

D.4 Biological Resources

This section presents information on biological resources that could be affected by the Proposed Project and alternatives. Section D.4.1 describes the environmental setting of the Proposed Project area. Section D.4.2 summarizes applicable laws and regulations. Section D.4.3 defines the impacts and mitigation measures for the Proposed Project, and alternatives are evaluated in Sections D.4.7 and D.4.8. Several appendices support this section: Appendix 5A presents descriptions of threatened and endangered species; Appendix 5B presents data on types and presence of vegetation in the area; and Appendix 5C summarizes information on special status plants and wildlife.

D.4.1 Environmental Setting for the Proposed Project

This section summarizes the existing biological resource setting in the project region, specific biological resources within the project corridor area. Much of the biological setting of the project area is based on information presented in PG&E's Proponent's Environmental Assessment (PG&E, 2002) so that reference is not repeated below.

D.4.1.1 Regional Overview

The Project Area lies within San Mateo County on the San Francisco Peninsula, a region characterized by a diversity of sensitive and unique types of natural and native vegetation communities, including fresh and saltwater wetland, perennial and ephemeral streams, riparian habitat, native serpentine soil grasslands, forests and scrub/chaparral vegetation. The diversity of upland and wetland habitats as well as its proximity to the San Francisco Bay and Pacific Ocean have also shaped this region as a migratory pathway and stop over for raptors, waterfowl, and songbirds. Substantial human impacts to wetlands, woodlands, chaparral, and endemic native plants and animal populations have created a fragmented mosaic of isolated native natural communities (PG&E, 2002; Murphy and Weiss, 1988; Weiss, 2002)

The endemic biological communities in this region evolved under the influence of unique climatic factors including the marine climate influence of the Pacific Ocean and San Francisco Bay, elevation, soils, and geology (Schoenherr, 1992). Fog occurs year-round and average rainfall is between 20-25 inches per season. Due to the moderating effect of the ocean, temperatures are moderate, ranging from lows in the upper 40s to highs over 90°F.

Vegetation Overview. Within the region the types of plant communities include:

- Chamise chaparral
- Coastal prairie
- Coast live oak woodland
- Coyote brush scrub
- Eucalyptus forest (non-native)
- Foothill riparian
- Freshwater marsh
- Mixed willow series
- Monterey cypress forest
- Monterey pine forest (non-native)
- Non-native grassland
- Open water habitats (i.e., reservoirs and San Francisco Bay)
- Redwood forest and mixed evergreen forest
- Ruderal or disturbed habitat
- Seasonal wetlands
- Serpentine chaparral and rock outcrops
- Serpentine grassland

The dominant vegetation types are discussed in more detail below according to the relative abundance of each within specific sections of the Proposed Project transmission line route. Plant communities generally separate themselves along environmental gradients related to soil type, hydrology, precipitation, humidity,

salinity, exposure to wind, and altitude (Whittaker, 1967). Within the project area there is therefore a broad range of climatic and physical conditions that have enabled a diversity of habitat types to develop. In addition, numerous special status endemic plant species are found in the project area, particularly those associated with serpentine grasslands and wetlands.

Wildlife Overview. The local environment supports a variety of habitats that are essential for the dispersal, refuge, breeding, and foraging activities of special status wildlife species. Individuals of many wildlife species often use multiple habitat types throughout their life cycle, while some such as the bay checkerspot butterfly (*Euphydryas editha bayensis*) and other invertebrates are highly specialized to inhabit a particular habitat types and plant species. The San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*), the California red-legged frog (*Rana aurora draytoni*), and Bald Eagle (*Haliaeetus leucocephalus*) are vertebrate species listed as threatened or endangered that are found in the region. The California tiger salamander (*Ambystoma californiense*) was recently listed as federally endangered (March 2003). Common wildlife include: black-tailed (mule) deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), small rodents, and numerous raptor, waterfowl, and songbird species.

Movement among habitat types or between patches of similar vegetation occurs within corridors of vegetative cover acceptable to these species particularly in areas of increasing human pressure on natural resources. These corridors can be critical for certain wildlife species to find adequate food, water, nesting or denning sites, and breeding opportunities, or to allow seasonal movements. When habitats are bisected by roads, homes, or other permanent barriers, wildlife populations may be adversely impacted. Substantial historical and recent human impacts to wetlands, woodlands, chaparral, and endemic native plants and animal populations have created degraded natural communities and a fragmented mosaic of isolated native natural communities. This loss of habitat has resulted in the elimination of many historical wildlife populations and/or the reduction of population sizes of other species.

D.4.1.2 Special Habitat Management Areas

Because this region of the San Francisco Peninsula contains unique plant and animal communities and regional watershed lands, it has several natural resource management areas that have been designated and protected. Those that relate most closely to the project area include lands managed by the County of San Mateo and the SFPUC Peninsula Watershed Lands. Figure D.4-1 illustrates open space preserves in the project area.

Protected Watershed Lands. The mountains to the southwest of the Crystal Springs Reservoirs form the boundaries of the protected SFPUC Peninsula Watershed (see Figure D.4-1) (SFPUC, 1999). Man-made Crystal Springs Reservoir is nine miles long and 122 feet deep and is situated 13 miles south of San Francisco. The Crystal Springs Reservoir holds 22.6 billion gallons of water for delivery to San Francisco and northern Peninsula towns, and the San Andreas Reservoir holds over 6 billion gallons of water.

Policies have been developed to address the existing and potential future activities in the Peninsula Watershed. The policies focus on public access to and use of the watershed, SFPUC operations and maintenance, and coordination with other applicable agencies and organizations. Policy WA6 states that the under the Peninsula Watershed Management Plan the SFPUC will “restrict new utility lines proposed on the watershed for the transmission of or communications to existing utility corridors, and require that new power lines be buried, where feasible. All proposed alignments shall undergo a scenic impact analysis.”

