al. 1998). Vernal pool complexes are defined as a series of vernal pool groups that are hydrologically connected with similar soil types and species compositions. Within San Diego County, they were first described and surveyed by Beauchamp and Cass (1979) and subsequently updated in 1986 (Bauder) and 2004 (City of San Diego). Local upland vegetation communities associated with vernal pools include needlegrass grassland, annual grassland, coastal sage scrub, maritime succulent scrub, and chaparral (Service 1998a).

Life History

San Diego button-celery blooms from April to June; the small white flowers vary in length from 0.067 to 0.11 inch (Munz 1974, Constance 1993). Species-specific studies have not been conducted for San Diego button-celery regarding pollination, dispersal, population ecology, and genetics. It survives the dry summer and autumn months through dormant seeds and perenniating vegetative structures. San Diego button-celery is presumably insect-pollinated (Zedler 1987), potentially by bee flies (*Bombyliids*) (Schiller et al. 2000) and solitary bees (*Apoidea*), as are many vernal pool species (Thorpe 2007). San Diego button-celery seems more tolerant of peripheral vernal pool habitat than most obligate vernal pool species. It is specifically adapted to surviving in vernally wet conditions due to the presence of aerenchyma tissue (air channels in the roots) that facilitates necessary gas exchange in submerged plants (Keeley 1998).

Status and Distribution

The historical distribution of San Diego button-celery included a coastal swath from Mesa de Colonet and San Quintín in Baja California, Mexico, north to Los Angeles County, California in the United States. San Diego button-celery currently occurs in 14 geographic areas in Riverside and San Diego counties. There are four sites on the Santa Rosa Plateau (Western Riverside

County MSHCP 2003) in Riverside County. Within San Diego County, San Diego button-celery occurs in ten regional locations including Camp Pendleton, Carlsbad, San Marcos, Ramona, Del Mar Mesa, Carmel Mountain, Mira Mesa, MCAS Miramar, Otay Lakes, and Otay Mesa. Current status of the species in Mexico is unknown.

San Diego button-celery can be locally abundant in remnant vernal pools; however, the distribution of this variety has been dramatically reduced due to loss of most (95 to 97 percent) of the vernal pool habitat in San Diego County (Oberbauer and Vanderwier 1991a). Little data relative to population counts and trends are extant. In 2003, the City of San Diego conducted a survey of vernal pools within their jurisdiction. These surveys revealed that of the 69 sites surveyed, 28 contained San Diego button-celery. The taxon was found on 20 of 36 acres of basin habitat (City of San Diego 2004). Based on survey data at MCAS Miramar that incorporates survey efforts since 1993, San Diego button-celery was found in 20 of 45 vernal pool complexes located on the installation (Black 2004, 2007).

Threats and Conservation Needs

Threats to vernal pools and San Diego button-celery can be divided into three major categories: 1) direct destruction of vernal pools from construction, vehicle traffic, grazing, dumping, and deep plowing; 2) indirect threats that degrade or destroy vernal pools (e.g., altered hydrology, draining, competition by introduced species, habitat fragmentation); and 3) potential long-term, cumulative impacts such as the effects of isolation on genetic diversity and locally adapted genotypes, air and water pollution, drastic climatic variations, and changes in nutrient availability (Bauder 1986).

San Diego button-celery may also be affected by factors associated with climate change including: 1) drier conditions may result in fewer suitable pool complexes, a lower percent germination and smaller population sizes, and fewer and less reliable recovery cycles of abundant individuals; 2) higher temperatures may inhibit germination, speed desiccation of pools, and affect pollinator services; 3) a shift in the timing of the annual rainfall may favor non-native species; 4) the timing of pollinator life-cycles may become out-of-sync with timing of flowering San Diego button-celery; and 5) drier conditions may result in increased fire frequency, making the ecosystems in which San Diego button-celery grows more vulnerable to the threats of subsequent erosion and non-native/native plant invasion. In a changing climate, conditions could also change in a way that would allow both native and non-native plants to invade the habitat where San Diego button-celery occurs (Bauder et. al. 2002, Bauder 2005).

As with other vernal pool species, conservation of San Diego button-celery is dependent on maintaining hydrology and the surrounding watershed for the occupied vernal pools, as well as protecting adjacent upland habitats for pollinators. Extant populations need to be managed to reduce stressors from on-site and adjacent activities, and regular monitoring is essential to gauging population trends and stressor effects.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following Vernal Pool and Road-Rut OPs (59-75) in the HCP Amendment will be implemented to avoid and/or minimize impacts to the San Diego button celery:

Vernal Pools (naturally occurring, non-man-made)

59. Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable. Vehicular traffic through dry vernal pools shall not be considered an impact that requires mitigation.

60. If impacts to vernal pool habitat cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for vernal pool Covered Species. If project timing does not allow for surveys, SDG&E shall confer with USFWS to determine if any vernal pool Covered Species should be assumed present.

61. If surveys determine a vernal pool is occupied (or is assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the occupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

62. If surveys determine vernal pools are not occupied, permanent impacts that cannot be avoided shall be mitigated per the unoccupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

63. Prior to permanent and temporary impacts, SDG&E shall confer with USFWS on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools. Seed from vernal pool indicator plants shall be collected from the pools that will be impacted when the plants have dried and before the seed disperses. Seed collection may not be possible when precluded by weather or physical constraints, such as the Covered Activity occurring at a time of year when no seed is present. However, it is assumed that salvaged soil would contain a seed bank for these species, and they would be allowed to recover once the soil was reinstalled.

Inoculum shall be collected only from vernal pools that are free of versatile fairy shrimp (*Branchinecta lindahli*), and when it is dry to avoid damaging or destroying fairy shrimp cysts. Hand tools (i.e., shovels and trowels) shall be used to remove the first 2 inches of soil from the pools. Whenever possible, the trowel shall be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool shall be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessive heating of the soil and stored offsite at an appropriate facility for vernal pool inoculum. Inoculum from different source pools shall not be mixed for seeding any restored pools, unless otherwise approved by USFWS.

64. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools. The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist.

65. Grading Covered Activities immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools shall comply with the following:

a. Grading shall occur only when the soil is dry to the touch both at the surface and 1 inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and 1 inch below indicates whether the soil is dry.

b. After rainfall of greater than 0.2 inch, grading shall occur only after the soil surface has dried sufficiently as described above, and no sooner than 2 days (48 hours) after the rain event ends.

c. If rain occurs during grading, work shall stop and resume only after soils are dry, as described above.

d. Grading shall be done in a manner to prevent runoff from entering preserved vernal pools.

e. If necessary, water spraying shall be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

f. If mechanized grading is necessary, grading shall be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

66. If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools. If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. A qualified Biologist shall be present to oversee implementation of minimization measures.

67. When vernal pools are located above gas lines and repair work is necessary, work areas shall be minimized and soil shall be stockpiled for replacement after repairs.

68. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills.

69. For new projects, impacts to vernal pools and vernal pool Covered Species would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Road Ruts and Other Seasonal, Man-Made Depressions

70. Impacts from Covered Activities to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp to occur shall be avoided through project design considerations, to the extent feasible. Vehicular traffic through dry road ruts and other seasonal, man-made depressions shall not be considered an impact that requires mitigation.

71. If impacts to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for fairy shrimp to determine species presence. If project timing does not allow for surveys, it shall be assumed that the road ruts and other seasonal, man-made depressions are occupied.

72. If surveys determine that road ruts and other seasonal, man-made depressions are occupied (or assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the vernal pool mitigation ratios in Table 5.5. or through other alternatives outlined in Section 5.5 as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring to the road ruts and other seasonal, man made depressions.

73. If surveys determine road ruts and other man-made depressions are not occupied by Covered fairy shrimp species, Covered Activities and impacts shall be allowed without mitigation.

74. Prior to permanent and temporary impacts to occupied road ruts, soil (inoculum) shall be collected as described in Section 5.1.11.1, Protocol 63 for vernal pools.

75. Grading Covered Activities on existing access roads shall not take place when the soils are wet, as described in Section 5.1.11.1, Protocol 65 for vernal pools, to minimize indirect impacts from erosion and sedimentation. Prior to grading Covered Activities, a Biologist shall demarcate a road rut proposed for grading and a Biologist shall be present during grading Covered Activities. Direct impacts when grading existing access roads shall be avoided by lifting the blade of the grader over the demarcated road rut within the road. Any windrows resulting from grading in the vicinity of vernal pools or complexes shall be flattened with equipment tires to avoid affecting hydrology in the area.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied San Diego button-celery habitat. However, not all Modeled Habitat is expected to support San Diego button-celery occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the San Diego button-celery Modeled Habitat, there are approximately 6,412 acres in the Plan Area and approximately 604 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of San Diego button-celery Modeled Habitat occur in the central coast, north coast, and southern coast ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 49 and 31 San Diego button celery occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2010 5-year review for San Diego button-celery included an analysis of the status of San Diego button-celery at different locations throughout its range. Each of the records included in the 2010 5-year review may represent one or more occurrences from the CNDDB. The 2010 5-year review identified ten regional locations in San Diego County that support San Diego button celery including Camp Pendleton, Carlsbad, San Marcos, Ramona, Del Mar Mesa, Carmel Mountain, Mira Mesa, MCAS Miramar, Otay Lakes, and Otay Mesa. In 2003, the City of San Diego conducted a study that documented 28 occurrences within their jurisdiction (City of San Diego 2004), and surveys on MCAS Miramar since 1993 have documented San Diego button-celery within 20 vernal pool complexes (Black 2004).

San Diego button-celery is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- San Diego MHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP
- City of San Diego VPHCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 987 acres of Modeled Habitat occur within Preserves and 120 acres of Modeled Habitat occur within Proposed Preserves (collectively, 17 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 27 occurrences of San Diego button-celery recorded in the CNDDB databases are located within

Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

The Plan Area and distribution of San Diego button-celery overlaps with the San Diego: Northern Coastal, Central Coastal, Southern Coastal, and Inland Management Areas of the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 7.82 acres of San Diego button-celery Modeled Habitat, which is a fraction of the 6,412 acres of San Diego button-celery Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 4.94 acres of permanent impacts (or 0.08 percent of Modeled Habitat in the Plan Area); and

- Approximately 2.88 acres of temporary impacts (or 0.04 percent of Modeled Habitat in the Plan Area).

Wildfire Fuels Management is not expected to impact San Diego button-celery habitat.

This impact represents about 0.12 percent of San Diego button-celery Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for San Diego button-celery. However, because San Diego button-celery are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[73] However, because it is difficult to define a threshold for impacts to occurrences (e.g., O&M activities could occur within occupied San Diego button-celery habitat but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[74]

[73] Up to 0.12 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 49 San Diego button celery occurrences in the Plan Area. The product of 0.12 percent and 49 is less than one.
[74] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact San Diego button-celery and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to San Diego button-celery will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of San Diego button-celery within the Plan Area and its specific habitat requirements (i.e., deep clay soils), we anticipate that only limited areas within Modeled Habitat support occurrences of San Diego button-celery. Therefore, it is likely that substantially less than 7.82 acres of occupied San Diego button-celery habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

The 7.82-acre estimate of impact to San Diego button-celery Modeled Habitat includes both vernal pool watershed and basin areas. In San Diego County, a watershed analysis of several mound and basin vernal pool complexes from Kearny Mesa and Otay Mesa found watershed to pool surface area ratios as low as 4:1, and commonly 6:1 or 7:1 (RECON 1997). Therefore, we expect most of the impacts to occur to the watershed and not to individual basins. Assuming an average watershed to pool surface area of 6:1, we anticipate within the overall 7.82 acres of impact, about 1.3 acres of the impacts will be to vernal pool basins, and the other 6.52 acres will be to vernal pool watersheds.

We anticipate that some San Diego button-celery plants or seeds could be killed or injured within up to 7.82 acres (1.3 acres and 6.52 acres of vernal pool basin and watershed, respectively) of San Diego button-celery Tracked Habitat due to loss or substantial degradation (including grading, excavating, and filling occupied basins and project-related changes to basin hydrology that preclude San Diego button-celery survival and reproduction) from Covered Activities.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) are anticipated to avoid, minimize, and mitigate the direct impacts to San Diego button-celery associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 33). Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable (OP 59). Prior to permanent and temporary impacts, SDG&E shall confer with the Service on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools (OP 63). Grading adjacent to vernal pools would be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). In addition, SDG&E would use biological monitors and protective fencing if necessary (OP 64); maintain avoidance buffers when working adjacent to vernal pools; fuel, stage, and maintain construction equipment at least 100 feet from the nearest vernal pools where

feasible; and use protective measures to prevent spills where 100-foot buffers from the nearest vernal pools are not feasible (OP 68).

Unavoidable temporary impacts to San Diego button-celery occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to San Diego button-celery occupied habitat will be mitigated at a 3:1 ratio (see Table 5.5 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or other measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of San Diego button-celery habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual San Diego button celery within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of San Diego button-celery within these mitigation lands.

Restoration will include grading of new pools, inoculating the new pools with San Diego button-celery seeds/soil collected from donor pools, and the planting of other vernal pool indicator plant species within the pools and native vegetation in the pool watersheds and surrounding uplands. Enhancement and monitoring may include weeding or other activities in existing vernal pools.

Inoculum will be collected when dry to avoid damaging or destroying San Diego button-celery seeds. Hand tools (i.e., shovels and trowels) will be used to remove the first 2 inches of soil from the pools. Whenever possible, the tools will be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the seeds. The soil from each pool will be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight to prevent the occurrence of fungus or excessive heating of the soil and stored off site at an appropriate facility for vernal pool inoculum (OP 63). With the above measures, while a small number of San Diego button-celery seeds maybe killed or injured, the majority of salvaged seeds from the impacted or donor pools are expected to survive the inoculum collection and transplant process, and these actions will minimize the likelihood that San Diego button-celery seeds will be killed or injured in impacted pools.

Overall, the benefits to San Diego button-celery associated with the restoration, enhancement and monitoring are anticipated to be substantially greater than the killing or injury of a small number of seeds caused by these activities. The primary benefit of the restoration will be to provide new habitat for the San Diego button-celery.

The removal and restoration of existing access roads that are not needed for Covered Activities may also help offset impacts to the San Diego button-celery.

Because Covered Activities will impact a small fraction of the San Diego button-celery habitat and occurrences in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of San Diego button-celery within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, and Non-Native Plants

The San Diego button celery could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to occupied San Diego button celery vernal pools include the degradation of habitat outside the footprint of Covered Activities as a result changes to hydrology and water quality, erosion, sedimentation, and non-native plants.

Changes to the hydrology of vernal pools can alter the distribution of other vernal pool flora and fauna that are influenced by the length and frequency of water inundation (Bauder 1987a, 2000a). For instance, non-native plant species can become more prevalent in disturbed vernal pools when the periods of water inundation are reduced, while freshwater marsh species can expand into disturbed vernal pools when the periods of inundation are increased. Water born pollutants, erosion, and sedimentation can also impact vernal pools.

Implementation of the HCP Amendment's general OPs summarized in the *Description of the Proposed Action* section of this Opinion, and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) stated above are anticipated to minimize changes to hydrology and water quality, erosion, sedimentation of the vernal pool basins associated with the Covered Activities. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools (OP 64). The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist. Grading immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools (OP 66). If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills (OP 68).

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities and restoration of temporary impact areas are expected to minimize the spread of non-native

plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, and non-native plants due to Covered Activities are not likely to result in a decrease in San Diego button celery survival or reproduction beyond baseline conditions.

Effect of Recovery

The Plan Area and distribution of San Diego button-celery overlaps with the San Diego: Northern Coastal, Central Coastal, Southern Coastal and Inland Management Areas identified in the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused. The vernal pool habitat included in the Plan Area is part of a system that provides important breeding, feeding, and sheltering habitat for the San Diego button celery.

The HCP Amendment does not conflict with the goals and objectives of the recovery plan and clarification. Although Covered Activities will impact vernal pool habitat that is used by the San Diego button celery for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation, restoration/enhancement of occupied San Diego button celery habitat. These mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the San Diego button celery.

The proposed conservation, restoration/enhancement, and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with recovery plan Task 1 (i.e., to establish a vernal pool habitat preserve system), Task 2 (i.e., to reestablish vernal pool habitat to historic structure and composition), and Task 3 (i.e., to rehabilitate and enhance secured vernal pool habitats and their constituent species). The recovery plan also emphasizes the need to manage and monitor protected habitat (Recovery Tasks 4 and 5). Consistent with these tasks, the restoration and enhancement areas will be preserved and managed in perpetuity by a natural lands manager. Therefore, the breeding, feeding, and sheltering functions degraded or destroyed due to unavoidable impacts to San Diego button celery habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan and clarification.

We expect no more than 7.82 acres (1.3 acres and 6.52 acres of vernal pool basin and watershed, respectively) of San Diego button celery Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the San Diego button celery occupied habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any San Diego button celery population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the San Diego button celery. We base this conclusion on the following:

1. Impacts will be limited to no more than 7.82 acres (1.3 acres and 6.52 acres of vernal pool basin and watershed, respectively) of San Diego button-celery Tracked Habitat, which represents about 0.12 percent of the Modeled Habitat for the San Diego button celery in the Plan Area.

2. Based on the known distribution of San Diego button-celery within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of San Diego button-celery. Therefore, it is likely that substantially less than 7.82 acres of occupied San Diego button-celery habitat will be impacted.

3. General and species-specific OPs will further reduce the likelihood San Diego button celery will be harmed by Covered Activities.

4. Impacts to San Diego button celery will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan and clarification.

5. Because Covered Activities will affect a small proportion of the San Diego button celery habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by San Diego button celery, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, the Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of San Diego button celery in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain San Diego button celery in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Willowy Monardella (Monardella viminea (M. linoides subsp. v.))

Status of the Species

Listing Status

The Service listed the willowy monardella as threatened on October 13, 1998 (63 FR 54938). The Service published a final rule designating critical habitat for willowy monardella on March 6, 2012 (77 FR 13394).

The Service completed 5-year reviews addressing the status of the willowy monardella in 2008, 2012 and 2022 (Service 2008d, 2012a and 2022). Because both rangewide and localized threats to willowy monardella remained, we recommended no change to the listing status of the species. A recovery plan has not been prepared for willowy monardella.

Species Description

Willowy monardella is a strongly aromatic, herbaceous perennial in the Lamiaceae (mint) family. The species occurs in coastal sage scrub and riparian scrub in sandy bottoms and on banks of ephemeral washes in canyons where surface water flows for usually less than 48 hours after a rain event (Sheid 1985, Elvin and Sanders 2003, Kelly and Burrascano 2006). It is a geographically narrow endemic restricted to three watersheds in San Diego County, California with most of the populations occurring on Marine Corps Air Station (MCAS) Miramar. The leaves are linear to lance shaped. When in bloom, the dense flowers are pale white to rose colored and subtended by greenish white, rose-tipped bracts. The stems are waxy, green, and hairy; a characteristic distinguishing it from other species of the same genus.

Willowy monardella was previously recognized and listed as *Monardella linoides* ssp. *viminea*. In 2003, Elvin and Sanders proposed a taxonomic split of this entity into two distinct species. Upon recognition of this taxonomic change and species split, the range of the listed entity was reduced, and the southernmost occurrences were reclassified as *Monardella stoneana*. For more details regarding the taxonomic classification of willowy monardella as a distinct species (*M. viminea*) and reclassifying a portion of *Monardella linoides* ssp. *viminea* as a separate species (*M. stoneana*), and the consequences of recognizing this split, please refer to the revised final listing and revised critical habitat rule published in the Federal Register on March 6, 2012 (Service 2012b).

Habitat Affinities

Willowy monardella is found in coastal sage scrub and riparian scrub in sandy bottoms and on banks of ephemeral washes in canyons where surface water flows for usually less than 48 hours. Soil requirements include coarse sandy grains and sediments and cobble deposits (Scheid 1985). willowy monardella is sustained by the natural processes and conditions of perennial streams and threatened by those factors that disrupt those processes and conditions. Finally, the subspecies needs semi-open canopies of coastal sage and riparian scrub with limited herbaceous understory. It is frequently associated with California buckwheat, sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*), California sagebrush (*Artemisia californica*), and broom baccharis (Scheid 1985).

Life History

Very little is known about the germination and establishment of willowy monardella. Mature plants flower readily (June to August), with flower heads persisting for 10 to 12 weeks (Elvin and Sanders 2003). Plants are short-lived perennials, producing a new cohort of aerial stems each year from a persisting perennial root structure. No pollination studies are known to exist for willowy monardella; however, other *Monardella* taxa are visited by butterfly and bee species.

Because willowy monardella branches arise from trailing stems, plants tend to grow in groupings or "clumps," rather than as discrete plants (Epling 1925). Seeds are small with a hard seed coat and may fall directly below existing plants after setting. Little is known about how the species disperses; however, seeds and vegetative shoots are believed to be transported by flowing water.

Status and Distribution

This narrow endemic plant persists in small, isolated occurrences within three watersheds north of Kearny Mesa in San Diego County, California (Elvin and Sanders 2003). Most of the occurrences are found on MCAS Miramar; however, the species can also be found in the City of San Diego's Mission Trails Regional Park and Los Peñasquitos Canyon Preserve. At the time of listing, we considered 20 occurrences to be extant in the United States. In 2022, the occurrences were revised to include 3 Element Occurrences (EO) omitted from the previous 5-year review, 1 was merged with another EO, and 10 are new occurrences reported since 2012. As of 2022, there are 30 occurrences of willowy monardella of which 16 are extant, 2 are presumed extant, 2 are possibly extirpated, and 10 are extirpated.

Historically and currently, there are few surveys that indicate numbers of plants present across all of the known occurrences. Because this is a perennial subspecies that reproduces vegetatively to some extent (Elvin and Sanders 2003), decline in a population due to lack of seedling establishment may be difficult to detect. Some occurrences may consist mostly of persisting older plants and thus show little or no capacity for recruitment.

Threats and Conservation Needs

Threats to willowy monardella include urbanization and development, altered hydrology, nonnative plant species and fire. (Service 2008d, 2012a and 2022). In addition, given the limited distribution and abundance of this species, it is more vulnerable to natural catastrophes and stochastic demographic, genetic, and environmental events than species with larger ranges and/or abundance. Genetic effects may further influence population demography via inbreeding depression and genetic drift (Service 2008d).

Because willowy monardella is found in small and declining populations, immediate action to conserve the subspecies may be inadequate as the extinction threshold (vortex) for the subspecies may already have been reached. Because of already small populations that may not be able to persist (JoEllen Kassebaum, pers. comm. 2007), it is unlikely that even populations protected in reserves will retain long-term viability if other threats affecting extant populations are not managed or removed.

The population appears to be declining with little indication as to the cause. Changing precipitation patterns and hydrologic process are likely a major factor.

In 2021, the SDMMP completed a plan that provides a framework to manage rare plants on conserved lands in San Diego County, including willowy monardella. The Plan identifies best management practices to restore willowy monardella habitat and occurrences, makes recommendations for reintroduction, introduction, and translocation, and identifies additional research needs for occurrences on MSPA lands (CBI and AECOM 2021a).

In addition to the rare plant management framework, SDMMP also developed guidelines for seed collection, banking, and bulking for seven Management Strategic Plan priority plants, including willowy monardella. The plan "provides a strategic approach to managing seed resources" by identifying and prioritizing plants needing seed conservation, identifying effective seed management, and funding actions, and providing land mangers information for managing seed resources (CBI and AECOM 2021b).

Specific conservation actions recommended in the most recent 5-year review (Service 2022d) include the following:

- Continue to monitor known willowy monardella occurrences to update occurrence status, size, and threats. That information can be used to identify high-priority occurrences for management or areas for restoration. Work with landowners to implement management strategies as identified in the rare plant framework management plan.

- Determine habitat characteristics that support willowy monardella growth, survival, and reproduction. Identify areas of potential supportive habitat for reintroduction.

- Enhance habitat where willowy monardella occurs, through nonnative plant control, flood control, and anti-erosion measures where necessary. Test available herbicides to learn their effect on willowy monardella and determine whether it could be used to control nonnative grasses and forbs without negatively affecting willowy monardella.

- Identify suitable introduction/reintroduction sites to expand current distribution of willowy monardella in areas where suitable habitat is present. Conduct habitat restoration to support pollinators, if necessary.

