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- EO 38: in the vicinity of North New Almaden Mine, north of Tennant Road, with a gas transmission line crossing the occurrence; an electric distribution line spans the occurrence, but the nearest towers are more than 250 feet away and access road does not cross polygons.
- Includes former occurrence 53 and 54.
- EO 48: 0.5 air mile south-southeast of the El Toro summit, electric transmission lines cross the occurrence, with one tower located in the occurrence, unpaved access roads between the towers.
- EO 49: In the hills north of Little Arthur Creek, an electric distribution line crosses the occurrence, with three poles located in the occurrence and two poles within 100 feet, and an unpaved access road crossing the occurrence.

Contra Costa Wallflower

Contra Costa wallflower is known only from four occurrences in Contra Costa County CDFW (2017). Three locations are outside of the action area. Covered Activities could impact the occurrence (EO 2) that is located in the Sardis Unit of the Antioch Dunes NWR. An electric transmission line crosses the occurrence, and one tower is located within the occurrence.

Occurrence 2 consists of several hundred plants on approximately 22 acres of habitat (CDFW 2017). The last reported count for the Sardis Unit was 671 plants in 1985. Although counts for individual areas have not been reported since then, the total number of plants in all occurrences is estimated at about 4,000 (Service 2008). The tower location was surveyed in July, 2012. The survey found 13 Contra Costa wallflower plants within 100 feet.

Contra Costa Wallflower Critical Habitat

The Antioch Dunes were designated as critical habitat for Contra Costa wallflower in 1978 and the Antioch Dunes NWR, which encompasses 55 acres of former dunes that are adjacent to the 12 acres of the dunes owned by PG&E, was established in 1980. Critical habitat for Contra Costa wallflower encompasses 281 acres within the study area, 41 acres of which are within the action area.

Marin Dwarf Flax

The range of this species is restricted to the northwestern portion of the Bay Area, including portions of Marin, San Francisco, and San Mateo Counties. There are 23 extant occurrences in the study area (CDFW 2017). Three occurrences are extirpated or possibly extirpated. A new occurrence not yet documented in the CNDDB was discovered during the course of replacing a portion of gas line L109. This population is located near Woodside and I-280. Occurrences are as follows:

- EO 1: At Occurrence 1, there six polygons located east of Lower Crystal Springs Reservoir. At one polygon, an electric transmission tower is present, two towers are within 50 feet, and a gas transmission line parallels the east side of the polygon. At a second polygon, six wooden poles (electric distribution and transmission) are present, and another pole is within 100 feet. An electric transmission line mapped along Skyline Boulevard is within 100 feet of two polygons. The number of plants present has not been consistently reported for all polygons. In 1991, 1,100 plants were present in all polygons. In 1989, more than 1,000 plants were observed in two polygons, and in 2000, 5,000 plants were observed in another polygon.

- EO 2: Located at Crystal Springs Dam, last observed in 1961; habitat removed by road construction (CDFW 2017), electric transmission pole present.
- EO 3: At Occurrence 3, there are 10 polygons located east of Lower Crystal Springs Reservoir. An electric distribution line crosses one polygon, with one wooden pole located within the polygon. An electric transmission line crosses two polygons with three wooden poles located within the polygons. Other polygons are within 100 feet of PG&E facilities. 15,600 plants were observed in all polygons in 1988.
- EO 4: Located at Edgewood County Park; more than 500 feet from nearest electric transmission facilities.
- EO 5: Located at Woodside Glens; more than 150 feet from nearest gas distribution facility.
- EO 6: At Occurrence 6 there is a single large polygon near Saint Hilary's Church in Tiburon. An electric distribution line runs along the west edge of the occurrence, with two poles located within the mapped polygon. Other PG&E facilities are within 100 feet of the occurrence. Plant numbers have varied from 180 plants in 1986, to more than 250 observed in 1987, to 16 in 1997, and to hundreds in 1998.
- EO 8: There are six polygons on the middle ridge of the Tiburon Peninsula. An electric distribution line is present at roadside at the north end of the large, central polygon, with three poles within 100 feet of the polygon. The occurrence was surveyed in 2013 and the Map Book zone was marked.
- EO 9: Located at Ring Mountain; 16 polygons more than 100 feet from nearest gas distribution facility.
- EO 10: Located near Marin County Day School in Tiburon, last observed in 1961, apparently extirpated (or possibly mismapped) (CDFW 2017); nearest electric distribution facilities are more than 200 feet away.
- EO 11: Historic and non-specific: "San Rafael." This area is highly developed with PG&E facilities located within developed areas. Located in San Rafael, last observed in 1880s; no habitat remains where the occurrence is mapped.
- EO 12: Located on Carson Ridge in Marin County; more than 600 feet from nearest electric transmission facilities.
- EO 13: Located along the south side of Lucas Valley Road; more than 150 feet from nearest electric distribution facility.
- EO 14: Located at the Laurel Hill Cemetery in San Francisco, last observed in 1912; no native habitat occurs in this area, multiple facilities located in urban areas around this occurrence.
- EO 16: Located in the San Francisco Presidio near the War Memorial; more than 1,000 feet from nearest gas distribution facility.
- EO 17: A single population is located at Edgewood County Park in San Mateo County. The extent of the habitat is not recorded, although about 3,000 plants were observed there in 1983. Two gas transmission lines run directly through the center of the occurrence. Population sizes have varied from as low as 30 to 50 in 1987, to 900 plants in 1992; 40 to 50 individuals were observed in 2014 as part of Map Book zone surveys.
- EO 18: This occurrence is located northeast of Canada College in Redwood City. According to the occurrence record, this population was extirpated by construction of a church (CDFW 2017). However, the habitat polygon is mapped about 0.2 mile south of the church, and habitat appears to be extant at the mapped location. Two gas transmission lines run directly through west side of the occurrence.

- EO 20: Located at Inspiration Point, in San Francisco and listed as “presumed extant” in CNDDDB; native plants appear to have died out, and attempts to re-establish the population by translocating seed into the site do not appear to have been successful.
- EO 21: Located in Hillsborough Heights Estates, last observed in 1987; habitat at this location removed by urban development between 2002 and 2012.
- EO 22: Located along the north side of Crystal Springs Road in San Mateo County; over 300 feet from nearest electric and gas distribution facilities.
- EO 23: Located near Alpine Lake in Marin County; over 1,400 feet from nearest electric distribution facilities.
- EO 25: Located in Mount Burdell Open Space; over 700 feet from nearest electric distribution facilities.
- EO 26: Located in Mount Burdell Open Space; over 3,700 feet from nearest electric distribution facilities.
- EO 28: Located south of Nicasio Reservoir; over 700 feet from nearest electric transmission facilities.
- EO 29: Located at Stulsaft Park in Redwood City; over 150 feet from nearest electric distribution facility, located within residential parcels.
- EO 30: Located 0.5 mile south-southeast of Crystal Springs Dam in San Mateo County. An electric distribution line runs along the east edge of the occurrence, with one pole located within the mapped polygon. Another pole is located within 100 feet of the occurrence. , the number of plants has varied from a high of 2,486 in 2000 to a low of 160 in 2001.
- EO 31: Located near Hillcrest Detention Home in San Mateo; over 300 feet from nearest electric distribution facility.
- EO 32: Located in Lucas Valley, Marin County; over 300 feet to nearest electric distribution facility.
- Unreported Occurrence: Woodside occurrence in San Mateo County. Covered Activities could result in direct impacts if additional maintenance or repair is needed on the gas pipeline in this area, although additional improvements are not anticipated given recent maintenance work here. The number of plants observed was between 10,000 and 15,000.

Burke's Goldfields

There are 29 documented occurrences of Burke's goldfields in the study area, 25 of which are considered to be extant (CDFW 2017). 12 occurrences are in the action area.

The occurrences within the action area are as follows:

- EO 4: At Windsor, electric distribution lines cross three map polygons, with four poles located within polygons (surveyed in 2013 and tagged as Map Book zone), and a gas transmission pipeline crosses one polygon. Plant numbers in each of the six mapped polygons have varied from hundreds to thousands of plants; in 1989, over 150,000 plants were observed in a single polygon. Most of the direct impacts on individuals would be in one polygon as a result of maintenance or replacement of a gas transmission line.
- EO 7: At the Sonoma County Airport, four of 24 mapped polygons less than 100 feet from an electric distribution line located at roadside (surveyed in 2013 and tagged as Map Book zone).

- EO 13: West of Santa Rosa, along Abramson Road, electric distribution lines border two polygons, one pole is located in map polygon, and three poles are within 100 feet of polygon (surveyed in 2013 and tagged as Map Book zone). Population numbers have been decreasing; there are no recorded observations of the plants here since 1992, when 1,000 to 5,000 plants were observed. A single electric distribution pole at this occurrence is located adjacent to potential habitat, although no Burke's goldfields were observed there during a survey in 2011.
- EO 15: Northeast of Sebastopol, on north side of Occidental Road, electric distribution lines border two map polygons; one pole is located in polygon, other poles within 100 feet. Hundreds of plants were present in 1986 and 1988. Most of the occurrence along Occidental Road has been converted to agriculture, although potential habitat is still present. A single electric distribution pole at this occurrence is located adjacent to potential habitat, although no Burke's goldfields were observed there during a survey in 2011.
- EO 17: North-northeast of Sebastopol, at the intersection of Hall Road and Piezzi Road; less than 100 feet from an electric distribution line located at roadside (surveyed in 2011).
- EO 19: Northwest of Santa Rosa near Piner Road, one polygon is crossed by an electric distribution line (one pole) and a gas transmission line, another polygon is crossed by an electric distribution line (one pole). Much of the habitat has been converted to urban development, and population numbers have been decreasing from a high of 40,000 in 1985 to 3,500 to 5,000 in 2002. Most of the direct impacts on individuals would be in one polygon as a result of maintenance or replacement of a gas transmission line.
- EO 21: West of Santa Rosa, on north side of Piner Road; less than 100 feet from an electric distribution line located at roadside (surveyed in 2011).
- EO 23: West of Santa Rosa, near Wood Road, an electric distribution line crosses one polygon (one pole), four poles are within 100 feet of polygons, and a gas distribution pipeline is less than 100 feet from a polygon (surveyed in 2013 and tagged as Map Book zone). Four mapped polygons are present, each with hundreds to thousands of plants. A single electric distribution pole at this occurrence is located in potential habitat
- EO 24: Northwest of Santa Rosa, along Fulton Road; less than 100 feet from an electric distribution line located at roadside, poles not in habitat but within 50 feet (surveyed in 2011).
- EO 25: At the Alton Road Vernal Pool Preserve; less than 100 feet from an electric distribution line located at roadside (surveyed in 2013 and tagged as Map Book zone).
- EO 27: Northwest of Santa Rosa along Piner Road, at the north polygon the electric and gas distribution lines located at roadside and within 20 feet of habitat (surveyed in 2011).
- EO 28: West of Santa Rosa, at the intersection of Fulton Road and Hall Road, an electric transmission line crosses a map polygon, with one pole in polygon. : Population numbers have varied, with 500 to 1,000 plants observed between 1991 and 1993. A single electric transmission pole at this occurrence is located in potential habitat, which could result in direct impacts on an estimated two plants.

Contra Costa Goldfields

Contra Costa goldfields is restricted to the North Coast, the southern portion of the Sacramento Valley, San Francisco Bay Area, and South Coast regions. This range includes portions of Alameda, Contra Costa, Napa, Santa Clara, and Solano Counties. 8 occurrences are extirpated. There are 10 extant occurrences of Contra Costa goldfields in the action area.

Extirpated occurrences:

- EO 2: North of Napa, along the east side of the Silverado Trail, last seen in 1960 and extirpated by habitat conversion; electric distribution and transmission facilities in this area at roadside or in vineyards and not in potential habitat.
- EO 8: Antioch, last seen in 1895; facilities in this locale in developed areas, not in potential habitat.
- EO 10: Walnut Creek, last seen in 1884; facilities in this locale in developed areas, not in potential habitat.
- EO 11: Concord, last seen in 1946; facilities in this locale in developed areas, not in potential habitat.
- EO 13: Newark, last seen in 1895; facilities in this locale in developed areas, not in potential habitat.
- EO 14: San Jose, last seen in 1958; facilities in this locale in developed areas, not in potential habitat.
- EO 36: Vacaville (Little Oak Ranch), last seen in 1918; facilities in this locale are in developed areas, not in potential habitat.
- EO 37: Hayward, at west end of Depot Road, last seen in 1959; facilities in this locale in developed areas, not in potential habitat.

Six occurrences are within 100 feet of PG&E facilities:

- EO 5: 2 miles northeast of Vanden, last seen in 1974; possibly extirpated, but potential habitat remains at this location, less than 100 feet from nearest electric distribution facilities.
- EO 7: Fairfield, west of Travis AFB; less than 100 feet from nearest electric transmission and electric and gas distribution facilities (surveyed in 2013 and tagged portions as Map Book zone).
- EO 28: Northeast of Fairfield, south of Cement Hill; gas distribution facilities at roadside but less than 100 feet (surveyed in 2013 and tagged as Map Book zone).
- EO 29: Fremont, near former Sky Sailing Airport: electric transmission pole less than 100 feet from mapped polygon but located in a paved parking lot.
- EO 33: Cordelia; electric distribution facilities span occurrence, nearest poles possibly less than 100 feet (surveyed in 2013 and tagged as Map Book zone).
- EO 39: East of Petaluma, west of Stage Gulch Road; electric distribution facilities span occurrence, with one pole located within 100 feet (surveyed in 2013).

At four occurrences, facilities are present within occupied habitat.

- EO 1: South of Napa, north of Soscol Creek, a gas transmission pipeline crosses west edge of mapped polygon, and an electric distribution line (three poles) is located within 100 feet of the west edge of the polygon (surveyed in 2013 and tagged as Map Book zone). Population numbers have varied from 0 in 1990, a low rainfall year, to more than 18,000 in 1995.
- EO 3: West of Suisun City, along Cordelia Road, habitat altered by commercial development, electric and gas transmission lines cross occurrence, towers and poles in and within 100 feet of occurrence (surveyed in 2013 and tagged portions as Map Book zone).

Population numbers varied from 1,500 to 6,500 in the 1990s, and 10,000 plants were observed in the south half of the occurrence in 2002.

- EO 20: South of Travis Air Force Base, along Scally Road, an electric transmission line crosses occurrence, with one tower in occurrence, two towers less than 100 feet from occurrence. This occurrence consists of one large polygon and 10 smaller polygons, with an estimated 18,000,000 individuals observed in 2004.
- EO 24: Northwest of Travis Air Force Base, a gas distribution line crosses the occurrence, electric distribution line less than 100 feet from occurrence. population numbers have varied from 250,000 in 1995 to 10,000 in 1999.

Contra Costa Goldfields Critical Habitat

There are a total of 14,730 acres of designated critical habitat for Contra Costa goldfields. Within the study area there are approximately 12,093 acres of designated critical habitat, 1,138 acres of which are within the action area. Annually, Covered Activities would permanently affect no more than 0.1 acre (a 66-ft. X 66-ft. area) of critical habitat.

Sebastopol Meadowfoam

The range of Sebastopol meadowfoam is restricted to the southern portion of the outer North Coast Ranges, including portions of Napa and Sonoma Counties. There are 38 extant occurrences of Sebastopol meadowfoam in the study area, 11 of which are located close to PG&E facilities (California Department of Fish and Wildlife 2015). Four occurrences were recently added to the CNDDB, but are more than 250 feet from existing PG&E ROW and facilities.