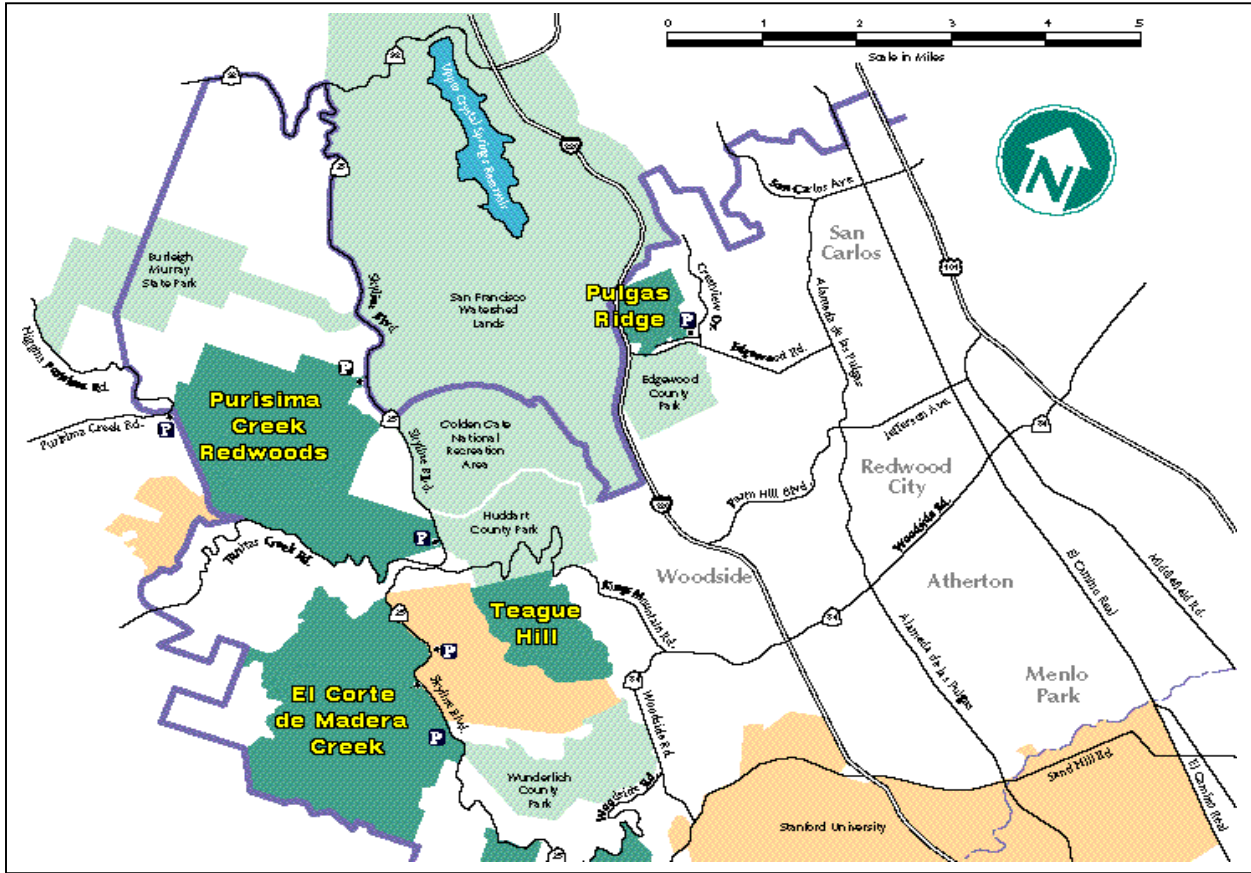


Figure D.4-1. Open Space Preserves in the Project Area

The California Department of Fish and Game (CDFG) administers the San Francisco Wildlife Refuge over lands coincident with the SFPUC Peninsula Watershed by prohibiting hunting and fishing within these areas.

The Midpeninsula Regional Open Space District (MROSD) manages nearly 50,000 acres of land, in 26 open space preserves in the San Francisco Bay region in order to permanently protect, and restore lands within a regional open space greenbelt (MROSD, 2002). **Pulgas Ridge Open Space Preserve** contains 366 acres of lands managed by the MROSD that is located along the northwest border with Edgewood County Park. This preserve contains grassland, chaparral, and mesic and xeric forest plant communities that support special status wildlife species as well.

Regional Parks. Figure D.4-2 illustrates the location of 17 regional parks in San Mateo County along the San Francisco Peninsula (San Mateo County, 2003). Thirteen of these parks are inventoried and discussed within the San Mateo County Parks Vegetation Resources Inventory

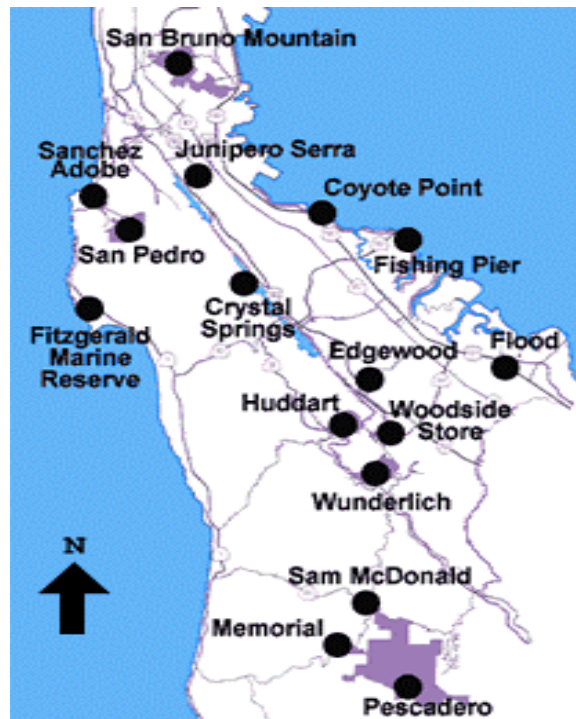


Figure D.4-2. San Mateo County Parks

(RCHR, 2002). Four of these county parks are relatively large and represent islands of biological diversity in close proximity to the project site. As one travels south to north along the Proposed Project route, the largest and closest of these parks include:

- **Edgewood County Park.** This 467-acre preserve generally lies immediately east, northeast of I-280 and north of the Jefferson Substation, which forms the southern terminus of the overhead section of the transmission line. Topography of the park is rugged and variable with elevation ranging between 240 to 873 feet above mean sea level (ESA, 1997). The Edgewood Park and Natural Preserve Master Plan was adopted in 1997 to provide a management framework for preserving the natural resources of the park while also providing recreational and aesthetic opportunities for the public (ESA, 1997). A major conservation emphasis within this preserve is to protect rare serpentine grasslands (144 acres), serpentine chaparral (18 acres), as well as coast live oak woodland (201 acres) (ESA, 1997; RCHR, 2002, Section 5; Weiss, 2002). Seventeen habitat types exist within the park, including sensitive native habitats such as wet meadow and riparian habitats. Twenty-four rare or endangered plant species including the federally listed endangered San Mateo Thornmint (*Acanthomintha duttonii*) and white-rayed pentachaeta (*Plagiobothrys diffusus*), and the federally listed threatened Marin dwarf flax (*Hesperolinom congestum*) (RCHR, 2002). The presence of serpentine soils and geology within this hillside park provide some of the only remaining habitat for the endangered bay checkerspot butterfly (*Euphydryas editha bayensis*); it is found also in Kirby Canyon in southern Santa Clara County, Coyote Ridge in San Jose, and San Bruno Mountain State and County Park in northern San Mateo County. Common wildlife species include deer, coyote, raptor species, migrant songbirds, bobcat, raccoon, opossum, and other small mammals.
- **Huddart County Park** is a 974-acre park located on the eastern slope of the Santa Cruz Mountains, southwest of I-280 and less than three miles south of the Jefferson Substation (RCHR, 2002). The park contains diverse plant communities including an abundance of mixed evergreen forest (578 acres) and redwood forest; (303 acres). Species such as tanbark oak (*Lithocarpus densiflorus*), madrone (*Arbutus menziesii*), California bay (*Umbellularia californica*), coast live oak (*Quercus wislizenii*), and Douglas fir (*Pseudotsuga menzeisii*) are dominant and shaded steam habitats support sword fern and redwood sorrel beneath which yellow banana slugs may be found. In contrast, the more open and dry chaparral (70 acres) areas contain manzanita, and chamise; a relatively small area of live oak woodland (24 acres) is also present. Seven special status plants and 8 special status wildlife species may be found in the park. Black-tailed deer, raccoons, black squirrels and, less commonly, bobcats, coyotes, and gray foxes may be seen. Common birds within the forested areas include acorn woodpeckers, chickadees, towhees, and stellar jays. Jackrabbits, rabbits, chipmunks, lizards, quail, scrub jays, towhees, and wrentits are some common species found within the chaparral habitats.
- **Crystal Springs Park** has been recognized as a critical part of the regional watershed, is a designated Biosphere Preserve, and is considered by California Department of Fish and Game (CDFG) as a Wildlife Refuge (RCHR, 2002). This park encompasses lands along the west side of the Crystal Springs Reservoirs and contains areas of restricted recreational access. The existing trail parallels Lower and Upper Crystal Springs Lake and San Andreas Lake. Vegetation within the park is dominated by coast live oak woodland (approx. 282 acres) but also includes mixed evergreen (58.5 acres), exotic forest (80 acres), mixed riparian forest (approx. 65 acres), grasslands (approx. 75 acres), coyote bush scrub (approx. 100 acres), and freshwater and seasonal marsh (less than 2 acres) (RCHR, 2002). Fifteen species of rare and uncommon plants occur in the park and vicinity, seven of these species special status species including the San Mateo woolly sunflower (*Eriophyllum latilobum*) (federal and State listed endangered), Marin dwarf flax (federal and State listed threatened), white-rayed pentachaeta, fragrant fritillary (*Fritillaria liliacea*), western leatherwood (*Dirca occidentalis*), and fountain thistle (*Cirsium fontinale*) (RCHR, 2002). Over 180 different species of birds have been