- Research effects of drought and high temperatures on willowy monardella recruitment and survivorship.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to the willowy monardella:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts. Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

<u>Environmental Baseline</u>

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied willowy monardella habitat. However, not all Modeled Habitat is expected to support willowy monardella occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the willowy monardella Modeled Habitat, there are approximately 14,891 acres in the Plan Area and approximately 1,464 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of willowy monardella Modeled Habitat occur highest in the central valley, southern foothills, and central coast ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 19 and 11 willowy monardella occurrences within the Plan Area and

PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2021 5-year review for willowy monardella included an analysis of the status of willowy monardella at different locations throughout its range. Each of the records included in the 2021 5-year review may represent one or more occurrences from the CNDDB. The 2021 5-year review identified a total of 30 willowy monardella occurrences in the Plan Area, restricted to only three watersheds in San Diego County of which 16 are extant, 2 are presumed extant, 2 are possibly extirpated, and 10 are extirpated. Populations occur from Mira Mesa to Mission trails in canyons including Lopez Canyon, Cuervo Canyon, Sycamore Canyon, San Clemente Canyon, Murphy Canyon, Sycamore Canyon, Elanus Canyon, and Spring Canyon.

Willowy monardella is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 9,288 acres of Modeled Habitat occur within Preserves, and 1,949 acres of Modeled Habitat occur within Proposed Preserves (collectively, 75 percent of all Modeled Habitat) associated with these HCPs within the Plan Area. In addition, 12 occurrences of willowy monardella recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species is not known or expected to on existing SDG&E mitigation lands.

Willowy monardella is also addressed in the Integrated Natural Resources Management Plan (INRMP) for MCAS Miramar that overlaps the Plan Area. While the IRNMP does not establish preserve areas, it does provide for conservation actions (e.g., research, surveys, fire management, population expansion, and habitat restoration and enhancement) that benefit willowy monardella.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 25.29 acres of willowy monardella Modeled Habitat, which is a fraction of the 14,891 acres of willowy monardella Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 11.98 acres of permanent impacts (0.08 percent of Modeled Habitat in the Plan Area);

- Approximately 6.99 acres of temporary impacts (0.05 percent of Modeled Habitat in the Plan Area); and

- Approximately 6.32 acres of Wildfire Fuels Management impacts (0.04 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.17 percent of willowy monardella Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for willowy monardella. However, because willowy monardella is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[75] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied willowy monardella habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[76]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact willowy monardella and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to willowy monardella will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of willowy monardella within the Plan Area and its specific habitat requirements (i.e., ephemeral washes in canyons where surface water flows for usually less than 48 hours), we anticipate that only limited areas within Modeled Habitat support occurrences of willowy monardella. Therefore, it is likely that substantially less than 25.29 acres of occupied willowy monardella habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some individual willowy monardella will be killed or injured within up to 25.29 acres of willowy monardella Tracked Habitat that is impacted in association with the Covered Activities. Willowy monardella could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities. Management and monitoring activities on mitigation

[75] Up to 0.17 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 19 San Diego ambrosia occurrences in the Plan Area. The product of 0.17 percent and 19 is less than one.
[76] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

lands could result in minor, temporary loss of willowy monardella habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for narrow endemic plants are anticipated to avoid, minimize, and mitigate the direct impacts to willowy monardella associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to willowy monardella habitat, as specified in the OP 76 include: 1) when work occurs within a known or potential area of occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts, and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to willowy monardella occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to willowy monardella occupied habitat will be mitigated at a 1:1 to 3:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of willowy monardella habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual willowy monardella within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of willowy monardella within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to the willowy monardella.

Because Covered Activities will impact a small fraction of the willowy monardella habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of willowy monardella within the Plan Area or rangewide.

Effects Changes to Hydrology, Erosion, Sedimentation, Non-Native Plants, Fire and Habitat Fragmentation

The willowy monardella could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to willowy monardella include the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology, erosion, sedimentation, non-native plants and habitat fragmentation.

Changes in local and regional hydrology have had detrimental effects on willowy monardella. Increases in surface and subsurface soil moisture, via direct effects to the water table by watershed urbanization, and changing streams from ephemeral to perennial, adversely affects native plants adapted to a drier Mediterranean climate (Service 2008d). Watershed urbanization alters the riparian vegetation community through changes in median and minimum daily discharges, dry season run-off, and flood magnitudes, specifically for Los Peñasquitos Creek and other locations (White and Greer 2006). Nonnative species incursion has been exacerbated by the changing water regime (underground hydrology), and willowy monardella has been unable to adapt to the increased soil moisture (Cindy Burrascano, pers. comm. 2007). Natural hydrological systems are required by willowy monardella to maintain and deposit material for secondary benches and streambeds on which the species grows (Sheid 1985). OPs will be implemented to minimize increased changes to hydrology and increased erosion and sedimentation (OP 16, 19, 20, 22, 28, 39, and 50). Also, to the extent feasible and practicable, new Facilities will be sited to provide a minimum 100-foot buffer from wetlands and narrow endemic populations (OP 21).

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat necessary for willowy monardella. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of the willowy monardella.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Approximately 64 percent of the Plan Area is in “High Fire Threat Districts” (HFTDs). The HFTD consists of Tier 2 areas, “where there is an elevated risk for destructive utility associated wildfires,” and Tier 3 areas, “where there is an extreme risk for destructive utility associated wildfires.” The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds, coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing facilities (e.g., electric lines) and O&M of these facilities are potential wildlife ignition sources and wildfire ignition sources may increase with construction of new facilities. In addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. Megafire events have the potential to severely impact or eliminate willowy monardella populations by killing large numbers of individual plants, their underground rhizomes (stems), and the soil seed bank (Service 2008d). However, threats to the habitat from fire exclusion, which impacts processes that historically created and maintained suitable habitat for willowy monardella, may make it even more vulnerable to extinction.

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007, after San Diego experienced some of the most destructive wildfires in the county’s history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have developed and implemented programs to enhance situational awareness, which has increased SDG&E’s ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment) and Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities (Section 8.5, pages 8 to16). For example, SDG&E will regularly maintain fire protection areas around facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas and equipping vehicles with shovels and fire extinguishers. Based on SDG&E’s increased ability to monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP 10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting willowy monardella dispersal that contributes to long-term population viability for the willowy monardella. However, no large-scale New Construction is expected that could cause

significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat in order to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from changes to hydrology, erosion, sedimentation, non-native plant invasion and habitat fragmentation due to Covered Activities are not likely to result in a decrease in willowy monardella survival or reproduction beyond baseline conditions.

Effect of Recovery

Implementation of the HCP Amendment is consistent with the Service's efforts to recover the willowy monardella. Conservation and recovery of the willowy monardella is largely being accomplished through the development and implementation of regional NCCP/HCP planning efforts in San Diego County. In addition, the INRMP for MCAS Miramar provides for conservation actions that support recovery of willowy monardella. The entire range of the willowy monardella is covered by these efforts. Two regional NCCP/HCPs covering the willowy monardella are now in place. Although these NCCP/HCPs allow for minimal impacts to willowy monardella through destruction of habitat, these plans also regulate and mitigate such actions. These NCCP/HCPs are making substantial contributions to the conservation of willowy monardella by creating a network of managed preserves with core habitat areas that are linked across the broader landscape.

Implementation of the HCP Amendment is consistent with the Service's efforts to recover the willowy monardella. The Plan Area for the SDG&E's subregional plan overlaps and is compatible with several of the broader NCCP/HCPs within the region. Although the proposed Covered Activities will impact habitat that is used by the willowy monardella for breeding, feeding, and sheltering, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts to willowy monardella occupied habitat will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. This mitigation is expected to be integral to our ongoing NCCP/HCP regional planning efforts and thus support recovery of the willowy monardella.

We expect no more than 25.29 acres of willowy monardella Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the willowy monardella habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to the species, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any coastal willowy monardella population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the willowy monardella. We base this conclusion on the following:

1. Impacts will be limited to no more than 25.29 acres of willowy monardella Tracked Habitat, which represents about 0.17 percent of Modeled Habitat for the willowy monardella in the Plan Area.

2. Based on the known distribution of willowy monardella within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of willowy monardella. Therefore, it is likely that substantially less than 25.29 acres of occupied willowy monardella habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual willowy monardella will be harmed by Covered Activities.

4. Impacts to willowy monardella will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

5. Because Covered Activities will affect a small proportion of the willowy monardella habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by willowy monardella, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any willowy monardella population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain willowy monardella in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Spreading Navarretia (Navarretia fossalis)

Status of the Species

Listing Status

Spreading navarretia was listed as threatened on October 13, 1998 (63 Federal Register 54975). Critical habitat has not been designated for this species. The Recovery Plan for Vernal Pools of Southern California ("vernal pool recovery plan") (Service 1998a) addresses spreading navarretia and the Recovery Plan Clarification for the Vernal Pools of Southern California

(clarification, Service 2019a) includes recover criteria clarification. A 5-Year Review completed in 2009 recommended no change in listing status (Service 2009h).

Species Description

Spreading navarretia, a member of Polemoniaceae (phlox family), is a low, mostly spreading or ascending, annual herb, 10 to 15 centimeters tall. The lower portions of the stems are mostly bare. The leaves are soft and finely divided, 1 to 5 centimeters long, and spine-tipped when dry. The flowers are white to lavender white with linear petals and are arranged in flat-topped, compact, leafy heads. The fruit is an ovoid, 2-chambered capsule (Day 1993, Moran 1977).

There are approximately 30 species in the genus Navarretia, several of which occur within the range of spreading navarretia. Of these, two occur in habitat suitable for spreading navarretia, and these are needleleaf navarretia (*Navarretia intertexta*) and prostrate navarretia (*Navarretia prostrata*). Spreading navarretia can be confused with, and has been misidentified as, prostrate navarretia (Moran 1977). Spreading navarretia is distinguished by its linear or narrowly ovate corolla lobes, erect habit, cymose inflorescences, the size and shape of the calyx, and the position of the corolla relative to the calyx (Day 1993, Service 1998d).

Habitat Affinities

Spreading navarretia is primarily associated with vernal pools (Day 1993; Service 1998d). This species occasionally occurs in ditches and other artificial depressions, which often occur in degraded vernal pool habitat (Moran 1977). Spreading navarretia also occurs in vernal pools in alkali grassland habitat along the San Jacinto River in Riverside County (Bramlet 1993).

Life History

Spreading navarretia flowers from May through June. No studies have been conducted for this species regarding reproduction. Specific data regarding pollinators and seed viability are lacking. The fruit of this species consists of indehiscent capsules (2 to 3 millimeters long) containing 5 to 25 seeds. The seeds become mucilaginous when wet (Moran 1977). Dispersal in this species has not been studied. After fruiting, this species fades rapidly and can be difficult to detect late in the dry season or in dry years. The number of individuals of spreading navarretia at a given population site varies annually in response to the timing and amount of rainfall and temperature.

Status and Distribution

Spreading navarretia is distributed from northwestern Los Angeles County and western Riverside County, south through coastal San Diego County, California to northwestern Baja California, Mexico. It is found at elevations between 30 and 1,300 meters (Day 1993, Munz 1974, CNPS 2001). At the time of listing, 34 populations were considered to be extant in the United States, including populations contained in the listing rule and in the Recovery Plan**.** At the time of the most recent 5-year review for the species, three or four occurrences had been extirpated by development, and 17 new occurrences have been documented within the originally identified range, for a total of 48 extant occurrences (Service 2009h).

Nearly 60 percent of the known populations are concentrated in three locations: Otay Mesa in southern San Diego County, along the San Jacinto River in western Riverside County, and near Hemet in Riverside County (Service 1998a). The two largest populations occur in Riverside County and have been estimated to support 375,000 and 100,000 individuals. However, each of these populations occupies less than 8 acres of habitat. Most of the populations contain fewer than 1,000 individuals and occupy less than 1 acre of habitat. The Service estimates that less than 300 acres of habitat in the United States is occupied by this species (Service 1998d). In Mexico, spreading navarretia is known from fewer than 10 populations clustered in three areas: along the international border, on the plateaus south of the Rio Guadalupe, and on the San Quintin coastal plain (Moran 1977).

Threats and Conservation Needs

Spreading navarretia is threatened by habitat destruction and fragmentation from urban and agricultural development, pipeline construction, alteration of hydrology and floodplain dynamics, excessive flooding, channelization, off-road vehicle activity, trampling by cattle and sheep, weed abatement, fire suppression practices (including discing and plowing), and competition from alien plant species (Service 1998a). Within the Plan Area, spreading navarretia has been subjected to loss or degradation of habitat due to urban development, conversion to agriculture, off-road vehicle use, and grazing. The species has been affected indirectly by alterations in hydrology, invasion of non-native species, and deleterious effects resulting from habitat fragmentation and adjoining urban land uses. At the time of the most recent 5-year review for the species, proposed development threatened 9 of the 48 extant occurrences (Service 2009h).

As described in the Recovery Plan for Vernal Pools of Southern California (Service 1998a), recovery efforts necessary for the survival and recovery of spreading navarretia include managed conservation of known occurrences in Los Angeles, San Diego, Orange, and Riverside counties in a manner that provides for long-term viability of the occurrences at these locations. Any newly discovered locations should be conserved in the same manner. Actions that would modify the hydrology supporting the species habitat or increase the likelihood of deleterious effects from any identified threat should be avoided.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following Vernal Pool and Road-Rut OPs (59-75) in the HCP Amendment will be implemented to avoid and/or minimize impacts to the spreading navarretia:

Vernal Pools (natural and man-made)

59. Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable. Vehicular traffic through dry vernal pools shall not be considered an impact that requires mitigation.

60. If impacts to vernal pool habitat cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for vernal pool Covered Species. If project timing does not allow for surveys, SDG&E shall confer with USFWS to determine if any vernal pool Covered Species should be assumed present.

61. If surveys determine a vernal pool is occupied (or is assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the occupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

62. If surveys determine vernal pools are not occupied, permanent impacts that cannot be avoided shall be mitigated per the unoccupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

63. Prior to permanent and temporary impacts, SDG&E shall confer with USFWS on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools. Seed from vernal pool indicator plants shall be collected from the pools that will be impacted when the plants have dried and before the seed disperses. Seed collection may not be possible when precluded by weather or physical constraints, such as the Covered Activity occurring at a time of year when no seed is present. However, it is assumed that salvaged soil would contain a seed bank for these species, and they would be allowed to recover once the soil was reinstalled.

Inoculum shall be collected only from vernal pools that are free of versatile fairy shrimp (*Branchinecta lindahli*), and when it is dry to avoid damaging or destroying fairy shrimp cysts. Hand tools (i.e., shovels and trowels) shall be used to remove the first 2 inches of soil from the pools. Whenever possible, the trowel shall be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool shall be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessive heating of the soil and stored offsite at an appropriate facility for vernal pool inoculum. Inoculum from different source pools shall not be mixed for seeding any restored pools, unless otherwise approved by USFWS.

64. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools. The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist.

65. Grading Covered Activities immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to

be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools shall comply with the following:

a. Grading shall occur only when the soil is dry to the touch both at the surface and 1 inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and 1 inch below indicates whether the soil is dry.

b. After rainfall of greater than 0.2 inch, grading shall occur only after the soil surface has dried sufficiently as described above, and no sooner than 2 days (48 hours) after the rain event ends.

c. If rain occurs during grading, work shall stop and resume only after soils are dry, as described above.

d. Grading shall be done in a manner to prevent runoff from entering preserved vernal pools.

e. If necessary, water spraying shall be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

f. If mechanized grading is necessary, grading shall be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

66. If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools. If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. A qualified Biologist shall be present to oversee implementation of minimization measures.

67. When vernal pools are located above gas lines and repair work is necessary, work areas shall be minimized and soil shall be stockpiled for replacement after repairs.

68. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills.

69. For new projects, impacts to vernal pools and vernal pool Covered Species would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Road Ruts and Other Seasonal, Man-Made Depressions

70. Impacts from Covered Activities to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp to occur shall be avoided through project design considerations, to the extent feasible. Vehicular traffic through dry road ruts and other seasonal, man-made depressions shall not be considered an impact that requires mitigation.

71. If impacts to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for fairy shrimp to determine species presence. If project timing does not allow for surveys, it shall be assumed that the road ruts and other seasonal, man-made depressions are occupied.

72. If surveys determine that road ruts and other seasonal, man-made depressions are occupied (or assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the vernal pool mitigation ratios in Table 5.5. or through other alternatives outlined in Section 5.5 as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring to the road ruts and other seasonal, man made depressions.

73. If surveys determine road ruts and other man-made depressions are not occupied by Covered fairy shrimp species, Covered Activities and impacts shall be allowed without mitigation.

74. Prior to permanent and temporary impacts to occupied road ruts, soil (inoculum) shall be collected as described in Section 5.1.11.1, Protocol 63 for vernal pools.

75. Grading Covered Activities on existing access roads shall not take place when the soils are wet, as described in Section 5.1.11.1, Protocol 65 for vernal pools, to minimize indirect impacts from erosion and sedimentation. Prior to grading Covered Activities, a Biologist shall demarcate a road rut proposed for grading and a Biologist shall be present during grading Covered Activities. Direct impacts when grading existing access roads shall be avoided by lifting the blade of the grader over the demarcated road rut within the road. Any windrows resulting from grading in the vicinity of vernal pools or complexes shall be flattened with equipment tires to avoid affecting hydrology in the area.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied spreading navarretia habitat. However, not all Modeled Habitat is expected to support spreading navarretia occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on spreading navarretia Modeled Habitat, there are approximately 6,412 acres present within the Plan Area and approximately 604 acres within the PIZ associated with existing SDG&E Facilities. In San Diego County, the highest acreages of spreading navarretia Modeled Habitat occur in the north, central, and southern coast ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 32 and 8 spreading navarretia occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2009 5-year review for spreading navarretia included an analysis of the status of spreading navarretia at different locations throughout its range. Each of the records included in the 2009 5-year review may represent one or more occurrences from the CNDDB. The 2009

5-year review identified 37 extant occurrence groups in San Diego County that support spreading navarretia on or in MCB Camp Pendleton, Carlsbad, San Marcos, Ramona, Santa Fe Valley, Mira Mesa, MCAS Miramar, Kearny Mesa, Sweetwater Reservoir, Proctor Valley, Otay Lakes, and Otay Mesa.

Spreading navarretia is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP NCCP/HCP (conditionally)
- San Diego MHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP
- City of San Diego VPHCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 987 acres of Modeled Habitat occur within Preserves and 120 acres of Modeled Habitat occur within Proposed Preserves (collectively, 17 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 16 occurrences of spreading navarretia recorded in the CNDDB are located within San Diego County Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

The Plan Area overlaps with all the San Diego Management Areas of the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 7.82 acres of spreading navarretia Modeled Habitat, which is a fraction of the 6,412 acres of spreading navarretia Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 4.94 acres of permanent impacts (or 0.08 percent of Modeled Habitat in the Plan Area); and

- Approximately 2.88 acres of temporary impacts (or 0.04 percent of Modeled Habitat in the Plan Area).

Wildfire Fuels Management is not expected to occur in areas of spreading navarretia Modeled Habitat.

This impact represents about 0.12 percent of spreading navarretia Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for spreading navarretia. However, because spreading navarretia is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[77] However, because it is difficult to define a threshold for impacts to occurrences (e.g., O&M activities could occur within occupied spreading navarretia habitat but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[78]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact spreading navarretia and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to spreading navarretia will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of spreading navarretia within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of spreading navarretia. Therefore, it is likely that substantially less than 7.82 acres of occupied spreading navarretia habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

The 7.82-acre estimate of impact to spreading navarretia Modeled Habitat includes both vernal pool watershed and basin areas. In San Diego County, a watershed analysis of several mound and basin vernal pool complexes from Kearny Mesa and Otay Mesa found watershed to pool surface area ratios as low as 4:1, and commonly 6:1 or 7:1 (RECON 1997). Therefore, we expect most of the impacts to occur to the watershed and not to individual basins. Assuming an average

[77] Up to 0.12 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 49 spreading navarretia occurrences in the Plan Area. The product of 0.12 percent and 49 is less than one.
[78] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

watershed to pool surface area of 6:1, we anticipate within the overall 7.82 acres of impact, about 1.3 acres of the impacts will be to vernal pool basins, and the other 6.52 acres will be to vernal pool watersheds.

We anticipate that some spreading navarretia plants or seeds could be killed or injured within up to 7.82 acres (1.3 acres and 6.52 acres of vernal pool basin and watershed, respectively) of spreading navarretia Tracked Habitat due to loss or substantial degradation (including grading, excavating, and filling occupied basins and project-related changes to basin hydrology that preclude spreading navarretia survival and reproduction) from Covered Activities.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) are anticipated to avoid, minimize, and mitigate the direct impacts to spreading navarretia associated with Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 33). Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable (OP 59). Prior to permanent and temporary impacts, SDG&E shall confer with the Service on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools (OP 63). Grading adjacent to vernal pools would be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). In addition, SDG&E would use biological monitors and protective fencing if necessary (OP 64); maintain avoidance buffers when working adjacent to vernal pools; fuel, stage, and maintain construction equipment at least 100 feet from the nearest vernal pools where feasible; and use protective measures to prevent spills where 100-foot buffers from the nearest vernal pools are not feasible (OP 68).

Unavoidable temporary impacts to spreading navarretia occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to spreading navarretia occupied habitat will be mitigated at a 3:1 ratio (see Table 5.5 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or other measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of spreading navarretia habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual spreading navarretia within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of spreading navarretia within these mitigation lands.

Restoration will include grading of new pools, inoculating the new pools with spreading navarretia seeds/soil collected from donor pools, and the planting of other vernal pool indicator plant species within the pools and native vegetation in the pool watersheds and surrounding

uplands. Enhancement and monitoring may include weeding or other activities in existing vernal pools.

Inoculum will be collected when dry to avoid damaging or destroying spreading navarretia seeds. Hand tools (i.e., shovels and trowels) will be used to remove the first 2 inches of soil from the pools. Whenever possible, the tools will be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the seeds. The soil from each pool will be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight to prevent the occurrence of fungus or excessive heating of the soil and stored off site at an appropriate facility for vernal pool inoculum (OP 63). With the above measures, while a small number of spreading navarretia seeds could be killed or destroyed, the majority of salvaged seeds from the impacted or donor pools are expected to survive the inoculum collection and transplant process, and these actions will minimize the likelihood that spreading navarretia seeds will be killed or injured in impacted pools.

Overall, the benefits to spreading navarretia associated with the restoration, enhancement and monitoring are anticipated to be substantially greater than the killing or injury of a small number of seeds caused by these activities. The primary benefit of the restoration will be to provide new habitat for spreading navarretia.

The removal and restoration of existing access roads that are not needed for Covered Activities may also help offset impacts to spreading navarretia.

Because Covered Activities will impact a small fraction of spreading navarretia habitat and occurrences in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of spreading navarretia within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, and Non-Native Plants

Spreading navarretia could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to occupied spreading navarretia vernal pools include the degradation of habitat outside the footprint of Covered Activities as a result changes to hydrology and water quality, erosion, sedimentation, and non-native plants.

Changes to the hydrology of vernal pools can alter the distribution of other vernal pool flora and fauna that are influenced by the length and frequency of water inundation (Bauder 1987a, 2000a). For instance, non-native plant species can become more prevalent in disturbed vernal pools when the periods of water inundation are reduced, while freshwater marsh species can expand into disturbed vernal pools when the periods of inundation are increased. Water born pollutants, erosion, and sedimentation can also impact vernal pools.

Implementation of the HCP Amendment's general OPs summarized in the *Description of the Proposed Action* section of this Opinion, and the Vernal Pool and Road Rut Protocols (OPs 59 to

75) stated above are anticipated to minimize changes to hydrology and water quality, erosion, and sedimentation of the vernal pool basins associated with Covered Activities. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools (OP 64). The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist. Grading immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools (OP 66). If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills (OP 68).

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, and non-native plants due to Covered Activities are not likely to result in a decrease in spreading navarretia survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area overlaps with all of the San Diego Management Areas identified in the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate,

enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused. The vernal pool habitat included in the Plan Area is part of a system that provides important habitat for the spreading navarretia.

The HCP Amendment does not conflict with the goals and objectives of the recovery plan. Although Covered Activities will impact vernal pool habitat that is used by the spreading navarretia, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation and restoration/enhancement of occupied spreading navarretia habitat. These mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the spreading navarretia.

The proposed conservation, restoration/enhancement, and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with recovery plan Task 1 (i.e., to establish a vernal pool habitat preserve system), Task 2 (i.e., to reestablish vernal pool habitat to historic structure and composition), and Task 3 (i.e., to rehabilitate and enhance secured vernal pool habitats and their constituent species). The recovery plan also emphasizes the need to manage and monitor protected habitat (Recovery Tasks 4 and 5). Consistent with these tasks, the restoration and enhancement areas will be preserved and managed in perpetuity by a natural lands manager. Therefore, the functions degraded or destroyed due to unavoidable impacts to spreading navarretia habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan and clarification.

We expect no more than 7.82 acres (1.3 acres and 6.52 acres of vernal pool basin and watershed, respectively) of spreading navarretia Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of spreading navarretia habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any spreading navarretia population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of spreading navarretia. We base this conclusion on the following:

1. The current range of spreading navarretia includes northwestern Los Angeles County and western Riverside County, south through coastal San Diego County, California to northwestern Baja California, Mexico; thus, the action area for HCP Amendment represents only a portion of the species' rangewide distribution.