The following nine occurrences have habitat within 100 feet of PG&E facilities:

- EO 12: Santa Rosa, along Horn Avenue, electric distribution line is present at roadside, four poles are within 100 feet of map polygon.
- EO 15: At the Desmond Mitigation Bank, west of Llano Road; electric distribution line runs along east side of road, with one pole on the west side of the road within 100 feet of the map polygon (surveyed in 2013 and tagged as Map Book zone).
- EO 21: At the Alton Road Vernal Pool Preserve, an electric distribution line is present at roadside, with 5 poles within 100 feet of the map polygon (surveyed in 2013 and tagged as Map Book zone).
- EO 22: Santa Rosa, between Hall Road and Occidental Road, electric distribution and transmission lines are within 100 feet of three of 36 polygons, with three poles within less than 100 feet.
- EO 28: Northwest of Santa Rosa, near Wood Road, an electric distribution line along Woolsey Road has one pole less than 100 feet from map polygon.
- EO 34: South of Santa Rosa, east of Walker Avenue, electric distribution lines are adjacent to or spanning the occurrence, with five poles within 100 feet of map polygons.
- EO 43: Southwest of Santa Rosa, north of Wilfred Avenue, electric and gas distribution lines are less than 100 feet from map polygon.
- EO 53: Southeast of Calistoga, and the intersection of Heintz Way and Highway 29, an electric distribution line is adjacent to the occurrence with one pole within 50 feet, and a gas transmission pipeline is about 100 feet from the habitat (surveyed in 2013 and tagged as Map Book zone).

At two occurrences, facilities are present within occupied habitat:

- EO 1: This large occurrence, which includes former EO5, is west of Stony Point Road, southeast of Sebastopol, along Todd Road. Electric distribution lines cross or are adjacent to 11 of 34 polygons. One pole is located within a polygon, and 12 poles are within 100 feet of polygons (surveyed in 2013 and tagged as Map Book zone). Southeast of Sebastopol, west of Stony Point Road, electric distribution lines cross or are adjacent to 14 of 78 polygons.
- EO 48: South of Sebastopol, east of the intersection of Canfield Road and Schaeffer Road, an electric distribution line crosses the occurrence, with one pole located in the map polygon (surveyed in 2013 and tagged as Map Book zone).

Antioch Dunes Evening Primrose

There are nine occurrences of Antioch Dunes evening primrose that are presumed extant, eight of which occur in the study area (CDFW 2017). Four of these occurrences, including two in the study area, are experimental populations established through transplantation.

PG&E facilities intersect with one occurrence of the species:

- EO 4: At the Sardis Unit of the Antioch Dunes NWR, an electric transmission line crosses the occurrence, with one tower located within the occurrence (surveyed in 2012 and tagged as a Map Book zone).

Antioch Dunes Evening Primrose Critical Habitat

Critical habitat for Antioch Dunes evening primrose encompasses approximately 41 acres in the action area. Currently, Covered Activities do not affect critical habitat for the species on an annual basis.

White-Rayd Pentachaeta

White-rayed pentachaeta range is restricted to the Bay Area, including portions of Marin and San Mateo Counties. Only one occurrence (EO 1) in the study area is presumed to be extant (CDFW 2017). Nine other occurrences in the study area are extirpated or are based on historic, non-specific collections.

Occurrence 1 is located in the triangle-shaped area formed by I-280, Edgewood Drive, and Cañada Road, and east of the highway in Edgewood Park in San Mateo County. This occurrence was surveyed in 2013. East of the highway, transmission lines are adjacent to the occurrence, but no white-rayed pentachaeta was found within 100 feet of the transmission towers. West of the highway, no white-rayed pentachaeta was observed within 100 feet of the gas transmission pipeline.

However, a large stand of white-rayed pentachaeta was observed at the location of the electric distribution line. Two wood poles are located within 10 feet of the plants, and the line spans the stand.

The population at Occurrence 1 fluctuates in size annually, but millions of plants have been observed in multiple years between 1982 and 2000 (CDFW 2017).

Metcalf Canyon Jewelflower

The range of the Metcalf Canyon jewelflower is restricted to the southeastern portion of the Bay Area, in Santa Clara County. Twelve occurrences of Metcalf Canyon jewelflower have been reported in the study area: 11 of these occurrences are presumed extant and one is extirpated (CDFW 2017). Two of occurrences are within the action area.

- EO 2: In Metcalf Canyon, three of twelve map polygons are crossed by electric distribution and transmission lines, with four towers and one pole located within map polygons and four more towers within 100 feet of polygons; a gas transmission line crosses one polygon. Thousands of plants were reported in 1986 and 1991. No more recent population counts have been reported.
- EO 15: Located between Highway 101 and Silver Creek Road, electric transmission lines cross one of four polygons, with two towers located in the polygon; a gas transmission line is within 100 feet of two polygons. Population numbers have fluctuated between a high of 75,000 in 1998 and a low of 0 in 1999. Recently reported population numbers include 17,395 in 2007 and 120 in 2013.

Effects of the Action

Caps on Habitat Loss

The number of O&M activities conducted each year varies significantly based on many factors, including the reliability and age of the facility, regulatory requirements, local demand, permit or license requirements, and available budgets. To ensure that effects on Covered Species are not disproportionately large in any 10-year period and that PG&E does not exhaust its aggregated take authorization too quickly, PG&E will not exceed 33.3 percent of its take authorization for a 10-year period for California tiger salamander (both the Central California and Sonoma County DPSs) and California red-legged frog unless mitigation is provided in advance of effects. For all other species, take would not exceed 50 percent of the take authorization in a 15-year period unless mitigation is provided in advance of effects. The total take authorization requested represents a cap that cannot be exceeded under the incidental take permits. Adverse effects and amount of take is generally expressed in acres of habitat for most species.

Effects Associated with Mitigation

Habitat acquisition and other mitigation efforts would benefit Covered Species; however, during implementation of the conservation strategy, some adverse effects could result. For example, standard maintenance and monitoring of mitigation lands (e.g., fencing, surveying, conducting biological surveys, and conducting habitat enhancements) could result in some minor adverse effects that flush or disturb species; individuals of several species could be inadvertently injured or killed. These potential effects are generally described below.

Covered Wildlife

During the maintenance of vernal pools, wetlands, riparian habitats, and grasslands, individual covered wildlife species could be harmed or harassed. The magnitude of these potential effects would depend on the size and type of activity, its proximity to individuals or a population, the life stage of the species, and duration of the effects on habitat characteristics. Management plans for

mitigation efforts would maximize beneficial effects and minimize adverse effects through the incorporation of AMMs for Covered Species.

Covered Plants

In the course of implementing conservation measures for covered plants, direct and indirect effects could result. The magnitude of potential effects would depend on the size and type of activity, proximity of individuals or a population to the Covered Activity, the life stage of the species, and the short- and long-term effects on habitat characteristics. However, specific management plans for plant mitigation efforts would maximize beneficial effects and minimize adverse effects.

Effects Overview

HCP Table 4-3 summarizes the calculated acreage of covered wildlife species' habitat that could be affected by the proposed Covered Activities and for which PG&E is requesting take authorization. These effects represent a worst-case scenario, because they are assumed to result from PG&E activities in the absence of environmental review and screening, and in the absence of AMMs, BMPs, or other measures to avoid and minimize effects. In addition to PG&E's current environmental review and screening practices, PG&E would implement measures to avoid and minimize effects on Covered Species. These measures include field protocols (FPs), Hot Zone AMMs, species-specific AMMs, and covered plant AMMs, as described in the *Conservation Measures*.

Annual effects represent an average, with some years being higher and other years being lower. Thirty-year effects represent a ceiling of effects (i.e., a cap) that cannot be exceeded without a major amendment to the permit. Table 4-4 in the HCP presents the effects on designated critical habitat. HCP Table 4-5 in the HCP lists the individual activities and their likelihood to impact Covered Species' habitat.

This effects analysis uses the following conservative assumptions to present potential effects from Covered Activities: (1) modeled habitat is assumed to be occupied (even though the species may not occupy some areas where modeled habitat has been developed); (2) disturbance calculations used for various Covered Activities are conservative and, therefore, overestimate the amount of ground disturbance that would result from Covered Activities; and (3) larger-scale Covered Activities would be infrequent and, thus, calculations may overestimate total annual amount of habitat loss.

The following sections describe the effects of implementing the Covered Activities on each of the covered wildlife species and their respective habitats.

California Freshwater Shrimp

Covered Activities conducted within occupied stream channels or on the channel banks may result in death or injury of California freshwater shrimp. Upgrading and replacing electric distribution poles and electric-system vegetation management activities on or near stream banks occupied by California freshwater shrimp could collapse overhanging banks if vehicles, equipment, and personnel are working too close to the stream bank; adults and larvae could be killed or injured, or water quality could be temporarily impaired.

However, ground-disturbing activities adjacent to streams that result in sediments entering streams occupied by California freshwater shrimp may reduce water quality and result in reduced

survivorship and reproductive success for adults and larvae. Also, chemicals, fuels, and lubricants that might be used during Covered Activities could accidentally enter occupied streams and impact water quality. Death, reduced survivorship, and reduced reproductive success could result from these impact mechanisms.

Covered Activities may permanently remove habitat for California freshwater shrimp. The replacement and/or construction of facilities, and construction of access roads near and across occupied drainages are aspects of Covered Activities that may result in this effect. Electric transmission and distribution lines cross California freshwater shrimp habitat. Vegetation management or removal beneath and adjacent to these lines could impact California freshwater shrimp habitat by removing overhanging vegetation and potentially destabilizing banks by undercutting them. Resulting losses are all considered permanent effects. Temporary loss of habitat could also result from the pruning of overhanging vegetation.

Gas transmission and distribution line repair would likely be done with microtunneling and is not expected to affect the species.

O&M and minor new construction activities will temporarily disturb 0.04 acre of habitat annually and no more than 2 acres over the 30-year permit term. These disturbances will include ground disturbance activities that result in the transport of sediment into the channel, a frac-out that results in degraded water quality, or removal of riparian habitat by either gas or electric vegetation management that temporarily alters the suitability of habitat.

Covered Activities are anticipated to permanently remove 0.01 acre of California freshwater shrimp habitat annually, and no more than 0.3-acre over the 30-year term .

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Conservancy Fairy Shrimp

Take of Conservancy fairy shrimp could occur at any life history stage. General mechanisms for death or injury are grading and excavation activities and general vehicle movement, which could crush shrimp eggs in vernal pools. Shrimp eggs could be buried by the inadvertent deposition of soil into or near vernal pools or swales during ground-disturbing activities, such as augering or trenching, thus possibly preventing eggs from hatching the following wet season(s). Adult shrimp could also be buried and water quality could be altered by sediment transport into vernal pools or swales during

ground disturbing activities such that they die or have reduced survivorship or reproductive output. Dust and chemicals inadvertently released (e.g., fuel, lubricants, degreasers) during construction and subsequently deposited in vernal pools near or adjacent to work areas could impact water quality and result in mortality, injury, or reduced reproductive success.

Covered Activities associated with gas transmission and electric transmission and distribution could impact Conservancy fairy shrimp in the vicinity of Travis Air Force Base and Jepson Prairie. In addition, activities associated with electric distribution and transmission could impact modeled habitat on the edge of the Delta.

Covered Activities that have the greatest potential for permanent effects on habitat for Conservancy fairy shrimp generally include trenching and excavations to replace a gas transmission pipeline, augering for electric pole removals/replacements, and blading and maintenance of access roads. These activities could result in the fill of Conservancy fairy shrimp habitat or changes to the soil profile (i.e., breaking through restrictive soil layers) or in the topography such that the hydrology of the habitat is changed and no longer pools to sufficient depths or durations to support vernal pool invertebrates.

The inadvertent introduction of an invasive plant species by construction equipment, personnel, or contaminated seed or straw is an indirect impact that could have serious implications for vernal pool invertebrate species. Invasive plants can displace native vernal pool/swale plant species by outcompeting them for space, sun, and water. Construction activities near vernal pools may indirectly impact vernal pool invertebrates by altering the hydrology that supports this habitat (e.g., altering surface runoff patterns, breaking through hardpan or claypan restrictive layers), increasing human intrusion, introducing invasive species (discussed above), and causing pollution (Service and NOAA 2016).

Covered Activities are anticipated to permanently remove 0.01-acre of Conservancy fairy shrimp habitat in the Plan Area annually and no more than 0.5-acre over 30 years.

Covered Activities will temporarily impact 0.04-acre of Conservancy fairy shrimp habitat annually and no more than 2 acres over 30 years. Covered Activities that involve trenching or excavation and temporarily disturb Conservancy fairy shrimp habitat are those that would impact a portion of the wetland habitat (i.e., swale) and would not alter the hydrology to the extent that the habitat would be permanently affected. Some temporary effects could become permanent if habitat conditions cannot be completely restored.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed

project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Conservancy Fairy Shrimp Critical Habitat

It is anticipated that 0.01-acre of critical habitat would be affected by Covered Activities annually and 0.3-acre over 30 years.

Longhorn Fairy Shrimp

The mechanisms for permanent and temporary direct effects on longhorn fairy shrimp are the same as those described above for Conservancy fairy shrimp. Covered Activities associated with a single electric distribution line and electric transmission in a section of modeled habitat south of North Vasco Road could impact longhorn fairy shrimp.

The mechanisms for indirect effects on longhorn fairy shrimp are the same as those described above for Conservancy fairy shrimp.

O&M and minor new construction activities would temporarily impact 0.02-acre of longhorn fairy shrimp habitat annually and no more than 1 acre over 30 years. The small area of habitat potentially affected, existing practices, and the implementation of field protocols and AMMs make it unlikely that effects to habitat will result in more than short-term or localized effects on the species.

O&M and minor new construction are anticipated to permanently remove 0.002-acre of longhorn fairy shrimp habitat in the Plan Area annually, and no more than 0.1-acre over 30 years.

PG&E has also committed to provide habitat conservation to offset adverse effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Longhorn Fairy Shrimp Critical Habitat

PG&E's permanent and temporary effects are anticipated to be the same as above (0.002 acre of permanent impact and 0.02 acre of temporary impact) and entirely within critical habitat because of the limited range and distribution of this species. Considering the small areas potentially affected and implementation of practices to avoid and minimize effects on individuals and habitat, effects on critical habitat are likely to be negligible.

Vernal Pool Fairy Shrimp

The mechanisms for permanent and temporary direct effects on vernal pool fairy shrimp are the same as those described above for Conservancy fairy shrimp. Covered Activities could impact habitat for vernal pool fairy shrimp in Solano, Contra Costa, and Alameda Counties. This habitat would most likely be affected by gas and electric transmission and electric distribution activities. The modeled habitat in the remainder of the Plan Area is scattered across the study area and could experience effects from gas and electric Covered Activities in vernal swales or pools.

The mechanisms for indirect effects on vernal pool fairy shrimp are the same as those described above for Conservancy fairy shrimp.

Covered Activities will temporarily impact 0.5 acre of vernal pool fairy shrimp habitat annually and no more than 25 acres over 30 years. These are likely to be effects on the watershed and swales supporting vernal pool habitat and are not expected to be on vernal pools themselves.

Covered Activities are anticipated to permanently remove 0.1-acre of vernal pool fairy shrimp habitat in the Plan Area annually and no more than 5 acres over 30 years.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Vernal Pool Fairy Shrimp Critical Habitat

It is anticipated that Covered Activities will permanently impact 0.02-acre annually and would temporarily affect 0.02 acre of critical habitat annually. It is estimated that Covered Activities will permanently affect 1 acre and temporarily affect up to 6 acres of critical habitat over 30 years in multiple critical habitat units.