identified there including songbirds, waterbirds, and raptors including Coopers and sharp-shinned hawk, red-shouldered hawk, and white-tailed kite (RCHR, 2002, Table 4.3). Deer, bobcat, coyote, and rattlesnake are commonly seen; sightings of mountain lion (*Felis concolor*) have also occurred. Other sensitive species that may occur in the park include the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), the California red-legged frog (*Rana aurora draytoni*), the California tiger salamander (*Ambystoma tigrinum californiense*), mission blue butterfly (*Icaricia icarioides missionensis*), and the Edgewood blind harvestman (*Calcina minor*).

- **San Bruno Mountain State and County Park** lies within San Bruno Mountain Wildlife Refuge, covering approximately 3,600-acres and reaching 1,314 feet in elevation (County of San Mateo, 1982). This park lies at the northern end of the Santa Cruz Mountain range, and has become surrounded by urban development; Daly City lies to the east and Coloma and South San Francisco are south of the preserve. The northern portion of park area is bisected by Guadalupe Canyon Parkway; this road would contain the northernmost segment of the underground portion of the proposed transmission line. The overall climate of this park is influenced by the mountain's exposure to the Pacific Ocean, with dominant westerly winds in the summer bringing moisture-laden fog, while southerly winds carry winter storms. The main ridge separates the steeper and dryer southeast slopes from the more gradual and wetter northwest facing slopes. The southeast side is dominated by native and introduced grassland vegetation, while the northwest side is comprised of mostly coastal scrub, and riparian scrub/woodland plant communities. The San Bruno Mountain ridgeline runs east-west, with a considerable area of slopes exceeding 50%, and elevations ranging from 250 feet to 1,314 feet at the summit (RCHR, 2002).

The park's principal resources include 14 species of rare or endangered plant life, as well as five species known as host plants for endangered butterflies such as the San Bruno elfin (*Incisalia mossii bayensis*), mission blue, Callippe silverspot (*Speyeria callippe callippe*), and the bay checkerspot butterflies. Coastal scrub, coastal prairie, and needlegrass grassland are the most abundant vegetation types. Coastal strand, oak woodland, chaparral, wetlands, and riparian habitats are also present. Twelve rare plant species found within the park including the State-listed endangered San Bruno Mountain manzanita (*Manzanita Arctostaphylos imbricata*), and the federal- and State-listed endangered San Francisco lessingia (*Lessingia germanorum*). At least 13 special status wildlife species may occur within the park including the butterfly species as well as the federally listed San Francisco garter snake, the California red-legged frog (RCHR, 2002), raptors, and numerous songbird species.

The San Bruno Mountain Area Habitat Conservation Plan (HCP) was approved in 1982 providing coverage of the entire area of San Bruno Mountain (County of San Mateo, 1982). The first Section 10(a)(1)(B) permit was issued by the U.S. Fish and Wildlife Service in March of 1983 and will remain in effect for 30 years. The HCP designates 11% (368) acres of the Mountain for planned development, and 81% (2,752 acres) for conserved habitat. The remaining 8% (260 acres) was designed unplanned and is subject to further analysis. The HCP is expected to result in the loss of up to 14% of the habitat of the Mission blue butterfly and 8% of the habitat of the Callippe silverspot. As mitigation for this loss, the HCP requires the transfer of 800 acres of previously privately owned land to the County of San Mateo, and the generation of a permanent funding source to manage the habitat of the Mountain in perpetuity. Since the HCP was approved actual development of the Mountain has been consistent with what was set forth in the HCP. As of 1996, 353 acres of land are either under construction or completed. Nineteen acres of planned developed areas have an unknown status. Some 216 acres are still designated as unplanned.

D.4.1.3 Plant Communities and Sensitive Habitats within the Project Area

Description and quantification of plant communities within the project area were completed by PG&E's biologists based upon field surveys in July 2002, and using digital vegetation maps of Edgewood Park and Preserve and San Bruno Mountain provided by the San Mateo County Parks Department (RCHR, 2002) and draft vegetation maps of the Crystal Springs Watershed produced by the Golden Gate National Recreation Area (GGNRA). During the field investigation completed by consultants to PG&E, the vegetation types present within the study area boundaries for each portion of the Proposed Project were compared to the existing vegetation maps, discrepancies were noted, and the vegetation was photographed. A full wetland delineation of all project features will be conducted prior to construction to meet permitting requirements. Figure D.4-3 illustrates the general habitat types of the southern segment of the project area.

Open Water

The Project Area contains three large freshwater reservoirs: Upper Crystal Springs Reservoir, Lower Crystal Springs Reservoir, and the San Andreas Reservoir. All of these lie along and within the overhead portion of the project. No open freshwater habitat occurs within the underground portion of the transmission line. The shoreline vegetation surrounding these managed waterbodies may contain forest, shrub, wetlands or may be disturbed by human activities and may not even contain vegetation. The Pacific Ocean lies several to the west and the San Francisco Bay lies to the northeast and east.

In open water habitats, many fish and bird species may be found depending on the salinity and depth of the water. A diversity of dabbling and diving ducks use open water habitats, including for example mallard (*Anas platyhynchos*), gadwall (*Anas strepera*), pintail (*A. acuta*), common merganser (*Mergus merganser*), bufflehead (*Bucephala albeola*). Belted kingfisher (*Ceryle alcyon*) as well as the American coot (*Fulica americana*) and other Gruiformes, gulls, terns, and other Charadriiformes would also be expected to use the reservoirs and nearby bay and associated shoreline habitats for feeding, bathing, and roosting (Zeiner et al., 1990). Killdeer (*Charadrius vociferus*) and other shorebirds and wading birds inhabit the shoreline habitat. Mammals such as raccoons, opossum, and deer may also frequent the shoreline. Amphibian species inhabiting this habitat type associated with streams and lake edges may include Pacific tree frog, western toad, and Coast Range newt.

The fishery resources of the Peninsula Watershed appear to be limited (ESA, 1994). In recent years, native species such as the rainbow trout (*Oncorhynchus mykiss*), Sacramento Sucker (*Catostomus occidentalis*), tule perch (*Hysterocarpus traski*), and various sculpin species (*Cottus spp.*) appear to be few in number (ESA, 1994). Exotic species such as the mosquito fish (*Gambusia affinis*) and largemouth bass (*Micropterus salmoides*) occur in all the reservoirs. Fish species collected from San Andreas Lake include rainbow trout (stocked), largemouth bass, mosquito fish, Sacramento sucker, tule perch, prickly sculpin (*Cottus asper*), Coast range sculpin (*Cottus aleuticus*), and threespine stickleback (*Gasterosteus aculeatus*).