2. Impacts will be limited to no more than 7.82 acres (1.3 acres and 6.52 acres of vernal pool basin and watershed, respectively) of spreading navarretia Tracked Habitat, which represents about 0.12 percent of Modeled Habitat for the spreading navarretia in the Plan Area.

3. Based on the known distribution of spreading navarretia within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of spreading navarretia. Therefore, it is likely that substantially less than 7.82 acres of occupied spreading navarretia habitat will be impacted.

4. General and species-specific OPs will further reduce the likelihood that spreading navarretia will be harmed by Covered Activities.

5. Impacts to spreading navarretia will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan.

6. Because Covered Activities will affect a small proportion of spreading navarretia habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by spreading navarretia, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any spreading navarretia population in the Plan Area or rangewide.

7. Long-term management and monitoring of mitigation lands will help sustain spreading navarretia in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

California Orcutt Grass (Orcuttia californica)

Status of the Species

Listing Status

California Orcutt grass was federally listed as endangered on August 3, 1993 (58 Federal Register 41391). The State of California also listed the species as endangered in 1979. The Recovery Plan for Vernal Pools of Southern California (recovery plan, Service 1998a) addresses California Orcutt grass, and a Recovery Criteria Clarification for the Recovery Plan (clarification, Service 2019a) includes recover criteria clarification. A 5-year review for California Orcutt grass was completed in 2011 (Service 2011f and recommended no change in its listing status. Critical habitat has not been designated for this species.

Species Description

California Orcutt grass is one of five species in the genus Orcuttia in the family Poaceae (Reeder 1993). This small, annual, bright gray-green grass reaches about 10 centimeters in height and secretes sticky exudate. This secretion, believed to aid in water conservation during the warm spring and hot summer months, is aromatic and bitter tasting and may serve to deter animal predation (Crampton 1959, Griggs 1981). Inflorescences consist of seven spikelets arranged in two ranks, with the upper spikelets overlapping on a somewhat twisted axis. California Orcutt grass is differentiated from other species in the genus by the following characteristics: teeth of lemma (bract enclosing the floret) 5 millimeters long or less; the teeth sharp-pointed or with awns 5 millimeters long or less; culms (stems) usually prostrate; caryopsis (fruit) 1.5-1.8 millimeters long; plants sparingly pilose (bearing soft and straight spreading hairs); and spikelets remote on the axis below, crowded toward the apex.

Habitat Affinities

All known Californica Orcutt grass localities are associated with vernal pools (Crampton 1959; Reeder 1982; CNPS 2001; Service 1998a). California Orcutt grass tends to grow in the deeper and wetter portions of the vernal pool basins, but this annual plant species does not show much growth until the basins become somewhat desiccated (Service 1993d; Reiser 1996). Griggs and Jain (1983) observed that individual plants found in deeper portions of the pools tend to be more fully developed and larger than individuals at the pool margins.

Life History

California Orcutt grass flowers from April through June (Munz 1974), appears to be strongly adapted to wind pollination, and is believed to be an outcrosser (Griggs and Jain 1983). Griggs (1981) observed in the field that, following pool inundation, fungi covered the seeds which germinated approximately two weeks later. A dependence on fungus and anaerobic conditions for germination is consistent with conditions in water-filled vernal pools and may explain how germination is cued during years of sufficient rainfall (Keeley 1988).

Studies of other Orcuttia species indicate that the number of fruits produced per plant is highly variable within a population, and variation in seed production between seasons can show a two- or three-fold difference. This is not unexpected given the dependence of Orcuttia species on a variety of environmental conditions (timing and duration of rainfall, temperature, etc.) (Griggs and Jain 1983). California Orcutt grass seeds can remain dormant for at least three to four years and possibly longer, germinating in the spring only after flooding of the vernal pools (Griggs 1981; Griggs and Jain 1983). California Orcutt grass remains intact and upright upon senescence. The first heavy rainstorms of the late fall or early winter cause the plants to fall apart, releasing the fruit formed the previous summer. The fruits either become firmly attached to the muddy surface of the pool or sink to the bottom if the pool is inundated (Griggs 1981). California Orcutt grass seedlings grow for several weeks submerged, producing leaves that float on the surface. After the pools have dried California Orcutt grass produces a new set of foliage that will last for one to two months until flowering and fruiting have occurred (Griggs 1981, Keeley 1988).

Status and Distribution

The current range of California Orcutt grass is from the Carlsberg vernal pool located in Moorpark in Ventura County, south to the vernal pools around San Quintin, Baja California, Mexico (Service 1998a). Its elevational range is from 15 to 625 meters (Reeder 1993, CNPS 2001).

The most recent 5-year review for California Orcutt grass was completed in 2011. At that time, the species was known from two localities near Santa Clarita and Woodland Hills in Los Angeles County. In Ventura County, the species was known from three occurrences southeast of Moorpark. In Riverside County, the species occurred at the Santa Rosa Plateau, Skunk Hollow, Paloma Valley, and Elsinore Trough. In San Diego County, California Orcutt grass was found in multiple pools on MCAS Miramar and in Carlsbad, Warner Valley, Otay Mesa, Wruck Canyon, Spring Canyon, Arnie's Point, and in the vicinity of Brown Field. In Baja California, Mexico, the species has been detected on Mesa de Colonet and in pools at San Quintin (Service 2011f). Despite the threats described below, occurrences documented since the species was listed as endangered in 1993 have largely avoided extirpation, and several new occurrences have been documented, particularly in Ventura County (Service 2011f).

Threats and Conservation Needs

Threats identified in the Recovery Plan for Vernal Pools of Southern California included habitat destruction and fragmentation from urban and agricultural development, pipeline construction, alteration of hydrology and flood plain dynamics, excessive flooding, off road vehicle activity, trampling by cattle and sheep, weed abatement, fire suppression practices (including discing and plowing), and competition from non-native plant species as well as other vernal pool species (Service 1998a). These threats were also identified in the 2011 5-year review, with the greatest emphasis being placed on habitat destruction, degradation, and fragmentation from urban and agricultural development, habitat degradation by non-native species, and habitat degradation due to drought and climate change.

The conservation needs of California Orcutt grass include conservation and management of known occurrences in Ventura, Los Angeles, San Diego, and Riverside counties in a manner that provides for long-term viability of the species. Newly discovered ephemeral pools that support the species should be conserved in the same manner. Actions that would modify the hydrology supporting the species' habitat or increase the likelihood of deleterious effects from any identified threat should be avoided.

Species-Specific Ops

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following Vernal Pool and Road-Rut OPs (59-75) in the HCP Amendment will be implemented to avoid and/or minimize impacts to the California Orcutt grass:

Vernal Pools (natural and man-made)

59. Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable. Vehicular traffic through dry vernal pools shall not be considered an impact that requires mitigation.

60. If impacts to vernal pool habitat cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for vernal pool Covered Species. If project timing does not allow for surveys, SDG&E shall confer with USFWS to determine if any vernal pool Covered Species should be assumed present.

61. If surveys determine a vernal pool is occupied (or is assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the occupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

62. If surveys determine vernal pools are not occupied, permanent impacts that cannot be avoided shall be mitigated per the unoccupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

63. Prior to permanent and temporary impacts, SDG&E shall confer with USFWS on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools. Seed from vernal pool indicator plants shall be collected from the pools that will be impacted when the plants have dried and before the seed disperses. Seed collection may not be possible when precluded by weather or physical constraints, such as the Covered Activity occurring at a time of year when no seed is present. However, it is assumed that salvaged soil would contain a seed bank for these species, and they would be allowed to recover once the soil was reinstalled.

Inoculum shall be collected only from vernal pools that are free of versatile fairy shrimp (*Branchinecta lindahli*), and when it is dry to avoid damaging or destroying fairy shrimp cysts. Hand tools (i.e., shovels and trowels) shall be used to remove the first 2 inches of soil from the pools. Whenever possible, the trowel shall be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool shall be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessive heating of the soil and stored offsite at an appropriate facility for vernal pool inoculum. Inoculum from different source pools shall not be mixed for seeding any restored pools, unless otherwise approved by USFWS.

64. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools. The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange

safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist.

65. Grading Covered Activities immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools shall comply with the following:

a. Grading shall occur only when the soil is dry to the touch both at the surface and 1 inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and 1 inch below indicates whether the soil is dry.

b. After rainfall of greater than 0.2 inch, grading shall occur only after the soil surface has dried sufficiently as described above, and no sooner than 2 days (48 hours) after the rain event ends.

c. If rain occurs during grading, work shall stop and resume only after soils are dry, as described above.

d. Grading shall be done in a manner to prevent runoff from entering preserved vernal pools.

e. If necessary, water spraying shall be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

f. If mechanized grading is necessary, grading shall be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

66. If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools. If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. A qualified Biologist shall be present to oversee implementation of minimization measures.

67. When vernal pools are located above gas lines and repair work is necessary, work areas shall be minimized and soil shall be stockpiled for replacement after repairs.

68. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills.

69. For new projects, impacts to vernal pools and vernal pool Covered Species would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Road Ruts and Other Seasonal, Man-Made Depressions

70. Impacts from Covered Activities to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp to occur shall be avoided through project design considerations, to the extent feasible. Vehicular traffic through dry road ruts and other seasonal, man-made depressions shall not be considered an impact that requires mitigation.

71. If impacts to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for fairy shrimp to determine species presence. If project timing does not allow for surveys, it shall be assumed that the road ruts and other seasonal, man-made depressions are occupied.

72. If surveys determine that road ruts and other seasonal, man-made depressions are occupied (or assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the vernal pool mitigation ratios in Table 5.5. or through other alternatives outlined in Section 5.5 as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring to the road ruts and other seasonal, man made depressions.

73. If surveys determine road ruts and other man-made depressions are not occupied by Covered fairy shrimp species, Covered Activities and impacts shall be allowed without mitigation.

74. Prior to permanent and temporary impacts to occupied road ruts, soil (inoculum) shall be collected as described in Section 5.1.11.1, Protocol 63 for vernal pools.

75. Grading Covered Activities on existing access roads shall not take place when the soils are wet, as described in Section 5.1.11.1, Protocol 65 for vernal pools, to minimize indirect impacts from erosion and sedimentation. Prior to grading Covered Activities, a Biologist shall demarcate a road rut proposed for grading and a Biologist shall be present during grading Covered Activities. Direct impacts when grading existing access roads shall be avoided by lifting the blade of the grader over the demarcated road rut within the road. Any windrows resulting from grading in the vicinity of vernal pools or complexes shall be flattened with equipment tires to avoid affecting hydrology in the area.

<u>Environmental Baseline</u>

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied California Orcutt grass habitat. However, not all Modeled Habitat is expected to support California Orcutt grass occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the California Orcutt grass Modeled Habitat, there are approximately 4,560 acres present within the Plan Area and approximately 832 acres within the PIZ associated with existing SDG&E Facilities. In San Diego County, the highest acreages of California Orcutt grass Modeled Habitat occur in the central

valley, central coast, and southern coast ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 13 and 4 California Orcutt grass occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2011 5-year review for California Orcutt grass included an analysis of the status of California Orcutt grass at different locations throughout its range. Each of the records included in the 2011 5-year review may represent one or more occurrences from the CNDDB. The 2011 5-year review identified 16 occurrence groups in San Diego County that support California Orcutt grass; including Warner Valley, Carlsbad, MCAS Miramar, Brown Field, Dennery Canyon, Otay Mesa, Wruck Canyon, Spring Canyon, Arnie's Point, and the Peñasquitos Substation.

California Orcutt grass is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- San Diego MHCP Subregional NCCP/HCP
- SDCWA Subregional NCCP/HCP
- City of San Diego VPHCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the Environmental Baseline and General Effects section of this Opinion.

Currently, approximately 1,297 acres of Modeled Habitat occur within Preserves and 217 acres of Modeled Habitat occur within Proposed Preserves (collectively, 33 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 7 occurrences of California Orcutt grass recorded in CNDDB are located within San Diego County Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

The Plan Area and distribution of California Orcutt grass overlaps with the San Diego: Northern Coastal, Central Coastal and Southern Coastal Management Areas of the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 10.78 acres of California Orcutt grass Modeled Habitat, which is a fraction of the 4,560 acres of California Orcutt grass Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 6.81 acres of permanent impacts (or 0.15 percent of Modeled Habitat in the Plan Area); and

- Approximately 3.97 acres of temporary impacts (or 0.09 percent of Modeled Habitat in the Plan Area).

Wildfire Fuels Management is not expected to occur in areas of California Orcutt grass Modeled Habitat.

This impact represents about 0.24 percent of California Orcutt grass Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for California Orcutt grass. However, because California Orcutt grass are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[79] However, because it is difficult to define a threshold for impacts to occurrences (e.g., O&M activities could occur within occupied California Orcutt grass habitat but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[80]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact California Orcutt grass and its habitat will only be covered if

[79] Up to 0.24 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 13 California Orcutt grass occurrences in the Plan Area. The product of 0.24 percent and 13 is less than one.
[80] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

the requirements of a Minor Amendment are met, at which time potential impacts to California Orcutt grass will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of California Orcutt grass within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of California Orcutt grass. Therefore, it is likely that substantially less than 10.78 acres of occupied California Orcutt grass habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

The 10.78-acre estimate of impact to California Orcutt grass Modeled Habitat includes both vernal pool watershed and basin areas. In San Diego County, a watershed analysis of several mound and basin vernal pool complexes from Kearny Mesa and Otay Mesa found watershed to pool surface area ratios as low as 4:1, and commonly 6:1 or 7:1 (RECON 1997). Therefore, we expect most of the impacts to occur to the watershed and not to individual basins. Assuming an average watershed to pool surface area of 6:1, we anticipate within the overall 10.78 acres of impact, about 1.8 acres of the impacts will be to vernal pool basins, and the other 8.98 acres will be to vernal pool watersheds.

We anticipate that some California Orcutt grass plants or seeds could be killed or injured within up to 10.78 acres (1.8 acres and 8.98 acres of vernal pool basin and watershed, respectively) of California Orcutt grass Tracked Habitat due to loss or substantial degradation (including grading, excavating, and filling occupied basins and project-related changes to basin hydrology that preclude California Orcutt grass survival and reproduction) from Covered Activities.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) are anticipated to avoid, minimize, and mitigate the direct impacts to California Orcutt grass associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 33). Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable (OP 59). Prior to permanent and temporary impacts, SDG&E shall confer with the Service on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools (OP 63). Grading adjacent to vernal pools would be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). In addition, SDG&E would use biological monitors and protective fencing if necessary (OP 64); maintain avoidance buffers when working adjacent to vernal pools; fuel, stage, and maintain construction equipment at least 100 feet from the nearest vernal pools where feasible; and use protective measures to prevent spills where 100-foot buffers from the nearest vernal pools are not feasible (OP 68).

Unavoidable temporary impacts to California Orcutt grass occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to California Orcutt grass occupied habitat will be mitigated at a 3:1 ratio (see Table 5.5 of the HCP

Amendment) at acquired mitigation lands that are occupied or through the R/E Program or other measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of California Orcutt grass habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual California Orcutt grass within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of California Orcutt grass within these mitigation lands.

Restoration will include grading of new pools, inoculating the new pools with California Orcutt grass seeds/soil collected from donor pools, and the planting of other vernal pool indicator plant species within the pools and native vegetation in the pool watersheds and surrounding uplands. Enhancement and monitoring may include weeding or other activities in existing vernal pools.

Inoculum will be collected when dry to avoid damaging or destroying California Orcutt grass seeds. Hand tools (i.e., shovels and trowels) will be used to remove the first 2 inches of soil from the pools. Whenever possible, the tools will be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the seeds. The soil from each pool will be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight to prevent the occurrence of fungus or excessive heating of the soil and stored off site at an appropriate facility for vernal pool inoculum (OP 63). With the above measures, while a small number of California Orcutt grass seeds could be killed or injured, the majority of salvaged seeds from the impacted or donor pools are expected to survive the inoculum collection and transplant process, and these actions will minimize the likelihood that California Orcutt grass seeds will be killed or injured in impacted pools.

Overall, the benefits to California Orcutt grass associated with the restoration, enhancement and monitoring are anticipated to be substantially greater than the killing or injury of a small number of seeds caused by these activities. The primary benefit of the restoration will be to provide new habitat for the California Orcutt grass.

The removal and restoration of existing access roads that are not needed for Covered Activities may also help offset impacts to the California Orcutt grass.

Because Covered Activities will impact a small fraction of the California Orcutt grass habitat and occurrences in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of California Orcutt grass within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation and Non-Native Plants

The California Orcutt grass could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular

concern to occupied California Orcutt grass vernal pools include the degradation of habitat outside the footprint of Covered Activities as a result changes to hydrology and water quality, erosion, sedimentation and non-native plants.

Changes to the hydrology of vernal pools can alter the distribution of other vernal pool flora and fauna that are influenced by the length and frequency of water inundation (Bauder 1987a, 2000a). For instance, non-native plant species can become more prevalent in disturbed vernal pools when the periods of water inundation are reduced, while freshwater marsh species can expand into disturbed vernal pools when the periods of inundation are increased. Water born pollutants, erosion and sedimentation can also impact vernal pools.

Implementation of the HCP Amendment's general OPs summarized in the *Description of the Proposed Action* section of this Opinion, and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) stated above are anticipated to minimize changes to hydrology and water quality, erosion, sedimentation of the vernal pool basins associated with the Covered Activities. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools (OP 64). The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist. Grading immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools (OP 66). If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills (OP 68).

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may

include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation and non-native plants due to Covered Activities are not likely to result in a decrease in California Orcutt grass survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area and distribution of California Orcutt grass overlaps with the San Diego: Northern Coastal, Central Coastal and Southern Coastal Management Areas identified in the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused. The vernal pool habitat included in the Plan Area is part of a system that provides important habitat for the California Orcutt grass.

The HCP Amendment does not conflict with the goals and objectives of the recovery plan and clarification. Although the proposed project will impact vernal pool habitat that is used by the California Orcutt grass, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation, restoration/enhancement of occupied California Orcutt grass. These mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the California Orcutt grass.

The proposed conservation, restoration/enhancement, and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with recovery plan Task 1 (i.e., to establish a vernal pool habitat preserve system), Task 2 (i.e., to reestablish vernal pool habitat to historic structure and composition), and Task 3 (i.e., to rehabilitate and enhance secured vernal pool habitats and their constituent species). The recovery plan also emphasizes the need to manage and monitor protected habitat (Recovery Tasks 4 and 5). Consistent with these tasks, the restoration and enhancement areas will be preserved and managed in perpetuity by a natural lands manager. Therefore, the functions degraded or destroyed due to unavoidable impacts to California Orcutt grass habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan and clarification.

We expect no more than 10.78 acres (1.8 acres and 8.98 acres of vernal pool basin and watershed, respectively) of California Orcutt grass Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the California Orcutt grass occupied habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers,

reproduction, or distribution of any California Orcutt grass population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the California Orcutt grass. We base this conclusion on the following:

1. The current range of California Orcutt grass is from the Carlsberg vernal pool located in Moorpark in Ventura County, south to the vernal pools around San Quintin, Baja California, Mexico; thus, the action area for HCP Amendment represents only a portion of the species' rangewide distribution.

2. Impacts will be limited to no more than 10.78 acres (1.8 acres and 8.98 acres of vernal pool basin and watershed, respectively) by California Orcutt grass Tracked Habitat, which represents about 0.24 percent of the Modeled Habitat for the California Orcutt grass in the Plan Area.

3. Based on the known distribution of California Orcutt grass within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of California Orcutt grass. Therefore, it is likely that substantially less than 10.78 acres of occupied California Orcutt grass habitat will be impacted.

4. General and species-specific OPs will further reduce the likelihood that California Orcutt grass will be harmed by Covered Activities.

5. Impacts to California Orcutt grass will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan and clarification.

6. Because Covered Activities will affect a small proportion of the California Orcutt grass habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by California Orcutt grass, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any California Orcutt grass population in the Plan Area or rangewide.

7. Long-term management and monitoring of mitigation lands will help sustain California Orcutt grass in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

San Diego Mesa Mint (Pogogyne ambramsii)

Status of the Species

Listing Status

The Service listed the San Diego mesa mint (*Pogogyne ambramsii*) as endangered September 28, 1978 (43 FR 44811). The *Recovery Plan for Vernal Pools of Southern California* (recovery plan, Service 1998a) addresses the San Diego Mesa mint and the *Recovery Plan Clarification for the Vernal Pools of Southern California* (clarification, Service 2019a) includes recover criteria clarification. A 5-year review for San Diego mesa mint was completed September 1, 2010 (Service 2010g) and recommended no change in listing status. An updated 5-year review is expected to be completed in 2023. No critical habitat has been designated for this species.

Species Description

San Diego mesa mint is an annual herb in the Lamiaceae (mint) family that is restricted to vernal pools in southern California. Plants can reach 1 foot or more in height, and flowers are arranged in whorls that typically bloom from May or June through early July. Key characters of the genus *Pogogyne* include floral bracts and calyx lobes that are "conspicuously hirsute and bristly-ciliate" (Howell 1931). The flowers are strikingly patterned with a rich rosy-purple limb and throat and white tube; the middle lobe of the lower lip has a yellow central area spotted with deep purple. The plants usually give off a strong, sweet mint odor. In the past, San Diego mesa mint has been misidentified as Otay Mesa mint (*Pogogyne nudiuscula*), which also occurs in San Diego County. There are several distinct differences between the two species: San Diego mesa mint usually has two flowers per node while Otay Mesa mint has six or more; the vegetative portions of San Diego mesa mint develop a reddish tinge during maturation, while Otay Mesa mint does not develop this reddish tinge until after the flowering period; San Diego mesa mint has a hairy calyx, while Otay Mesa mint has a smooth calyx; and the bracts and leaves of San Diego mesa mint are narrower than Otay Mesa mint (Howell 1931, Munz 1974, Service 1998a).

Habitat Affinities

San Diego mesa mint is restricted to vernal pools and occurs on coastal terraces between 328 to 656 feet in elevation. Vernal pools are ephemeral wetlands that occur from southern Oregon through California into northern Baja California, Mexico (Service 1998a). They require a unique combination of climatic, topographic, geologic, and evolutionary factors for their formation and persistence. They form in regions with Mediterranean climates where shallow depressions fill with water during fall and winter rains and then dry up when the water evaporates in the spring (Collie and Lathrop 1976; Holland 1976; Holland and Jain 1977, 1988; Thorne 1984).

Downward percolation of water within the pools is prevented by an impervious subsurface layer consisting of claypan, hardpan, or volcanic stratum (Holland 1976, 1988a). Seasonal inundation makes vernal pools too wet for adjacent upland plant species adapted to drier soil conditions, while rapid drying during late spring makes pool basins unsuitable for typical marsh or aquatic species that require a more persistent source of water. For convenience of reference, groups of vernal pools are sometimes referred to as vernal pool complexes that may include two to several hundred individual vernal pools (Keeler-Wolf *et. al.* 1998). Vernal pool complexes are defined

as a series of vernal pool groups that are hydrologically connected with similar soil types and species compositions. Within San Diego County, they were first described and surveyed by Beauchamp and Cass 1979 and subsequently updated in 1986 (Bauder), 2004 (City of San Diego), and 2019 (City of San Diego). Local upland vegetation communities associated with vernal pools include needlegrass grassland, annual grassland, coastal sage scrub, maritime succulent scrub, and chaparral (Service 1998a).

Life History

The life cycle of the San Diego mesa mint is dependent on the function of the vernal pool ecosystem. San Diego mesa mint seeds germinate with the first significant fall and winter rains. As the season progresses, temperature increases and rainfall declines result in increased evaporation. More rapid growth of young plants is stimulated as the pools begin to dry out. Flowering commences in May and continues through June or July, and by early to mid-summer the pools become dry. The family is primarily bee pollinated (Proctor and Yeo 1973).

Gene dispersal may occur via pollen or seed. None of the *Pogogyne* species have seed morphology associated with animal or wind dispersal, although scattered occurrences of pool plants along well-worn trails that link individual pools over wide areas suggest large animals may contribute to seed dispersal (Cole 1995). Waterfowl use pools, especially the larger ponds or vernal lakes, and they are presumed to carry seeds from pool to pool (Proctor et al. 1967, Zedler 1987).

Zedler and Black (1992) found that San Diego mesa mint seeds germinated and grew from pellets of brush rabbits and Audubon's cottontail rabbits (*Sylvilagus bachmani* and *S. auduboni*), which were collected from vernal pools on Del Mar Mesa and Miramar Mesa. They postulated that rabbit movement may be a potential mechanism for dispersal and genetic mixing of vernal pool obligate species. In addition, San Diego mesa mint seeds float, which may result in limited dispersal opportunities when pools interconnect or lakes fill their basins in years of greater than average precipitation (Scheidlinger 1981).