Vernal Pool Tadpole Shrimp

The mechanisms for direct effects on vernal pool tadpole shrimp are the same as those described above for Conservancy fairy shrimp. Modeled habitat for vernal pool tadpole shrimp in the study area occurs primarily in Solano County. There are also smaller areas of habitat located in eastern Contra Costa and Alameda Counties, and in Napa and Sonoma Counties.

Covered Activities could affect habitat for vernal pool tadpole shrimp. Gas and electric transmission and electric distribution Covered Activities would be most likely to affect habitat in Solano, Contra Costa, and Alameda Counties.

The mechanisms for indirect effects on vernal pool tadpole shrimp are the same as those described above for Conservancy fairy shrimp.

Covered Activities would temporarily disturb 0.5 acre of vernal pool tadpole shrimp habitat annually and no more than 25 acres over 30 years.

Covered Activities are anticipated to permanently remove 0.1 acre of vernal pool tadpole shrimp habitat in the Plan Area annually and no more than 5 acres over 30 years

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Vernal Pool Tadpole Shrimp Critical Habitat

It is anticipated that Covered Activities will permanently remove 0.01-acre and temporarily affect 0.01 acre of critical habitat annually. It is estimated that Covered Activities will permanently remove up to 1 acre and temporarily affect up to 3 acres of critical habitat over 30 years. These effects would be in multiple critical habitat units.

Delta Green Ground Beetle

The impact mechanisms described above for Conservancy fairy shrimp also apply to delta green ground beetle. In addition, ground-disturbing activities could result in death of beetle larvae, pupae, or adults if these activities are implemented in or adjacent to vernal pools. Adult delta green ground beetles, larvae, and pupae are particularly vulnerable when taking refuge in soil crevices of dry pools or adjacent uplands because they could be crushed by vehicles, equipment, or excavation activities. Covered Activities associated with gas transmission and electric distribution and transmission could impact Delta green ground beetle habitat in the vicinity of Jepson Prairie.

The mechanisms for indirect effects on delta green ground beetle are the same as those described above for Conservancy fairy shrimp.

Covered Activities are anticipated to permanently remove 0.02-acre of Delta green ground beetle habitat annually in the Plan Area and no more than 1 acre over 30 years.

Covered Activities are expected to temporarily affect 0.1-acre of Delta green ground beetle habitat annually and no more than 5 acres over 30 years.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Delta Green Ground Beetle Critical Habitat

The initial 1980 designation of critical habitat for delta green ground beetle identified “vernal pools with their surrounding vegetation, and the land areas which surround and drain into these pools” as the known constituent elements for delta green ground beetle (45 FR 52807). Critical habitat designated for the Delta green ground beetle encompasses 32 acres in the action area. It is anticipated that Covered Activities will permanently remove 0.01-acre and temporarily disturb 0.04-acre of critical habitat annually, with a total of 0.30-acre of permanent loss and 1.3 acres of temporary disturbance over 30 years. With approximately 969 acres of critical habitat designated for this species, these loss and disturbance amounts represent an insignificant and discountable effect on designated critical habitat for this species.

Bay Checkerspot Butterfly

To account for the reintroduction at Edgewood Park, and potential future reintroductions or recolonizations in other portions of San Mateo County, effects of Covered Activity are given for both counties. Covered Activities could result in death or injury of Bay checkerspot butterflies. Grading, trenching, or excavation activities could crush or bury Bay checkerspot butterfly eggs, larvae, or pupae, but such effects are generally unlikely because of BMPs, such as field protocols. Vehicles and equipment traveling to and from work areas also could potentially harm butterfly eggs, larvae or pupae, and adults. During construction activities, moving vehicles could take adults while they are nectaring, resting, basking, or roosting, particularly during cool times of the day when low temperatures make flight metabolically impossible. Similarly, increased dust in a work area during the flight period could cause butterflies to avoid the area or could result in the inability of host or nectar plants to provide food resources for butterflies during critical periods.

The inadvertent introduction of invasive plant species could indirectly affect the Bay checkerspot butterfly by displacing host plants and degrading habitat quality over time. Such an outcome could

result from leaving ground bare, or from transport of seeds by construction equipment or personnel, or from contaminated seed or straw. Invasive plants could displace native host or nectar plant species by outcompeting them for space, sun, and water. Permanent loss of butterfly habitat would result if habitat is replaced by facility infrastructure (e.g., gravel roads, foundations, poles). Ground-disturbing activities, such as construction of new access roads or maintenance of existing roads, could permanently remove habitat.

Covered Activities would temporarily disturb 1.2 acres annually and no more than 62 acres over 30 years. Temporary effects include ground disturbance and excavation from Covered Activities in non-serpentine grassland areas that recover within 1 year.

Covered Activities will permanently remove 0.10 acre of Bay checkerspot butterfly habitat annually in the Plan Area, and no more than 4 acres over 30 years. Covered Activities most likely to permanently impact habitat for Bay checkerspot butterfly generally include upgrading and replacement of gas and electric facilities and maintenance of access roads.

PG&E has also committed to provide habitat conservation to offset affects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Bay Checkerspot Butterfly Critical Habitat

There are 1731 acres of designated critical habitat for this species in the action area; all habitat for this species within the action area is designated critical habitat. The Service anticipates 0.10-acre of permanent loss and 1.24-acre of temporary habitat disturbance annually, for a total of 4 acres of permanent habitat loss and 62 acres of temporary disturbance to designated critical habitat for this species. This amount of permanent loss represents a loss of less than 0.05 percent of the total designated critical habitat for this species.

Callippe Silverspot Butterfly

The mechanisms for permanent and temporary direct effects on Callippe silverspot are the same as those described above for Bay checkerspot butterfly. Ground-disturbing activities could permanently and temporarily remove habitat. Johnny jump-up (*Viola pedunculata*)—the host plant for Callippe butterfly—is a difficult plant species to restore to pre-disturbance conditions and may not resprout or recolonize in excavated or heavily compacted work areas; it is therefore likely that some temporary effects could become permanent.

Covered Activities will temporarily disturb 1.1 acres of Callippe silverspot butterfly habitat annually and no more than 55 acres over 30 years. Effects should be proportionate to modeled habitat by county, with most effects in Contra Costa, Solano, and Alameda Counties. Less than 5 percent of the temporary effects are expected to occur on San Bruno Mountain in San Francisco County.

Covered Activities will permanently remove 0.6-acre of Callippe silverspot butterfly habitat annually in the Plan Area and no more than 30 acres over 30 years. Effects should be proportionate to modeled habitat by county, with most effects in Contra Costa, Solano, and Alameda Counties. Less than 5 percent of the total effects are expected to occur on San Bruno Mountain in San Mateo County.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Lange's Metalmark Butterfly

The mechanisms for permanent and temporary direct effects on Lange's metalmark are generally the same as those described above for Bay checkerspot butterfly. Ground-disturbing activities may permanently remove the butterfly's host plant as well as temporarily impact habitat and reduce connectivity across the landscape in this important habitat area. PG&E's crews are accompanied by a biologist when conducting work on PG&E's parcels to avoid and minimize effects on this and other species.

Future work on electric towers is most likely to impact this species; work performed on an existing gas pipeline (described in the *Environmental Baseline*) is less likely to affect the species because the pipeline follows an existing road and fence. Covered Activities that may impact habitat onsite include upgrades and maintenance to the electric system and/or its constituent equipment and work on the tower footings. Activities in or near Lange's metalmark butterfly habitat are likely to impact the species' habitat. Because this area is relatively undisturbed, most effects would result from electric transmission tower footing repair or future tower replacement, tower extensions or relocation, or electric reconductoring. Gas pipeline modernization activities are unlikely to take place within habitat for Lange's metalmark butterfly.

Covered Activities will temporarily disturb 0.02-acre annually and no more than 1 acre over 30 years.

Covered Activities will permanently remove approximately 0.01-acre of Lange's metalmark butterfly habitat and no more than 0.3 acre over 30 years.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Mission Blue Butterfly

Mechanisms for permanent and temporary direct effects on Mission blue butterfly are the same as those described above for Bay checkerspot butterfly. Ground-disturbing Covered Activities could impact modeled habitat for mission blue butterfly. PG&E's crews are typically accompanied by a biologist when conducting work on San Bruno Mountain to avoid and minimize effects on this and other species. The habitat in Marin Headlands encompasses one electric transmission line and a few electric and gas distribution lines.

Covered Activities will temporarily disturb 0.4-acre of Mission blue butterfly habitat annually and no more than 20 acres over 30 years.

Covered Activities will permanently remove 0.04-acre of Mission blue butterfly habitat annually and no more than 2 acres over 30 years.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

San Bruno Elfin Butterfly

The mechanisms for permanent and temporary direct effects on San Bruno elfin butterfly are the same as those described above for Bay checkerspot butterfly. Modeled habitat for San Bruno elfin

butterfly in the study area extends along the coast just south of Bodega Bay, in the Coast Ranges just east of Bolinas, in Contra Costa County near Mount Diablo State Park, San Bruno Mountain, Milagra Ridge County Park, and an area stretching from McNee Ranch State Park to San Pedro Valley County Park in San Mateo County. The most contiguous, well-connected habitat patches are those in San Mateo County on San Bruno Mountain, in Milagra Ridge County Park, and in the area of McNee Ranch State Park and San Pedro Valley County Park. Although urbanization surrounds these three sites, they remain undeveloped.

Covered Activities will temporarily disturb 0.4-acre annually and no more than 20 acres over 30 years.

PG&E anticipates that Covered Activities could permanently remove 0.04-acre of San Bruno elfin butterfly habitat annually in the Plan Area, and no more than 2 acres over 30 years.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

California Tiger Salamander Central DPS

In addition to the analytical assumptions described in the introduction to HCP Section 4.2, this effects analysis is further guided by the results of research indicating that California tiger salamander population density declines with distance from breeding habitat. Accordingly, California tiger salamander population density is an important factor in the effects analysis. Covered Activities in areas with higher population densities (such as breeding habitat and uplands within 1,600 feet of breeding habitat) have greater potential to encounter individuals. Based on dispersal distances, the probability of killing or injuring dispersing or aestivating individuals of the species drops substantially the farther away the Covered Activity is from the breeding habitat because individuals are less likely to be present at greater distances. Information regarding population densities away from breeding habitat is reflected in fairly recent approaches for assigning different levels of impact (and compensatory mitigation) based on the distance from breeding habitat. For instance, one approach for compensatory mitigation for the distinct population segment of the Sonoma County California tiger salamander is based on proximity to breeding habitat and established the following ranges, reflecting the decreasing potential for impact with greater distance: 0 to 499 feet, 500 to 2,200 feet, and 2,201 feet to 1.3 miles (Service 2005b).

The potential for the Covered Activities to take California tiger salamander is influenced by factors such as the size and duration of activities, timing of activities, and the distance from breeding ponds. Other factors, such as the amount of ground disturbance and density of burrows, also play a role. Smaller-scale Covered Activities, such as routine work around an individual pole, lattice tower, or gas pipeline valve, represent the majority of the Covered Activities that may affect the Central California tiger salamander. These typically would disturb only small areas, take place over short time frames, and involve few personnel and vehicles.

Covered Activities are not expected to frequently take place close to breeding habitat, reducing the likelihood taking larvae of this species or destroying breeding habitat. Larger-scale Covered Activities involving more heavy equipment, personnel, and ground disturbance, pose greater potential for take of California tiger salamanders.

Seasonal timing of work will strongly influence the potential to affect the species. In accordance with PG&E's environmental planning and screening practices, larger-scale Covered Activities will be scheduled to minimize work during the wet season, when breeding adult California tiger salamanders are moving to ponds or moving into the uplands after the breeding season. Timing work to occur during the dry season is expected to avoid effects on breeding and dispersing individuals. Smaller-scale activities are conducted year-round but are typically conducted from roads and during the day.

Within the Plan Area, Covered Activities will affect both upland and breeding areas. In upland areas, it is anticipated that the potential to encounter and affect individual salamanders decreases the farther the Covered Activity is from breeding habitat. Covered Activities such as grading, trenching, or excavation in uplands could result in direct mortality or injury of adults (e.g., those occupying burrows or soil crevices), particularly when these activities are implemented close to wetland habitats such as vernal pools and stock ponds. In an attempt to minimize direct mortality in an area that will be trenched, there may be instances where PG&E would excavate burrows, resulting in harassment, and possibly harm of individuals through injury or mortality. California tiger salamanders found in burrows will be removed to the closest suitable habitat. Vehicles and equipment traveling to and from work areas within upland habitat may take adults when they are active on the surface, generally at night when humidity is high or in periods of rainfall between fall and spring when salamanders may be actively dispersing. The movement of vehicles and equipment may crush or injure salamanders in occupied burrows. Except in emergency conditions, crews perform Covered Activities during daytime hours, so the potential for death or injury of dispersing salamanders is low; during storm-related emergency construction crews could be active at night and could take adult salamanders that happen to be dispersing through the work area.

Covered Activities may rarely need to be implemented in breeding areas where there is the potential for death or injury of eggs, larvae, or adults.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

California Tiger Salamander Central DPS Critical Habitat

The action area encompasses 5,438 acres of designated critical habitat for the Central California tiger salamander. Covered Activities are anticipated to permanently remove approximately 0.8 acre of critical habitat and temporarily disturb approximately 10 acres annually, for a maximum permanent loss of 39 acres and temporary disturbance of critical habitat over 30 years. This represents approximately 0.08 percent of the designated critical habitat units effected.

California Tiger Salamander Sonoma DPS

In addition to the analytical assumptions described in the introduction to Section 4.2, this analysis also considers recent research that indicates the California tiger salamander population density declines with distance from breeding habitat, as discussed for the Central California tiger salamander. Covered Activities in areas with higher population densities (such as breeding habitat and uplands within 1,600 feet of breeding habitat) have greater potential to encounter individuals. Based on dispersal distances, the probability of take of tiger salamanders drops the farther away the Covered Activity is from the breeding habitat because individuals are less likely to be present at greater distances. However, in the Santa Rosa Plain the density of wetlands to uplands is at a higher percentage than in most areas within the range of the Central California tiger salamander.

Covered Activities such as grading, trenching, or excavation in upland habitat could result in death or injury of individuals, particularly when conducted near aquatic habitat. These activities may inhibit dispersal, remove or reduce the value of foraging habitat, remove shelter habitat (e.g., burrows), or limit other life history requirements.

In an attempt to minimize direct mortality in an area that will be trenched, PG&E may excavate burrows to prevent individuals from being entombed within them. Excavation of burrows by hand will result in take through harassment, and may harm individuals by inadvertently injuring them or killing them during excavation. Individuals found in burrows would be removed to the closest habitat adjacent to the capture location. The impact mechanisms and the likelihood of resulting effects are similar to those discussed above for the Central California tiger salamander.

Permanent loss on upland dispersal habitat may result from siting new or replacement facilities in an area where none currently exist. In addition to the loss of grassland land cover, the permanent loss of small patches of upland habitat is expected to be scattered throughout the species' habitat within the action area and could involve the loss of refugia such as burrows if new or replacement facilities are not sited to avoid these microhabitat areas. The small amount of permanent effects on modeled habitat is not expected to significantly impair the life history requirements of the Sonoma California tiger salamander.

The Service anticipates that Covered Activities may permanently remove 0.3-acre Sonoma California tiger salamander habitat annually. A maximum 13 acres of Sonoma California tiger salamander habitat will be permanently lost over the 30-year permit term, while a maximum of 80 acres of

Sonoma California tiger salamander habitat will be temporarily disturbed over the same amount of time. A maximum 1 percent (0.13-acre) of total permanent effects are anticipated to take place on aquatic habitat.