Wetlands

Wetlands and aquatic resources within the project area include seasonal wetlands, freshwater marshes, perennial creeks, intermittent creeks, ditches and swales. Wetland and aquatic resources within the project area was estimated during field reconnaissance surveys conducted in July 2002, and a full wetland delineation will be completed prior to construction in order to more accurately determine actual wetland boundaries and acreages present. Wetlands occur within approximately 2 percent of tower, cable pull, and access road areas.

A large diversity of aquatic, amphibious, and terrestrial plants and wildlife are dependent on wetlands. Typical wildlife species that use the many types of wetlands in the project area include mammals such as bats, raccoon, coyote, muskrat, and deer, birds: including, the American coot and other gallinaceous birds, mallards and other waterfowl, great blue heron (*Ardea herodias*) and common egret (*Casmerodias albus*) and other ciconiformes, and other passerines including red-winged blackbirds (*Agelaius phoeniceus*), raptors including the special status bald eagle, gulls and terns, swallows, and swifts. Pacific treefrog (*Hyla regilla*), and gopher snake (*Pituophis melanoleucus*) may also be found in these areas. Wetlands provide important breeding and hunting habitat for two special-status species, the California red-legged frog and San Francisco garter snake. Both of these species inhabit the project area and are discussed in Appendix 5A.

The majority of wetlands and aquatic features occur in the southern portion of the project area, between Jefferson Substation and the Transition Station and within the overhead portion of the Proposed Project. Two freshwater marshes and eight seasonal wetlands occur within the overhead portion of the project area. These features may be associated with intermittent creeks swales, or manmade ditches. Mixed willow riparian forest may also occur adjacent to some of these creeks. A few seasonal wetlands were identified within the proposed McLellan Drive, but that road is now completed and paved.

Seasonal Wetland and Freshwater Marsh. Seasonal wetlands are habitats that are seasonally inundated and/or saturated for a sufficient duration (in the winter) such that hydrophytic (wetland) vegetation and hydric soils have evolved. These wetlands dry up significantly if not completely during the spring and summer (Holland 1986). Seasonal wetlands are typically dominated by a mixture of non-native grass species such perennial ryegrass and forbs such as curly dock and rush. Holland characterizes this vegetation type as exhibiting low growing annual herbs (contrasting with the taller perennials in more permanent marshes). Within the project area, this vegetation type occurs most frequently within intermittent creeks or swales, but also occurs in microdepressional terrain within upland vegetation types. Plant species observed in this vegetation type within the project area include: Italian and perennial ryegrass, Mediterranean barley (*Hordeum marinum ssp. gussoneanum [H. hystrix]*), curly dock (*Rumex crispus*), rushes (*Juncus patens* and *J. xiphioides*), Harding grass (*Phalaris aquatica*), bristly ox tongue (*Picris echioides*), spikerush (*Eleocharis montevidensis*), and rabbit's foot grass (*Polypogon monspeliensis*). A few wetlands are adjacent to roads that function as impoundment barriers and pond for longer duration. These wetlands support perennial emergent species such as cattails, and better fit the category of freshwater marsh. California tiger salamander inhabits seasonal wetland habitats and associated with oak savannah communities (USFWS, 2003; Zeiner, 1988).

Coastal and Valley Freshwater Marsh. These marshes occur in areas that are permanently flooded, lack significant water currents, and are dominated by perennial emergent wetland plants that can reach 12 feet in height. Species found in this wetland type include broad-leaved cattail (*Typha latifolia*), as well as several low-growing perennial species. The latter include: rushes (*Juncus effusus*, *J. patens*, and *J. balticus*), tall nutsedge (*Cyperus eragrostis*), and spikerush (*Eleocharis montevidensis*). Vegetation in these wetlands can be very dense forming closed canopies that benefits breeding birds and mammals (Holland, 1986). Within the project area, this vegetation type is found within the bed and bank of the few intermittent drainages that contain water into the summer months, or in depressional wetland areas that pond for long duration. Freshwater marsh is also found adjacent to the access road in between Towers 12/79 and 12/80, but is not found at any tower, cable pull and access road areas.

Figure D.4-3. Habitat Types in Project Area

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Perennial Creeks

San Mateo Creek is the only perennial creek within the project area that has natural creek topography. This creek is located east of Crystal Springs Dam at the bottom of a wide ravine and within the overhead portion of the project. The creek bed channel is small yet perennial and supportive of native fish populations including lamprey and steelhead. A dense corridor of mixed willow riparian forest lines both sides of the creek and this also provides sensitive and valuable wildlife habitat. Riparian and associated stream willow habitats also listed below occur in association with perennial creeks. These habitats support a diversity of species including ash-coated flycatcher (*Myiarchus cinerascens*), bushtit (*Psaltriparus minimus*), black phoebe (*sayornis nigricans*), California quail (*Callipepla californica*), red-shouldered hawk, raccoon, deer, coast range newt (*Taricha torosa torosa*), and western toad. Riparian areas provide cover for wildlife during migration and dispersal.

Colma and Twelve Mile Creeks occur within the underground segment of the Proposed Project. These two creeks are channelized, and the creek bed is lined with concrete. Colma Creek is approximately 15 to 20 feet in width at the channel bottom and 30 to 50 feet at the top. Twelve Mile Creek has vertical concrete walls, that vary from 10 to 12 feet in width. No wetland vegetation is present within these concrete channels and their wildlife habitat value is minimal.

Intermittent Creeks, Ditches, and Swales

The intermittent creeks, swales and ditches are generally narrow and range in size from one to two feet in the project area. However, in a few locations, the creek canyon width extends to 50 to 75 feet as measured at the top of the canyon banks. The creek, ditch, and swale slopes vary, with some features possessing gently sloping banks, and others with steep eroding banks. The bottom substrate is generally a mixture of dirt and cobbles; however, some have been stabilized with sac-crete or are rock-lined.

Because they are intermittent features these areas are generally dry up during the spring and remain dry until the rainy season begins. In July 2002 the largest creeks still supported puddles in the creek bottoms. Seasonal wetlands may also occur within the bed and bank of these features, or in depressional terrain adjacent to the banks or slopes. Mixed willow riparian forest habitats are commonly associated with these intermittent wetland areas.

A total of 16 intermittent creeks and 9 ditches or swales occur in the project area. The majority of intermittent creeks, ditches and swales occur in the overhead portion of the project route and within the southern portion of the underground portion of the project.

Mixed Willow and Riparian

This habitat type may be associated with open wetlands and riparian habitats and provides valuable wildlife habitat. Plant species within the project areas associated with this type of vegetation include: red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), big-leaf maple (*Acer macrophyllum*), California blackberry, snowberry, poison oak, and California buckeye (*Aesculus californica*). Wildlife found in these habitats are diverse including the previously mentioned raptors, songbirds, apodotes, mammals, amphibians, and reptiles. Mixed willow habitat occurs at 1 percent of tower, cable pull, access road, and staging areas, and also is found adjacent to six intermittent creeks and San Mateo Creek.

Serpentine Habitats

Edaphic communities such as those dependent upon serpentine soils include native grasslands, rock outcrops, and chaparral; these communities are considered sensitive habitats by CDFG (CDFG, 1998; CDFG, 2002; Schoenherr, 1992). Serpentine-based rock represents only about one percent of California's geologic base, yet contains 10 percent of California's native flora (Murphy and Weiss, 1988). Serpentine-derived soils are found in parts of eight counties within the San Francisco Bay Area: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, and Sonoma. These soils provide harsh conditions for plant growth including a low calcium to magnesium ratio, lack of nitrogen, potassium, and phosphorous that are essential to plant growth, and high concentrations of heavy metals that are toxic to most plant life (Murphy and Weiss, 1988). Despite these harsh conditions serpentine habitats support proportionately high numbers of rare and/or endemic plant species such as grasses.