Status and Distribution

San Diego mesa mint is endemic to San Diego County. This mint grows in vernal pools on the coastal central mesas of San Diego County. The northern limit of its distribution is Del Mar Mesa. It also occurs to the south on Mira Mesa, MCAS Miramar, and Kearny Mesa, with a few scattered populations in western Tierrasanta. San Diego mesa mint populations have been extirpated from the Linda Vista area, the vicinity of Balboa Park, Normal Heights, and the area surrounding San Diego State University. However some confusion has existed regarding *Pogogyne abramsii's* historical range due to misidentified herbarium specimens (identified as *Pogogyne nudiuscula*) and vague references regarding collection sites (Service 2010g).

Historically, San Diego vernal pool habitat probably covered no more than 6 percent of the county, approximately 200 square miles. Current estimates indicate a loss of vernal pool habitat in the San Diego County around 95 to 97 percent because of intensive cultivation and urbanization (Bauder and McMillan 1998). No estimate of numbers of San Diego mesa mint plants is available; however, it is known to occur from approximately 19.2 acres of vernal pool

basins on MCAS Miramar and approximately 0.8 acre outside the boundary of MCAS Miramar (City of San Diego 2004, MCAS Miramar 2006). This lack of an estimate for San Diego mesa mint plants is likely due to the difficulty of measuring temporal abundance at each occurrence. Local site conditions, rainfall, and freshwater pooling likely influence numbers of standing plants and their local distribution (Schiller et al. 2000).

Like most annual plants, the germination success of San Diego mesa mint differs annually depending on temperature, timing, and rainfall. The number of individuals may differ at each site for any year because it also depends upon reproductive success of previous cohorts, the number of seeds deposited in the soil seed bank, and the survivorship of the annual seedling cohort in the year the survey was conducted. In 2019, the City of San Diego conducted a survey of vernal pools within their jurisdiction and reported that San Diego mesa mint was identified in 337 vernal pools within 16 complexes within their jurisdiction (City of San Diego 2019b).

Threats and Conservation Needs

Threats to vernal pools and San Diego mesa mint can be divided into three major categories: 1) direct destruction of vernal pools from construction, vehicle traffic, grazing, dumping, and deep plowing; 2) indirect threats that degrade or destroy vernal pools (e.g., altered hydrology, draining, competition by introduced species, habitat fragmentation); and 3) potential long-term, cumulative impacts such as the effects of isolation on genetic diversity and locally adapted genotypes, air and water pollution, drastic climatic variations, and changes in nutrient availability (Bauder 1986).

San Diego mesa mint may also be affected by factors associated with climate change including: 1) drier conditions may result in fewer suitable pool complexes, a lower percent germination and smaller population sizes, and fewer and less reliable recovery cycles of abundant individuals; 2) higher temperatures may inhibit germination, speed desiccation of pools, and affect pollinator services; 3) a shift in the timing of the annual rainfall may favor non-native species; 4) the timing of pollinator life-cycles may become out-of-sync with timing of flowering; and 5) drier conditions may result in increased fire frequency, making the ecosystems in which San Diego mesa mint grows more vulnerable to the threats of subsequent erosion and non-native/native plant invasion. In a changing climate, conditions could change in a way that would allow both native and non-native plants to invade the habitat where San Diego mesa mint occurs (Bauder et al. 2002b, Bauder 2005).

San Diego mesa mint is predominately found in vernal pool complexes on Redding soils. As with other vernal pool species, the conservation needs of San Diego mesa mint include maintaining hydrology and the surrounding watershed for the occupied vernal pools, as well as protecting adjacent upland habitats for pollinators. Due to its restricted range and small population size, conservation of San Diego mesa mint is dependent on preservation of extant populations, including management of the threats identified above, as well as re-establishment of populations of mint within other pools.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following Vernal Pool and Road-Rut OPs (59-75) in the HCP Amendment will be implemented to avoid and/or minimize impacts to the San Diego mesa mint:

Vernal Pools (naturally occurring, non-man-made)

59. Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable. Vehicular traffic through dry vernal pools shall not be considered an impact that requires mitigation.

60. If impacts to vernal pool habitat cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for vernal pool Covered Species. If project timing does not allow for surveys, SDG&E shall confer with USFWS to determine if any vernal pool Covered Species should be assumed present.

61. If surveys determine a vernal pool is occupied (or is assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the occupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

62. If surveys determine vernal pools are not occupied, permanent impacts that cannot be avoided shall be mitigated per the unoccupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

63. Prior to permanent and temporary impacts, SDG&E shall confer with USFWS on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools. Seed from vernal pool indicator plants shall be collected from the pools that will be impacted when the plants have dried and before the seed disperses. Seed collection may not be possible when precluded by weather or physical constraints, such as Covered Activities occurring at a time of year when no seed is present. However, it is assumed that salvaged soil would contain a seed bank for these species, and they would be allowed to recover once the soil was reinstalled.

Inoculum shall be collected only from vernal pools that are free of versatile fairy shrimp (*Branchinecta lindahli*), and when it is dry to avoid damaging or destroying fairy shrimp cysts. Hand tools (i.e., shovels and trowels) shall be used to remove the first 2 inches of soil from the pools. Whenever possible, the trowel shall be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool shall be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessive heating of the soil and stored offsite at an appropriate facility for vernal pool inoculum. Inoculum from different source pools shall not be mixed for seeding any restored pools, unless otherwise approved by USFWS.

64. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools. The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist.

65. Grading Covered Activities immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools shall comply with the following:

a. Grading shall occur only when the soil is dry to the touch both at the surface and 1 inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and 1 inch below indicates whether the soil is dry.

b. After rainfall of greater than 0.2 inch, grading shall occur only after the soil surface has dried sufficiently as described above, and no sooner than 2 days (48 hours) after the rain event ends.

c. If rain occurs during grading, work shall stop and resume only after soils are dry, as described above.

d. Grading shall be done in a manner to prevent runoff from entering preserved vernal pools.

e. If necessary, water spraying shall be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

f. If mechanized grading is necessary, grading shall be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

66. If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools. If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. A qualified Biologist shall be present to oversee implementation of minimization measures.

67. When vernal pools are located above gas lines and repair work is necessary, work areas shall be minimized and soil shall be stockpiled for replacement after repairs.

68. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills.

69. For new projects, impacts to vernal pools and vernal pool Covered Species would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Road Ruts and Other Seasonal, Man-Made Depressions

70. Impacts from Covered Activities to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp to occur shall be avoided through project design considerations, to the extent feasible. Vehicular traffic through dry road ruts and other seasonal, man-made depressions shall not be considered an impact that requires mitigation.

71. If impacts to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for fairy shrimp to determine species presence. If project timing does not allow for surveys, it shall be assumed that the road ruts and other seasonal, man-made depressions are occupied.

72. If surveys determine that road ruts and other seasonal, man-made depressions are occupied (or assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the vernal pool mitigation ratios in Table 5.5. or through other alternatives outlined in Section 5.5 as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring to the road ruts and other seasonal, man made depressions.

73. If surveys determine road ruts and other man-made depressions are not occupied by Covered fairy shrimp species, Covered Activities and impacts shall be allowed without mitigation.

74. Prior to permanent and temporary impacts to occupied road ruts, soil (inoculum) shall be collected as described in Section 5.1.11.1, Protocol 63 for vernal pools.

75. Grading Covered Activities on existing access roads shall not take place when the soils are wet, as described in Section 5.1.11.1, Protocol 65 for vernal pools, to minimize indirect impacts from erosion and sedimentation. Prior to grading Covered Activities, a Biologist shall demarcate a road rut proposed for grading and a Biologist shall be present during grading Covered Activities. Direct impacts when grading existing access roads shall be avoided by lifting the blade of the grader over the demarcated road rut within the road. Any windrows resulting from grading in the vicinity of vernal pools or complexes shall be flattened with equipment tires to avoid affecting hydrology in the area.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied San Diego mesa mint habitat. However, not all Modeled Habitat is expected to support San Diego mesa mint occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the San Diego mesa mint Modeled Habitat, there are approximately 2,536 acres present within the Plan Area and approximately 341 acres within the PIZ associated with existing SDG&E Facilities. In San Diego County, the San Diego mesa mint Modeled Habitat is found only in the central coast ecoregion. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 14 and 11 San Diego mesa mint occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2010 5-year review for San Diego mesa mint included an analysis of the status of San Diego mesa mint at different locations throughout its range. Each of the records included in the 2010 5-year review may represent one or more occurrences from the CNDDB. The 2010 5-year review identified 40 extant occurrence groups in San Diego County that support San Diego mesa mint on Mira Mesa, MCAS Miramar, Kearny Mesa, and in western Tierrasanta.

San Diego mesa mint is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- SDCWA Subregional NCCP/HCP
- City of San Diego VPHCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 524 acres of Modeled Habitat occur within Preserves and 46 acres of Modeled Habitat occur within Proposed Preserves (collectively, 22 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 9 occurrences of San Diego mesa mint recorded in the CNDDB are located within San Diego County Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

The Plan Area and distribution of San Diego mesa mint overlaps with the San Diego Central Coastal Mesa Management Area of the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal

pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, all of which occur in the Plan Area, where recovery efforts should be focused.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 4.42 acres of San Diego mesa mint Modeled Habitat, which is a fraction of the 524 acres of San Diego mesa mint Modeled Habitat within the Plan Area (Table 12) These impacts will include:

- Approximately 2.79 acres of permanent impacts (or 0.11 percent of Modeled Habitat in the Plan Area); and

- Approximately 1.63 acres of temporary impacts (or 0.06 percent of Modeled Habitat in the Plan Area).

Wildfire Fuels Management is not expected to occur in areas of San Diego mesa mint Modeled Habitat.

This impact represents about 0.17 percent of San Diego mesa mint Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for San Diego mesa mint. However, because San Diego mesa mint is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[81] However, because it is difficult to define a threshold for impacts to occurrences (e.g., O&M activities could occur within occupied San Diego mesa mint habitat but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[82]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New

[81] Up to 0.17 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 14 San Diego mesa mint occurrences in the Plan Area. The product of 0.17 percent and 14 is less than one.
[82] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

Construction projects that impact San Diego mesa mint and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to San Diego mesa mint will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of San Diego mesa mint within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of San Diego mesa mint. Therefore, it is likely that substantially less than 4.42 acres of occupied San Diego mesa mint habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

The 4.42-acre estimate of impact to San Diego mesa mint Modeled Habitat includes both vernal pool watershed and basin areas. In San Diego County, a watershed analysis of several mound and basin vernal pool complexes from Kearny Mesa and Otay Mesa found watershed to pool surface area ratios as low as 4:1, and commonly 6:1 or 7:1 (RECON 1997). Therefore, we expect most of the impacts to occur to the watershed and not to individual basins. Assuming an average watershed to pool surface area of 6:1, we anticipate within the overall 4.42 acres of impact, about 0.74 acre of the impacts will be to vernal pool basins, and the other 3.68 acres will be to vernal pool watersheds.

We anticipate that some San Diego mesa mint plants or seeds could be killed or injured within up to 4.42 acres (0.74 acre and 3.68 acres of vernal pool basin and watershed, respectively) of San Diego mesa mint Tracked Habitat due to loss or substantial degradation (including grading, excavating, and filling occupied basins and project-related changes to basin hydrology that preclude San Diego mesa mint survival and reproduction) from Covered Activities.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) are anticipated to avoid, minimize, and mitigate the direct impacts to San Diego mesa mint associated with Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 33). Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable (OP 59). Prior to permanent and temporary impacts, SDG&E shall confer with the Service on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools (OP 63). Grading adjacent to vernal pools would be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). In addition, SDG&E would use biological monitors and protective fencing if necessary (OP 64); maintain avoidance buffers when working adjacent to vernal pools; fuel, stage, and maintain construction equipment at least 100 feet from the nearest vernal pools where feasible; and use protective measures to prevent spills where 100-foot buffers from the nearest vernal pools are not feasible (OP 68).

Unavoidable temporary impacts to San Diego mesa mint occupied habitat will be restored onsite through the R/E Program or mitigated at acquired additional mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to San Diego

mesa mint occupied habitat will be mitigated at a 3:1 ratio (see Table 5.5 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or other measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of San Diego mesa mint habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual San Diego mesa mint within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of San Diego mesa mint within these mitigation lands.

Restoration will include grading of new pools, inoculating the new pools with San Diego mesa mint seeds/soil collected from donor pools, and the planting of other vernal pool indicator plant species within the pools and native vegetation in the pool watersheds and surrounding uplands. Enhancement and monitoring may include weeding or other activities in existing vernal pools.

Inoculum will be collected when dry to avoid damaging or destroying San Diego mesa mint seeds. Hand tools (i.e., shovels and trowels) will be used to remove the first 2 inches of soil from the pools. Whenever possible, the tools will be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the seeds. The soil from each pool will be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight to prevent the occurrence of fungus or excessive heating of the soil and stored off site at an appropriate facility for vernal pool inoculum (OP 63). With the above measures, while a small number of San Diego mesa mint seeds could be killed or injured, the majority of salvaged seeds from the impacted or donor pools are expected to survive the inoculum collection and transplant process, and these actions will minimize the likelihood that San Diego mesa mint seeds will be killed or injured in impacted pools.

Overall, the benefits to San Diego mesa mint associated with the restoration, enhancement, and monitoring are anticipated to be substantially greater than the killing or injury of a small number of seeds caused by these activities. The primary benefit of the restoration will be to provide new habitat for the San Diego mesa mint.

The removal and restoration of existing access roads that are not needed for Covered Activities may also help offset impacts to the San Diego mesa mint.

Because Covered Activities will impact a small fraction of the San Diego mesa mint habitat and occurrences in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of San Diego mesa mint within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, and Non-Native Plants

The San Diego mesa mint could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other

than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to occupied San Diego mesa mint vernal pools include the degradation of habitat outside the footprint of Covered Activities as a result changes to hydrology and water quality, erosion, sedimentation, and non-native plants.

Changes to the hydrology of vernal pools can alter the distribution of other vernal pool flora and fauna that are influenced by the length and frequency of water inundation (Bauder 1987a, 2000a). For instance, non-native plant species can become more prevalent in disturbed vernal pools when the periods of water inundation are reduced, while freshwater marsh species can expand into disturbed vernal pools when the periods of inundation are increased. Water born pollutants, erosion, and sedimentation can also impact vernal pools.

Implementation of the HCP Amendment's general OPs summarized in the *Description of the Proposed Action* section of this Opinion, and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) stated above are anticipated to minimize changes to hydrology and water quality, erosion, sedimentation of the vernal pool basins associated with Covered Activities. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools (OP 64). The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist. Grading immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools (OP 66). If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills (OP 68).

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may

include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, and non-native plants due to Covered Activities are not likely to result in a decrease in San Diego mesa mint survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area and distribution of San Diego mesa mint overlaps with the San Diego Central Coastal Mesa Management Area identified in the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused. The vernal pool habitat included in the Plan Area is part of a system that provides important habitat for the San Diego mesa mint.

The HCP Amendment does not conflict with the goals and objectives of the recovery plan and clarification. Although Covered Activities will impact vernal pool habitat that is used by San Diego mesa mint, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation and restoration/enhancement of occupied San Diego mesa mint habitat. These mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the San Diego mesa mint.

The proposed conservation, restoration/enhancement, and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with recovery plan Task 1 (i.e., to establish a vernal pool habitat preserve system), Task 2 (i.e., to reestablish vernal pool habitat to historic structure and composition), and Task 3 (i.e., to rehabilitate and enhance secured vernal pool habitats and their constituent species). The recovery plan also emphasizes the need to manage and monitor protected habitat (Recovery Tasks 4 and 5). Consistent with these tasks, the restoration and enhancement areas will be preserved and managed in perpetuity by a natural lands manager. Therefore, the functions degraded or destroyed due to unavoidable impacts to San Diego mesa mint habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan and clarification.

We expect no more than 4.42 acres (0.74 acre and 3.68 acres of vernal pool basin and watershed, respectively) of San Diego mesa mint Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the San Diego mesa mint habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any San Diego mesa mint population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the San Diego mesa mint. We base this conclusion on the following:

1. Impacts will be limited to no more than 4.42 acres (0.74 acre and 3.68 acres of vernal pool basin and watershed, respectively) of San Diego mesa mint Tracked Habitat, which represents about 0.17 percent of Modeled Habitat for the San Diego mesa mint in the Plan Area.

2. Based on the known distribution of San Diego mesa mint within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of San Diego mesa mint. Therefore, it is likely that substantially less than 4.42 acres of occupied San Diego mesa mint habitat will be impacted.

3. General and species-specific OPs will further reduce the likelihood that individual San Diego mesa mint will be harmed by Covered Activities.

4. Impacts to San Diego mesa mint will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan and clarification.

5. Because Covered Activities will affect a small proportion of the San Diego mesa mint habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by San Diego mesa mint, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any San Diego mesa mint population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain San Diego mesa mint in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Otay Mesa Mint (Pogogyne nudiuscula)

Status of the Species

Listing Status

Otay Mesa mint (*Pogogyne nudiuscula)* was listed as endangered on August 3, 1993 (58 FR 41384). The *Recovery Plan for Vernal Pools of Southern California* (recovery plan, Service

1998a addresses the Otay Mesa mint and the *Recovery Plan Clarification for the Vernal Pools of Southern California* (clarification, Service 2019a) includes recover criteria clarification. A 5-year review for Otay Mesa mint was completed September 1, 2021 (Service 2021j) that recommended no change in the status of the Otay Mesa mint. Critical habitat has not been designated for this species.

Species Description

Otay Mesa mint is an annual herb in the mint family (Lamiaceae). Howell (1931) considered Otay Mesa mint to be diagnosable from Otay mesa mint (*Pogogyne abramsii*) by having a glabrous (smooth) calyx and bract with a different morphology. This distinction is supported by Jokerst (1993), and the species is also diagnosable by usually having at least six flowers per node on the stem.

Otay Mesa mint can reach 1 foot or more in height and typically blooms from May or June through early July. The plant is usually not much branched and the vegetative and floral portions of the plant give off a strong, turpentine mint odor. Otay Mesa mint displays internodal elongation, adventitious roots and reduced branching when grown under water, but plants are branched and shorter when never inundated (Bauder 1987b, 1992). In contrast to Otay mesa mint, the vegetative portions of the plant do not develop a reddish tinge until the plant is past the flowering period. The flowers are purple with a white throat. Otay Mesa mint typically has six flowers (occasionally more) per stem node, a glabrous to minutely pubescent (hairy) calyx, and bracts and leaves which are wider than Otay mesa mint.

Habitat Affinities

Otay Mesa mint is restricted to vernal pools on Otay Mesa in the City and County of San Diego. Vernal pools that support Otay Mesa mint are found on Huerero or Stockpen soils (Beauchamp and Cass 1979). Vernal pools are ephemeral wetlands that occur from southern Oregon through California into northern Baja California, Mexico (Service 1998a). They require a unique combination of climatic, topographic, geologic, and evolutionary factors for their formation and persistence. They form in regions with Mediterranean climates where shallow depressions fill with water during fall and winter rains and then dry up when the water evaporates in the spring (Collie and Lathrop 1976; Holland 1976; Holland and Jain 1977, 1988; Thorne 1984).

Downward percolation of water within the pools is prevented by an impervious subsurface layer consisting of claypan, hardpan, or volcanic stratum (Holland 1976, 1988a). Seasonal inundation makes vernal pools too wet for adjacent upland plant species adapted to drier soil conditions, while rapid drying during late spring makes pool basins unsuitable for typical marsh or aquatic species that require a more persistent source of water. For convenience of reference, groups of vernal pools are sometimes referred to as vernal pool complexes that may include two to several hundred individual vernal pools (Keeler-Wolf et. al. 1998). Vernal pool complexes are defined as a series of vernal pool groups that are hydrologically connected with similar soil types and species compositions. Within San Diego County, they were first described and surveyed by Beauchamp and Cass (1979) and subsequently updated in 1986 (Bauder 1986), 2004 (City of San Diego 2004), and 2019 (City of San Diego 2019b). Local upland vegetation communities

associated with vernal pools include needlegrass grassland, annual grassland, coastal sage scrub, maritime succulent scrub, and chaparral (Service 1998a).

Life History

The life cycle of the Otay Mesa mint is dependent on the function of the vernal pool ecosystem. Otay Mesa mint seeds germinate with the first significant fall and winter rains. As the season progresses, temperature increases and rainfall declines result in increased evaporation. More rapid growth of young plants is stimulated as the pools begin to dry out. Flowering commences in May and continues through June or July, and by early to mid-summer, the pools become dry. The family is primarily bee pollinated (Proctor and Yeo 1973).

Gene dispersal may occur via pollen or seed. None of the *Pogogyne* species have seed morphology associated with animal or wind dispersal, although scattered occurrences of pool plants along well-worn trails that link individual pools over wide areas suggest large animals may contribute to seed dispersal (Cole 1995). Waterfowl use pools, especially the larger ponds or vernal lakes, and they are presumed to carry seeds from pool to pool (Proctor et al. 1967, Zedler 1987).

Zedler and Black (1992) found that Otay mesa mint seeds germinated and grew from pellets of brush rabbits and Audubon's cottontail rabbits (*Sylvilagus bachmani* and *S. auduboni*), which were collected from vernal pools on Del Mar Mesa and Miramar Mesa. They postulated that rabbit movement may be a potential mechanism for dispersal and genetic mixing of vernal pool obligate species. In addition, *Pogogyne* seeds float, which may result in limited dispersal opportunities when pools interconnect or when lakes fill their basins in years of greater than average precipitation (Scheidlinger 1981).

Status and Distribution

Otay Mesa mint is endemic to southern San Diego County. This mint grows in vernal pools near the Otay Mesa region. Historically, Otay Mesa mint was found beyond Otay Mesa and occurred at 10 locations in southern San Diego County, including sites further north near University Heights, Balboa Park, and Mission Valley (Service 2010h Appendix 1). It also historically grew in nearby vernal pools near the Tijuana Airport in Baja California, Mexico, but it may be extirpated there due to urban development.

In November 2010, the San Diego NWR introduced Otay Mesa mint into the vernal pool complex ("S" series) located just south of the Sweetwater Reservoir. Seeds were distributed at the Shinohara vernal pool restoration site prior to the 2011 growing season. The species has grown abundantly every year since 2011 and expanded its distribution onsite into pools in which it was not initially seeded (Service 2014d). Recently, new locations of Otay Mesa mint were reported at Topsail parcel [series to be determined (TBD)], Hidden Trails parcel (series TBD), Dennery West (J31), West Otay B (J32), and West Otay C (J32) (Service 2021j).

Historically, San Diego vernal pool habitat probably covered no more than 6 percent of the county, approximately 200 square miles. Current estimates indicate a loss of about 95 to 97 percent of historical vernal pool habitat in the San Diego County because of intensive cultivation and urbanization (Bauder and McMillan 1998). No estimate of numbers of Otay Mesa mint

plants is currently available due to the difficulty of measuring abundance at each occurrence at a single point in time. Local site conditions, rainfall, and freshwater pooling likely influence numbers of standing plants and their local distribution (Schiller et al. 2000).

Like most annual plants, the germination success of Otay Mesa mint differs annually depending, in part, on temperature, timing, and amount of rainfall. The number of individuals may differ at any site for any year because it also depends, in part, upon reproductive success of previous cohorts, the number of seeds deposited in the seed bank, and the survivorship of the annual seedling cohort in the year the survey was conducted. In 2019, the City of San Diego conducted a survey of vernal pools within their jurisdiction; currently, Otay Mesa mint has been identified in 370 vernal pools within 5 complexes inside City jurisdiction (City of San Diego 2019b).

Threats and Conservation Needs

Threats to vernal pools and Otay Mesa mint can be divided into three major categories: 1) direct destruction of vernal pools from construction, vehicle traffic, grazing, dumping, and deep plowing; 2) indirect threats that degrade or destroy vernal pools (e.g., altered hydrology, draining, competition by introduced species, habitat fragmentation); and 3) potential long-term, cumulative impacts such as the effects of isolation on genetic diversity and locally adapted genotypes, air and water pollution, drastic climatic variations, and changes in nutrient availability (Bauder 1986).

Otay Mesa mint may also be affected by factors associated with climate change including: 1) drier conditions may result in fewer suitable pool complexes, a lower percent germination and smaller population sizes, and fewer and less reliable recovery cycles of abundant individuals; 2) higher temperatures may inhibit germination, speed desiccation of pools, and affect pollinator services; 3) a shift in the timing of the annual rainfall may favor non-native species; 4) the timing of pollinator life-cycles may become out-of-sync with timing of flowering; and 5) drier conditions may result in increased fire frequency, making the ecosystems in which Otay Mesa mint grows more vulnerable to the threats of subsequent erosion and non-native/native plant invasion. In a changing climate, conditions could also change in a way that would allow both native and non-native plants to invade the habitat where Otay Mesa mint occurs (Bauder *et. al.* 2002a, Bauder 2005).