Covered Activities are expected to temporarily disturb approximately 1.6 acres of Sonoma California tiger salamander habitat annually. Annual effects are expected to vary based on project need and priority, but as described above, these effects are not expected to appreciably reduce the overall habitat value for the species or significantly impair essential behavioral patterns. Because temporarily affected areas such as grasslands regenerate and are available to the species again within 12 months, the amount of temporarily disturbed habitat unavailable to the species at any point in time is not expected to ever be twice the annual disturbance. This is because effects may occur at the end of one year and the beginning of the next, and restoration and regeneration of habitat for these two years may cause the total temporary disturbance area to be larger than the annual average. Covered Activities are expected to temporarily disturb no more than 80 acres of habitat over 30 years, distributed throughout the action area. Loss of breeding habitat is expected to amount to 1 percent or less of the total permanent loss of habitat that will occur during the 30-year permit term.

NERC ROW clearing work (Activity E10d) is not expected to affect this species because there is less than 1 acre of NERC work planned in Sonoma County, all within unsuitable habitat.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

California Tiger Salamander Sonoma DPS Critical Habitat

Designated critical habitat for the Sonoma California tiger salamander encompasses 870 acres in the action area. Covered Activities are expected to permanently remove approximately 0.1-acre of critical habitat annually and 5 acres of critical habitat over 30 years, and temporarily disturb approximately 1 acre annually and 30 acres over the 30-year permit term.

California Red-Legged Frog

The potential for the Covered Activities to take a California red-legged frog is influenced by factors such as the size and duration of the activity and the proximity of the activity to aquatic habitat. The proximity of the work to breeding habitat will influence the potential to affect the species. Work may need to be conducted in riparian and wetland areas. The habitat models indicate that about 35 percent of all ROWs in the Plan Area may contain suitable upland habitat for California red-legged

frog. Covered Activities such as grading, trenching, or excavation in upland habitat could result in death or injury of adults, particularly when these activities are implemented close to wetland habitats such as riparian areas and stock ponds. There is an increased chance of encountering California red-legged frogs in the uplands around aquatic resources when the water is drying down, late in the year, or at the end of the breeding season (summer months) when juvenile frogs are dispersing to new ponds or streams in response to dryer conditions at the breeding site. Throughout the year, work in these areas is typically sited to avoid boulders, rocks, mammal burrows, and areas with large amounts of organic debris that provide refuge and shelter for frogs. Vehicles and equipment traveling to and from work areas within dispersal habitat could potentially take adults or juveniles when the species is active on the surface, generally at night when humidity is high or in periods of rainfall between fall and spring when frogs may be actively dispersing. The movement of vehicles and equipment could also crush or injure frogs. Except in emergency conditions, crews perform Covered Activities during daytime hours, so the potential for death or injury of dispersing frogs is low. A storm-related emergency would be the exception, when construction crews could be active at night and could take adult and juvenile frogs that happen to be dispersing through the work area.

Indirect effects caused by Covered Activities may include: (1) inadvertently introducing invasive plant species by means of construction equipment, personnel, or contaminated seed or straw; and (2) altering hydrology of breeding habitat.

Invasive plants could overrun riparian areas or adjacent suitable upland areas by outcompeting native plant species for space, sun, and water. Such an indirect impact could reduce the quality of the habitat for California red-legged frog or make the habitat unsuitable.

Construction activities 300 feet beyond riparian areas could indirectly affect modeled breeding habitat by altering the hydrology or reducing water quality. For example, if PG&E's restoration actions or sediment control measures fail, runoff and sediment could affect wetlands or dispersal habitat.

Covered Activities are expected to permanently remove 1 acre of modeled breeding habitat (i.e., the wetted area and the adjacent riparian areas) annually and will not exceed 42 acres over 30 years. Covered Activities are expected to permanently remove 2.1 acres of actual breeding areas (i.e., wetted area) over the 30-year period. Habitat loss resulting from Covered Activities represents less than one-half of 1 percent of all modeled breeding habitat in the action area. Covered Activities are expected to permanently remove 4 acres of modeled upland habitat annually and 177 acres of upland habitat over 30 years. Habitat loss is expected to be distributed throughout the species' range within the action area, and the amount of permanent loss is not expected to significantly impair the life history requirements of the species.

Covered Activities may temporarily disturb 8 acres of California red-legged frog modeled breeding habitat (i.e., wetted area and the adjacent riparian areas) annually. Over 30 years, of 377 acres total breeding habitat are expected temporarily disturbed. Covered Activities are anticipated to temporarily disturb 30 acres of upland habitat annually, and 1,500 acres of upland habitat over 30 years. Because temporarily affected areas regenerate and are available to the species again within 12 months, the amount of temporarily disturbed habitat unavailable to the species at any point in time is not expected to ever be twice the annual disturbance. This is because effects may occur at the end of one year and the beginning of the next, and restoration and regeneration of habitat for these two years may cause the total temporary disturbance area to be larger than the annual average.

Covered vegetation management activities related to NERC ROW clearing may effect modeled upland habitat by removing canopy above the habitat, which would alter the microclimate conditions.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

California Red-Legged Frog Critical Habitat

Critical habitat for the California red-legged frog encompasses 10,348 acres in the study area. Covered Activities are expected to permanently remove approximately 1.1 acre of critical habitat annually and 55 acres of critical habitat in the Plan Area over 30 years, while at the same time temporarily disturbing 12 acres of critical habitat annually and 584 acres of critical habitat over the 30 year permit term. This represents disturbance to 0.09 percent of the designated critical habitat.

Effects of O&M, minor new construction, vegetation management, and pipeline replacement activities on critical habitat, including its primary constituent elements, are consistent with the direct effects and indirect effects discussed above. Effects on specific critical habitat units are not expected to result within one specific unit.

Alameda Whipsnake

Direct effects include both effects on individual whipsnakes that could be encountered during implementation of Covered Activities and the permanent and temporary loss of modeled habitat. In addition to the analytical assumptions described in the introduction to HCP Section 4.2, this analysis is further guided by the results of research indicating that Alameda whipsnakes primarily use scrub and chaparral (i.e., core and perimeter core) habitat.

The potential to affect Alameda whipsnakes is greatest in core and perimeter core habitats. Movement of vehicles, removal of vegetation, or grading of roads during the day in core and perimeter core habitats could result in take of whipsnake. The potential for the Covered Activities to take Alameda whipsnake is influenced by factors such as the presence of scrub, chaparral, and rock outcrops, the duration of the activities, time of year, time of day, amount of ground disturbance, and the habitat where the Covered Activities take place.

Smaller-scale Covered Activities focus on maintenance of a specific pole, gas pipeline valve, or other discrete facility that is generally accessible from existing roads, and represent the majority of

PG&E's work. The probability of encountering individuals of the species during smaller-scale Covered Activities is low because most activities involve small areas and few personnel and vehicles, whipsnakes would likely move away from the source of disturbance, and activities would not require the removal of scrub or chaparral habitat. These activities are not typically located in core or perimeter core habitats due to the difficulty of accessing these areas and because few electric and gas distribution facilities are located in these areas. Smaller-scale activities are conducted year-round from roads and have limited effects on scrub and chaparral communities.

Larger-scale Covered Activities involve planning and coordination over months or years, and typically involve more habitat disturbance over longer durations than smaller-scale Covered Activities. As a result, there is a greater potential for larger-scale Covered Activities to adversely affect individuals of the species, but the probability that individuals would be killed or injured remains low because of the planning and coordination required to site facilities, implement permit activities, and locate work areas away from sensitive habitat. PG&E does anticipate the need to reclaim the gas transmission pipeline ROW in areas of core and perimeter core habitat that have become overgrown with chaparral or scrub vegetation by permanently removing vegetation. These overgrown areas are located in areas of the East Bay Regional Park system. Under PG&E's current utility standard, chaparral is considered incompatible vegetation and would be permanently removed if found within 10 feet of the pipeline. The extent of anticipated clearing in the core and perimeter core areas is anticipated to not exceed 34 acres, and is more likely to be less than 1.2 acres of core and 4.6 acres of perimeter core, or less than 6 acres in total over the permit term. PG&E generally schedules larger-scale Covered Activities to minimize work during the winter, when the species is inactive. Large Covered Activities would be implemented outside of winter and would affect Alameda whipsnake because some activities would take place in core or perimeter core habitats.

Covered Activities that include grading, trenching, or excavation could result in death or injury of adults, juveniles, or eggs in each of these habitat types. It is anticipated that the entire gas transmission corridor could be entirely reclaimed in areas where chaparral or scrub vegetation have overgrown the pipeline and, therefore, a maximum of 34 acres of modeled habitat would be permanently impacted early in the permit term.

Removing overstory vegetation could leave the Alameda whipsnake more susceptible to predation or it could change the microclimate within core and perimeter core habitats, especially around rock outcrops where basking and mating occur. Constructing new access roads could fragment habitat or make snakes more susceptible to death or injury.

Potential indirect effects resulting from Covered Activities may include inadvertently introducing invasive plant species by means of construction equipment, personnel, or contaminated seed or straw. Invasive plants could reduce dispersal habitat suitability by outcompeting native plant species for space, sun, and water.

Once a pipeline ROW is cleared of vegetation, temporary effects on chaparral and scrub vegetation (as described above) would result from maintaining a clear path over the pipeline ROW. The pruning of vegetation is not expected to alter habitat values in a way that would limit use of the ROW by Alameda whipsnake once the Covered Activity is complete. Most temporary effects would be on perimeter core and movement habitat. Habitat would be inaccessible for a matter of several hours or days, and whipsnakes would move back into the core habitat once equipment moves out of the area. When grassland excavation occurs in perimeter core or movement habitat, those areas are expected to regenerate and provide the same habitat value to the species again within 12 months;

therefore, the amount of temporarily disturbed habitat unavailable to the species at any point in time is not expected to ever be twice the annual estimate. This is because effects may occur at the end of one year and the beginning of the next, and restoration and regeneration of dispersal habitat for these two years may cause the total temporary disturbance area to be larger than the annual average.

Except for clearing the gas line to maintain safety and access, permanent effects on core and perimeter core habitat would be rare and consist of very small effects dispersed across the species' range. However, to reclaim the pipeline ROW, areas that have become overgrown with chaparral or scrub vegetation need to be permanently cleared to allow for inspections and ease of access.. Because most facilities in core and perimeter core habitats are near existing roads, only a small number of activities that would be implemented in core and perimeter core habitats and result in vegetation removal or earth moving activities that could affect snakes underground. The amount of permanent effects on core, perimeter core, and movement habitat is not expected to significantly impair the life history requirements of Alameda whipsnake. Permanent effects on core or perimeter core habitat may result from siting new or replacement facilities in an area where none currently exist. These could result in the loss of small patches of habitat and the loss of core and perimeter core habitat.

Covered Activities may permanently remove 0.68 acre of Alameda whipsnake core and 0.5 acres of perimeter core habitat annually within its 335,000-acre range. No more than 34 acres of core and 25 acres of perimeter core habitat will be permanently removed over the 30-year permit term. Covered Activities are expected to permanently remove 0.5 acre of movement habitat annually, and 27 acres of movement habitat over 30 years.

Covered Activities are expected to temporarily disturb 0.3 acres of core and 1.4 acres of perimeter core Alameda whipsnake habitat annually, and up to 13 acres of core and 70 acres of perimeter core habitat over 30 years. Covered Activities would also temporarily disturb 6.6 acres of Alameda whipsnake movement habitat annually, and 329 acres over 30 years.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Alameda Whipsnake Critical Habitat

Covered Activities will permanently remove 0.66 acres of critical habitat annually and temporarily disturb 3 acres of critical habitat annually. PG&E may permanently remove up to 33 acres and temporarily disturb 162 acres of critical habitat over 30 years. This represents permanent loss of

approximately 0.02 percent of designated critical habitat and a temporary disturbance of 0.11 percent of designated critical habitat.

San Francisco Garter Snake

Ground-disturbing activities (grading, trenching, or excavating) may crush or bury newborns, juveniles, and adults in upland areas and as well as snakes using adjacent aquatic areas for dispersal, basking, foraging, or sheltering.

Vehicles and equipment traveling to and from work areas also could potentially take newborn, juveniles, and adults when traveling through upland habitats while the species is using these areas for cover or dispersal. Moving vehicles can kill or injure snakes when they are active in the uplands or crush them while they seek refuge in small burrows that collapse from the weight of vehicles and equipment.

The *Conservation Measures* described in the *Description of the Action* will ensure that the Covered Activities avoid potential death or injury of individuals of the species, and avoid and minimize potential effects on habitat.

Reduction in both the quality and availability of habitat over time could cause snakes to move to other less-desirable areas with limited food or cover where they are less able to survive. Installing new infrastructure that results in the modification of aquatic habitats over time could have adverse consequences for San Francisco garter snake if habitats become unsuitable for the species through changes in vegetative cover, hydrology, or changes to water quality that impact its prey base.

The Service anticipates that Covered Activities will permanently remove 0.04 acre of core habitat and 0.04 acre of dispersal habitat for San Francisco garter snake annually in the action area, and no more than 2 acres of core habitat and 2 acres of dispersal habitat over 30 years. Covered Activities would result in incremental effects throughout San Mateo County, but not in one specific location.

Covered Activities will temporarily disturb 0.3 acre of core habitat and 0.2 acre of dispersal habitat annually, and no more than 16 acres of core habitat and 10 acres of dispersal habitat over 30 years. Covered Activities would result in incremental effects throughout San Mateo County but not in one specific location.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

California Clapper Rail (also known as Ridgway's Rail)

Ground-disturbing activities (grading, trenching, or excavating) could crush eggs. Similarly, vehicles and equipment traveling to and from work areas also may crush eggs, and/or kill or injure chicks or adults when traveling through pickleweed or marsh habitats.

The inadvertent introduction of an invasive plant species, such as invasive cordgrass (*Spartina* spp.), by construction equipment, personnel, or contaminated seed or straw is an indirect impact that could have serious implications for Ridgway's rail. Invasive plants such as cordgrass can displace native plant species and alter the sediment accretion rate in mudflats, impacting foraging and nesting habitat. However, as noted in the recovery plan, this is complicated by the fact that hybrid *Spartina* currently provides habitat for Ridgway's rail (U.S. Fish and Wildlife Service 2013).

Human presence and activity associated with Covered Activities may also lead to indirect effects. Attractants and scents from ground disturbance could invite native and nonnative predators to a work site after personnel have left. Feral and non-feral pet cats and dogs, coyotes, raccoons, and other wildlife all could prey upon Ridgway's rail eggs, young, and adults. Also, any new poles and towers, in addition to existing ones, increase the risk of predation from ravens and red-tailed hawks that are known to use these areas for perches and nest sites (Service 2013a). However, PG&E would implement the *Conservation Measures* to minimize these types of effects. PG&E anticipates that Covered Activities will permanently remove 0.1-acre of Ridgway's rail habitat annually in the Plan Area and no more than 3.4 acres over 30 years.

Covered Activities will temporarily disturb 0.7-acre of habitat annually and no more than 34 acres over 30 years.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Salt Marsh harvest Mouse

Covered Activities could result in death or injury of salt marsh harvest mice and habitat removal. Covered Activities that include trenching or excavation could result in death or injury of young and adults. Covered Activities within or adjacent to habitat for salt marsh harvest mouse could result in take of individuals. The presence and movement of work vehicles, equipment, and personnel, and associated noises could disrupt normal behaviors of individuals and result in increased energy

expenditures (e.g., increased foraging time), decreased reproductive success (e.g., decreased ability to feed young, inability to find mates), and reduced overall survivorship.

Covered Activities most likely to permanently impact salt marsh harvest mouse habitat generally include minor new construction activities sited in areas of suitable habitat that may be occupied by the species. Ground disturbance caused by these activities would be the result of off-road travel, construction, or equipment laydown.