The endemic serpentine plant species have developed several genetic adaptations to tolerate the serpentine environments and have been able to persist due to the lack of competition from nonnative species that are intolerant to serpentine conditions. Native grass species observed or known to occur in this habitat within the project area include: purple needlegrass, foothill needlegrass, California oatgrass, squirrel tail (*Elymus multisetus*), California melic (*Melica californica*), and Torrey's melic (*Melica torreyana*). Serpentine habitats also support endemic or nearly endemic invertebrates such as the federally threatened Bay checkerspot butterfly whose primary larval host plant, dwarf plantain (*Plantago erecta*), is abundant on serpentine soils. The Opler's longhorn moth (*Adela oplerella*), a federal species of concern, is found exclusively on its host plant, California cream cups (*Platystemon californicus*), in serpentine soils. The Edgewood blind harvestman (*Calicina sitalcina minor*), also a federal species of concern, is restricted to serpentine soils in the San Francisco Bay Area.

Impacts to this community are a major concern in this region (Murphy and Weiss, 1988). In the project area, this vegetation type occurs in Edgewood County Park and Preserve, Ralston-Pulgas Ridge, and along the Haynes Road-Black Mountain Road areas — areas in which soils are derived from serpentine rock. In addition to occurring within a limited portion of the ROW, serpentine grassland is found on average at 11 percent of tower, cable pull and access road areas.

Chamise Chaparral

This type of chaparral is found on dry exposed sites, with little understory vegetation or litter, reaching 3 to 10 feet in height and is adapted to repeated fires by stump sprouting. It can be very thick and is characteristically dominated by chamise (*Adenostoma fasciculatum*) (Holland, 1986) Species that can be present in the chamise chaparral and chamise series include: bigberry and Eastwood manzanita (*Arctostaphylos glauca*, *A. glandulosa*), black sage (*Salvia mellifera*), California buckwheat (*Eriogonum fasciculatum*), poison oak (*Toxicodendron diversilobum*), toyon (*Heteromeles arbutifolia*), and California lilac (*Ceanothus cuneatus*). Chamise chaparral is the most limited habitat type in the project area. Chamise chaparral was confirmed at one tower location, but may exist at two additional tower locations.

Coast Live Oak Woodland

Coast live oak (*Quercus agrifolia*) woodlands are commonly located on upland slopes or on raised stream banks and terraces between 0 to 4,000 feet in elevation (Sawyer and Keeler-Wolf, 1995). Coast live oak is generally the only tree species present. Subdominant species found within the project area include: poison oak, madrone (*Arbutus menziesii*), California bay (*Umbellularia californica*), toyon,

coffeeberry (*Rhamnus californica*), and snowberry (*Symphoricarpos albus* var. *laevigatus* [*S. rivularis*]). The trees may grow to 100 feet in height, with an open, intermittent, or continuous canopy and provide habitat for many nesting bird species.

Raccoons and opossum may use hollow oaks for den sites, while fallen trees provide cover for small rodents. Hollow snags are important roosting habitat for bats. Oak woodland also provides habitat for several other mammals including the pocket gopher (*Thomomys bottae*), shrew mole (*Neurotrichus gibbsii*), western gray squirrel (*Sciurus griseus*) and black-tailed deer, which forage on leaves and twigs. Coyote are also common residents.

Avian species found within oak woodland within the overhead portion of the transmission line may include: acorn woodpecker (*Melanerpes formicivorus*) and other woodpeckers, plain titmouse (*Parus inornatus*) and other parids (nuthatches and chickadees), scrub jay (*Aphelocoma coerulescens*) and other corvids, barn owl (*Tyto alba*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), and cooper's and sharp-shinned hawks (*Accipiter cooperi* and *A. striatus*), White-tailed kite, and owls such as great-horned owl and western screech owl (*Otus kennicottii*) (Zeiner et al., 1990). Reptiles and amphibians that are found in oak woodlands include western fence lizard (*Sceloporus occidentalis*), western toad (*Bufo boreas*), California slender salamander (*Batrachoseps attenuatus*), and Coast Range newt (Zeiner et al., 1988).

Coast live oak woodland occurs in 30 percent of the tower study areas, cable pull sites, and staging areas as well as within the ROW. Fire hazard vegetation clearing occurs under and next to the tower footings, therefore, few oaks occur in these areas.

Coyote Brush Scrub

The coyote brush (*Baccharis pilularis*) dominated scrub series is commonly located on stabilized dunes of coastal bars, river mouths, spits along the coastline, coastal bluffs, open slopes and/or terraces, at elevations ranging between 0 to 3,300 feet (Sawyer and Keeler-Wolf, 1995). Shrub height is less than six feet in height with a continuous or an intermittent canopy. Species composition and coverage of the ground layer is highly variable (Sawyer and Keeler-Wolf, 1995). Within the project area, coyote brush is often the only shrub species present, but subdominant shrub species observed onsite include: California blackberry (*Rubus ursinus*), poison oak, California sagebrush (*Artemisia californica*), California coffeeberry, and sticky monkeyflower (*Mimulus aurantiacus*). In some areas, a noxious weed, French broom (*Genista monspessulana*), is prevalent as an understory shrub.

Typical wildlife species found in this scrub habitat include small mammals such as the brush rabbit (*Sylvilagus bachmani*), and black-tailed hare (*Lepus californicus*). Large mammals may include the gray fox (*Urocyon cinereoargenteus*) and coyote. Bird species include the California towhee (*Pipilo crissalis*), California quail (*Callipepla californica*), and Bewicks wren (*Thryomanes bewickii*) (Zeiner et al., 1990).

Coyote brush scrub is found at 57 percent of the tower, cable pull, access road, and staging areas, combined. It also occurs in scattered patches within the ROW.

Monterey Cypress Forest

These stands are considered a sensitive resource by the CDFG and California Native Plant Society (CNPS), and are protected (CDFG, 1998). Within the project area, Monterey cypress is widely distributed within the overhead portion of the route as a landscape species. It occurs at 10 percent of the tower, cable pull and access road areas. Monterey cypress is found either in monotypic or mixed stands

with several co-dominant species. Other tree species that are co-dominant with Monterey cypress include Monterey pine (*Pinus radiata*), coast live oak, and blue gum. The prevalence and density of understory vegetation varies according to canopy density but can include species from the coyote brush scrub and non-native grassland vegetation types.

Non-Native Plant Communities and Habitats

The following vegetation types are not native to California but they do provide habitat for wildlife species inhabiting the project area. These habitats offer perching, roosting, and nesting sites for a variety of avian species, including raptors such as the red-tailed hawk and barn owl, passerines such as corvids, vireos, parids (titmice and allies), songbirds such as western meadowlark (*Sturnella neglecta*), warblers, flycatchers, and nectivorous species such as Anna's hummingbird (*Calypte anna*) and Allen's hummingbird (*Selasphorus sasin*).