Otay Mesa mint is restricted to only a few vernal pool complexes on Otay Mesa with Huerero or Stockpen soils and the one complex on the San Diego NWR. As with other vernal pool species, Otay Mesa mint is dependent on maintaining hydrology and the surrounding watershed, as well as adjacent uplands to support pollinators.

Due to its restricted range and small population size, conservation needs of Otay Mesa mint include preservation of extant populations as well as re-establishment of populations of mint within other pools on Otay Mesa (Service 2021j).

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following Vernal Pool and Road-Rut OPs (59-75) in the HCP Amendment will be implemented to avoid and/or minimize impacts to the Otay mesa mint:

Vernal Pools (naturally occurring, non-man-made)

59. Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable. Vehicular traffic through dry vernal pools shall not be considered an impact that requires mitigation.

60. If impacts to vernal pool habitat cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for vernal pool Covered Species. If project timing does not allow for surveys, SDG&E shall confer with USFWS to determine if any vernal pool Covered Species should be assumed present.

61. If surveys determine a vernal pool is occupied (or is assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the occupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

62. If surveys determine vernal pools are not occupied, permanent impacts that cannot be avoided shall be mitigated per the unoccupied vernal pool mitigation ratios in Table 5.5., or through other alternatives outlined in Section 5.5, as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within the vernal pool, complex, or watershed.

63. Prior to permanent and temporary impacts, SDG&E shall confer with USFWS on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools. Seed from vernal pool indicator plants shall be collected from the pools that will be impacted when the plants have dried and before the seed disperses. Seed collection may not be possible when precluded by weather or physical constraints, such as the Covered Activity occurring at a time of year when no seed is present. However, it is assumed that salvaged soil would contain a seed bank for these species, and they would be allowed to recover once the soil was reinstalled.

Inoculum shall be collected only from vernal pools that are free of versatile fairy shrimp (*Branchinecta lindahli*), and when it is dry to avoid damaging or destroying fairy shrimp cysts. Hand tools (i.e., shovels and trowels) shall be used to remove the first 2 inches of soil from the pools. Whenever possible, the trowel shall be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool shall be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessive heating of the soil and stored offsite at an appropriate facility for vernal pool inoculum. Inoculum from different source pools shall not be mixed for seeding any restored pools, unless otherwise approved by USFWS.

64. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools. The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange

safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist.

65. Grading Covered Activities immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools shall comply with the following:

a. Grading shall occur only when the soil is dry to the touch both at the surface and 1 inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and 1 inch below indicates whether the soil is dry.

b. After rainfall of greater than 0.2 inch, grading shall occur only after the soil surface has dried sufficiently as described above, and no sooner than 2 days (48 hours) after the rain event ends.

c. If rain occurs during grading, work shall stop and resume only after soils are dry, as described above.

d. Grading shall be done in a manner to prevent runoff from entering preserved vernal pools.

e. If necessary, water spraying shall be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

f. If mechanized grading is necessary, grading shall be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

66. If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools. If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. A qualified Biologist shall be present to oversee implementation of minimization measures.

67. When vernal pools are located above gas lines and repair work is necessary, work areas shall be minimized and soil shall be stockpiled for replacement after repairs.

68. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills.

69. For new projects, impacts to vernal pools and vernal pool Covered Species would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Road Ruts and Other Seasonal, Man-Made Depressions

70. Impacts from Covered Activities to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp to occur shall be avoided through project design considerations, to the extent feasible. Vehicular traffic through dry road ruts and other seasonal, man-made depressions shall not be considered an impact that requires mitigation.

71. If impacts to road ruts and other seasonal, man-made depressions where there is potential for fairy shrimp cannot be avoided, a survey shall be conducted by a Biologist using established survey protocols for fairy shrimp to determine species presence. If project timing does not allow for surveys, it shall be assumed that the road ruts and other seasonal, man-made depressions are occupied.

72. If surveys determine that road ruts and other seasonal, man-made depressions are occupied (or assumed occupied), permanent impacts that cannot be avoided shall be mitigated per the vernal pool mitigation ratios in Table 5.5. or through other alternatives outlined in Section 5.5 as agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring to the road ruts and other seasonal, man-made depressions.

73. If surveys determine road ruts and other man-made depressions are not occupied by Covered fairy shrimp species, Covered Activities and impacts shall be allowed without mitigation.

74. Prior to permanent and temporary impacts to occupied road ruts, soil (inoculum) shall be collected as described in Section 5.1.11.1, Protocol 63 for vernal pools.

75. Grading Covered Activities on existing access roads shall not take place when the soils are wet, as described in Section 5.1.11.1, Protocol 65 for vernal pools, to minimize indirect impacts from erosion and sedimentation. Prior to grading Covered Activities, a Biologist shall demarcate a road rut proposed for grading and a Biologist shall be present during grading Covered Activities. Direct impacts when grading existing access roads shall be avoided by lifting the blade of the grader over the demarcated road rut within the road. Any windrows resulting from grading in the vicinity of vernal pools or complexes shall be flattened with equipment tires to avoid affecting hydrology in the area.

<u>Environmental Baseline</u>

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Otay mesa mint habitat. However, not all Modeled Habitat is expected to support Otay mesa mint occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the Otay mesa mint Modeled Habitat, there are approximately 691 acres present within the Plan Area and approximately 116 acres within the PIZ associated with existing SDG&E Facilities. In San Diego County, Otay mesa mint Modeled

Habitat is found only in the southern coast ecoregion on Otay Mesa. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 12 and 5 Otay mesa mint occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

The Service's 2021 5-year review for Otay mesa mint included an analysis of the status of Otay mesa mint at different locations throughout its range. Each of the records included in the 2021 5-year review may represent one or more occurrences from the CNDDB. The 2021 5-year review identified 19 extant or presumed extant occurrence groups in San Diego County on Otay Mesa that support Otay mesa mint.

Otay mesa mint is covered by the following existing regional HCPs that overlap the Plan Area:

- San Diego MSCP Subregional NCCP/HCP (conditionally)
- SDCWA Subregional NCCP/HCP
- City of San Diego VPHCP

These HCPs form a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 217 acres of Modeled Habitat occur within Preserves and 77 acres of Modeled Habitat occur within Proposed Preserves (collectively, 43 percent of all Modeled Habitat) associated with these regional conservation efforts within the Plan Area. In addition, 9 occurrences of Otay mesa mint recorded in the CNDDB are located within San Diego County Preserves in the Plan Area (CDFW 2023). This species is not known or expected to occur on existing SDG&E mitigation lands.

The Plan Area and distribution of Otay mesa mint overlaps with the San Diego Southern Coastal Mesa Management Area of the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, all of which occur in the Plan Area, where recovery efforts should be focused.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 1.5 acres of Otay mesa mint Tracked Habitat, which is a fraction of the 691 acres of Otay mesa mint Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 0.95 acres of permanent impacts (or 0.14 percent of Modeled Habitat in the Plan Area); and

- Approximately 0.55 acres of temporary impacts (or 0.08 percent of Modeled Habitat in the Plan Area).

Wildfire Fuels Management is not expected to occur in areas of Otay mesa mint Modeled Habitat.

This impact represents about 0.22 percent of Otay mesa mint Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for Otay mesa mint. However, because Otay mesa mint is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[83] However, because it is difficult to define a threshold for impacts to occurrences (e.g., O&M activities could occur within a Otay mesa mint occurrence but not have a biologically meaningful impact on the occurrence, and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[84]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact Otay mesa mint and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Otay mesa mint will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of Otay mesa mint within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of Otay mesa mint. Therefore, it is likely that substantially less than 1.5 acres of occupied Otay mesa mint habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

The 1.5-acre estimate of impact to Otay mesa mint Modeled Habitat includes both vernal pool watershed and basin areas. In San Diego County, a watershed analysis of several mound and

[83] Up to 0.22 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 12 Otay mesa mint occurrences in the Plan Area. The product of 0.22 percent and 12 is less than one.
[84] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

basin vernal pool complexes from Kearny Mesa and Otay Mesa found watershed to pool surface area ratios as low as 4:1, and commonly 6:1 or 7:1 (RECON 1997). Therefore, we expect most of the impacts to occur to the watershed and not to individual basins. Assuming an average watershed to pool surface area of 6:1, we anticipate within the overall 1.5 acres of impact, about 0.25 acre of the impacts will be to vernal pool basins, and the other 1.25 acres will be to vernal pool watersheds.

We anticipate that some Otay mesa mint plants or seeds could be killed or injured within up to 1.5 acres (0.25 acre and 1.25 acres of vernal pool basin and watershed, respectively) of Otay mesa mint Tracked Habitat due to loss or substantial degradation (including grading, excavating, and filling occupied basins and project-related changes to basin hydrology that preclude Otay mesa mint survival and reproduction) from Covered Activities.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) are anticipated to avoid, minimize, and mitigate the direct impacts to Otay mesa mint associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 33). Impacts to vernal pools and/or their watersheds (vernal pool habitat) shall be avoided through project design considerations, to the maximum extent practicable (OP 59). Prior to permanent and temporary impacts, SDG&E shall confer with the Service on whether soil (inoculum) and/or vernal pool plant seed shall be salvaged from the impacted vernal pools (OP 63). Grading adjacent to vernal pools would be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). In addition, SDG&E would use biological monitors and protective fencing if necessary (OP 64); maintain avoidance buffers when working adjacent to vernal pools; fuel, stage, and maintain construction equipment at least 100 feet from the nearest vernal pools where feasible; and use protective measures to prevent spills where 100-foot buffers from the nearest vernal pools are not feasible (OP 68).

Unavoidable temporary impacts to Otay mesa mint occupied habitat will be restored onsite through the R/E Program or mitigated at acquired additional mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to Otay mesa mint occupied habitat will be mitigated at a 3:1 ratio (see Table 5.5 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or other measures that will benefit this species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Otay mesa mint habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Otay mesa mint within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Otay mesa mint within these mitigation lands.

Restoration will include grading of new pools, inoculating the new pools with Otay mesa mint seeds/soil collected from donor pools, and the planting of other vernal pool indicator plant species within the pools and native vegetation in the pool watersheds and surrounding uplands. Enhancement and monitoring may include weeding or other activities in existing vernal pools.

Inoculum will be collected when dry to avoid damaging or destroying Otay mesa mint seeds. Hand tools (i.e., shovels and trowels) will be used to remove the first 2 inches of soil from the pools. Whenever possible, the tools will be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the seeds. The soil from each pool will be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight to prevent the occurrence of fungus or excessive heating of the soil and stored off site at an appropriate facility for vernal pool inoculum (OP 63). With the above measures, while a small number of Otay mesa mint seeds could be killed or destroyed, the majority of salvaged seeds from the impacted or donor pools are expected to survive the inoculum collection and transplant process, and these actions will minimize the likelihood that Otay mesa mint seeds will be killed or injured in impacted pools.

Overall, the benefits to Otay mesa mint associated with the restoration, enhancement and monitoring are anticipated to be substantially greater than the killing or injury of a small number of seeds caused by these activities. The primary benefit of the restoration will be to provide new habitat for the Otay mesa mint.

The removal and restoration of existing access roads that are not needed for Covered Activities may also help offset impacts to the Otay mesa mint.

Because Covered Activities will impact a small fraction of the Otay mesa mint habitat and occurrences in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Otay mesa mint within the Plan Area or rangewide.

Effects from Changes to Hydrology and Water Quality, Erosion, Sedimentation, and Non-Native Plants

The Otay mesa mint could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to occupied Otay mesa mint vernal pools include the degradation of habitat outside the footprint of Covered Activities as a result changes to hydrology and water quality, erosion, sedimentation, and non-native plants.

Changes to the hydrology of vernal pools can alter the distribution of other vernal pool flora and fauna that are influenced by the length and frequency of water inundation (Bauder 1987a, 2000a). For instance, non-native plant species can become more prevalent in disturbed vernal pools when the periods of water inundation are reduced, while freshwater marsh species can expand into disturbed vernal pools when the periods of inundation are increased. Water born pollutants, erosion, and sedimentation can also impact vernal pools.

Implementation of the HCP Amendment's general OPs summarized in the *Description of the Proposed Action* section of this Opinion, and the Vernal Pool and Road Rut Protocols (OPs 59 to 75) stated above are anticipated to minimize changes to hydrology and water quality, erosion, sedimentation of the vernal pool basins associated with Covered Activities. For all construction occurring adjacent to vernal pools, SDG&E shall work with a Biologist having local experience with vernal pool resources, to conduct Covered Activities in a manner that avoids potential impacts to vernal pools (OP 64). The Biologist shall oversee and monitor, as needed, Covered Activities occurring adjacent to vernal pools. The biological monitor shall hold a preconstruction meeting to brief the crew on the location of sensitive resources and construction boundaries. Vernal pools adjacent to impact areas shall be fenced as appropriate with orange safety fencing to ensure no people or equipment impact the vernal pools during construction. A silt fence shall be installed along the base of the roadway to prevent increased erosion or sedimentation during construction adjacent to vernal pool areas. Gravel bags shall be placed along the bottom of the fence to minimize erosion or sedimentation into vernal pools and removed upon completion of construction. Best management practices placed near and around vernal pools shall be installed appropriately as to not impact vernal pool watersheds, with oversight from a Biologist. Grading immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools (OP 65). If SDG&E needs to temporarily work in vernal pools or complexes under wet conditions, vehicular and foot traffic shall be directed away from the pools (OP 66). If vehicular and foot traffic cannot be directed away from the pools due to construction requirements, other impact minimization measures shall be used, such as the installation of steel plates or fabric mats. To the extent feasible, all construction equipment shall be fueled, staged, and maintained at least 100 feet from the nearest vernal pools. If this is not feasible, drip pans or other means shall be implemented to protect vernal pools from accidental spills (OP 68).

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities and restoration of temporary impact areas are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Based on the above, potential adverse effects from changes to hydrology and water quality, erosion, sedimentation, and non-native plants due to Covered Activities are not likely to result in a decrease in Otay mesa mint survival or reproduction beyond baseline conditions.

Effect on Recovery

The Plan Area and distribution of Otay mesa mint overlaps with the San Diego Southern Coastal Mesa Management Area identified in the recovery plan. The recovery plan and clarification identify the need to preserve, reestablish, rehabilitate, enhance, manage, and monitor vernal pools to help meet the recovery criteria established for these management areas and identifies specific vernal pool complexes, many of which occur in the Plan Area, where recovery efforts should be focused. The vernal pool habitat included in the Plan Area is part of a system that provides important habitat for the Otay mesa mint.

The HCP Amendment does not conflict with the goals and objectives of the recovery plan and clarification. Although Covered Activities will impact vernal pool habitat that is used by Otay mesa mint, these impacts are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Impacts will be avoided to the maximum extent practicable and unavoidable impacts will be mitigated through the conservation, restoration/enhancement of occupied Otay Mesa mint habitat. These mitigation lands and restoration/enhancement are expected to result in a no "net loss" of habitat and support recovery of the Otay mesa mint.

The proposed conservation, restoration/enhancement, and the associated in-perpetuity management of all conservation/restoration/enhancement areas provided by the HCP Amendment will be consistent with recovery plan Task 1 (i.e., to establish a vernal pool habitat preserve system), Task 2 (i.e., to reestablish vernal pool habitat to historic structure and composition), and Task 3 (i.e., to rehabilitate and enhance secured vernal pool habitats and their constituent species). The recovery plan also emphasizes the need to manage and monitor protected habitat (Recovery Tasks 4 and 5). Consistent with these tasks, the restoration and enhancement areas will be preserved and managed in perpetuity by a natural lands manager. Therefore, the functions degraded or destroyed due to unavoidable impacts to Otay mesa mint habitat will be replaced and improved, and overall HCP Amendment implementation will be consistent with the habitat protection and management goals outlined in the recovery plan and clarification.

We expect no more than 1.5 acres (0.25 acre and 1.25 acres of vernal pool basin and watershed, respectively) of Otay mesa mint Tracked Habitat will be impacted. Because the HCP Amendment will affect a fraction of the Otay mesa mint habitat and population in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts, we do not expect this level of impact to appreciably reduce the numbers, reproduction, or distribution of any Otay mesa mint population within the Plan Area or rangewide.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of the Otay mesa mint. We base this conclusion on the following:

1. Impacts will be limited to no more than 1.5 acres (0.25 acre and 1.25 acres of vernal pool basin and watershed, respectively) of Otay mesa mint Tracked Habitat, which represents about 0.22 percent of Modeled Habitat for the Otay mesa mint in the Plan Area.

2. Based on the known distribution of Otay mesa mint within the Plan Area, we anticipate that only limited areas within Modeled Habitat support occurrences of Otay mesa mint. Therefore, it is likely that substantially less than 1.5 acres of occupied Otay mesa mint habitat will be impacted.

3. General and species-specific OPs will further reduce the likelihood that Otay mesa mint will be harmed by Covered Activities.

4. Impacts to Otay mesa mint will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E program or measures that will benefit this species. This mitigation will ensure that habitat functions will be conserved and replaced and are consistent with the overall habitat protection and management goals outlined in the recovery plan and clarification.

5. Because Covered Activities will affect a small proportion of the Otay mesa mint habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Otay mesa mint, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any Otay mesa mint population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain Otay mesa mint in the Plan Area and will contribute to the rangewide conservation (i.e., recovery) of this species.

Unlisted Plants

Short-leaved dudleya (Dudleya brevifolia)

Status of the Species

Listing Status

Short-leaved dudleya (*Dudleya brevifolia* (*D. blochmaniae brevifolia*)) is a State endangered plant listed under the California Endangered Species Act since 1982 (CDFG 2005b). Short-leaved dudleya is neither listed nor proposed for listing under the Act.

Species Description

Short-leaved dudleya is a small perennial succulent of the stonecrop family (Crassulaceae) (CDFG 2005b). Short-leaved dudleya has a rosette of subglobular, waxy, summertime-deciduous leaves that sprout from corms – specialized sections of underground stem used for nutrient storage and reproduction (CDFG 2005b, McCabe 2012). The corms are glabrous to fusiform and usually no more than twice as long as thick (Munz 1974). Short-leaved dudleya has leaves that are 7-15 mm long and 2-7 mm wide that form 0.5-4 cm wide rosettes. It flowers in April-June, with lateral stems that are 2 to 11 cm high arising from axils of leaves of the basal rosettes. Flowers are five spreading petals 5 to 9 mm long fused at the base in a star-shape and are white with red or purple markings and a sweet odor (Munz 1974, CDFG 2005b).

Habitat Affinities

Short-leaved dudleya prefers dry, stony places (e.g., sandstone terraces or bluffs) in open areas of southern maritime chaparral, and often on serpentine soils at elevations less than 1,500 feet (Munz 1974, McCabe 2012, Service 1993d). Frequently found growing amongst reddish-brown iron deposits or "nodules" in the soil, the five remaining populations are restricted to sandy pockets on outcrops of Lindavista sandstone (Service 1993d).

Life History

Short-leaved dudleya is ephemeral, blending in with the red and sandy soils and emerging after the spring rains (Service 1993d, McCabe 2012). Short-leaved dudleya occurs in colonies typically ranging from hundreds to thousands of plants and flowers from April-June producing 5 follicles with many seeds not exceeding 1 mm in size (McCabe 2012). Members of the Dudleya genus are also commonly known as "live-forevers", with some perhaps living as long as 100 years (Guana 2023). Being a type of geophyte, or a species of plant that propagates by means of underground buds, short-leaved dudleya is extremely hardy, theoretically cloning themselves for decades from their corms (Gauna 2023).

Status and Distribution

Short-leaved dudleya is a member of the stonecrop family (Crassulaceae), which contains approximately 33 genera and 1,500 species that are distributed on every continent but Antarctica and Australia. The Dudleya genus consists of 47 species and 21 subspecies restricted to southwest North America, with over 60 percent of those species occurring in California (CNPS 2023). Ten of California's Dudleya are classified as threatened or endangered under the federal and/or California Endangered Species Act, and more than half are ranked as rare (CNPS 2023). The range extent for short-leaved dudleya is approximately 7 miles along the coastline north of San Diego, from Del Mar south to Torrey Pines and east to Carmel Mountain (NatureServe Explorer 2017). Formerly this range extended south to La Jolla. There are currently 5 extant occurrences of short-leaved dudleya, three of which have poor viability, suggesting a decline in habitat extent or quality. Four known occurrences have been extirpated (NatureServe Explorer 2017). Two large occurrences (>5000 individuals) exist at Carmel Mountain Preserve and Torrey Pines State Reserve, while there are two small occurrences (<500 individuals) at Skeleton

Canyon and Torrey Pines State Reserve and a moderate sized occurrence at Crest Canyon (SDMMP 2017).

Threats and Conservation Needs

Short-leaved dudleya are threatened by development, recreation, climate change, drought, illegal collection, and non-native species. Over 87 percent of southern maritime chapparal vegetation in San Diego County has been lost as a result of development (Oberbauer and Vanderwier 1991b). Members of this plant family are common as ornamentals and poaching sometimes occurs (CNPS 2023). NaturServe estimates the degree of threat is very high for this species, with a short term trend decline of 30-50 percent and a global rank of G1 (Critically Imperiled) (NatureServe Explorer 2017). Efforts in 2019 to augment the number of plants at the smallest population located in Torrey Pines State Reserve has been minimally successful, due to trampling from off-trail recreation, drought, and perhaps other unknown variables (Anderson 2019).

The conservation of short-leaved dudleya depends on the protection and management of land where occurrences of this species can still be found.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to short-leaved dudleya:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts. Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts

to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied short-leaved dudleya habitat. However, not all Modeled Habitat is expected to support short-leaved dudleya occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on short-leaved dudleya Modeled Habitat, there are approximately 2,008 acres in the Plan Area and approximately 347 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, the highest acreages of short-leaved dudleya Modeled Habitat occur in the northern valley, the central valley, and the southern coast ecoregions. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 5 and 3 short-leaved dudleya occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023).

Short-leaved dudleya is endemic to San Diego County occurring only along the coast between Del Mar and La Jolla (Reiser 1994). Within San Diego County, there are extant populations at Carmel Mountain Preserve Skeleton Canyon, Torrey Pines State Reserve, and Crest Canyon (CDFW 2023).

Short-leaved dudleya is covered by the following existing regional HCP that overlaps the Plan Area:

- San Diego MSCP Subregional NCCP/HCP

This HCP forms a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 1,272 acres of Modeled Habitat occur within Preserves, and 97 acres of Modeled Habitat occur within Proposed Preserves (collectively, 68 percent of all Modeled Habitat) associated with this HCP within the Plan Area (CDFW 2023). In addition, five occurrences of short-leaved dudleya recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area. This species is not known or expected to occur on existing SDG&E mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 5.99 acres of short-leaved dudleya Modeled Habitat, which is a fraction of the 2,008 acres of short-leaved dudleya Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 2.84 acres of permanent impacts (0.14 percent of Modeled Habitat in the Plan Area);
- Approximately 1.65 acres of temporary impacts (0.08 percent of Modeled Habitat in the Plan Area); and
- Approximately 1.5 acres of Wildfire Fuels Management impacts (0.07 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.29 percent of short-leaved dudleya Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for short-leaved dudleya. However, because short-leaved dudleya is not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[85] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied short-leaved dudleya habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[86]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact short-leaved dudleya and its habitat will only be covered if the

[85] Up to 0.29 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 5 San Diego ambrosia occurrences in the Plan Area. The product of 0.29 percent and 5 is less than one.
[86] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

requirements of a Minor Amendment are met, at which time potential impacts to short-leaved dudleya will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of short-leaved dudleya within the Plan Area and its specific habitat requirements (i.e., sandy loam or clay soils; southern maritime chaparral), we anticipate that only limited areas within Modeled Habitat support occurrences of short-leaved dudleya. Therefore, it is likely that substantially less than 5.99 acres of occupied short-leaved dudleya habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some individual short-leaved dudleya will be killed or injured within up to 5.99 acres of short-leaved dudleya Tracked Habitat that is impacted in association with the Covered Activities. Short-leaved dudleya could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities. Management and monitoring activities on mitigation lands could result in minor, temporary loss of short-leaved dudleya habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for narrow endemic plants are anticipated to avoid, minimize, and mitigate the direct impacts to short-leaved dudleya associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to short-leaved dudleya habitat, as specified in the OP 76 include: 1) when work occurs within a known or potential area of occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts, and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to short-leaved dudleya occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to short-leaved dudleya occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of short-leaved dudleya habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual short-leaved dudleya within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the

species by securing and managing habitat to support core occurrences of short-leaved dudleya within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to short-leaved dudleya.

Because Covered Activities will impact a small fraction of short-leaved dudleya habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of short-leaved dudleya within the Plan Area or rangewide.