Inadvertent introduction of an invasive plant species, such as iceplant (*Carpobrotus* spp.) or perennial pepperweed (*Lepidium latifolium*), by construction equipment, personnel, or contaminated seed or straw is an indirect impact that could have serious implications for salt marsh harvest mouse. Invasive plants can outcompete and displace pickleweed (*Salicornia pacifica*), the salt marsh harvest mouse's preferred habitat.

Human presence and activity associated with Covered Activities may also lead to indirect effects. Attractants and scents from ground disturbance could invite native and nonnative predators to a work site after personnel have left. Feral and pet cats and dogs, coyotes, raccoons, and other wildlife all could prey upon salt marsh harvest mouse young and adults.

The Service anticipates that Covered Activities could permanently remove 0.07-acre of salt marsh harvest mouse habitat annually in the Plan Area, and no more than 3.7 acres over 30 years. Covered Activities would temporarily disturb 0.7-acre of salt marsh harvest mouse habitat annually and no more than 35 acres over 30 years.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

San Joaquin Kit Fox

Covered Activities could result in death or injury of adults and young. Adults and young could be killed or injured during ground-disturbing (grading, trenching, and excavating) activities if occupied dens collapse. Vehicular movement associated with Covered Activities could take individuals inhabiting or moving through the work area. San Joaquin kit foxes are curious animals and construction sites may also attract individuals during non-work hours, potentially elevating their risk for injury or death if they become trapped in open trenches or seek cover under equipment or materials (i.e., pipes) that are later moved. Because most ground-disturbing work is undertaken in the summer, encounters with kit foxes would be greatest during and immediately following the

pupping season (generally March through August) when adults are actively hunting to feed their young and young are exploring and dispersing from natal sites.

Covered Activities within or adjacent to suitable core habitat for San Joaquin kit fox could result in the harassment of individuals. The presence and movement of work vehicles, equipment, and personnel, and associated noises, could disrupt normal behaviors of individuals and result in increased energy expenditures (e.g., flushing from dens, increased foraging time), decreased reproductive success (e.g., natal den abandonment, decreased ability to feed young, inability to find mates), and reduced overall survivorship.

Ground-disturbing activities (particularly trenching) could have the greatest potential to result in affects when conducted within or adjacent to suitable core habitat. Activities such as pole replacements and pole equipment repair that are most likely to affect kit foxes are generally of short duration, and temporary disturbances to habitat or harassment of the species would not be expected to have long-term effects on survival or reproductive success.

Grassland habitats in eastern Contra Costa and Alameda counties are areas of particular concern for San Joaquin kit fox because of the number of CNDDDB records and the suitability of the habitat. A specific area of concern is the area near Bethany Reservoir where CNDDDB documents several occurrences of the species. Numerous electric transmission lines and a gas transmission line traverse the area. Habitat models being relied upon for this species categorize some areas within the Plan Area as low use/quality due to lack of recent records, surrounding land use, unsuitable land cover or unsuitable slopes and barriers identified as part of other regional conservation planning efforts; East Contra Costa HCP/NCCP uses the term "suitable low use," Santa Clara Valley Habitat Plan uses the terms "secondary habitat" and "secondary habitat low use," and East Alameda Conservation Strategy uses the term "low quality habitat." Disturbance of these low-use/quality habitat areas by Covered Activities is unlikely to have negative effects on the species because of the degraded habitat conditions and low probability that the species is using or relying on these areas. Furthermore, FP-14 requires that grassland effects of 0.25 acre or more be revegetated. Regardless of habitat quality, overall encounters with San Joaquin kit fox in the Plan Area are expected to be few, due to the low number of recent observations.

Human presence and activity associated with Covered Activities may also lead to indirect effects. Attractants and scents from ground disturbance could invite native and nonnative predators to a work site after personnel have left. Domesticated dogs and coyotes could potentially prey upon young San Joaquin kit fox and adults.

PG&E anticipates that Covered Activities are expected to permanently remove 0.7-acre of San Joaquin kit fox suitable core habitat and 0.3-acre of low-use/quality habitat annually in the Plan Area. Activities that remove habitat (such as the placement of new facilities or access roads in habitat) result in permanent effects. Other permanent effects include disturbing, crushing, or altering burrows and potential dens in the area to the extent that these important habitat components do not recover over time, reducing the ability of these areas to support a prey base and den sites. Covered Activities would remove no more than 37 acres of suitable core habitat and 16 acres of low-use/quality habitat over 30 years.

Covered Activities will temporarily disturb 8.5 acres of San Joaquin kit fox suitable core habitat and 5.3 acres of low-use/quality habitat annually. Ground disturbance resulting from vehicular travel, construction, pull and tensioning sites, and electric pole removals or replacements in grasslands

would generally result in temporary habitat effects. Covered Activities would temporarily impact no more than 426 acres of suitable core habitat and 264 acres of low- use/quality habitat over 30 years. The amount of habitat unavailable to the species at any point in time as a result of temporary effects is not expected to ever be twice the annual disturbance.

PG&E has also committed to provide habitat conservation to offset effects to this species and its habitat. This habitat conservation is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from any permanent loss, modification, or degradation of habitat described above. The compensatory habitat proposed will be in the form of AMM implementation as described in the *Conservation Measures*, as well as 3:1 – acre conservation to impact habitat acquisition to compensate for permanent loss of habitat for this species, and 0.50:1 – acre conservation to impact habitat acquisition to compensate for temporary disturbance of this species' habitat

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

General Effects on Plant Species

Covered Activities could result in permanent or temporary effects on habitat (discussed in HCP Section 4.1.1, *Definitions of Permanent and Temporary Impacts*) as well as direct and indirect effects on covered plant species populations.

The Covered Activities that would result in the greatest habitat effects would be those associated with work on gas transmission lines (Covered Activity G5–G12). These Covered Activities would mostly result in temporary habitat loss from pipeline replacement, pipeline recoating, and gas valve installation. However, in some instances pipeline excavations could result in permanent habitat loss. Covered Activity effects associated with electric lines (Covered Activity E6–E10) would consist mostly of vegetation removal for routine maintenance such as wood pole testing and treating, and vegetation clearing of poles and towers. Larger projects such as electric reconductoring typically require moderate removal of vegetation associated with both temporary work spaces and to accommodate any work required at or near the base of towers or wood poles.

Effects to plant species may be direct or indirect. Direct effects include those where the movement or parking of vehicles and/or the placement of equipment and staging materials may damage or crush adult plants, saplings, and seedlings. Ground disturbance such as blading and excavation can destroy or damage mature individual plants, destroy or bury seeds, and provide opportunities for colonization by invasive plants. Excavation and grading has the potential to alter soil properties, create conditions unsuitable for the growth of some species (but for other species it may promote germination or seedling establishment), and can change surface drainage patterns.

The roots of shrubs and other perennial species are susceptible to damage from soil compaction by equipment or staging materials. Pruning could also adversely affect shrubs if they are pruned during their reproductive phase or if the pruning inflicts damage that makes them more susceptible to herbivory or pathogens.

Possible indirect effects on covered plants could result from Covered Activities that cause erosion that degrades habitat, ground disturbance that facilitates the establishment of invasive plant species that compete with native vegetation, or accidental ignition of a fire that damages or kills individuals. Sidecast soil from excavation, spilled materials, and other substances (such as broadcast herbicides) could be carried by ditches or swales to nearby sensitive areas, causing physical or physiological damage to the plants there.

Most of these indirect effects would be within a short distance from the Covered Activity and would attenuate rapidly with increasing distance (Forman 1995; Forman *et al.* 2003). This analysis assumes that indirect effects would be non-substantial for plants occurring more than 100 feet from Covered Activities given the methods PG&E uses to access its facilities.

For annual plant species, discussion of absolute numbers is difficult as the populations can fluctuate significantly from year to year due to environmental variation (e.g., rainfall). Some occurrences in the CNDDDB include estimates of numbers of individual plants, although many occurrences do not, or the numbers are from only 1 year. Additionally, in the rare cases where there are multiple years of data, these numbers often vary widely (e.g., from hundreds in a given year to thousands in another for only one occurrence).

For a few Covered Species (i.e., Burke's goldfields, Contra Costa goldfields, Sebastopol meadowfoam, and Sonoma sunshine), field surveys have been conducted to obtain more current field data about population size and distribution within proposed Map Book zones (i.e., where a CNDDDB occurrence overlaps with PG&E facilities and specific AMMs would be implemented). Field survey results used to evaluate the effects of Covered Activities on Covered Species are provided in the individual discussions, where applicable.

The estimates of habitat and individual plants affected for each Covered Species are conservative "worst-case scenarios" and likely overestimate of habitat loss and number of individuals of Covered Species sustaining effects in a given year. The actual effects would likely be lower than provided estimates because PG&E is able to identify and avoid these populations. Further, PG&E assumed covered plants are uniformly distributed throughout their occupied habitat though their actual distribution may be more clumped or scattered. Therefore, in areas where known Covered Species occurrences overlap with facilities, Covered Activities could either impact areas where individuals are sparse or where they are more dense. The effects of Covered Activities could also be higher if new populations of a Covered Species are found in the action area.

The *Conservation Measures* include a discussion of the conservation strategy implemented to minimize effects on covered plant species and other sensitive resources in the Plan Area. Map Book zones have been created to alert crews to the presence of covered plant species. Each Map Book zone is based on a one-time survey that establishes the location and extent of occupied habitat and determines the location of the facilities with respect to the occupied habitat. Because species occurrences and facilities are often not mapped precisely, the Map Book zone surveys are necessary to field-verify the initial GIS-based effects analysis and to determine whether Covered Activities may actually impact the plants in question. If a previously unknown population of a covered plant species is found within the footprint of a facility, then a new Map Book zone will be created for it, along with appropriate AMMs.

Where there is potential for adverse effects, facilities would be tagged with Map Book zone markers. When future activities are identified at these locations, the AMMs prescribed for each Map Book

zone will be implemented. PG&E initiated the map book surveys for the Bay Area O&M HCP Plan Area in 2012 and should complete the surveys and Map Book zone marking by 2017.

Pallid Manzanita

Covered Activities could result in direct effects on habitat for pallid manzanita at three occurrences. At EO 3, the primary effects would consist of habitat loss from gas pipeline activities (G5–G12). At EOs 3, 4, and 13, effects associated with the electric distribution lines would be mostly from vegetation management and remedial maintenance (E7–E9). At EO 4, effects associated with electric transmission lines would be mostly from vegetation removal for routine maintenance and tower clearing (E10), reconductoring (E9), and maintenance and repair activities (E6, E7). The area of habitat occupied by pallid manzanita that could be affected by these Covered Activities is 2.27 acres over 30 years. With an estimated total area of 158.6 acres of occupied habitat in the study area, this would be a potential effect of 1.4 percent of the species' habitat in the study area.

Direct effects on individual pallid manzanita plants are expected at Occurrences 3 and 4. Based on the area affected and the number of plants present at the occurrences, less than 10 plants would be directly affected at EO 3 and six plants would be affected at EO 4. No direct effects on pallid manzanita plants would occur at EO 9 or 13, based on the results of surveys done in 2012. Based on this assessment, Covered Activities would not substantially affect the population viability of any occurrences of pallid manzanita. The species is susceptible to sudden oak death, but PG&E follows standard protocols (BMP 17) to minimize the spread of sudden oak death and is not expected to further spread or exacerbate this problem.

Sonoma Sunshine

The anticipated area of habitat potentially occupied by Sonoma sunshine that could be directly affected by Covered Activities is up to 2.5 acres over 30 years. With an estimated total area of 500.8 acres of occupied habitat in the study area, this would be a potential impact of 0.5 percent of the habitat for this species in the study area.

Maintenance or replacement of the gas transmission pipeline that crosses EOs 23 and 25 has the potential to directly impact Sonoma sunshine and result in the direct loss of individual plants. The location of the plants relative to the gas pipeline and the current status of the populations are not known. The reported population size for EO 23 was 74,000 in 1991 and for EO 25 was 750 in 1988 but the populations have been combined in the latest version of CNDDDB and the population has been estimated to be as large as 1.8 million (CDFW 2017). Because the extent and area of the populations are not known, the area and number of individuals affected at these occurrences cannot be accurately determined until the occurrences have been surveyed. However, based on the occurrences' specific map locations and the location of the gas pipeline, it is unlikely that more than 25 percent of each occurrence would be directly affected (i.e., up to 250,000 plants). Based on this assessment, and given the large number of other extant occurrences, Covered Activities would not substantially impact the population viability of any occurrences of Sonoma sunshine.

Coyote Ceanothus

At Occurrence 4, an electric distribution line along Croy Road crosses this location, and activities associated with maintenance of this facility (E7, E8, E9, E10b) potentially could affect coyote ceanothus. The poles are located at roadside, and access and other activities would be unlikely to

directly affect occupied habitat for the species. However, indirect effects could result if occupied habitat were within 100 feet.

Based on a direct effect of up to 3.5 acres of mapped habitat, out of a total of 295.0 acres (1.2 percent), an estimated 2,516 plants may be directly affected. Locations of the affected plants have not been mapped but would be within the areas of direct effects. At Occurrence 12, about 30 plants are present along a ravine in the smaller of two polygons (Service 2011b; CDFW 2017). These plants are on the slopes below the hilltop where the electric transmission tower is located, so no direct effects on these individuals would result from Covered Activities.

At Occurrence 6, 188,175 Coyote ceanothus plants were surveyed in 2009 in the polygons west of Anderson Dam (CDFW 2017). Most of these plants were established in 2003 after a fire and are now reproductively mature, appearing healthy with no observed herbivory or other signs of distress (Service 2011b). Based on the relatively small amount of habitat and plants affected, Covered Activities would not substantially affect the population viability of this occurrence.

Fountain Thistle

At Occurrence 1 the 10 stands comprise a total of 21 acres. PG&E facilities cross two of the stands. An electric distribution line crosses a 2.1-acre stand, located on the west side of I-280 and the north side of Ralston Avenue. Two wooden poles are present, and about 1,414 sq. ft. (0.032 acre) could be affected by pole clearing (E10b) or replacement (E7, E8). Vehicle travel between the poles for pole maintenance or reconductoring (E9) could temporarily disturb about 360 linear feet of habitat (0.10 acre).

The same electric distribution line and a gas transmission line cross a second 1.8-acre stand on the east side of I-280. One wooden pole is present within the stand, and about 707 sq. ft. (0.016 acre) could be affected by pole clearing or replacement (E10b or E8). Vehicle travel between the poles for pole inspection, maintenance, or reconductoring could temporarily disturb about 145 linear feet of habitat (approximately 0.04 acre). The gas transmission line also crosses the stand within the same right-of-way. Maintenance, repair, or replacement of the pipeline (G3a, G9, or G10) could affect up to 0.33 acres of habitat. No facilities come within 100 feet of the eight other stands. Up to 0.46 acres (1.3 percent) of the 39.0-acre occurrence could be affected by Covered Activities.

Occurrence 8 consists of a single 8-acre stand that contained about 20 plants in 1993 (CDFW 2017). The current status of the population is not known. A gas transmission line crosses 150 feet of the stand, and maintenance, repair, or replacement of the pipeline (G5–G12) could affect up to 0.34 acre of habitat. About 4.2 percent of the occurrence, as currently known, could be affected. Covered Activities that directly affect habitat for fountain thistle have the potential to directly affect individual plants. At Occurrence 1, about 2.2 percent of the habitat could be disturbed, but the number of plants affected is expected to be much lower. About 25,000 plants are present in this occurrence, 97 percent of which occur in a single patch adjacent to Lower Crystal Springs Reservoir (Service 2010c), which would not be affected by Covered Activities because there are no facilities in this area. Therefore, approximately 100 plants are likely to be subject to direct loss over 30 years at EO 1.