- **Monterey Pine Forest** Several non-native species were also observed in this vegetation type, including: French broom, blackwood acacia (*Acacia melanoxylon*) and blue gum. Monterey pine forest is found at 30 percent of the tower, cable pull and access road areas, combined.
- **Eucalyptus Grove.** Members of the Eucalyptus group are native to Australia and is an invasive pest tree species as described in Sawyer and Keeler-Wolf (1995) and by California Exotic Pest Plant Council (CALEPPC) (CALEPPC, 1999). These species can form dense stands and hedgerows and provides cover and foraging areas for wildlife despite its status as an invasive weed. The Town of Hillsborough encourages the removal of these trees (Town of Hillsborough, 2002).
- **Non-Native Grassland.** This diverse and extensive upland community is composed of many alien and native annual species such as wild oats (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), European hairgrass (*Aira caryophyllea*), yellow star thistle (*Centaurea solstitialis*), Italian and perennial ryegrass (*Lolium multiflorum* and *L. perenne*), and narrow-leaved flax (*Linum bienne*). Trees and shrubs may also be present (Sawyer and Keeler-Wolf, 1995). Non-native grasses are common throughout the project area, particularly within the ROW, at the tower, cable pull and access road locations (88 percent) and in all areas that have been plowed, cleared or substantially disturbed but are not paved.

Appendix 5B provides a summary of the vegetation types that occur within the overhead segment of the Proposed Project.

D.4.1.4 Special Status Plant and Wildlife Species within the Project Area

Special-status species are protected under the federal Endangered Species Act (ESA) and the California Endangered Species Act. Plants may also be listed by the California Native Plant Society (CNPS) as rare or endangered in California. The term "special-status species" is defined as including species that are:

- Listed, proposed for listing, or candidates for listing, as threatened or endangered under the federal Endangered Species Act (50 CFR 17.11 for wildlife; 50 CRF 17.12 for plants; 67 FR 40658 for candidates) and various notices in the Federal Register for proposed species);
- Listed, or proposed for listing by the State of California as threatened or endangered under the California Species Act (California Administrative Code, Title 14, Section 670.5);
- Identified by the CDFG as species of concern (fish and wildlife species that do not have State or federal threatened or endangered status but may still be threatened with extinction);

- Protected by the Migratory Bird Treat Act (MBTA) (U.S.C. 703-712; CH. 128; July 13, 1918; 40 Stat. 755, as amended);
- Species that otherwise meet the definition of rare, threatened, or endangered under the California Environmental Quality Act (1970).

To determine if the special status species inhabit the project area/site, PG&E has completed the following:

- Reconnaissance field surveys and habitat assessments to determine the potential occurrence (high, moderate or low) for each of the special-status species in the project area. During these surveys, nine special status plants, 27 vertebrate species, and 10 invertebrate species were observed as potentially occurring within the project area (see Appendix 5C). This list includes two fish, three amphibians, three reptiles, 12 birds, and seven mammals some of which have very restricted and specialized habitat requirements.
- Surveys for special-status plants and their habitats were conducted by a consulting botanist within a 100-foot-wide survey corridor during the spring and summer of 2001 and 2002. The objectives of the special-status plant surveys were to locate, document, and assess all threatened, endangered, and sensitive plant populations using agency appropriate field survey methods. Pertinent literature and expert opinion from the general vicinity of the project was consulted. Field surveys were performed on April 5-6, May 10-12, June 16-17, and July 20-21, 2001, and March 10, March 26, and April 20, 2002. In addition to the 100-foot-wide corridor, areas of potential impact near the ROW and access routes were also surveyed. All the tower sites and access routes were surveyed on foot. Vehicles were used on existing roads to coordinate and facilitate access in some locations. Where special status species and habitats were found photographs were taken. Newly defined project work areas (e.g., cable pull sites or staging areas that are located outside the 100-foot-wide survey corridor) that have not yet been surveyed would be surveyed prior to construction using accepted agency protocols for each plant species.
- Special surveys were conducted for both the threatened California red-legged frog and the endangered San Francisco garter snake because both species occur in the area. For both the San Francisco garter snake and the California red-legged frog, a status review was conducted based on available information. Sources for the review included two field surveys commissioned by the CDFG, one in the late 1970s conducted by S. Berry and the other conducted by Sam McGinnis between 1986 and 1987. Additional information included trapping survey data collected from 1988 to 2000 by Sam McGinnis.
- Eleven special-status insects and other invertebrates were identified as potentially occurring in the project area based upon CNDDDB records, historical or present-day geographic ranges and survey results (BUGGY database report 2001; CDFG, 1998; CDFG, 2001; CDFG, 2002). Surveys were conducted by Entomological Consulting Services for eleven special-status invertebrate species, including the bay checkerspot butterfly, the mission blue butterfly, Opler's longhorn moth (*Adela oplerella*), the Edgewood Blind harvestman (*Calicina minor*); Edgewood Microblind harvestman (*Microcina edgewoodensis*); and Serpentine phalangid (*Calicina serpentina*).
- Database searches, literature reviews, and interviews with species experts were also conducted.

The species list, habitat requirements, federal and State listing status, and the potential of occurrence in the project area are summarized in Appendix 5C. A description of all special-status plant and wildlife species within the project area is provided in Appendix 5A. Species addressed therein include:

- San Francisco garter snake
- California red-legged frog
- Steelhead trout
- Bay checkerspot butterfly
- Bald eagle
- Edgewood blind harvestman, Edgewood microblind harvestman, and serpentine phalangid.
- California tiger salamander.
- Southwestern pond turtle.
- San Francisco dusky-footed wood rat
- Six bat species (long-eared myotis, fringed myotis, long-legged myotis, Townsend's western big-eared bat, pallid bat, western mastiff bat)
- Raptors and owls.
- White-tailed kite
- Northern harrier
- Sharp-shinned hawk
- Cooper's hawk
- Ferruginous hawk
- Red-shouldered hawk
- Golden eagle
- Peregrine falcon
- Merlin
- Prairie falcon
- Songbirds (California yellow warbler, San Francisco common yellowthroat)
- Loggerhead shrike
- Olive-sided flycatcher
- Pacific-slope flycatcher

D.4.1.5 Sensitive Biological Resources Documented in Project Area

This section complements preceding sections and biological resources appendices on species occurrence by providing additional detail and CNDDDB record information within specific segments of the proposed alignment. As a general framework for discussing existing conditions, the proposed Project Area is characterized by two main components: the overhead segment and the underground segment. The overhead transmission line portion of the Proposed Project route contains the most numerous sensitive vegetation types and special status species. The underground segment would be entirely within developed areas, so the focus of the biological resources discussion is on the southern overhead segment.

Overhead Segment – Proposed Project

The overhead portion of the route begins at the Jefferson Substation, near Edgewood County Park and Preserve, and extends north across the serpentine grasslands of the park. North of Edgewood Park, the line traverses the San Francisco Water Department Peninsula Watershed lands, as illustrated in Figure B-2 (Section B). For the purposes of this site description, the overhead section is divided into three segments:

- Jefferson Substation to Ralston Substation
- Ralston Substation to Carolands Substation
- Carolands Substation to Transition Station.

Upper Crystal Springs Reservoir, Lower Crystal Springs Reservoir, and San Andreas Lake are linear waterbodies that are situated along the western side of the existing transmission line. The regional watershed west of these reservoirs has remained relatively undisturbed by the surrounding urban development and serves as an important biological preserve for the region. Eleven vegetation types occur within the portion of proposed Project Area that contains the overhead transmission lines. Refer to Appendix 5B for a list of vegetation types within the overhead portion of the project area. These include eight upland vegetation types (grassland, forest, and scrub or chaparral types), and three wetland or riparian (streamside) vegetation types (wetlands, marsh, and willow riparian forest). Appendix 5B provides a tabular summary of the vegetation types observed during the field reconnaissance at towers, cable pull sites and along access roads, and the percentage of Project Areas where these types were found. Based on surveys in late winter and spring of 2003, no special status wildlife species were seen on the access roads, cable-pull sites, or helicopter staging areas.