Effects from Non-Native Plants and Habitat Fragmentation

Short-leaved dudleya could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to short-leaved dudleya include the degradation of habitat outside the footprint of Covered Activities as a result of non-native plants and habitat fragmentation.

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat necessary for short-leaved dudleya. Disturbed areas that are invaded by non-native vegetation can promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of short-leaved dudleya.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting short-leaved dudleya dispersal that contributes to long-term population viability for short-leaved dudleya. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved

access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat in order to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from non-native plants and habitat fragmentation due to Covered Activities are not likely to result in a decrease in short-leaved dudleya survival or reproduction beyond baseline conditions.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of short-leaved dudleya. We base this conclusion on the following:

1. Impacts will be limited to no more than 5.99 acres of short-leaved dudleya Tracked Habitat, which represents about 0.29 percent of Modeled Habitat for short-leaved dudleya in the Plan Area.

2. Based on the known distribution of short-leaved dudleya within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of short-leaved dudleya. Therefore, it is likely that substantially less than 5.99 acres of occupied short-leaved dudleya habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual short-leaved dudleya will be harmed by Covered Activities.

4. Impacts to short-leaved dudleya will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

5. Because Covered Activities will affect a small proportion of short-leaved dudleya habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by short-leaved dudleya, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any short-leaved dudleya population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain short-leaved dudleya in the Plan Area and will contribute to the rangewide conservation of this species.

Dehesa Beargrass (Nolina interrata)

Status of the Species

Listing Status

Dehesa beargrass (*Nolina interrata*) is a plant species that is neither listed nor proposed for listing under the Act. It was proposed for listing on October 2, 1995 (60 FR 51433), but the proposal was withdrawn on October 13, 1998 (63 FR 54972).

Species Description

In the 1995 proposed listing, Dehesa beargrass was described as a perennial member of the lily family (Liliaceae) and is similar in appearance to members of the genus Yucca (Service 1995d). It forms a woody platform and produces many aerial rosettes of leaves, with each rosette consisting of 10 to 45 lance linear, glaucous (covered with a whitish powder) leaves with minutely serrate margins. In some years, rosettes produce a single stalk 3 to 7.5 feet tall with an elongate, compound panicle inflorescence at its apex. The flowers are minute (0.1 to 0.2 inches) and creamy white. Dehesa beargrass can be distinguished by its short, thin stalked panicle, which has inconspicuous bracts, and by the absence of any visible above-ground trunk or stem bearing individual rosettes of leaves, a greatly reduced number of leaves per rosette, and minimally expanded leaf bases. It can be distinguished from Yucca species by the absence of a rigid spinose leaf tip and leaves with shredding margins. In addition, Yucca species have larger flowers that branch from a single spike rather than a panicle (Dice 1988, 1993).

Habitat Affinities

Dehesa beargrass grows in chaparral habitat commonly associated with chamise (*Adenostoma fasciculatum*), peak rush rose (*Crocanthemum scoparium*), Cleveland sage (*Salvia clevelandii*), and San Diego button bush (*Tetracoccus dioicus*) (Service 1995d). Dehesa beargrass is often associated with other rare plants such as Gander's butterweed (*Senecio ganderi*), San Diego thornmint (*Acanthomintha ilicifolia*), felt-leaved monardella (*Monardella hypoleuca* ssp. *Lanata*), and chocolate lily (*Fritillaria biflora*) (Oberbauer 1979). The association of Dehesa beargrass with these species reflects the distribution of clay soils formed from gabbro soils in the region (Oberbauer 1979, 1991).

Life History

Dehesa beargrass is dioecious (male and female flowers on separate plants) and reproduces primarily by asexual means (Service 1995d). It does not flower every year; this adaptation may compensate for its lack of consistent flowering and may require fire or other disturbance to induce flowering.

Status and Distribution

Dehesa beargrass occurs in restricted and localized populations from the interior foothills of San Diego County to northwestern Baja California, Mexico (Service 1998e). At the time of the 1995 proposed listing, the total population size of Dehesa beargrass was estimated to be about 9,000 plants with nine populations in San Diego County, all within a 6 square mile area in the Dehesa Valley, immediately east of El Cajon, California. About two-thirds of all populations, and 90-100 percent of all major populations, are protected on reserve lands owned and managed by The Nature Conservancy at McGinty Mountain and by CDFW at Sycuan Ecological Preserve. The protection afforded by the establishment of the Sycuan Ecological Preserve occurred subsequent to the proposal to list Dehesa beargrass. The remaining few occurrences are small and are on private lands (Oberbauer 1979).

Threats and Conservation Needs

Dehesa beargrass, like most narrow endemic plant species, can be impacted by threats such as development, altered fire regime, climate change, and non-native species. Development leads to habitat destruction, degradation, and fragmentation. Generally, urban development has impacted these chaparral communities, like that Dehesa beargrass is found in, more than other activities because the terrain is more accessible than the typically rugged and boulder covered terrain of the surrounding chaparral.

Dehesa beargrass depends on natural fire patterns; alteration of natural fire periodicity, season, and intensity may have various adverse effects on this species (Service 1998e). The species flowers profusely after fires and reproduce vegetatively from underground stems. Occurrences that are entirely female require pollen from disjunct male plants to fertilize the flowers and produce viable seeds (Service 1998e). Fire suppression measures are intensified in undeveloped areas near population centers. The natural period between fires in these areas may be altered. Fire suppression activities may also affect the vegetation. High fire frequencies prevent young plants from reaching reproductive maturity and will result in population declines or extirpation once the underground seed bank has been depleted (Zedler et al. 1983).

Protection of the species from regional plans, MSCP, and the County's Biological Mitigation Ordinance, has reduced the significance of these threats on Dehesa beargrass. Protection afforded by these plans was a major factor in the 1998 withdrawal of the listing proposal. Though the stress from these factors have been lessened, Dehesa beargrass is still a narrow endemic plant vulnerable to extinction due to random events, such as hot, slow-burning fires (Service 1998e). Genetic variability also may be reduced in small populations of limited distribution (Barrett and Kohn 1991). A single event or series of events can reduce a species below recoverable numbers. Proactive recovery efforts to lessen the threat of such random events typically involve the continued establishment of reserves that permanently protect and manage populations of the species of concern (Service 1998e).

The conservation of Dehesa beargrass depends on the protection and management of land where occurrences of this species can still be found.

Species-Specific OPs

In addition to general OPs identified in the *Description of the Proposed Action* section of this Opinion, the following OP 76 for Narrow Endemic Plants in the HCP Amendment will be implemented to avoid and/or minimize impacts to Dehesa beargrass:

76. Narrow Endemic Plants

Impacts to narrow endemic plants as identified in Table 3.1 are to be avoided to the extent practical.

a. When work occurs within a known or potential area of occurrence of a narrow endemic plant, then focused surveys shall occur within the appropriate blooming seasons. If project timing does not allow for surveys, it shall be assumed that all habitat to be impacted is occupied.

b. If a narrow endemic is observed or assumed to be within the work area, it shall be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts. The Biologist shall have the authority to immediately stop any Covered Activity that does not adhere to the project environmental constraints to avoid the unanticipated impacts. Additional measures, such as installing matting within temporary work areas to avoid soil compaction, may also be recommended.

c. If avoidance is not feasible, SDG&E shall confer with USFWS to determine the best approach for minimization of impacts, including additional measures such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location. Permanent impacts to narrow endemic plants that cannot be avoided shall be mitigated in kind per the mitigation ratios in Table 5.4, or through other alternatives in Section 5.5 agreed to by USFWS.

d. For new projects, impacts to narrow endemic plants or their supporting habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2, including acquiring Mitigation Credits as discussed in Section 5.5.

Environmental Baseline

A habitat model was used rather than broader habitat types to provide a more accurate estimate of potentially occupied Dehesa beargrass habitat. However, not all Modeled Habitat is expected to support Dehesa beargrass occurrences (i.e., Occupied Habitat) and limited Occupied Habitat may occur outside of Modeled Habitat. Based on the Dehesa beargrass Modeled Habitat, there are approximately 2,296 acres in the Plan Area and approximately 124 acres in the PIZ associated with existing SDG&E Facilities (Table 12). In San Diego County, only the southern

foothills ecoregion has Dehesa beargrass Modeled Habitat. This species is not known or expected to occur in Orange County or on the Moreno Compressor Station property.

Although there are no recent comprehensive status and distribution data derived from surveys, there are approximately 7 and 3 Dehesa beargrass occurrences within the Plan Area and PIZ, respectively, based on data collected from the CNDDB species database since 1990 and with an accuracy of up to 1 mile (CDFW 2023). All major populations are located in the east region of San Diego County and are concentrated in Dehesa (north of Dehesa Road); on the western side of McGinty Mountain; and throughout the slopes of Sycuan Peak, north of Skyline Truck Trail.

Dehesa beargrass is covered by the following existing regional HCP that overlaps the Plan Area:

- San Diego MSCP Subregional NCCP/HCP

This HCP forms a network of large blocks of conserved habitat and linkages to facilitate connectivity, dispersal, and gene flow that protect this species from urban development and fragmentation. Additional information regarding the relationship between the HCP Amendment and other regional HCPs, and potential impacts to them, is provided in the *Environmental Baseline* and *General Effects* sections of this Opinion.

Currently, approximately 1,267 acres of Modeled Habitat occur within Preserves, and 29 acres of Modeled Habitat occur within Proposed Preserves (collectively, 56 percent of all Modeled Habitat) associated with these HCPs within the Plan Area. In addition, 7 occurrences of Dehesa beargrass recorded in the CNDDB database are located within Preserves and Proposed Preserves in the Plan Area (CDFW 2023). This species has a high and moderate potential to occur on SDG&E's Willow Glen and Otay Lakes mitigation lands, respectively, and is not known or expected to occur on the Cielo mitigation lands.

Effects of the Action

Habitat Loss and Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may impact up to 2.13 acres of Dehesa beargrass Modeled Habitat, which is a fraction of the 2,296 acres of Dehesa beargrass Modeled Habitat within the Plan Area (Table 12). These impacts will include:

- Approximately 1.01 acres of permanent impacts (0.04 percent of Modeled Habitat in the Plan Area);

- Approximately 0.59 acre of temporary impacts (0.03 percent of Modeled Habitat in the Plan Area); and

- Approximately 0.53 acre of Wildfire Fuels Management impacts (0.02 percent of Modeled Habitat in the Plan Area).

This impact represents about 0.09 percent of Dehesa beargrass Modeled Habitat within the Plan Area. This estimate includes all Modeled Habitat within the Plan Area that, in general, provides suitable habitat for Dehesa beargrass. However, because Dehesa beargrass is not uniformly

distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied.

If the proportion of occurrences impacted within the Plan Area is roughly equivalent to the percentage of Modeled Habitat impacted, implementation of Covered Activities would impact less than one occurrence.[87] However, because it is difficult to define a threshold for impacts to occurrences and individuals (e.g., O&M activities could occur within occupied Dehesa beargrass habitat but not have a biologically meaningful impact on the occurrence and the number of individuals potentially within a work area varies drastically based on the season and year over the permit term), and Occupied Habitat may occur outside of Modeled Habitat, impacts will be tracked based on acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented.[88]

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing Facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, not all impacts are anticipated to be permanent, and temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact Dehesa beargrass and its habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Dehesa beargrass will be evaluated for consistency with the HCP Amendment.

Based on the known distribution of Dehesa beargrass within the Plan Area and its specific habitat requirements (i.e., foothills with gabbro soils), we anticipate that only limited areas within Modeled Habitat support occurrences of Dehesa beargrass. Therefore, it is likely that substantially less than 2.13 acres of occupied Dehesa beargrass habitat will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled Habitat.

We anticipate that some individual Dehesa beargrass will be killed or injured within up to 2.13 acres of Dehesa beargrass Tracked Habitat that is impacted in association with the Covered Activities. Dehesa beargrass could be crushed, trimmed, trampled, covered with fill, or removed during Covered Activities. Management and monitoring activities on mitigation lands could result in minor, temporary loss of Dehesa beargrass habitat (e.g., during the repair of fencing), but no direct loss of individuals is anticipated.

Implementation of the HCP Amendment's OPs summarized in the *Description of the Proposed Action* section of this Opinion and OP 76 for narrow endemic plants are anticipated to avoid, minimize, and mitigate the direct impacts to Dehesa beargrass associated with the Covered Activities. For all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring

[87] Up to 0.09 percent of Modeled Habitat within the Plan Area will be impacted, and there are an estimated 7 Dehesa beargrass occurrences in the Plan Area. The product of 0.09 percent and 7 is less than one.
[88] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

as recommended in the PSR and verify compliance at completion of work (OP 32). Species-specific protocols that will avoid or minimize impacts to Dehesa beargrass habitat, as specified in the OP 76 include: 1) when work occurs within a known or potential area of occurrence of a narrow endemic plant, focused surveys would occur within the appropriate blooming season. If project timing does not allow for surveys, it would be assumed that all habitat to be impacted is occupied; 2) if a narrow endemic is observed or assumed to be within the work area, it would be avoided to the greatest extent practicable. A Biologist shall be onsite to assist crews in avoiding impacts to the extent practicable. The Biologist shall use flagging as needed and monitor Covered Activities to ensure avoidance of impacts; and 3) if avoidance is not feasible, SDG&E shall confer with the Service to determine the best approach for minimization of impacts, such as restoration, enhancement of suitable habitat, and salvage/relocation of species to a suitable location.

Unavoidable temporary impacts to Dehesa beargrass occupied habitat will be restored onsite through the R/E Program or mitigated at existing or acquired mitigation lands that are occupied or through measures that will benefit the species. Unavoidable permanent impacts to Dehesa beargrass occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit the species. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. Mitigating the loss of Dehesa beargrass habitat through protection and management of similar habitat within the mitigation lands will not avoid or minimize impacts to individual Dehesa beargrass within occupied habitat. However, the conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Dehesa beargrass within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to help offset impacts to Dehesa beargrass.

Because Covered Activities will impact a small fraction of Dehesa beargrass habitat and individuals in the Plan Area and measures will be implemented to avoid, minimize, and mitigate anticipated impacts to this species, we do not expect habitat loss and associated death and injury of individuals to result in an appreciable reduction in the numbers, reproduction, or distribution of Dehesa beargrass within the Plan Area or rangewide.

Effects from Non-Native Plants, Fire, and Habitat Fragmentation

Dehesa beargrass could be subject to indirect effects from Covered Activities as described in the *General Effects* section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to Dehesa beargrass include the degradation of habitat outside the footprint of Covered Activities as a result non-native plants, fire, and habitat fragmentation.

Unintentional conversion from native to non-native vegetation from land disturbance may result in the displacement of individuals by non-native plants and remove or degrade suitable habitat necessary for Dehesa beargrass. Disturbed areas that are invaded by non-native vegetation can

promote the spread of non-native vegetation and disrupt native pollinators outside of direct impact areas. All of these effects could affect germination, flowering, and seed production of Dehesa beargrass.

SDG&E will implement several measures that will minimize the spread of non-native plants. The removal and restoration of existing access roads that are not needed for Covered Activities, and restoration of temporary impact areas, are expected to minimize the spread of non-native plants. In addition, Wildfire Fuels Management will focus on removing non-native plants, which can counteract the potential spread of such. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in *Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council* (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory (OP 26).

Approximately 64 percent of the Plan Area is in "High Fire Threat Districts" (HFTDs). The HFTD consists of Tier 2 areas, "where there is an elevated risk for destructive utility associated wildfires," and Tier 3 areas, "where there is an extreme risk for destructive utility associated wildfires." The Plan Area also experiences Santa Ana winds that have been directly linked to some of the largest and most destructive wildfires in southern California. Santa Ana winds, coupled with other weather conditions, including drought conditions, dry fuels, and the impacts of climate change, have all contributed to the risk of catastrophic wildfires in the Plan Area.

Existing Facilities (e.g., electric lines) and O&M of these Facilities are potential wildlife ignition sources and wildfire ignition sources may increase with construction of new Facilities. In addition, fuel management zones and other mowed areas may be colonized by non-native plants, making these areas more susceptible to fire, particularly in areas accessible to the public. Another potential source of wildfire is the use of vehicles, mowers, or other construction equipment in vegetated areas where catalytic converters may ignite vegetation. The primary concern with frequent megafires is the plant mortality associated with these extensive and intense events which may kill individual plants and thereby potentially precludes recolonization of burned areas Dehesa beargrass.

In recent years, SDG&E has focused significant resources towards maintaining its electric distribution and transmission line system to prevent frequent large-scale wildfires. Efforts to reduce the risk of wildfire and enhance grid resilience began in 2007, after San Diego experienced some of the most destructive wildfires in the county's history. This first involved establishing a company-wide fire-awareness culture and prioritizing safe work practices. SDG&E hired subject matter experts in firefighting, fire science, and meteorology, who have developed and implemented programs to enhance situational awareness, which has increased SDG&E's ability to monitor and understand the wildfire environment. This improved level of understanding led to changes in operational procedures to reduce the potential for ignitions associated with utility infrastructure during periods of elevated fire potential. SDG&E has also

made considerable efforts to harden the electric grid and upgrade its natural gas pipeline system to help ensure their resiliency, safety, and reliability.

SDG&E anticipates that implementation of Fire Control Areas (Section 2.2.5.3 of the HCP Amendment) and Wildlife Fuels Management (Section 2.2.5.4 of the HCP Amendment), and OP 10 will help avoid/minimize fire starts by Covered Activities (Section 8.5, pages 8 to16). For example, SDG&E will regularly maintain fire protection areas around Facilities. In addition, field personnel and contractors will reduce the risk of wildfire by parking in unvegetated areas and equipping vehicles with shovels and fire extinguishers. Based on SDG&E's increased ability to monitor and understand the wildfire environment, the planned hardening and upgrading of the electric grid and natural gas pipeline system, and implementation of Fire Control Areas and OP 10, Covered Activities are expected to decrease the likelihood of fire ignition and spread compared to baseline conditions.

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Dehesa beargrass dispersal that contributes to long-term population viability for Dehesa beargrass. However, no large-scale New Construction is expected that could cause significant habitat fragmentation and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat, without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads, and the removal and restoration of existing access roads is expected to reduce habitat fragmentation. To the extent feasible and practicable, new Facilities will also be sited to provide a minimum 100-foot buffer from narrow endemic populations and avoid habitat to minimize fragmentation (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat. When Facilities must be sited in a Preserve, they will, to the extent feasible and practicable, be sited at the outer boundary of the Preserve rather than in the center.

Based on the above, potential adverse effects from non-native plants, fire, and habitat fragmentation due to Covered Activities are not likely to result in a decrease in Dehesa beargrass survival or reproduction beyond baseline conditions.

Conclusion

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that issuance of an incidental take permit for the proposed Covered Activities as described in the HCP Amendment is not likely to jeopardize the continued existence of Dehesa beargrass. We base this conclusion on the following:

1. Impacts will be limited to no more than 2.13 acres of Dehesa beargrass Tracked Habitat, which represents about 0.09 percent of Modeled Habitat for the Dehesa beargrass in the Plan Area.

2. Based on the known distribution of Dehesa beargrass within the Plan Area and its specific habitat requirements, we anticipate that only limited areas within Modeled Habitat support occurrences of Dehesa beargrass. Therefore, it is

likely that substantially less than 2.13 acres of occupied Dehesa beargrass habitat will be impacted.

3. General and species-specific OPs will reduce the likelihood that individual Dehesa beargrass will be harmed by Covered Activities.

4. Impacts to Dehesa beargrass will be avoided to the maximum extent practicable, and all unavoidable impacts will be mitigated at existing or acquired mitigation lands that are occupied or through the R/E Program or measures that will benefit this species.

5. Because Covered Activities will affect a small proportion of Dehesa beargrass habitat in the Plan Area, the distribution of these impacts primarily along disturbed linear areas with low probability of being occupied by Dehesa beargrass, and the implementation of measures to avoid, minimize, and mitigate anticipated impacts to this species, Covered Activities are not expected to appreciably reduce the numbers, reproduction, or distribution of any Dehesa beargrass population in the Plan Area or rangewide.

6. Long-term management and monitoring of mitigation lands will help sustain Dehesa beargrass in the Plan Area and will contribute to the rangewide conservation of this species.

CUMULATIVE EFFECTS

Cumulative effects are effects of future State or private activities, not involving federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation (50 CFR § 402.02). Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

It is anticipated that the majority of future lawful, non-federal actions within the Plan Area will fall under the purview of multiple species NCCP/HCPs developed pursuant to section 10(a)(1)(B) of the Act that address landscape level impacts to, and conservation of, native habitats and species including those that are federally listed. We are unaware of any other non-federal actions affecting listed species that are reasonably certain to occur in the action area considered by this Opinion.

INCIDENTAL TAKE STATEMENT

INTRODUCTION

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened animal species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of "take" in the Act means an act which actually kills or injures wildlife. Such [an] act may include significant habitat modification or

degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the proposed protective measures and the terms and conditions of an incidental take statement and occurs as a result of the action as proposed.

The proposed SDG&E HCP Amendment and its associated documents identify anticipated impacts to affected species likely to result from the proposed taking and the measures that are necessary and appropriate to minimize those impacts. All OPs described in the proposed HCP Amendment, together with the terms and conditions described in the associated section 10(a)(1)(B) permit issued with respect to the proposed HCP Amendment, are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement pursuant to 50 CFR 402.14(i).

The measures described below are non-discretionary and must be undertaken by the Service so that they become binding conditions of any grant or permit issued to SDG&E, for the exemption in section 7(o)(2) to apply. The Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Service: (1) fails to assume and implement the terms and conditions, or (2) fails to require SDG&E to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, SDG&E must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)]. The amount or extent of incidental take anticipated under the proposed SDG&E HCP Amendment, associated reporting requirements, and provision for disposition of dead or injured animals are described in the HCP Amendment and its accompanying section 10(a)(1)(B) permit.

The section 10(a) incidental take permit also constitutes a Special Purpose permit under 50 CFR 21.27 for the take of any Covered Animal Species which may be listed as threatened or endangered under the Act during the Permit term and which are also protected by the MBTA, in the amount and/or number and subject to the terms and conditions specified in the 10(a) Permit. The MBTA Special Purpose permit would become effective upon the listing of the species under the Act. Any such take shall not be in violation of the MBTA of 1918, as amended (16 U.S.C. 703-712). The Special Purpose permit shall be valid for a period of 3 years from the effective date, provided the section 10(a) Permit remains in effect for such period. The Special Purpose permit shall be renewed provided the Permittee remains in compliance with the terms of the 10(a) Permit and the Implementation Agreement. Each such renewal shall be valid for the maximum period of time allowed by 50 CFR 21.27 or its successor at the time of renewal. This Opinion does not relieve the need for the Permittee to comply with any other federal, state or local permitting requirement.

The Act does not prohibit the take of listed plant species, consequently, section 7(b)(4) and 7(o)(2) of the Act do not apply to the listed plants. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of

State law or regulation or in the course of any violation of a State criminal trespass law. This Opinion does not relieve the need for the Permittee to comply with any other federal, state or local permitting requirement. Nevertheless, the Service must review the effects of its own actions on listed plants, even when those listed plants are found on private lands. In approving the Plan and issuing an Incidental Take Statement during the intra-Service section 7 consultation, the Service must determine that the permit would not "jeopardize the continued existence" of any listed plant. In the interest of conserving listed and other plant Covered Species, the Plan includes conservation measures to protect and enhance listed and non-listed plant species within the Plan Area.

AMOUNT OR EXTENT OF TAKE

The regulations for section 7(a)(2) clarify that the Service may use surrogates to express the amount or extent of anticipated take when "exact numerical limits on the amount of anticipated incidental take may be difficult" (80 FR 26832). The implementing regulations [50 CFR § 402.14(i)(1)(i)] require that the Service meet three conditions for the use of a surrogate. To use a surrogate, the Service must:

1. Describe the causal link between the surrogate and take of the listed species:

2. Describe why it is not practical to express the amount of anticipated take or to monitor take-related impacts in terms of individuals of the listed species:

3. Set a clear standard to determine when the proposed action has exceeded the anticipated amount or extent of the taking:

SDG&E proposes up to 400 acres of permanent habitat impacts, 210 acres of temporary habitat impacts, and 210 acres of Wildfire Fuels Management habitat impacts from Covered Activities in accordance with requirements, conditions, measures, and processes described in the SDG&E HCP Amendment that will result in the incidental take of Covered Animal Species. The incidental take of Covered Animal Species in the form of harm, kill, and injury will be authorized through the section 10(a)(1)(B) Permit.