At EO 8, the 20 plants were observed scattered across 8 acres of habitat, and effects on 4.2 percent of the habitat could be expected to affect one plant.

Santa Clara Valley Dudleya

Direct effects on Santa Clara Valley dudleya would be expected at the 11 occurrences where construction activities are likely to be implemented (see the *Environmental Baseline*). At most of the known locations, the effects on individuals would result from maintenance or repair of electric transmission towers. At two locations, the effects on individual plants would result from maintenance or replacement of gas transmission pipelines. The number of individuals directly affected would be proportional to the amount of habitat affected. Most of the direct effects on individuals would be at Occurrences 7 and 10. Overall, the estimated number of plants subject to direct loss is 800 plants over 30 years. Direct and indirect effects on Santa Clara Valley individuals would not substantially affect the population viability of any occurrences of Santa Clara Valley dudleya.

Contra Costa Wallflower

Covered Activities could impact the occurrence (EO 2) that is located in the Sardis Unit of the Antioch Dunes NWR. An electric transmission line crosses the occurrence, and one tower is located within the occurrence. Covered Activity effects would be expected from tower maintenance and repair (E6, E7, E9, E10).

The area of habitat occupied by Contra Costa wallflower that could be affected by these Covered Activities is 0.17 acre. With an estimated total area of 48.3 acres of habitat in the study area (not all of which is occupied), this would be a potential impact of 0.4 percent of the total study area range of the species.

Occurrence 2 consists of several hundred plants on approximately 22 acres of habitat (CDFW 2013). The last reported count for the Sardis Unit was 671 plants in 1985. Although counts for individual areas have not been reported since then, the total number of plants in all occurrences is about 4,000 (Service 2008). The tower location was surveyed in July, 2012. The survey found two Contra Costa wallflower plants within the area that could be potentially affected by Covered Activities, and 11 other plants were within 100 feet. More could potentially grow in this area in the future. Based on this assessment, Covered Activities would not substantially affect the population viability of this occurrence.

Contra Costa Wallflower Critical Habitat

Over the next 30 years, it is estimated that 0.2 acre of critical habitat for this species would be affected by Covered Activities; this equates to no more than 0.06 percent of the total critical habitat designated for this species.

Marin Dwarf Flax

The area of habitat occupied by Marin dwarf flax that could be affected by Covered Activities is about 1.95 acres over 30 years. With an estimated total of 457.9 acres of occupied habitat in the study area, this would be a potential impact of 0.8 percent of the total study area range of the species. Covered Activities (E6–E10, G5–G12) could directly and indirectly affect Marin dwarf flax at eight occurrences.

Covered Activities would result in direct effects on Marin dwarf flax individuals at six locations. At most of the locations, the effects on individuals would result from maintenance or repair of electric transmission towers. At two occurrences, the effects on individuals would result from maintenance or replacement of gas transmission pipelines. The number of individuals present in each occurrence varies annually in response to differences in annual rainfall. The number of plants directly affected would differ annually but would be proportional to the amount of habitat affected.

At Occurrence 1, the number of plants present has not been consistently reported for all polygons. Assuming that the minimum number of plants in the occurrence is 1,100 and that the number of plants can vary by an order of magnitude, between 10 and 100 plants could be directly affected by Covered Activities.

At Occurrence 3 approximately 27 plants may be directly affected by Covered Activities.

At Occurrence 6, based on the low number of plants present and the small amount of habitat disturbed, direct effects on plants are unlikely at this occurrence, but cannot be precluded entirely. We estimate that 5 plants may be disturbed over the 30-year permit term.

At Occurrence 17, because the two gas pipelines cross directly through this occurrence, activities requiring the excavation of these pipelines would be likely to remove all of the plants. Because the gas pipelines were installed long before the plants were found at this location, it is possible that the plants were established after the pipeline was installed, but it is also possible that the population was present before the pipeline was installed and was able to re-establish following the construction.

At Occurrence 18, the number of plants present was not reported. Assuming that the number of plants directly affected would be proportional to the amount of habitat disturbed, about 27 percent of the plants would be directly affected.

At Occurrence 30, based on the small amount of habitat that would be disturbed, less than 10 plants are likely to be directly affected at this occurrence.

At the Woodside occurrence, based on the amount of habitat that would be disturbed, approximately 1,500 plants are likely to be directly affected at this occurrence, or approximately 10 percent of the population.

Based on this assessment, Covered Activities could substantially affect the population viability at EO 17. The amount of take anticipated at the Woodside occurrence could significantly affect the viability of that population. Covered Activities would not substantially affect the population viability at any of the other occurrences. Measures requiring the stockpiling of topsoil for use in reclaiming a site after a Covered Activity has been performed are expected to allow this population to remain after excavation of the pipelines at any location, so we do not anticipate the loss or extirpation of any population of this species to result from the action.

Burke's Goldfields

Covered Activities could affect 12 occurrences of this species. Covered Activities would not affect 12 other occurrences where no facilities are present. One occurrence (EO 36) from Napa County is based on a poorly-documented record, and its reported location, near the Calistoga Geyser, is based on conjecture. Information on this occurrence is insufficient to determine whether Covered

Activities would affect this occurrence. Four other occurrences recently added to the CNDDDB were not included in the HCP's effects analysis; however, these occurrences are located in constructed pools within mitigation banks and are unlikely to be directly affected by O&M activities.

The estimated area of habitat occupied by Burke's goldfields that could potentially be affected by these Covered Activities is 1.51 acres over 30 years. Most of the Covered Activity effects would be expected from ground disturbance for gas pipeline activities. At six occurrences, facilities are accessed from paved roads, and Covered Activities would be far enough away that no direct effect on habitat for Burke's goldfields would result. However, habitat within 100 feet of facilities could be indirectly affected by repair and maintenance of electric facilities (E7–E10) and gas facilities (G5–G12).

Covered Activities would result in direct effects on Burke's goldfields at six occurrences. The number of plants directly affected would vary annually but would be proportional to the amount of habitat affected.

EO 4: Most of the direct effects on individuals are expected to occur in one polygon as a result of maintenance or replacement of a gas transmission line. Covered Activities could affect about 10 percent of this polygon, which could result in effects on hundreds to thousands of plants.

EO 13: Direct effects on plants are unlikely at this occurrence.

EO 15: A single electric distribution pole at this occurrence is located adjacent to potential habitat, although no Burke's goldfields were observed there during a survey in 2011. Direct effects on plants are unlikely at this occurrence.

EO 19: Most of the direct effects on individuals are expected to occur in one polygon as a result of maintenance or replacement of a gas transmission line. Covered Activities could affect about 15 percent of this polygon, which could result in effects on hundreds to thousands of plants.

EO 23: A single electric distribution pole at this occurrence is located in potential habitat, which could result in direct effects on an estimated 10 plants.

EO 28: A single electric transmission pole at this occurrence is located in potential habitat, which could result in direct effects on an estimated two plants.

The number of plants that would be directly affected is difficult to estimate, because population numbers vary annually. Not all habitat within each occurrence has been surveyed; portions of some populations have been lost since they were surveyed. Nevertheless, up to 2,000 Burke's goldfields plants could be subject to direct loss from Covered Activities over 30 years, primarily associated with gas transmission lines at Occurrences 4 and 19. Measures requiring the stockpiling of topsoil for use in reclaiming a site after a Covered Activity has been performed are expected to allow this population to remain after excavation of the pipelines at any location, so we do not anticipate the loss or extirpation of any population of this species to result from the action. Based on this assessment, Covered Activities would not substantially affect the population viability at any occurrences Burke's goldfields.

Contra Costa Goldfields

Covered Activities could affect 10 of 20 occurrences of this species. The estimated area of habitat occupied by Contra Costa goldfields that could be affected by these Covered Activities is 5.48 acres over 30 years. With an estimated total area of 507.1 acres of occupied habitat in the study area, this would be a potential impact of 1.1 percent of the total study area range of the species.

At six occurrences (EO 5, 7, 28, 29, 33, and 39), Covered Activities would not directly affect habitat for Contra Costa goldfields. No individual or population-level effects are anticipated, but habitat within 100 feet of facilities could be indirectly affected by Covered Activities (E7–E10, G5–G12).

At four occurrences (EO 1, 3, 20, 24), facilities are present within occupied habitat, and Covered Activities (E7–E10, G5–G12) could have direct and indirect effects on Contra Costa goldfields. The number of plants directly affected would vary annually but would be proportional to the amount of habitat affected. Based on this assessment, Covered Activities would not substantially affect the population viability of any occurrences of Contra Costa goldfields.

At Occurrence 1 take of individuals could result from maintenance or replacement of a gas transmission line. About 4.3 percent of the mapped polygon could be affected, which could result in up to 788 individuals directly affected.

At Occurrence 3 take of individuals could result from Covered Activities associated with both electric transmission lines and a gas transmission pipeline. About 10 percent of the mapped polygon could be affected, which could result in over 1,000 individuals directly affected.

At Occurrence 20 take of individuals could result from Covered Activities associated with maintenance or repair of one electric transmission tower, which would affect less than 0.02 percent of the occurrence, or up to 2,770 individuals.

At Occurrence 24 take of individuals could result from maintenance or replacement of a gas distribution line. About 4.0 percent of the mapped polygon could be affected, which could result in up to 9,981 individuals directly affected.

Contra Costa Goldfields Critical Habitat

Annually, Covered Activities will permanently remove no more than 0.11 acre of designated critical habitat. Over the next 30 years it is estimated that 5.5 acres of critical habitat for this species would be permanently affected by Covered Activities; this equates to no more than 0.05 percent of the total critical habitat designated for this species.

Sebastopol Meadowfoam

Covered Activities may affect 10 of 38 occurrences of this species within the action area. At nine occurrences (EO 12, 15, 21, 22, 28, 34, 43, and 53), no individual or population-level effects are anticipated, but habitat within 100 feet of facilities could be indirectly affected by Covered Activities (E7–E10, G5–G12).

Four occurrences were recently added to the CNDDDB and have not been analyzed; but are more than 250 feet from existing PG&E ROW and facilities.

At two occurrences (EO 1 and 48), facilities are present within occupied habitat, and Covered Activities (E7–E10) could have direct and indirect effects on Sebastopol meadowfoam. The number of plants directly affected would vary annually but would be proportional to the amount of habitat affected.

EO 1: Southeast of Sebastopol, west of Stony Point Road, electric distribution lines cross or are adjacent to 14 of 78 polygons. One pole is located within a polygon, and 12 poles are within 100 feet of polygons (surveyed in 2013 and tagged as Map Book Zone).

EO 48: No estimate of the number of plants present has been reported. Direct effects on individuals could result from maintenance or replacement of an electric power pole. About 0.03 percent of this occurrence could be affected, and a proportional number of individuals could be affected.

Covered Activities have the potential to result in direct loss and reduced habitat quality, as discussed above, and the number of individuals that could be affected is a few hundred plants over 30 years. Based on this assessment, Covered Activities would not substantially affect the population viability of any occurrences of Sebastopol meadowfoam. Measures requiring the stockpiling of topsoil for use in reclaiming a site after a Covered Activity has been performed are expected to allow this population to remain after excavation of the pipelines at any location, so we do not anticipate the loss or extirpation of any population of this species to result from the action.

The estimated area of habitat occupied by Sebastopol meadowfoam that could potentially be affected by these Covered Activities is 0.04 acre over 30 years. With an estimated total area of 698.6 acres of occupied habitat in the study area, this would be a potential impact of less than 0.1 percent of the total study area range of the species.

Antioch Dunes Evening Primrose

Of 9 total occurrences of this species throughout its known range, 8 occur within the study area. Of those 8 occurrences, 7 occurrences (EO 1, 3, 7, 8, 9, 10, and 11) will not be affected by Covered Activities.

At Occurrence 4, which has been tagged as a Map Book Zone, Covered Activities (E7–E10, G5–G12) could have direct and indirect effects on habitat for Antioch Dunes evening primrose. The estimated area of habitat occupied by Antioch Dunes evening primrose that could potentially be affected by these Covered Activities is 0.17 acre over 30 years. With an estimated total area of 69.7 acres of occupied habitat in the range of the species, this would be a potential impact on 0.2 percent of the species' range of the species.

Because Antioch Dunes evening primrose is a short-lived perennial, these specific plants are not likely to be affected by Covered Activities, but they are representative of the magnitude of effects that individuals at this location would experience. A maximum 10 plants are expected to be affected by Covered Activities, most of which would be indirectly affected. Ground-disturbing activities, such as mowing or foot traffic, may actually benefit Antioch Dunes evening primrose by removing nonnative weedy plants that appear to inhibit germination of evening-primrose seeds (Service 2008). Based on this assessment, Covered Activities are not expected to affect the population viability of this occurrence.

Antioch Dunes Evening Primrose Critical Habitat

Critical habitat for Antioch Dunes evening primrose encompasses approximately 41 acres in the action area. Covered Activities do not affect critical habitat for the species on an annual basis. For the purposes of providing an estimate, over the next 30 years it is estimated that no more than 0.2 acre of critical habitat for this species could be permanently affected by Covered Activities; this equates to 0.06 percent of the total critical habitat designated for this species.

White-Rayed Pentachaeta

Only one occurrence of this species in the action area is presumed to be extant (CDFW 2017). Occurrence 1, which has been designated as a Map Book Zone, is located in the triangle-shaped area formed by I-280, Edgewood Drive, and Cañada Road, and east of the highway in Edgewood Park in San Mateo County. At this location, two wood poles are located within 10 feet of the plants, and the line spans the stand. The potential area of effects from Covered Activities (E7–E10) is 0.04 acre. With an estimated total area of 22.0 acres of occupied habitat in the study area, this would be a potential impact of 0.2 percent. Because the poles are located at the edge of the affected stand, very few plants (none to 500) would be affected by Covered Activities over 30 years. Due to the small area of potential effects, the action is not expected to negatively affect the population viability of this occurrence.

Metcalf Canyon Jewelflower

Covered Activities may affect 2 out of 12 occurrences of this species within the action area:

EO 2: Direct effects on 0.91 acre of habitat (1.2 percent) could result in take of several dozen plants.

EO 15: Direct effects on 0.05 acre of habitat (0.1 percent) could result in take of individuals ranging from 0 to 110 plants.

The estimated number of Metcalf Canyon jewelflower plants subject to direct loss would be 500 individual plants over 30 years. Based on this assessment, Covered Activities are not expected to adversely affect the population viability of any occurrence of Metcalf Canyon jewelflower.

Cumulative Effects

Most lands included in the 402,440-acre action area are privately owned but within a right-of-way or easements deed with PG&E. Under the terms of these deeds, the landowner may use the right-of-way lands for any purpose which will not interfere with PG&E's use of the right-of-way. Buildings or other structures cannot be erected within the boundary of the right-of-way, as these would interfere with PG&E's activities. Consequently, the right-of-way easement deed provides no protection from land-use change within the ROWs, with the exception that buildings will not be constructed within the ROW boundaries. Other State or private activities are expected to occur within these rights-of-way, including cattle grazing, extensive agricultural development, timber harvesting, fuel wood cutting, fire suppression, road building, and herbicide use. Although housing development is not expected within the boundary of a right-of-way, development or other land-use changes may occur on lands directly bordering the ROWS. Although land-cover in a right-of-way area may stay in a natural condition, development or other land-use changes on bordering lands would substantially reduce the habitat value of the ROW lands. These future activities may not be

subject to section 7 consultation (and thus are considered to enter into cumulative effects). These activities are not associated with the proposed project.