Nine special-status plant species were identified as potentially occurring within the overhead portion of the project area. Of these, three are federally listed as endangered (San Mateo thornmint, fountain thistle, and San Mateo sunflower) and two are proposed for listing as threatened or endangered (Marin flax and white-rayed pentachaeta). Marin flax was the only special-status plant observed within the 100-foot-wide survey corridor during the 2001 and 2002 field surveys although sensitive habitats such as riparian and wetlands are present.

Jefferson Substation to Ralston Substation

This segment of the project would include 29 towers and traverses areas that contains coast live oak woodland (present at 14 towers), serpentine grasslands (present at seven towers), wetlands (present at four towers), as well as non-native grasslands. Marin flax is State-listed as threatened and is proposed for federal listing as threatened. Approximately 50 plants were observed on May 2001 and in 2002 north of the Ralston Substation outside the project area and also on Pulgas Ridge nearly 130 feet west of the existing ROW. No other special-status plant species were observed within the areas surveyed in 2001 and 2002; however, CNDDDB records show clusters of plant species on both sides of the route at its origin, departing Jefferson Substation. This area includes Edgewood Park and Natural Preserve (ESA, 1997). As one travels north, northwest towards the Ralston Substation there are records of songbirds, beetles and San Francisco Garter Snakes on the west side of the route. The Ralston Substation area supports additional clusters of special status species, including the bay checkerspot butterfly.

Below is a list of special status plant species occurring between the Jefferson Substation and the Ralston Substation; these occurrences are based on the PEA and CNDDDB maps. Many of these species are associated with serpentine grasslands and chaparral habitats.

- San Mateo thornmint
- Fountain thistle
- Western leatherwood
- San Mateo woolly sunflower
- Fragrant fritillary
- Marin western flax
- Crystal springs lessingia
- White-rayed pentachaeta
- San Francisco campion
- San Francisco Bay spineflower

In addition to the information mentioned in the species accounts in the previous sections, CNDDDB records of wildlife species found within a mile of this alignment are discussed below. Figure D.4-4 illustrates the areas of sensitive habitats that occur in Edgewood Park (from CNDDDB data).

The bay checkerspot butterfly can be found on endemic serpentine outcrops with Edgewood County Park and is expected to inhabit grasslands within the first mile of this section of the overhead route. The known distribution of the Edgewood microblind harvestman is centered at Edgewood County Park and Preserve which is located at the southern terminus of the alignment (Ubick and Briggs, 1989).

The serpentine phalangid is found in serpentine habitats, including grassland and oak woodland, and has also been found in redwood, broadleaf evergreen, and digger pine-oak associations (Ubick and Briggs, 1989) and is one of the more widespread harvestmen in the San Francisco Bay Area. According to surveys conducted in 2002, the two harvestmen and serpentine phalangid were found between existing Towers 0/2 and 0/4, and in the vicinity of existing Tower 0/6. Only the serpentine phalangid, a species with no special status, was observed at the serpentine grassland of the Ralston-Pulgas Ridge and Hayne-Black Mountain Road area. All three invertebrate insect taxa were observed under partially buried serpentine rocks along the proposed alignment at Edgewood County Park and Preserve. All three taxa were observed under partially buried serpentine rocks along the proposed alignment at Edgewood County Park and Preserve. At Edgewood County Park and Preserve, results of the focused surveys suggest

that all three of these phalangids occur along the proposed alignment between Towers 0/1 to 0/5 and in the immediate vicinity of Tower 0/6. These taxa do not occur in the drainage channel and non-serpentine grassland vegetation between Towers 0/5 and 0/6.

Many protected wildlife species from raptors and songbirds to amphibians and reptiles may inhabit the various habitats within this segment. In fact, both sides of this route are classified as sensitive habitats with animal occurrences according to the CNDDDB. The CNDDDB contains occurrence records within a one-mile radius for:

- San Francisco garter snake (known to occur on the west side of the alignment)
- Saltmarsh common yellowthroat (occur on the west side of the alignment)
- Ricksecker's water scavenger beetle.

Ralston Substation to Carolands Substation

This section of the transmission line contains 25 towers, and passes through habitat areas containing live oak woodland (present at seven locations), serpentine grassland (present at nine locations), valley needlegrass grassland, seasonal wetlands associated with the Upper and Lower Crystal Springs Reservoirs, and non-native grasslands. Special Status Plant Species are known to occur between the Ralston Substation and the Carolands Substation are the following:

- San Mateo thornmint
- Fountain thistle
- San Mateo woolly sunflower
- Fragrant fritillary
- Marin western flax
- Western leatherwood
- Crystal springs lessingia
- San Francisco owl's clover
- San Francisco Bay spineflower
- Hillsborough chocolate lily
- Franciscan onion

This portion of the overhead alignment transects serpentine bunchgrass grasslands for significant distances beginning south of Tower 4/25 through Tower 6/34.

In addition to the information mentioned in the species accounts in the previous sections, CNDDDB records of wildlife species found within a mile of this alignment are discussed below. Figures D.4-5 and D.4-6 illustrate the areas of sensitive habitat in this project segment. Three special status wildlife species may occur in this area: California red-legged frog, San Francisco garter snake, and Bay checkerspot butterfly.

As described in the above sections there are numerous special status avian, reptile, amphibian and mammal species that inhabit the grasslands and nearby woodland and forests within one mile of the proposed route.

Carolands Substation to Transition Station

This section runs north-south along the eastern coast of San Andreas Lake and terminates at the western end of San Bruno Avenue. This segment contains 50 towers crosses coyote bush scrub (present at 25 towers), coast live oak woodland (present at nine locations), and nonnative grass and forest communities. Numerous special status plant and animal may be found. Similar to the Ralston to Carolands segment, CNDDDB records indicate that the following plant species may occur: Crystal Springs Lessingia, Western Leatherwood, San Francisco Owl's Clover, and White-rayed Pentachaeta. Figure D.4-7 illustrates the areas of sensitive habitat in this project segment.

Figure D.4-4. Sensitive Habitats – Edgewood Park Area

For security reasons this figure is not included in the online version of the report.

Figure D.4-5. Sensitive Habitats: Ralston Substation to San Mateo Creek
For security reasons this figure is not included in the online version of the report.

Figure D.4-6. Sensitive Habitats: San Mateo Creek to Carolands Substation
For security reasons this figure is not included in the online version of the report.

Figure D.4-7. Sensitive Habitats: Burlingame Area

For security reasons this figure is not included in the online version of the report.

The serpentine bunchgrass community is also present underneath parts of this alignment, between Towers 9/59 and 10/68.

CNDDDB records indicate that the following wildlife species have been identified within a mile of this alignment: San Francisco garter snake, California red-legged frog, and Mission blue butterfly.

Underground Segment – Proposed Project

The underground transmission line portion of the Proposed Project route is generally located within a heavily urbanized and developed area. With the exception of the disturbed non-native grassland along the BART ROW construction areas, no wildlife habitats would be directly affected by the underground portion of the alignment. The underground section of the proposed route is discussed according to the following sections:

- San Bruno Avenue
- BART ROW
- Colma to Martin Substation.

Most of the underground transmission line portion of the Proposed Project route is generally situated in urban developed areas of San Mateo County. Within the Cities of San Bruno, Daly City, Brisbane, and South San Francisco and the Town of Colma, the transmission line will be constructed either within existing city streets or within the disturbed BART ROW. The northern portion of the transmission line will be constructed within Guadalupe Canyon Parkway in Daly City, which crosses San Bruno Mountain and the City of Brisbane. San Bruno Mountain is a biological island in the urban area, and supports a relictual assemblage of plants sometimes called Franciscan chaparral or Franciscan scrub (RCHR, 2002). Among its endemics are several rare or endangered species. After leaving Guadalupe Canyon Parkway, the transmission line follows Bayshore Boulevard in Brisbane to the Martin Substation.