The Service expects that incidental take of various Covered Animal Species will be difficult to detect or quantify for the following reasons: 1) the aquatic nature of certain of the organisms or the relatively small body size makes the finding of a dead specimen unlikely; 2) the secretive nature of certain species makes detection or quantification difficult; 3) species abundance may be masked by seasonal fluctuations in numbers or other causes; 4) species occur in habitats that make them difficult to detect; 5) the species use of the habitat is intermittent; and 6) the HCP Amendment will be implemented over the duration of the ITP until 2050, so populations of Covered Animal Species are likely to fluctuate substantially over this time.

Because it is not possible to track impacts to individuals over the duration of the HCP Amendment, impacts from Covered Activities will be tracked primarily based on the acres of Modeled or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) as individual Covered Activities are implemented Habitat is nevertheless strongly correlated with the number of individuals for all of the Covered Animal Species. In addition, implementation of the conservation measures in the HCP Amendment will ensure that impacts to individuals will be

avoided and minimized when impacts to occupied habitat do occur. Thus, we anticipate that impacts to Covered Animal Species will remain consistent with the analysis in this biological opinion despite variation in the number of individuals present in different areas of Tracked Habitat.

Hence, the following take statements are based on our species-specific effects analysis (see SPECIES by SPECIES EVALUATIONS AND CONCLUSIONS). Incidental take of the following species is exempted for SDG&E as follows:

Listed Invertebrates

San Diego Fairy Shrimp (Branchinecta sandiegonensis)

- Death or injury of San Diego fairy shrimp adults or cysts within up to 10.18 acres (1.7 acres and 8.48 acres of vernal pool basin and watershed, respectively) of San Diego fairy shrimp Tracked Habitat due to loss or substantial degradation (including grading, excavating, and filling occupied basins and project-related changes to basin hydrology that preclude San Diego fairy shrimp survival and reproduction) from Covered Activities during O&M and New Construction. The amount or extent of incidental take will be exceeded if more than 10.18 acres (1.7 acres and 8.48 acres of vernal pool basin and watershed, respectively) of San Diego fairy shrimp Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

- Death or injury of San Diego fairy shrimp cysts that are salvaged from impacted or donor pools, stored, and/or inoculated into restored or enhanced pools consistent with the HCP Amendment.

Riverside Fairy Shrimp (Streptocephalus woottoni)

- Death or injury of Riverside fairy shrimp adults or cysts within up to 14.94 acres (2.5 acres and 12.44 acres of vernal pool basin and watershed, respectively) of Riverside fairy shrimp Tracked Habitat due to loss or substantial degradation (including grading, excavating, and filling occupied basins and project-related changes to basin hydrology that preclude Riverside fairy shrimp survival and reproduction) from Covered Activities during O&M and New Construction. The amount or extent of incidental take will be exceeded if more than 14.94 acres (2.5 acres and 12.44 acres of vernal pool basin and watershed, respectively) of Riverside fairy shrimp Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

- Death or injury of Riverside fairy shrimp cysts salvaged from impacted or donor pools, stored, and inoculated into restored or enhanced pools.

Hermes Copper Butterfly (*Lycaena* [*Hermelycaena*] *hermes*)

- Death or injury of Hermes copper butterfly adults, eggs, larvae, and pupae from collision, crushing, trampling, or removal of host plants within up to 314.18 acres of Hermes copper butterfly Tracked Habitat from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than 314.18 acres of Hermes copper butterfly Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

Laguna Mountains Skipper (*Pyrgus ruralis lagunae*)

- Death or injury of Laguna Mountains skipper adults, eggs, larvae, and pupae from collision, crushing, trampling, or removal of host plants within up to 0.23 acre of Laguna Mountains skipper Tracked Habitat from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than 0.23 acre of Laguna Mountains skipper Tracked Habitat is impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

Listed Amphibians

Arroyo Toad (*Anaxyrus* (=*Bufo) californicus*)

- Death or injury of arroyo toad adults, eggs, tadpoles and juveniles from crushing, trampling, and trapping within up to 843.53 acres of arroyo toad Tracked Habitat (20.31 acres breeding and 823.22 acres non-breeding) from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than 843.53 acres of arroyo toad Tracked Habitat (20.31 acres breeding and 823.22 acres non-breeding) are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

- Death or injury of arroyo toads of different life history stages during capture, handling, and relocation to avoid or minimize death or injury from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. It is not possible to quantify exactly how many arroyo toads may be subject to capture, handling, and relocation. Regardless, the numbers of arroyo toads captured, handled, and relocated should be low due to the limited extent of Covered Activities.

California Red-Legged Frog (Rana draytonii)

- Death or injury of California red-legged frog adults, eggs, tadpoles and juveniles from crushing, trampling, and trapping within up to 45.25 acres of California red-legged frog Tracked Habitat from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more

than 45.25 acres of California red-legged frog Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

- Death or injury of California red-legged frogs of different life history stages during capture, handling, and relocation to avoid or minimize death or injury from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. It is not possible to quantify exactly how many California red-legged frogs may be subject to capture, handling, and relocation. Regardless, the numbers of arroyo toads captured, handled, and relocated should be low due to the limited extent of Covered Activities.

Unlisted Amphibians

Western Spadefoot (*Scaphiopus hammondii*)

- Death or injury of western spadefoot adults, eggs, tadpoles, and juveniles from crushing, trampling, and trapping within up to 668.26 acres of western spadefoot Tracked Habitat (27.97 acres breeding and 640.29 acres non-breeding) that is impacted in association with the Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than to 668.26 acres of western spadefoot Tracked Habitat (27.97 acres breeding and 640.29 acres non-breeding) are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

- Death or injury of western spadefoots of different life history stages during capture, handling, and relocation to avoid or minimize death or injury from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. It is not possible to quantify exactly how many western spadefoots may be subject to capture, handling, and relocation. Regardless, the numbers of western spadefoots captured, handled, and relocated should be low due to the limited extent of Covered Activities.

Unlisted Reptiles

Southwestern Pond Turtle (Actinemys pallida)

- Death or injury of southwestern pond turtle adults, eggs, and juveniles from crushing, trampling, and trapping within up to 40.86 acres of southwestern pond turtle Tracked Habitat that is impacted in association with the Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than to 40.86 acres of southwestern pond turtle Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

- Death or injury of southwestern pond turtles of different life history stages during capture, handling, and relocation to avoid or minimize death or injury from Covered

Activities during O&M, New Construction, and Wildfire Fuels Management. It is not possible to quantify exactly how many southwestern pond turtles may be subject to capture, handling, and relocation. Regardless, the numbers of southwestern pond turtles captured, handled, and relocated should be low due to the limited extent of Covered Activities.

Coast Horned Lizard (*Phrynosoma blainvillii*)

- Death or injury of coast horned lizard adults and juveniles from crushing, trampling, and trapping within up to 449.28 acres of coast horned lizard Tracked Habitat that is impacted in association with the Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than to 449.28 acres of coast horned lizard Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

- Death or injury of coast horned lizard adults and juveniles during capture, handling, and relocation to avoid or minimize death or injury from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. It is not possible to quantify exactly how many coast horned lizards may be subject to capture, handling, and relocation. Regardless, the numbers of coast horned lizards captured, handled, and relocated should be low due to the limited extent of Covered Activities.

Listed Birds

Western Yellow-Billed Cuckoo (*Coccyzus americanus*)

- Harm to an estimated one pair of western yellow-billed cuckoos through loss or partial loss of their primary breeding, feeding, and sheltering habitat within up to 16.64 acres of western yellow-billed cuckoo Tracked Habitat from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than 16.64 acres of western yellow-billed cuckoo Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

- Harm to an estimated one pair of southwestern willow flycatchers through loss or partial loss of their primary breeding, feeding, and sheltering habitat within up to 38.47 acres of southwestern willow flycatcher Tracked Habitat from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than 38.47 acres of southwestern willow flycatcher Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

Coastal California Gnatcatcher (*Polioptila californica californica*)

- Harm to an estimated 16 pairs of coastal California gnatcatchers through loss or partial loss of their primary breeding, feeding, and sheltering habitat within up to 127.18 acres of coastal California gnatcatcher Tracked Habitat from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than 127.18 acres of coastal California gnatcatcher Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

Light-Footed Ridgway's (=Clapper) Rail (*Rallus obsoletus levipes*)

- Harm to an estimated one pair of light-footed Ridgway's rails through loss or partial loss of their primary breeding, feeding, and sheltering habitat within up to 3.99 acres of light-footed Ridgway's rail Tracked Habitat from Covered Activities during O&M and New Construction. The amount or extent of incidental take will be exceeded if more than 3.99 acres of light-footed Ridgway's rail Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

Least Bell's Vireo (*Vireo bellii pusillus*)

- Harm to an estimated one pair of least Bell's vireos through loss or partial loss of their primary breeding, feeding, and sheltering habitat within up to 31.05 acres of least Bell's vireo Tracked Habitat from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than 31.05 acres of least Bell's vireo Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

<u>Unlisted Birds</u>

Tricolored Blackbird (*Agelaius tricolor*)

- Harm to an estimated one pair of tricolored blackbirds through loss or partial loss of their primary breeding, feeding, and sheltering habitat within up to 8.98 acres of tricolored blackbird Tracked Habitat from Covered Activities during O&M and New Construction. The amount or extent of incidental take will be exceeded if more than 8.98 acres of tricolored blackbird Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

Western Burrowing Owl (*Athene cunicularia hypugaea*)

- Harm to an estimated one pair of western burrowing owls through loss or partial loss of their primary breeding, feeding, and sheltering habitat within up to 117.57 acres of

western burrowing owl Tracked Habitat from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than 117.57 acres of western burrowing owl Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

Coastal Cactus Wren (*Campylorhynchus brunneicapillus sandiegensis)*

- Harm to an estimated one pair of coastal cactus wrens through loss or partial loss of their primary breeding, feeding, and sheltering habitat within up to 188.12 acres of coastal cactus wren Tracked Habitat from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than 188.12 acres of coastal cactus wren Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)

- Harm to an estimated one pair of Belding's savannah sparrows through loss or partial loss of their primary breeding, feeding, and sheltering habitat within up to 1.41 acres of Belding's savannah sparrow Tracked Habitat from Covered Activities during O&M and New Construction. The amount or extent of incidental take will be exceeded if more than 1.41 acres of Belding's savannah sparrow Tracked Habitat are impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment.

Bald Eagle (*Haliaeetus leucocephalus*)

- Disturbance to a total of 3.5 nests per 5 years and 21 nests over the 30-year ECP term; electrocution of a total of 2.1 individuals per 5 years and 13 individuals over the 30-year ECP term; collision of a total of 1 individual per 5 years and 6 individuals over the 30-year ECP term; and removal of a total of 0.6 nests per 5 years and 4 nests over the 30-year ECP term, as shown in Table 2 (Table 5 of the ECP).

Golden Eagle (*Aquila chrysaetos*)

- Disturbance to a total of 12 nests per 5 years and 72 nests over the 30-year ECP term; electrocution of a total of 4.3 individuals per 5 years and 26 individuals over the 30-year ECP term; collision of a total of 2.1 individuals per 5 years and 13 individuals over the 30-year ECP term; and removal of a total of 2 nests per 5 years and 12 nests over the 30-year ECP term, as shown in Table 2 (Table 5 of the ECP).

Listed Mammals

Stephens' Kangaroo Rat (*Dipodomys stephensi*)

- Death or injury of Stephens' kangaroo rat adults and juveniles from crushing, trampling, and trapping within up to 14.42 acres of Stephens' kangaroo rat Tracked Habitat that is

impacted in association with the Covered Activities during O&M, New Construction, and Wildfire Fuels Management. The amount or extent of incidental take will be exceeded if more than 14.42 acres of Stephens' kangaroo rat Tracked Habitat is impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment;

- Death or injury of Stephens' kangaroo rat adults and juveniles during capture, handling, and relocation to avoid or minimize death or injury from Covered Activities during O&M, New Construction, and Wildfire Fuels Management. It is not possible to quantify exactly how many Stephens' kangaroo rats may be subject to capture, handling, and relocation. Regardless, the numbers of Stephens' kangaroo rats captured, handled, and relocated should be low due to the limited extent of Covered Activities.

Pacific Pocket Mouse (Perognathus longimembris pacificus)

- Death or injury of Pacific pocket mouse adults and juveniles from crushing, trampling, trapping, noise and vibration within up to 10.92 acres (2.37 acres direct and 8.55 acres from noise and vibration) of Pacific pocket mouse Tracked Habitat that is impacted in association with the Covered Activities during O&M and New Construction. The amount or extent of incidental take will be exceeded if more than 10.92 acres (2.37 acres direct and 8.55 acres from noise and vibration) of Pacific pocket mouse Tracked Habitat is impacted or if the impacts occur as a result of activities that are not identified in the HCP Amendment or are implemented in a manner inconsistent with the HCP Amendment;

- Death or injury of Pacific pocket mouse adults and juveniles during capture, handling, and relocation to avoid or minimize death or injury from Covered Activities during O&M and New Construction. It is not possible to quantify exactly how many Pacific pocket mice may be subject to capture, handling, and relocation. Regardless, the numbers of Pacific pocket mice captured, handled, and relocated should be low due to the limited extent of Covered Activities.

EFFECT OF THE TAKE

Listed Species

For reasons stated in the species by species analyses of effects of SDG&E's HCP Amendment, we determined that the level of incidental take specified in this Incidental Take Statement is not likely to result in jeopardy to the endangered San Diego fairy shrimp, Riverside fairy shrimp, Laguna Mountain skipper, arroyo toad, California red-legged frog, southwestern willow flycatcher, light-footed Ridgway's rail, least Bell's vireo, Stephens' kangaroo rat, and Pacific pocket mouse, and the threatened Hermes copper butterfly, and coastal California gnatcatcher. Nor will the proposed action result in the destruction or adverse modification of designated critical habitat for the Hermes copper butterfly, arroyo toad, and coastal California gnatcatcher.

Unlisted Species

For reasons stated in the species-by-species analyses of effects of SDG&E's HCP Amendment, we determined that the level of incidental take specified in this Incidental Take Statement is not likely to result in jeopardy to the following unlisted Covered Animal Species should they become listed: western spadefoot, southwestern pond turtle, coast horned lizard, tricolored blackbird, western burrowing owl, coastal cactus wren, Belding's savannah sparrow, bald eagle, and golden eagle.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

We have determined that all of the conservation and management measures in the SDG&E's HCP Amendment, together with the special terms and conditions identified in the ITP, are the reasonable and prudent measures necessary and appropriate to minimize the impact of the incidental take of Covered Animals Species, and the terms and conditions that SDG&E must comply with to be exempt from the prohibitions of section 9 of the Act. These terms and conditions are non-discretionary.

Further, the following terms and conditions apply to the Service after issuance of the ITP:

1. The Service shall provide technical assistance to the Permittee throughout the term of the ITP.

2. The Service shall, at the time of listing of any of the currently unlisted Covered Species, reinitiate consultation on the proposed action in accordance with 50 C.F.R. 402.16.

REPORTING REQUIREMENTS

An annual report will be prepared and submitted to the CFWO by June 1 of each calendar year (or other date agreed to by SDG&E and the Service).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. No conservation recommendations have been identified.

REINITIATION NOTICE

Reinitiation of consultation is required and will be requested by the SDG&E or by the Service, where discretionary federal involvement or control over the action has been retained or is authorized by law and:

1. If the amount or extent of taking specified in the incidental take statement is exceeded;

2. If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;

3. If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this biological opinion; or

4. If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions concerning this consultation, please contact Jonathan Snyder, Assistant Field Supervisor of the CFWO, at (760) 431-9440.

Sincerely,

Scott A. Sobiech
Field Supervisor

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APPENDIX

The following information supports the U.S. Fish and Wildlife Service's (Service) not likely to adversely affect determination for the federally endangered California least tern and Peninsular bighorn sheep; federally threatened western snowy plover; and designated critical habitat for the San Diego thorn-mint, San Diego ambrosia, thread-leaved brodiaea, willowy monardella, spreading navarretia, San Diego fairy shrimp, Riverside fairy shrimp, Laguna Mountains skipper, western snowy plover, southwestern willow flycatcher, least Bell's vireo, and Peninsular bighorn sheep, in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.), for the SG&E HCP Amendment.

The following general OPs identified in the "Description of the Proposed Action" section of this Opinion will be implemented to avoid and/or minimize impacts to western snowy plover, California least tern and Peninsular Bighorn Sheep: for all Covered Activities occurring within or adjacent to habitat with potential to support Covered Species, a biologist will conduct a Pre-activity Surveys and complete a PSR (OP 14), flag boundaries of habitats that must be avoided (OP 15), and conduct biological monitoring as recommended in the PSR and verify compliance at completion of work (OP 32). In addition to these general OPs, the following Species-Specific OPs 86 and 93 for the western snowy plover and California least tern, respectively, and OPs for Peninsular bighorn sheep in Appendix C of the HCP Amendment, will also be implemented to avoid and/or minimize impacts to these species.

86. Western Snowy Plover (*Charadrius nivosus nivosus*)

a. Permanent impacts from Covered Activities where there is a potential for western snowy plover to occur or in designated critical habitat with PBFs (SNPL-Habitat) shall be avoided. PBFs include sandy beaches, dune systems immediately inland of an active beach face, salt flats, mud flats, seasonally exposed gravel bars, artificial salt ponds and adjoining levees, and dredge spoil sites, with:

   i. Areas that are below heavily vegetated areas or developed areas and above the daily high tides;

   ii. Shoreline habitat areas for feeding, with no or very sparse vegetation, that are between the annual low tide or low-water flow and annual high tide or high-water flow, subject to inundation but not constantly under water, that support small invertebrates, such as crabs, worms, flies, beetles, spiders, sand hoppers, clams, and ostracods, that are essential food sources;

   iii. Surf- or water-deposited organic debris, such as seaweed (including kelp and eelgrass) or driftwood located on open substrates that supports and attracts small invertebrates described in PCE 2 for food, and provides cover or shelter from predators and weather, and assists in avoidance of detection (crypsis) for nests, chicks, and incubating adults; and

iv. Minimal disturbance from the presence of humans, pets, vehicles, or human-attracted predators, which provide relatively undisturbed areas for individual and population growth and for normal behavior.

b. Temporary impacts from Covered Activities to SNPL-Habitat shall be avoided through project design considerations, to the extent feasible.

c. Schedule work within 800 feet of western snowy plover nesting sites between September 15 and March 1 to the maximum extent possible. If work is scheduled to occur during the breeding season, no Covered Activities shall be implemented within 800 feet of the nesting site. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by a western snowy plover Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures and/or biological monitoring approved by USFWS. Specific buffer requirements may be reduced with approval by USFWS on a project-by-project basis as appropriate.

d. For projects scheduled within 200 feet of potential SNPL-Habitat during the non-breeding season (September 16 through February 28), the western snowy plover Biologist shall conduct preconstruction surveys for western snowy plovers in and within 200 feet of the project footprint.

    i. If western snowy plovers are observed within 200 feet of the project footprint, a western snowy plover Biologist shall monitor the western snowy plovers at least once per day during construction activities.

    ii. If western snowy plovers are observed within the project footprint, the western snowy plover Biologist may slowly walk towards the western snowy plovers, allowing the western snowy plovers to move away from the project footprint, prior to commencing project activities. The western snowy plover Biologist shall guide the western snowy plovers at least 200 feet from the project footprint.

e. To the extent feasible, new linear Facilities within 800 feet of western snowy plover nesting sites shall be placed underground. If overhead structures (poles) are necessary, SDG&E shall explore engineering designs that shall reduce available perch location for potential avian predators.

f. To control the spread of weeds that may degrade western snowy plover nesting sites, all earth-moving construction equipment shall be thoroughly power-washed before working within 200 feet of western snowy plover nesting sites.

g. Any stockpiled soils within 200 feet of western snowy plover nesting sites shall be covered with plastic or other material and the edges shall be held in place by sandbags at the end of each workday.

h. Direct take of nesting individuals and destruction of active nests are not allowed.

i. Temporary impact areas within western snowy plover nesting sites shall be re-contoured to mimic the natural landscape.

93. California Least Tern (*Sternula antillarum browni*)

a. Permanent impacts from Covered Activities to California least tern nesting sites shall be avoided.

b. Temporary impacts from Covered Activities to California least tern nesting sites shall be avoided through project design considerations, to the extent feasible.

c. Work within 800 feet of California least tern nesting sites shall be scheduled during the non-breeding season (i.e., September 15 through March 31) to the maximum extent possible. If work is scheduled to occur during the breeding season, no Covered Activities shall be implemented within 800 feet of the nesting site. Work within nest buffers may not resume until the young fledge and disperse, or the nest has been determined to fail by a California least tern Biologist. In the event that the buffer criteria cannot be achieved, SDG&E shall develop alternative measures and/or biological monitoring approved by USFWS. Specific buffer requirements may be reduced with approval by USFWS on a project-by-project basis as appropriate.

d. To the extent feasible, new linear Facilities within 800 feet of California least tern nesting sites shall be placed underground. If overhead structures (poles) are necessary, SDG&E shall explore engineering designs, including perch deterrents or other equipment that shall reduce the available perch location for potential avian predators.

e. For existing linear Facilities within 800 feet of California least tern nesting sites (power poles and lines immediately west of San Elijo Lagoon nest site) or other known predator perches (power pole north and east of Batiquitos Lagoon nest sites W-2 and W-1, power poles and lines along the Silver Strand between Coronado and Imperial Beach), SDG&E shall explore perch deterrents or other equipment that shall reduce the available perch locations for potential avian predators. SDG&E may also contribute to a predator management fund, or directly support predator management at individual California least tern nesting sites, in coordination with USFWS. Nothing herein shall preclude SDG&E from undergrounding Facilities as it determines appropriate.

f. To control the spread of weeds that may degrade California least tern nesting sites, all earth-moving construction equipment shall be thoroughly power-washed before working within 200 feet of California least tern nesting sites.

g. Any stockpiled soils within 200 feet of California least tern nesting sites shall be covered with plastic or other material and the edges shall be held in place by sandbags at the end of each workday.

h. Temporary impact areas within California least tern nesting sites shall be re-contoured to mimic the natural landscape.

i. Direct take of nesting individuals and destruction of active nests are not allowed.

Peninsular Bighorn Sheep (*Ovis canadensis nelsoni*)

1. Impacts from Covered Activities where there are known/historical Peninsular bighorn sheep (PBS) occurrences and/or to designated critical habitat and essential habitat with physical and biological features (PBFs) for PBS (collectively referred to as PBS-Habitat), shall be avoided through project design considerations, to the extent feasible. PBS-Habitat shall be updated annually as new PBS sightings are documented. A 1-kilometer radius (or approximately 0.6 mile) circle shall be placed around each new PBS sighting and included in PBS-Habitat. USFWS shall be responsible for providing the updated information to SDG&E by December 1 of each year, for use the following year. PBFs and essential habitat include:

   - Moderate to steep, open slopes (20 to 60%) and canyons, with canopy cover of 30%or less (below 4,600 feet elevation in Peninsular Ranges) that provide space for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups;

   - Presence of a variety of forage plants, indicated by the presence of shrubs (e.g., *Ambrosia* spp., *Caesalpinia* spp., *Hyptis* spp., *Sphaeralcea* spp., *Simmondsia* spp.), that provide a primary food source year-round; grasses (e.g., *Aristida* spp., *Bromus* spp.) and cacti (e.g., *Opuntia* spp.) that provide a source of forage in the fall; and forbs (e.g., *Plantago* spp., *Ditaxis* spp.) that provide a source of forage in the spring;

   - Steep, rugged, slopes (60% slope or greater) (below 4,600 feet elevation in Peninsular Ranges) that provide secluded space for lambing and terrain for predator evasion;

   - Alluvial fans, washes, and valley bottoms that provide important foraging areas where nutritious and digestible plants can be more readily found during times of drought and lactation, and that provide and maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resource areas (e.g., foraging areas and escape terrain);

   - Intermittent and permanent water sources that are available during extended dry periods and provide relatively nutritious plants and drinking water; and

   - Areas that provide PBS with the various physical and biological resources (e.g., space, food, water, cover) potentially needed for (1) individual/population growth and movement, and (2) normal behavior with protection from disturbance.

2. PBS-Habitat will be considered occupied habitat. Permanent impacts to PBS Mapped Areas that cannot be avoided shall be mitigated in kind at a 2:1 ratio, or through other alternatives discussed in Section 5.5.3 of the HCP Amendment agreed to by USFWS. This mitigation would need to be approved prior to Covered Activities occurring within PBS-Habitat.

3. When work shall occur within PBS-Habitat, timing of Covered Activities shall be evaluated to ensure avoidance and minimization of impacts of PBS. When Operational Protocols cannot be implemented to avoid and minimize impacts to PBS, a qualified Biologist shall provide additional recommendations to avoid and minimize impacts to PBS. Recommendations shall be included in the pre-activity survey report (PSR) for USFWS review. Measures that may be implemented include, but are not limited to, the following:

    - A Biologist shall be present during construction, as needed, in order to minimize impacts to and avoid take of PBS.