The proposed project will not contribute to the local and rangewide trend of urbanization, habitat loss, fragmentation, and degradation, the principal causes of the decline of the species addressed in this biological opinion. The proposed action allows the on-going operation and maintenance of existing natural gas and electric distribution facilities, and minor extensions of gas and electric lines. PG&E would construct the facility extensions in advance or simultaneous to the new energy need, and the capacity of the new pipelines would not exceed the peak-need of the new subdivisions and businesses, on a sustained basis. Therefore, the new facility extensions would occur in response to urban development, would not remove an obstacle for future urban development, and are not considered growth-inducing.

Continued human population growth in action area is expected to drive further development of agriculture, cities, industry, transportation, and water resources in the foreseeable future. This future development, and the associated infrastructure will further contribute to the continued loss and fragmentation of natural areas, including areas harboring the Covered Species. Ongoing loss and fragmentation of natural land-cover in the action area and anthropogenic factors such as pesticides and invasion of exotic species is expected to continue for the 30-year term of the proposed permit.

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. 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. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

After reviewing the current status of designated critical habitat for the Covered Species, the environmental baseline for the action area, the effects of the proposed Pacific Gas and Electric Company Bay Area Operations & Maintenance Habitat Conservation Plan, and the cumulative effects, it is the Service's biological opinion that the Pacific Gas and Electric Company Bay Area Operations & Maintenance Habitat Conservation Plan, as proposed, is not likely to destroy or adversely modify designated critical habitat. The Service reached this conclusion because the project-related effects to the designated critical habitat, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding the function of the Covered Species critical habitat to serve its intended conservation role for the Covered Species. We have reached this conclusion because the effects of the action, relative to the amount of critical habitat remaining in each unit for each species, are expected to be so small as to be discountable, and the effects of the action are not expected to impair the ability of any unit of critical habitat in the action area to continue to provide habitat for any Covered Species for which critical habitat has been designated.

After reviewing the current status of all Covered Species, the environmental baseline for the action area, the effects of the proposed Pacific Gas and Electric Company Bay Area Operations & Maintenance Habitat Conservation Plan, and the cumulative effects, it is the Service's biological opinion that the Pacific Gas and Electric Company Bay Area Operations & Maintenance Habitat Conservation Plan, as proposed, is not likely to jeopardize the continued existence of any of the

Covered Species. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the Covered Species. Our rationale for these non-jeopardy determinations are as follows:

California Freshwater Shrimp

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Minor new construction is not expected to occur within aquatic habitat for this species. The effects resulting from individual Covered Activities are expected to be small (less than 0.10-acre), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. None of the Covered Activities are expected to occur often within habitat for this species. The expected loss resulting from implementation of Covered Activities of 0.30-acre of permanent habitat loss and 2 acres of temporary habitat loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, is so small as to be discountable. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The effects of the action on the California freshwater shrimp are expected to be minimized by implementation of the *Conservation Measures*.

Conservancy Fairy Shrimp

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Minor new construction is not expected to occur within aquatic habitat for this species. The effects resulting from individual Covered Activities are expected to be small (less than 0.10-acre), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. Covered Activities are not expected to occur often within aquatic habitat for this species. The species is rare throughout its range, reducing the likelihood that Covered Activities undertaken at a given location would affect this species. The expected loss resulting from implementation of Covered Activities of 0.50-acre of permanent habitat loss and 2 acres of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, is so small as to be discountable. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The effects of the action on the Conservancy fairy shrimp are expected to be minimized by implementation of the *Conservation Measures*.

Longhorn Fairy Shrimp

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Minor new construction is not expected to occur within aquatic habitat for this species. The effects resulting from individual Covered Activities are expected to be small (less than 1.10-acre), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. Covered Activities are not expected to occur often within aquatic habitat for this species. The species is rare throughout its range, reducing the likelihood that Covered Activities undertaken at a given location would affect this species. The expected loss resulting from

implementation of Covered Activities of 0.10-acre of permanent habitat loss and 1 acre of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, is so small as to be discountable. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The effects of the action on the longhorn fairy shrimp are expected to be minimized by implementation of the *Conservation Measures*.

Vernal Pool Fairy Shrimp

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Minor new construction is not expected to occur within aquatic habitat for this species. The effects resulting from individual Covered Activities are expected to be small (less than 2.5 acres), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation of individual Covered Activities. Covered Activities are not expected to occur often within aquatic habitat for this species. The expected loss resulting from implementation of Covered Activities of 5 acres of permanent habitat loss and 25 acres of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is insignificant. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The effects of the action on the vernal pool tadpole shrimp are expected to be minimized by implementation of the *Conservation Measures*.

Vernal Pool Tadpole Shrimp

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Minor new construction is not expected to occur within aquatic habitat for this species. The effects resulting from individual Covered Activities are expected to be small (less than 2.5 acres), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation of individual Covered Activities. Covered Activities are not expected to occur often within aquatic habitat for this species. The species is rare throughout its range, reducing the likelihood that Covered Activities undertaken at a given location would affect this species. The expected loss resulting from implementation of Covered Activities of 5 acres of permanent habitat loss and 25 acres of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is insignificant. Additionally, habitat loss for this species is likely inflated, as loss projections have been estimated based on available habitat, but the species is rare within its range and does not typically occupy all available habitat. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The effects of the action on the vernal pool tadpole shrimp are expected to be minimized by implementation of the *Conservation Measures*.

Delta Green Ground Beetle

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Minor new construction is not expected to occur within aquatic habitat for this species. The effects resulting from individual Covered Activities are expected to be small (less than 2.5-acre), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation of individual Covered Activities. Covered Activities are not expected to occur often within aquatic habitat for this species. The expected loss resulting from implementation of Covered Activities of 1 acre of permanent habitat loss and 5 acres of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is insignificant. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The effects of the action on the Delta green ground beetle are expected to be minimized by implementation of the *Conservation Measures*.

Bay Checkerspot Butterfly

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 0.25-acre), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation of individual Covered Activities. The expected loss resulting from implementation of Covered Activities of 4 acres of permanent habitat loss and 62 acres of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is insignificant. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the bay checkerspot butterfly are expected to be minimized by implementation of the *Conservation Measures*.

Callippe Silverspot Butterfly

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 0.25-acre), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation of individual Covered Activities. The expected loss resulting from implementation of Covered Activities of 30 acres of permanent habitat loss and 55 acres of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is insignificant. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any extant occurrences. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action

on this species. The effects of the action on the Callippe silverspot butterfly are expected to be minimized by implementation of the *Conservation Measures*.

Lange's Metalmark Butterfly

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 0.25-acre), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The expected loss resulting from implementation of Covered Activities of 0.30 acres of permanent habitat loss and 1.0 acre of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is insignificant. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any extant occurrences. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the Lange's metalmark butterfly are expected to be minimized by implementation of the *Conservation Measures*.

Mission Blue Butterfly

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 0.25-acre), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The expected loss resulting from implementation of Covered Activities of 2 acres of permanent habitat loss and 20 acres of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is insignificant. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any extant occurrences. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the Mission blue butterfly are expected to be minimized by implementation of the *Conservation Measures*.

San Bruno Elfin Butterfly

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 0.25-acre), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The expected loss resulting from implementation of Covered Activities of 2 acres of permanent habitat loss and 20 acres of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is insignificant.

The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any extant occurrences. The applicant has committed to conserving habitat for this species, through the various measures described in the Conservation measures, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the San Bruno Elfin butterfly are expected to be minimized by implementation of the *Conservation Measures*.

California Tiger Salamander Central DPS

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 2.5 acres), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The Service views the maximum projected permanent loss of 300 acres (298 upland and 2 aquatic) and temporary disturbance of 3,825 (3,800 upland and 25 aquatic) as a considerable adverse effect on the species; however, the applicant has agreed to conserve habitat for this species into perpetuity to offset the habitat loss, and take that may occur as a result of temporary disturbance at a level sufficient to minimize the effects of the action. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any portion of its range within the action area. The applicant has committed to the implementation several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the Central California tiger salamander are expected to be minimized by implementation of the *Conservation Measures*.

California Tiger Salamander Sonoma DPS

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 2.5 acres), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The Service views the maximum projected permanent loss of 13 acres (12.87 upland and 0.13 aquatic) and temporary disturbance of 80 (79.2 upland and 0.80 aquatic) as a considerable adverse effect on the species; however, the applicant has agreed to conserve habitat for this species into perpetuity to offset the habitat loss, and take that may occur as a result of temporary disturbance at a level sufficient to minimize the effects of the action. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any portion of its range within the action area. The applicant has committed to the implementation several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the Sonoma California tiger salamander are expected to be minimized by implementation of the *Conservation Measures*.

California Red-Legged Frog

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 2.5 acres), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The Service views the maximum projected permanent loss of 219

acres (177 upland and 42 aquatic) and temporary disturbance of 1,877 (1,500 upland and 377 aquatic) as a considerable adverse effect on the species; however, the applicant has agreed to conserve habitat for this species into perpetuity to offset the habitat loss, and take that may occur as a result of temporary disturbance at a level sufficient to minimize the effects of the action. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any portion of its range within the action area. The applicant has committed to the implementation several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the California Red-Legged Frog are expected to be minimized by implementation of the *Conservation Measures*.

Alameda Whipsnake

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 2.5 acres), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The Service views the maximum projected permanent loss of 13 acres of core habitat, 70 acres of perimeter core habitat, and 329 acres of movement habitat, as well as the temporary disturbance of 47 acres of core habitat, 95 acres of perimeter core habitat, and 356 acres of movement habitat, as a considerable adverse effects on the species; however, the applicant has agreed to conserve habitat for this species into perpetuity to offset the habitat loss, and take that may occur as a result of temporary disturbance at a level sufficient to minimize the effects of the action. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any portion of its range within the action area. The applicant has committed to the implementation several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the Alameda Whipsnake are expected to be minimized by implementation of the *Conservation Measures*.

San Francisco Garter Snake

The Service anticipates no injury or mortality of individual San Francisco Garter Snakes. Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 2.5 acres), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The expected permanent loss resulting from implementation of Covered Activities of 2 acres and temporary loss of 16 acres of core habitat and permanent loss of 2 acres and temporary loss of 10 acres of dispersal habitat over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is small. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any extant occurrences. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the San Francisco garter snake are expected to be minimized by implementation of the *Conservation Measures*.

California Clapper Rail (also known as Ridgeway's Rail)

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 2.5 acres), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The expected loss resulting from implementation of Covered Activities of 3.4 acres of permanent habitat loss and 34 acres of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is small. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any extant occurrences. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on Ridgeway's rail are expected to be minimized by implementation of the *Conservation Measures*.

Salt Marsh Harvest Mouse

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 2.5 acres), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The expected loss resulting from implementation of Covered Activities of 3.7 acres of permanent habitat loss and 35 acres of temporary loss over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is small. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any extant occurrences. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the salt marsh harvest mouse are expected to be minimized by implementation of the *Conservation Measures*.

San Joaquin Kit Fox

Covered Activities will be undertaken almost entirely on existing facilities within the action area. The effects resulting from individual Covered Activities are expected to be small (less than 2.5 acres), most often temporary in nature, and distributed throughout this species' range in the action area rather than condensed into one location, thereby minimizing the effects of implementation if individual Covered Activities. The expected loss resulting from implementation of Covered Activities of 53 acres (37 acres of core habitat and 16 acres of low-use/quality habitat) of permanent habitat loss and temporary loss of 690 acres (426 acres of core habitat and 264 acres of low-use/quality habitat) over the 30-year permit term, in comparison to the habitat remaining to this species throughout its range, and in light of the fact that effects will be distributed throughout its range within the action area, is small. The distribution of permanent loss is not expected to cause or contribute to the extirpation of this species from any extant occurrences. The applicant has committed to conserving habitat for this species, through the various measures described in the

Conservation Measures, prior to engaging in any Covered Activities that may result in habitat disturbance. San Joaquin kit foxes exist at a low population density within the action area, rendering them less likely to be affected by individual Covered Activities since they are less likely to inhabit a given Covered Activity location. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on the San Joaquin kit fox are expected to be minimized by implementation of the *Conservation Measures*.

Pallid Manzanita

Covered Activities will be undertaken almost entirely on existing facilities within the action area. A total of 16 plants across two occurrences of the species within the action area are expected to be injured or removed. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has also committed to salvaging, or compensating for individual plants temporarily affected or permanently destroyed as a result of Covered Activities. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. Measures to prevent the spread of pathogens such as *Phytophthora* will ensure that implementation of the HCP will not threaten the continued existence of this species. The effects of the action on pallid manzanita are expected to be minimized by implementation of the *Conservation Measures*.

Sonoma Sunshine

Covered Activities will be undertaken almost entirely on existing facilities within the action area. 25 percent of two occurrences of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary, and the level of disturbance is not expected to affect the viability of the populations at the occurrences that will be affected. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on Sonoma sunshine are expected to be minimized by implementation of the *Conservation Measures*.

Coyote Ceanothus

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Two occurrences of the species within the action area are expected to be disturbed. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has also committed to salvaging, or compensating for individual plants temporarily affected or permanently destroyed as a result of Covered Activities. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. Measures to prevent the spread of pathogens such as *Phytophthora* will ensure that implementation of the HCP will not threaten the continued existence of this species. The effects of the action on coyote ceanothus are expected to be minimized by implementation of the *Conservation Measures*.

Fountain Thistle

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Two occurrences of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary, and the level of disturbance is not expected to affect the viability of the populations at the occurrences that will be affected. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on fountain thistle are expected to be minimized by implementation of the *Conservation Measures*.

Santa Clara Valley Dudleya

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Two occurrences of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary, and the level of disturbance is not expected to affect the viability of the populations at the occurrences that will be affected. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on Santa Clara Valley dudleya are expected to be minimized by implementation of the *Conservation Measures*.

Contra Costa Wallflower

Covered Activities will be undertaken almost entirely on existing facilities within the action area. One occurrence of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary, and the level of disturbance is not expected to affect the viability of the populations at the occurrences that will be affected. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on Contra Costa Wallflower are expected to be minimized by implementation of the *Conservation Measures*.

Marin Dwarf Flax

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Six occurrences of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary. Absent avoidance and minimization measures, the viability of one occurrence could be adversely affected by the action, but measures such as stockpiling topsoil are expected to minimize the effects of the action on this occurrence to a degree where extirpation or reduced population are no longer likely. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on Marin dwarf flax are expected to be minimized by implementation of the *Conservation Measures*.

Burke's Goldfields

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Twelve occurrences of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary, and the level of disturbance is not expected to affect the viability of the populations at the occurrences that will be affected. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on Burke's goldfields are expected to be minimized by implementation of the *Conservation Measures*.

Contra Costa Goldfields

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Ten occurrences of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary, and the level of disturbance is not expected to affect the viability of the populations at the occurrences that will be affected. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on Contra Costa goldfields are expected to be minimized by implementation of the *Conservation Measures*.

Sebastopol Meadowfoam

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Ten occurrences of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary, and the level of disturbance is not expected to affect the viability of the populations at the occurrences that will be affected. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on Sebastopol meadowfoam are expected to be minimized by implementation of the *Conservation Measures*.

Antioch Dunes Evening Primrose

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Two occurrences of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary, and the level of disturbance is not expected to affect the viability of the populations at the occurrences that will be affected. Some disturbance associated with the action may benefit the species by reducing competition with weedy species. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on Antioch Dunes evening primrose are expected to be minimized by implementation of the *Conservation Measures*.

White-Rayed Pentachaeta

Covered Activities will be undertaken almost entirely on existing facilities within the action area. One occurrence of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary, and the level of disturbance is not expected to affect the viability of the populations at the occurrences that will be affected. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on white-rayed pentachaeta are expected to be minimized by implementation of the *Conservation Measures*.