    - A Biologist shall lead a worker environmental awareness training for crews and conduct a survey of the work area prior to the beginning of work each day, as needed, to ensure no PBS are in the project area.

    - Covered Activities (including the use of helicopters and unmanned aerial vehicles) will occur outside of known PBS lambing areas detailed in Section 3.2.2 during the lambing season (January 1 through June 30), and outside of PBS perennial water sources during period of greatest water need (May 1 through September 30) to the maximum extent practicable. Except for emergencies, Covered Activities within lambing areas during the lambing season or near perennial water sources during period of greatest water need, will be reviewed and approved by the USFWS.

    - If PBS are observed in the work area of any Covered Activity throughout the year, maintain a 1,500-foot buffer between the work area and any observed PBS for helicopter-based crews and a 500-foot buffer for ground crews. If PBS enter a work area, SDG&E shall halt work until the individuals have left the work area. When a Covered Activity is located outside lambing areas, occurring outside the lambing season, or located away from perennial water sources during period of greatest water need, a Biologist may also flush PBS individuals out of an active work area by slowly walking toward the PBS until they move out of the work area.

    - Pilots will conduct all low-altitude flight activity near the centerline of the electric line right-of-way (ROW) to the maximum extent practicable for pilot and crew safety.

    - Flights will be conducted at a consistent elevation and speed appropriate to the Covered Activity to the maximum extent practicable for pilot and crew safety.

    - Helicopters shall follow regular flight corridors coinciding with the ROW to the maximum extent possible and avoid low-flying “short-cuts” or sight-seeing trips away from the project site.

    - Helicopters, ground activities, facility placement, and other key resource areas identified by a biologist shall keep a minimum of 0.6 mile from PBS perennial water sources to the maximum extent practicable.

4. No direct injury or killing of PBS is anticipated or authorized.

5. For new projects, impacts to PBS and PBS-Habitat would only be covered through the Minor Amendment process as discussed in Section 6.5.1.2 of the HCP Amendment, including acquiring Mitigation Credits as discussed in Section 5.5.

Unavoidable temporary impacts to western snowy plover, California least tern, and Peninsular bighorn sheep occupied habitat will be restored onsite through the R/E Program or mitigated at acquired mitigation lands that are occupied or through measures that will benefit these species. Unavoidable permanent impacts to Peninsular bighorn sheep occupied habitat will be mitigated at a 1:1 to 2:1 ratio (Table 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or other measures that will benefit this species and are approved by the Service. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. The conservation of the mitigation lands will contribute to the long-term viability of the species by securing and managing habitat to support core occurrences of Peninsular bighorn sheep within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to benefit Peninsular bighorn sheep.

Environmental Baseline

A habitat model was used for western snowy plover and California least tern, and Essential Habitat[89] was used for Peninsular bighorn sheep, rather than broader habitat types to provide a more accurate estimate of potentially occupied habitat. However, limited occurrences of these species (i.e., Occupied Habitat) may occur outside of Modeled/Essential Habitat. However, not all Modeled Habitat is expected to support species' occurrences (i.e., Occupied Habitat), and limited Occupied Habitat may occur outside of Modeled/Essential Habitat.

The Plan Area and PIZ have Modeled Habitat for the western snowy plover and California least tern and Essential Habitat for Peninsular bighorn sheep (Table 1). Western snowy plover and California least tern occur along the coast in the western portion of the Plan Area in San Diego County and Orange County, while Peninsular bighorn sheep occur in the mountains in the eastern portion of the Plan Area in San Diego County. There is no suitable habitat for these species on the Moreno Compressor Station property or existing SDG&E mitigation lands.

The Plan Area and PIZ also include designated critical habitat for San Diego thorn-mint, San Diego ambrosia, thread-leaved brodiaea, willowy monardella, spreading navarretia, San Diego fairy shrimp, Riverside fairy shrimp, Laguna Mountains skipper, western snowy plover, southwestern willow flycatcher, least Bell's vireo, and Peninsular bighorn sheep (Table 2).

[89] Essential Habitat as defined in the *Recovery Plan for Bighorn Sheep in the Peninsular Ranges, California* (Service 2000) was used instead of Modeled Habitat to assess potential impacts to Peninsular bighorn sheep habitat.

Potential Effects of Covered Activities

Habitat Loss and Potential for Death or Injury of Individuals

Implementation of Covered Activities over the duration of the ITP until 2050 may temporarily impact up to 0.85 acre and 0.41 acre of western snowy plover and California least tern Modeled Habitat, respectively (Table 1). These impacts represent about 0.05 percent of the 1,685 acres and 0.08 percent of 520 acres of western snowy plover and California least tern Modeled Habitat within the Plan Area, respectively. No permanent impacts to western snowy plover and California least tern Modeled Habitat are expected.

Implementation of Covered Activities over the duration of the ITP until 2050 may also impact up to 11.95 acres of Peninsular bighorn sheep Essential Habitat,[90] which is a fraction of the 429,424 acres of Peninsular bighorn sheep Essential Habitat within the Plan Area. These impacts will include:

- Approximately 7.55 acres of permanent impacts (<0.01 percent of Essential Habitat in the Plan Area);

- Approximately 4.4 acres of temporary impacts (<0.01 percent of Essential Habitat in the Plan Area);

This impact represents about 0.01 percent of Peninsular bighorn sheep Essential Habitat within the Plan Area.

These estimates include all Modeled/Essential Habitat within the Plan Area that, in general, provides suitable habitat for these species. However, because these species are not uniformly distributed within available habitat and populations will naturally expand and contract over the Permit term, suitable habitat is not expected to always be occupied. In addition, no SDG&E facilities within the PIZ occur in known or potential western snowy plover and California least tern nesting sites.

Impacts from Covered Activities are expected to be relatively small and distributed across a broad landscape within the PIZ over the duration of the ITP until 2050. Because O&M of existing facilities is ongoing, impacts will primarily occur within areas that have been previously disturbed and will not result in new developed areas. In addition, no permanent impacts will occur to occupied western snowy plover and California least tern habitat, and Wildfire Fuels Management impacts will not occur in habitat for all three species. Temporary impact areas that are restored will continue to provide habitat to meet the species' long-term needs. No large-scale New Construction is expected, and New Construction projects that impact occupied Peninsular bighorn sheep habitat will only be covered if the requirements of a Minor Amendment are met, at which time potential impacts to Peninsular bighorn sheep will be evaluated for consistency with the HCP Amendment.

[90] Similar to Modeled Habitat, Essential Habitat refers habitat that is currently identified as Essential Habitat but also includes additional areas that are identified as bighorn sheep Occupied Habitat in the future, during the permit term.

Based on the known distribution of these species within the Plan Area and their specific habitat requirements, we anticipate that only limited areas within Modeled/Essential Habitat support occurrences of these species. Therefore, it is likely that substantially less than 0.85 acre, 0.41 acre, and 11.95 acres of occupied western snowy plover, California least tern, and Peninsular bighorn sheep habitat, respectively, will be impacted, even after including what we expect to be limited additional Occupied Habitat outside of Modeled/Essential Habitat.

There is the potential for western snowy plover and California least tern adults, eggs, and fledglings, and Peninsular bighorn sheep adults and lambs to be killed or injured by vehicle collision, crushing, trampling, being startled, and/or disruption of nesting and lambing by Covered Activities in or near occupied habitat during their breeding and lambing seasons. Outside their breeding and lambing seasons, there is also the potential for western snowy plover adults and fledglings and Peninsular bighorn sheep adults and lambs to be killed or injured from vehicle collision, crushing, trampling, and/or being startled by Covered Activities in or near occupied habitat.

Unavoidable temporary impacts to western snowy plover, California least tern, and Peninsular bighorn sheep occupied habitat will be restored onsite through the R/E Program or for Peninsular bighorn sheep be mitigated at acquired mitigation lands that are occupied or through measures that will benefit this species. Unavoidable permanent impacts to Peninsular bighorn sheep occupied habitat will be mitigated at a 1:1 to 3:1 ratio (Table 5.3a, 5.3b, and 5.4 of the HCP Amendment) at acquired mitigation lands that are occupied or through the R/E Program or other measures that will benefit this species and are approved by the Service. In perpetuity monitoring and management of mitigation lands will minimize the potential for preserved habitat to become degraded by human generated disturbances (i.e., unauthorized recreational use, trash dumping) over time. The conservation of the mitigation lands will contribute to the long-term viability of the Peninsular bighorn sheep by securing and managing habitat to support core occurrences of this species within these mitigation lands.

The removal and restoration of existing access roads that are not needed for Covered Activities is also expected to benefit Peninsular bighorn sheep.

We anticipate that Covered Activities will impact only a small fraction of any area actively used by western snowy plover, California least tern, and Peninsular bighorn sheep, and based on the extent of impacts and implementation of the proposed OPs, we anticipate that habitat loss *per se* will have an insignificant effect on the survival and reproduction of these species. In addition, Covered Activities may occasionally result in minor disturbance to western snowy plovers, California least terns, and Peninsular bighorn sheep, but with implementation of the proposed OPs, we anticipate that such disturbance will have an insignificant effect on survival and reproduction of these species. Finally, with the proposed OPs, the potential for Covered Activities to kill or injure an individual from any of these species will be discountable.

Because not all Modeled/Essential Habitat is expected to be occupied, and Occupied Habitat may occur outside of Modeled/Essential Habitat, impacts will be tracked based on acres of Modeled

or unmodeled habitat that is known or assumed to be occupied (Tracked Habitat) Habitat as individual Covered Activities are implemented.[91]

Effects from Lighting, Non-Native Species, Predation, and Habitat Fragmentation

The western snowy plover, California least tern, and Peninsular bighorn sheep could be subject to indirect effects from Covered Activities as described in the General Effects section of this Opinion and more specifically as follows. Other than habitat loss and death or injury of individuals from Covered Activities, effects of particular concern to these species include the degradation of habitat outside the footprint of Covered Activities as a result of lighting, non-native species, predation, and habitat fragmentation.

Project construction and new facilities that require night lighting may increase the ambient nighttime light level in adjacent habitat for these western snowy plover, California least tern, and Peninsular bighorn sheep. If night work is necessary, night lighting will be of the lowest illumination necessary for operational safety, selectively placed, shielded, and directed away from natural habitats, and any permanent lighting will be directed away and/or shielded so as not to illuminate habitats (OP 25),

The ground disturbance and landscaping associated with Covered Activities may facilitate the spread of non-native species into adjacent undisturbed habitat. Non-native plants may out-compete and exclude native plants potentially altering the structure of the vegetation, degrading or eliminating habitat used by the western snowy plover, California least tern, and Peninsular bighorn sheep, and providing food and cover for non-native animals (Bossard et al. 2000). Furthermore, the increased irrigation required by many common landscaping plants may provide suitable conditions for the establishment of introduced Argentine ants (*Linepithema humile*) within the adjacent habitat areas. Argentine ants can build large colonies and prey on western snowy plover and California least tern nests. In addition, human activity in the area during construction may result in accumulation of trash and food, attracting predators of these species. Pets brought to work sites could also disrupt western snowy plover and California least tern and disrupt and/or spread disease to Peninsular bighorn sheep.

SDG&E will implement several measures that will minimize the spread of non-native plants and invasive ant species. The restoration of temporary impact areas is expected to minimize the spread of non-native plants. Field crews will coordinate with the Biologist to implement preventative invasive weed control BMPs found in Prevention BMPs for Transportation and Utility Corridors – California Invasive Plant Council (https://www.cal-ipc.org/resources/library/publications/tuc/) when requested by a land manager and/or where feasible and practicable to minimize the spread of invasive weed species (OP 11). BMPs may include vehicle washing, use of weed free substrates, educating staff and contractors on protocols like washing/brushing boots between sites, and removing weed biomass from sites during weed control activities. Landscaping for new Facilities within 300 feet of native habitat will not include exotic plant species that are listed on Cal-IPC's Invasive Plant Inventory, and any planting stock for landscaping will be inspected by a qualified pest inspector to ensure it is free

[91] See "Description of the Proposed Action" for an explanation of how impacts to Tracked Habitat for Covered Species will be calculated, tracked, and reported.

of pest species that could invade native habitats (OP 26). In addition, SDG&E personnel shall not feed wildlife (OP 5) or bring pets to (OP 6) or deposit or leave any food or waste at project sites (OP 9).

Large-scale habitat impacts have the potential to result in habitat fragmentation, potentially disrupting Peninsular bighorn sheep dispersal/movement corridors that contribute to long-term population viability for the Peninsular bighorn sheep. However, no large-scale New Construction is expected that could cause significant habitat fragmentation, and most of SDG&E's O&M Covered Activities are expected to impact disturbed habitat or small isolated areas of natural habitat without causing significant fragmentation. In addition, many of SDG&E's ROWs include habitat or narrow and unpaved access roads. To the extent feasible and practicable, new Facilities will also be sited to avoid Peninsular bighorn sheep habitat to minimize fragmentation and disruption of movement and breeding areas (OP 21). When habitat must be disturbed, new Facilities will, to the extent feasible and practicable, be sited in lowest-quality habitat.

With implementation of the above OPs, we anticipate that indirect effects including lighting, non-native species, predation, and habitat fragmentation may result in minor disturbance to western snowy plovers, California least tern, and Peninsular bighorn sheep, but we anticipate that these sources of disturbance will have an insignificant effect on survival and reproduction of these species.

Effects to Critical Habitat

Implementation of Covered Activities over the duration of the ITP until 2050 may impact a total of <0.01 acre to 8.2 acres of designated critical habitats with PBFs for San Diego thorn-mint, San Diego ambrosia, thread-leaved brodiaea, willowy monardella, spreading navarretia, San Diego fairy shrimp, Riverside fairy shrimp, Laguna Mountains skipper, western snowy plover, southwestern willow flycatcher, least Bell's vireo, and Peninsular bighorn sheep, which represent only 0.02 to 0.15 percent of the total designated critical habitats for these species (Table 2). Permanent impacts are of greater potential concern than temporary impacts, which will be restored. No permanent impacts will occur in western snowy plover critical habitat, and no Wildfire Fuels Management impacts will occur in spreading navarretia, San Diego fairy shrimp, Riverside fairy shrimp, western snowy plover, and Peninsular bighorn sheep critical habitat.

SDG&E facilities existed prior to and were part of the landscape when critical habitats were designated. Impacts to critical habitat due to Covered Activities will primarily result from O&M of linear facilities (e.g., power lines and pipelines) within previously disturbed areas with removal or destruction of vegetation limited to relatively small narrow strips within the PIZ over the duration of the ITP until 2050. No large-scale New Construction is expected, and impacts to critical habitat will be avoided, if possible, during the planning process. In addition, any new Facility that would impact more than 1.75 acres of critical habitat would require a Minor Amendment. Unavoidable permanent impacts will be mitigated at existing or acquired mitigation lands that have critical habitat. If no critical habitat is available from the existing or additional acquired mitigation lands, SDG&E will acquire, restore, and/or enhance mitigation land that will benefit the species and/or its critical habitat, with the concurrence of Service (Section 5.4.2 of the HCP Amendment). The removal and restoration of existing access roads is also expected to improve the functioning of critical habitat.

Critical habitat could also be subject to indirect effects from Covered Activities, including the degradation of habitat outside the footprint of Covered Activities as a result of changes to hydrology and water quality, erosion, sedimentation, lighting, non-native species, predation, fire, and habitat fragmentation. However, with implementation of the HCP Amendment's OPs summarized in the "Description of the Proposed Action" section of this Opinion and species-specific OPs, we do not anticipate indirect effects Covered Activities to impair the functions of critical habitat units and overall designations beyond baseline conditions and, therefore, will have an insignificant effect on these designated critical habitats.

In summary, the SDG&E will implement significant OPs as part of the HCP Amendment to avoid, minimize, and mitigate potential impacts to the western snowy plover, California least tern, and Peninsular bighorn sheep and to critical habitat for San Diego thorn-mint, San Diego ambrosia, thread-leaved brodiaea, willowy monardella, spreading navarretia, San Diego fairy shrimp, Riverside fairy shrimp, Laguna Mountains skipper, western snowy plover, southwestern willow flycatcher, least Bell's vireo, and Peninsular bighorn sheep. Based on the HCP Amendment and species and critical habitat information described above and SDG&E's commitment to implement the OPs, we expect that all impacts will be avoided or reduced such that potential effects will be insignificant or discountable, supporting a determination that the HCP Amendment is not likely to adversely affect these species and critical habitats.

Table 1. Anticipated Permanent, Temporary, and Wildfire Fuels Management Modeled Species Habitat Impacts in the Plan Area (acres)

Common Name	Modeled Habitat in Plan Area	Modeled Habitat in PIZ	Percentage of PIZ Supporting Modeled Habitat[1]	Permanent Impacts					Temporary Impact			Wildfire Fuels Management			Impacts through 2050[7, 5]	
				Annual Impacts[2,3]	Total O&M and New Construction Impacts through 2050[3,5]	O&M Impacts through 2050	New Construction Impacts through 2050	Percentage of Modeled Habitat Impacted through 2050[6]	Annual Impacts[2,3]	Impacts through 2050[3,5]	Percentage of Modeled Habitat Impacted through 2050[3,6]	Annual Impacts[4]	Impacts through 2050[3,5]	Percentage of Modeled Habitat Impacted through 2050[6]	Total[3]	Percentage of Modeled Habitat Impacted through 2050[3,6]
Birds																
Western snowy plover	1,685.26	178.91	0.37%	-	-	-	-	-	0.03	0.85	0.05%	-	-	-	0.85	0.05%
California least tern	519.67	85.92	0.18%	-	-	-	-	-	0.01	0.41	0.08%	-	-	-	0.41	0.08%
Mammals																
Peninsular bighorn sheep[8]	429,424	923.04	1.90%	0.25	7.55	6.30	1.25	<0.01%	0.15	4.40	<0.01%	-	-	-	11.95	<0.01%

[1] The portion of the PIZ with undeveloped habitat totals 48,665 acres. The percentage represents modeled habitat within the PIZ divided by 48,665 acres. Note that anticipated impacts to modeled habitat have been calculated to provide an approximation of the potential impacts on Modeled Habitat for each Covered Species. Actual impacts on Covered Species habitat would be assessed, avoided, and minimized through the existing Pre-activity Survey Report [PSR] process.
[2] The sum of anticipated and potential unanticipated impacts in Appendix A of the HCP (Covered Species Analysis), Attachments B and C.
[3] Numbers rounded after calculations completed.
[4] Species with no impacts within the table would not be impacted by Wildfire Fuels Management because Wildfire Fuels Management would not have direct habitat impacts on beach species.
[5] To be conservative, annual average multiplied by 30 years.
[6] Total impacts divided by all modeled habitat within the Plan Area.
[7] Note that anticipated impacts to modeled habitat have been calculated to provide an approximation of the potential impacts on modeled habitat for each Covered Species. Actual impacts on Covered Species habitat would be assessed, avoided, and minimized through the existing PSR process.
[8] Impacts for Peninsular bighorn sheep are based on essential habitat as described in Appendix C of the HCP Amendment.

Table 2. Anticipated Permanent, Temporary, and Wildfire Fuels Management Critical Habitat Impacts in the Plan Area (acres)

Common Name	Total Designated Critical Habitat	Plan Area	PIZ	Undeveloped PIZ[2]	Percentage of Undeveloped PIZ Where There Is Critical Habitat[3]	Permanent Impacts[1]					Temporary Impacts[1]			Wildfire Fuels Management[1]			Total Impacts through 2050 (%)[10]
						Annual Impacts[4]	Total O&M and New Construction Impacts through 2050[5]	O&M Impacts through 2050[6]	New Construction Impacts through 2050[6]	Percentage of Total Designated Critical Habitat Impacted through 2050[7]	Annual Impacts[8]	Impacts through 2050[5]	Percentage of Total Designated Critical Habitat Impacted through 2050[7]	Annual Impacts[9]	Impacts through 2050[5]	Percentage of Total Designated Critical Habitat Impacted through 2050[7]	
Plants																	
San Diego thorn-mint	671	671	12	11.66	0.02%	<0.01	0.10	0.08	0.02	0.01%	<0.01	0.06	0.01%	<0.01	0.05	0.01%	0.20 (0.03)
San Diego ambrosia	783	594	124	68.60	0.14%	0.02	0.56	0.47	0.09	0.07%	0.01	0.33	0.04%	0.01	0.30	0.04%	1.18 (0.15)
Thread-leaved brodiaea	2,950	1,558	211	124.55	0.26%	0.03	1.02	0.85	0.17	0.03%	0.02	0.59	0.02%	0.02	0.54	0.02%	2.15 (0.07)
Willowy monardella	122	122	3	0.03	<0.01%	<0.01	<0.01	<0.01	<0.01	<0.01%	<0.01	<0.01	<0.01%	<0.01	<0.01	<0.01%	<0.01 (0.03)
Spreading navarretia	6,725	1,068	69	47.06	0.10%	0.01	0.38	0.32	0.06	0.01%	0.01	0.22	<0.01%	-	-	-	0.61 (0.02)
Wildlife																	
San Diego fairy shrimp	2,933	2,918	218	138.57	0.28%	0.04	1.13	0.95	0.19	0.04%	0.02	0.66	0.02%	-	-	-	1.79 (0.06)
Riverside fairy shrimp	1,670	914	21	18.14	0.04%	<0.01	0.15	0.12	0.02	0.01%	<0.01	0.09	0.01%	-	-	-	0.23 (0.02)
Laguna Mountains skipper	6,259	6,259	83	59.23	0.12%	0.02	0.48	0.40	0.08	0.01%	0.01	0.28	<0.01%	0.01	0.26	<0.01%	1.02 (0.03)
Western snowy plover	25,263	405	14	10.11	0.02%						<0.01	0.05	<0.01%	-	-	-	0.05 (0.01)
Southwestern willow flycatcher	209,131	5,373	246	167.86	0.34%	0.05	1.37	1.15	0.23	<0.01%	0.03	0.80	<0.01%	0.02	0.72	<0.01%	2.90 (0.03)
Least Bell's vireo	36,991	13,416	2,038	379.92	0.78%	0.10	3.11	2.59	0.52	0.01%	0.06	1.81	<0.01%	0.05	1.64	<0.01%	6.56 (0.03)
Peninsular bighorn sheep	376,938	261,489	661	633.06	1.30%	0.17	5.18	4.32	0.86	<0.01%	0.10	3.02	<0.01%	-	-	-	8.20 (0.02)

[1] Note that anticipated impacts to Critical Habitat have been calculated to provide an approximation of the potential impacts on Critical Habitat for each Covered Species. Actual impacts on Critical Habitat would be assessed, avoided, and minimized through the existing Pre-activity Survey Report [PSR] process. Note all numbers rounded after calculations completed.

[2] Critical Habitat with agriculture and developed areas removed per the process described in HCP Amendment Section 4.1.3.

[3] The portion of the PIZ with undeveloped habitat totals 48,665 acres. The percentage represents Critical Habitat within the undeveloped PIZ divided by 48,665 acres.

[4] Based on SDG&E historical impact trends under the Subregional Plan for the period of 1996 through 2018, an average of approximately 11.54 acres of total impacts is expected on an annual basis with implementation of O&M and New Construction. The average annual total impacts (11.54 acres) was multiplied by the percentage of PIZ supporting Critical Habitat for a given species to estimate the permanent impacts on Critical Habitat on an annual basis. This total was increased by 15% to accommodate unanticipated impacts.

[5] To be conservative, annual average multiplied by 30 years.

[6] Based on historical data, New Construction was assumed to represent 16.6% of the total O&M and New Construction impact estimate. O&M represents the difference between the total impacts and New Construction impacts.

[7] To be conservative, total impacts over 30 years divided by all designated Critical Habitat.

[8] Based on SDG&E historical impact trends under the Subregional Plan for the period of 1996 through 2018, an average of approximately 6.73 acres of temporary impacts is expected on an annual basis with implementation of O&M and New Construction. The average annual temporary impacts (6.73 acres) was multiplied by the percentage of PIZ supporting Critical Habitat for a given species to estimate the temporary impacts on Critical Habitat on an annual basis. This total was increased by 15% to accommodate unanticipated impacts.

[9] Based on SDG&E's 2019 Pilot Study (see HCP Amendment Section 4.4), SDG&E assumed that up to 100 acres per year will undergo Wildfire Fuels Management through 2050, and that a 7% net percent reduction of native canopy cover will be consistent, on average, over the remaining permit term; resulting in 7 acres of habitat impacts per year. The percentage of the undeveloped portion of PIZ that consisted of Critical Habitat for applicable Covered Species was quantified, and this percentage was multiplied by Wildfire Fuels Management annual impact estimate of 7 acres per year, to estimate the impacts on Critical Habitat on an annual basis. Species with no impacts within the table will not be impacted by Wildfire Fuels Management because Wildfire Fuels Management would not have direct habitat impacts on Peninsular bighorn sheep, vernal pool species, or beach species.

[10] Total permanent, temporary, and Wildfire Fuels Management impacts.