Metcalf Canyon Jewelflower

Covered Activities will be undertaken almost entirely on existing facilities within the action area. Two occurrences of the species within the action area are expected to be disturbed, any disturbance is expected to be largely temporary, and the level of disturbance is not expected to affect the viability of the populations at the occurrences that will be affected. The applicant has committed to conserving habitat for this species, through the various measures described in the *Conservation Measures*, prior to engaging in any Covered Activities that may result in habitat disturbance. The applicant has committed to several avoidance and minimization measures intended to reduce or eliminate indirect effects of the action on this species. The effects of the action on Santa Clara Valley dudleya are expected to be minimized by implementation of the *Conservation Measures*.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened 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. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The Pacific Gas and Electric Company Bay Area Operations and Maintenance Habitat Conservation Plan and its associated documents clearly identify anticipated effects on Covered Species and the measures that will be taken to minimize those effects. The Plan's conservation strategy (Chapter 5) and monitoring and adaptive management program (Chapter 6), together with the terms and conditions described in the section 10(a)(1)(B) permit issued with respect to the proposed Plan, 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). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section

7(o)(2) of the Act to apply. If the Applicant fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) permit and section 7(o)(2) may lapse. The anticipated amount or extent of the incidental take and associated reporting requirements are described in the Plan and its accompanying section 10(a)(1)(B) permit.

Section 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. 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.

Amount or Extent of Take

All of the Covered Species are listed under the Act. The Service anticipates incidental take in terms of numbers of individuals of all covered animal species may be difficult to detect because of population dynamics, small body size, seasonal fluctuations in populations, and habitat type (i.e. underground burrows). However, take of these listed species can be anticipated by loss or degradation of suitable habitat modeled under the Plan. The HCP based its effect analysis for each Covered animal Species based on modeled habitat. Therefore the HCP estimates amount of take in the form of habitat loss as a surrogate for number of individuals in most cases and doesn't anticipate direct injury and mortality of all Covered animal Species. Additionally, implementation of the BMPs, AMMs, Hot Zone, and Map Book Zones measures are further expected to reduce the amount of direct injury and mortality. However, some amount of direct injury and mortality is possible. Therefore the Service's incidental take statement includes a small number of individuals for Covered animal Species (as identified in Table 3 below), except the vernal pool invertebrates. Anticipated take, in this context, is provided in Tables 1, 2, and 3 below.

Table 1: Maximum 30-Year Habitat Loss for Animals

Common Name	Permanent and Temporary Habitat Loss (Acres)
California freshwater shrimp	2.3
Conservancy fairy shrimp	2.5
Longhorn fairy shrimp	1.1
Vernal pool fairy shrimp	30
Vernal pool tadpole shrimp	30
Delta green ground beetle	6
Bay checkerspot butterfly	66
Callippe silverspot butterfly	85
Lange's metalmark butterfly	1.3
Mission blue butterfly	22
San Bruno elfin butterfly	22
California tiger salamander (Central CA DPS)	
Upland habitat	4,098
Breeding habitat	27

California tiger salamander (Sonoma County DPS)	
Upland habitat	93
Breeding habitat	1
California red-legged frog – Upland habitat	1,677
California red-legged frog – Breeding habitat	21.1
Alameda whipsnake – Core habitat	47
Alameda whipsnake – Perimeter core habitat	95
Alameda whipsnake – Movement habitat	356
San Francisco garter snake – Core habitat	18
San Francisco garter snake – Dispersal habitat	12
Ridgway's rail	37.4
Salt marsh harvest mouse	38.7
San Joaquin kit fox – Core habitat	463
San Joaquin kit fox – Low-use/quality	280

Table 2: Maximum 30-Year Habitat Loss for Plants

Common Name	Permanent and Temporary Habitat Loss (Acres)
Pallid manzanita	2.27
Sonoma sunshine	2.5
Coyote ceanothus	3.5
Fountain thistle	0.8
Santa Clara Valley Dudleya	3.84
Contra Costa wallflower	0.17
Marin dwarf flax	1.958
Burke's goldfields	1.51
Contra Costa goldfields	5.48
Sebastopol meadowfoam	0.04
Antioch Dunes evening primrose	0.17
White-rayed pentachaeta	0.11
Metcalf Canyon jewelflower	0.96

Table 3: Maximum 30-Year Injury and/or Death of Individuals (If Applicable)

Common Name	Number of Individuals Annually
California tiger salamander (Central DPS)	16
California tiger salamander (Sonoma County DPS)	2
California red-legged frog	12
Alameda whipsnake	6
San Francisco garter snake	4
San Joaquin kit fox	1

Delta green ground beetle	10
Bay checkerspot butterfly	10
Callippe silverspot butterfly	10
Lange's metalmark butterfly	5
Mission blue butterfly	5
San Bruno Elfin butterfly	5
Salt marsh harvest mouse	1
Common Name	Number of Individuals over 30-year Permit Term
California clapper rail	No more than 10 nests
California freshwater shrimp	36
Pallid manzanita	15
Sonoma sunshine	250,000
Coyote ceanothus	2,500
Fountain thistle	100
Santa Clara Valley dudleya	800
Contra Costa wallflower	35
Marin dwarf flax	1,700
Burke's goldfields	2,000
Contra Costa goldfields	14,539
Sebastopol meadowfoam	500
Antioch Dunes evening primrose	10
White-rayed pentachaeta	500
Metcalf Canyon jewelflower	210

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

The Service believes that implementation of the entire Pacific Gas and Electric Company Bay Area Operations and Maintenance HCP constitutes reasonable and prudent measures necessary and appropriate to minimize take of all Covered Species, all of which are listed under the Act.

Salvage and Disposition of Individuals:

Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact person is the Conservation Planning Division Chief of the Endangered Species Program at the Sacramento Fish and Wildlife Office at (916) 414-6600.

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. The Service has no conservation recommendations for the proposed action considered in this Opinion.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Pacific Gas and Electric Company Bay Area Operations and Maintenance HCP. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) 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;
- (c) 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 the biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion for the proposed Pacific Gas and Electric Company Bay Area Habitat Conservation Plan, please contact Joshua Emery (joshua_emery@fws.gov) or Mike Thomas, Division Chief (mike_thomas@fws.gov), at the letterhead address or at (916) 414-6600.

cc:

Include name, organization, city and state

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Appendix A

U.S. Fish and Wildlife Service Biological Evaluation Form

Sacramento Fish and Wildlife Office

Intra-Service Section 7 Biological Evaluation Form

I. Project Location:

A. County where the project will occur: Portions of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties, California

B. Brief description of project area (include map):

II. Species/Critical Habitat:

A. Identify the species of concern that are or may be present in the action area and whether federally designated or proposed critical habitat is present within the project area. (Range, Status, Impact, Data)

Listed, Proposed and Candidate Species that may occur within Action Area					
Common Name	Scientific Name	Federal Status	Species or Habitat within Action Area (Yes/No)	Proposed or Designated Critical Habitat Present in Action Area (Yes/No)	Species Potentially Affected By Project (Yes/No)
Ohlone tiger beetle	<i>Cicindela ohlone</i>	E	Yes	No	No
Valley elderberry longhorn beetle	<i>Desmocerus californicus behrensii</i>	T	Yes	No	No
Behren's silverspot butterfly	<i>Speyeria zerene behrensii</i>	E	Yes	No	No
Myrtle's silverspot butterfly	<i>Speyeria zerene myrtilae</i>	E	Yes	No	No
Tidewater goby	<i>Eucyclogobius transpacificus</i>	E	No	Yes	No
Delta smelt	<i>Hypomesus transpacificus</i>	T	Yes	Yes	No
Giant garter snake	<i>Thamnophis gigas</i>	T	Yes	No	No
Marbled murrelet	<i>Brachyramphus marmoratus</i>	T	Yes	Yes	No
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T	Yes	Yes	No
Wester yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	T	No	No	No
Short-tailed albatross	<i>Diomedea albatrus</i>	E	Yes	No	No
California least tern	<i>Sterna antillarum brownii</i>	E	Yes	No	No
Northern spotted owl	<i>Strix occidentalis caurina</i>	T	Yes	Yes	No

Least Bell's vireo	<i>Vireo bellii pusilus</i>	E	Yes	No	No
Riparian woodrat	<i>Neotoma fuscipes riparia</i>	E	No	No	No
Riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	E	No	No	No
San Mateo thornmint	<i>Acanthomintha duttonii</i>	E	No	No	No
Sonoma alopecurus	<i>Alpecurus aequalis</i> var. <i>sonomensis</i>	E	No	No	No
Large flowered fiddleneck	<i>Amsinckia grandiflora</i>	E	No	No	No
Presidio manzanita	<i>Arctostaphylos montana</i> ssp. <i>ravenii</i>	E	No	Yes	No
Marsh sandwort	<i>Aranaria paludicola</i>	E	No	No	No
Clara Hunt's milk-vetch	<i>Astragalus claranus</i>	E	No	No	No
Tiburon mariposa lily	<i>Calochortus tiburonensis</i>	T	No	No	No
White sedge	<i>Carex albida</i>	E	No	No	No
Tiburon paintbrush	<i>Castilleja affinis neglecta</i>	E	Yes	No	No
Robust spineflower	<i>Chorizanthe robusta robusta</i>	E	No	No	No
Sonoma spineflower	<i>Chorizanthe valida</i>	E	No	No	No
Suisun thistle	<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	E	No	Yes	No
Presidio clarkia	<i>Clarkia franciscana</i>	E	No	No	No
Vine Hill clarkia	<i>Clarkia imbricata</i>	E	No	No	No
Soft bird's beak	<i>Cordylanthus mollis mollis</i>	E	No	Yes	No
Palmate-bracted bird's-beak	<i>Cordylanthus palmatus</i>	E	No	No	No
Pennell's bird's-beak	<i>Cordylanthus tenius</i> subsp. <i>capillaris</i>	E	Yes	No	No
Santa Cruz cypress	<i>Cupressus abramsiana</i>	E	No	No	No
Baker's larkspur	<i>Delphinium bakeri</i>	E	No	Yes	No
Yellow larkspur	<i>Delphinium luteum</i>	E	No	Yes	No
San Mateo County wooly sunflower	<i>Eriophyllum latilobum</i>	E	Yes	No	No
Loch Lomond coyote-thistle	<i>Eryngium constancei</i>	E	No	No	No
Santa Cruz tarplant	<i>Holocarpha macradenia</i>	T	No	No	No
Beach layia	<i>Layia carnosa</i>	E	No	No	No
San Francisco lessingia	<i>Lessingia germanorum</i>	E	Yes	No	No

Pitkin Marsh lily	<i>Lilium pardalinum pitkinense</i>	E	No	No	No
Clover lupine	<i>Lupinus tidestromii</i>	E	No	No	No
Few-flowered navarretia	<i>Navarretia leucocephala pauciflora</i>	E	No	No	No
Many-flowered navarretia	<i>Navarretia leucocephala pliantha</i>	E	Yes	No	No
Colusa grass	<i>Neostapfia colusana</i>	T	No	No	No
San Joaquin Orcutt grass	<i>Orcuttia inaequalis</i>	T	No	No	No
Calistoga popcornflower	<i>Plagiobothrys strictus</i>	E	Yes	No	No
Napa bluegrass	<i>Poa napensis</i>	E	Yes	No	No
Hickman's cinquefoil	<i>Potentilla hickmanii</i>	E	Yes	No	No
Kenwood Marsh checkermallow	<i>Sidalcea oregana valida</i>	E	Yes	No	No
Tiburon jewelflower	<i>Streptanthus glandulosus niger</i>	E	No	No	No
California seablight	<i>Suaeda californica</i>	E	No	No	No
Showy Indian clover	<i>Trifolium amoenum</i>	E	No	No	No
Solano grass	<i>Tuctoria mucronata</i>	E	No	No	No

III. Description of Proposed Action:

See HCP Chapters 1-5.

IV. Recommended Determination(s) of Effect(s): For all species and critical habitat identified in the action area, mark (X) the appropriate determinations.

A. Listed, Proposed and Candidate Species

☐ a) "No Effect"

List species for which this recommendation is applicable: _____.

☒ b) "May Affect, but is Not Likely to Adversely Affect" (includes beneficial effects)

List species for which this recommendation is applicable: All Species in section II. A.

☐ c) "May Affect, and is Likely to Adversely Affect" (if checked, proceed with biological opinion)

List species for which this recommendation is applicable: _____.

1. Reasoning for Effects Determinations

There are numerous listed species with the potential to exist in the action area that have not been included for coverage in the HCP; we have determined that our action may affect, but is not likely to

adversely affect these species. The final list of covered species was refined through the application of the criteria used to decide on inclusion of the species for coverage as described in HCP Chapter 1, Introduction, section 1.5.2 Covered Species, and summarized here: 1) the species is known to occur or likely to occur within the Plan Area; 2) the species is currently listed as threatened or endangered under the Act, or was judged to have a high probability of being listed during the permit term; 3) the species may be adversely affected by PG&E's covered activities even with the implementation of avoidance and minimization measures; 4) sufficient data exists on the species' life history, habitat requirements, and occurrence within the Plan Area to estimate the effects on species and develop conservation measures to avoid or minimize those effects. If an individual project, that would also be a Covered Activity, is likely to adversely affect (pursuant to section 7) or is reasonably certain to result in take (pursuant to section 10) one or more of these species that project is not covered by the HCP or Permit it will be analyzed on a project-by-project basis by the Service via a separate section 7 consultation, or separate section 10 permit, as appropriate.

B. Federally Designated and Proposed Critical Habitat

☐ a) "No Effect" to Critical Habitat

List critical habitat(s) for which the recommendation is applicable. _____

☒ b) "May Affect, but is not likely to Adversely Affect"

List critical habitat(s) for which the recommendation is applied. _____

☐ c) "May Affect, and is Likely to Adversely Affect" (if checked, proceed with biological opinion)

List critical habitat(s) for which the recommendation is applied. _____

1. Reasoning for Effects Determinations

Most species that have designated critical habitat within the action area have been included for coverage in the HCP. Two fish have designated critical habitat within the action area, the delta smelt and tidewater goby. The applicant's facilities span waterways within these species ranges, and work within waters will require a permit from the U.S. Army Corps of Engineers. Effects to the delta smelt and tidewater goby will be analyzed as-needed section 7 consultations with the U.S. Army Corps of Engineers.

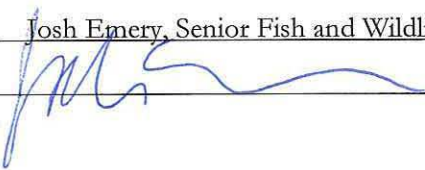
Designated critical habitat for the marbled murrelet and northern spotted owl is within the action area. Covered activities are not expected to remove old growth forests, a primary habitat component for the marbled murrelet and northern spotted owl.

Designated critical habitat for the western snowy plover, soft bird's beak, Baker's larkspur, Presidio manzanita, Suisun thistle, and yellow larkspur are within the action area. Facilities span habitat for these species and are not expected to affect it.

VI. Signatures:

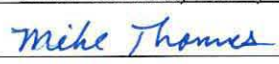
Prepared by:

Name/Title: Josh Emery, Senior Fish and Wildlife Biologist

Signature:  Date: 9-27-2017

Reviewed by:

Name/Title: Mike Thomas, Chief, Conservation Planning Division

Signature:  Date: 9/28/2017

Approved by:

Name/Title: Eric Tattersall, Assistant Field Supervisor, Recovery/Listing & Conservation Planning Divisions

Signature:  Date: 9/28/17