San Bruno Avenue

This portion of the route lies within the existing street right of way traveling down in elevation toward the Bay. A record for the San Francisco garter snake exists within the one mile east of this project segment. No other special status species records are known for this segment of the underground segment.

BART ROW

This portion of the route lies within the existing street and unpaved ROW traveling generally north from San Bruno to Colma past the west side of South San Francisco. Despite the urbanized setting there are numerous special status species records within one mile of this segment of the underground segment, including the endangered butterfly species with habitat on San Bruno Mountain.

Two perennial creeks and one restoration wetland lie within the BART ROW portion of the route. Colma Creek lies along this segment but it is a concrete channel lacking vegetation. Similarly, Twelve Mile Creek is also cement lined containing no vegetation. The freshwater seasonal wetland north of South Spruce Avenue in South San Francisco occupies 0.007 acres and will be drilled under by the project. There are also 0.02 acres of wetland associated with a ditch/swale near this wetland that also contain mixed willow vegetation.

Colma to Martin Substation

The section while following existing streets approaches and bisects lands contained within San Bruno State and County Park, described in detail above. San Bruno Mountain is the subject of an HCP that governs activities on the Mountain in order to protect habitat for three endangered butterfly species. Figure D.4-8 illustrates the extent of the highly valued habitat on San Bruno Mountain. The Proposed Project would cross San Bruno Mountain within Guadalupe Canyon Parkway. According to the CNDDB all special status species known to occur within one mile of this section of the route are:

- Montara manzanita
- San Bruno Mountain manzanita
- San Francisco campion
- San Francisco Bay spineflower
- San Francisco lessingia
- San Francisco gumplant
- San Francisco owl's-clover
- Kellogg's horkelia
- Robust spineflower
- San Francisco garter snake
- Mission blue butterfly
- Callippe silverspot butterfly
- San Bruno elfin butterfly
- Bay checkerspot butterfly

D.4.2 Applicable Regulations, Plans, and Standards

D.4.2.1 Federal Regulations

Federal Endangered Species Act. The Federal Endangered Species Act of 1973 and Title 16 (implementing regulations) of the United States Code of Regulations (CFR) 17.1 et seq., designate and provide for protection of threatened and endangered plants and animals and their critical habitat. Procedures for addressing federal-listed species follow two principal pathways, both of which require consultation with the USFWS, which administers the Act for all terrestrial species. The first pathway (FESA, Section 10(a) Incidental Take Permit) is set up for situations where a non-federal government entity (or where no federal nexus exists) must resolve potential adverse impacts to species protected under the Act. The second pathway (FESA, Section 7 Consultation) and involves projects with a federal connection or requirement; typically these are projects where a federal lead agency is sponsoring or permitting the Proposed Project. For example, a permit from the U.S. Army Corp of Engineers (USACE) may be required if a project will result in wetland impacts. In these instances, the federal lead agency (e.g., the USACE) initiates and coordinates the following steps:

- Informal consultation with USFWS to establish a list of target species
- Preparation of biological assessment assessing potential for the project to adversely affect listed species
- Coordination between State and federal biological resource agencies to assess impacts/proposed mitigation
- Development of appropriate mitigation for all significant impacts on federally listed species.

The USFWS ultimately issues a final Biological Opinion on whether the project will affect the federally listed species. A Section 10(a) Endangered Species Incidental Take Permit may be necessary when the “taking” or harming of a species is incidental to the lawful operation of a project.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the Fish and Game Code. Enforcement of the Act is carried out by USFWS law enforcement officials, while California Fish and Game Codes are enforced by CDFG game wardens.

Figure D.4-8. Sensitive Habitats Areas on San Bruno Mountain
For security reasons this figure is not included in the online version of the report.

Bald and Golden Eagle Protection Act. Title 16, United States Code, Section 668, prohibits the take or possession of eagles, parts, or nests without a permit issued by the USFWS.

Federal Clean Water Act. As also described in Sections D.7 (Hydrology and Water Resources), Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into “waters of the United States” without a permit from the USACE. The definition of waters of the United States includes wetland areas “that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3 7b). The U.S. Environmental Protection Agency (USEPA) also has authority over wetlands and may override a USACE permit. Substantial impacts to wetlands may require an individual permit. Projects that only minimally affect wetlands may be eligible for one of the Nationwide Permits that require less review than an individual permit.

Executive Order 11990, Section 1(a) established a policy of “no net loss” of wetlands. Compensation for wetland impacts may include restoration and/or off-site replacement or enhancement. However, the characteristics of the restored or enhanced wetlands must be equal to or better than those of the affected wetlands.

D.4.2.2 State Laws and Regulations

California Endangered Species Act. Sections 2050 through 2098 of the California Fish and Game Code outline the protection provided to California’s rare, endangered, and threatened species. Section 2080 of the California Fish and Game Code prohibits the taking of plants and animals listed under the authority of the California Endangered Species Act of 1984. Individual animal species declared to be threatened or endangered by the California Fish and Game Commission are listed in Title 14 of the California Code of Regulations (CCR) under Section 670.5. In addition, the Native Plant Protection Act of 1977 (Fish and Game Code Section 1900 et seq.) gives the CDFG authority to designate State Endangered, Threatened, and Rare plants and provides specific protection measures for identified populations.

Sensitive species that would qualify for listing but are not currently listed are afforded protection under CEQA. The CEQA Guidelines, Section 15065 (“Mandatory Findings of Significance”) requires that a reduction in numbers of a rare or endangered species be considered a significant effect. CEQA Guidelines Section 15380 (“Rare or endangered species”) provides for assessment of unlisted species as rare or endangered under CEQA if the species can be shown to meet the criteria for listing. Unlisted plant species on the California Native Plant Society’s Lists 1A, 1B, and 2 would typically be considered under CEQA.

California Streambed Alteration Notification/Agreement. Sections 1601-1606 of the California Fish and Game Code require that a Streambed Alteration Application be submitted to the CDFG for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” The CDFG reviews the proposed actions and, if necessary, submits to the Applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by the Department and the Applicant is the Streambed Alteration Agreement. Often, projects that require a Streambed Alteration Agreement also require a permit from the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. In these instances, the conditions of the Section 404 permit and the Streambed Alteration Agreement may overlap.

California Fish and Game Code. Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles and amphibians, and fish. Species that are fully protected by these Sections may not be taken or possessed at any time. The Department cannot issue permits or licenses that authorize the “take” of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock.

Specific Sections of the California Fish and Game Code pertinent to the current project include:

- Section 3503 (which prohibits the taking, possession, or needless destruction of the nest or eggs of any bird)
- Section 3503.5 (which prohibits the taking, possession, or destruction of any bird in the order Falconiformes or Strigiformes [birds-of-prey] or the taking, possession, or destruction of the nest or eggs of any such bird)
- Section 3513 (which prohibits the taking or possession of any migratory non-game bird as designated in the Migratory Act).

Native Plant Protection Act. The Native Plant Protection Act (NPPA) of 1977 (Fish and Game Code Sections 1900-1913) was created with the intent to “preserve, protect and enhance rare and endangered plants in this State”. The Fish and Game Commission has the authority to designate native plants as “endangered” or “rare” and to protect endangered and rare plants from take. The California Endangered Species Act of 1984 (Fish and Game Code Section 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the Fish and Game Code.

Local Tree Ordinances. Standards for maintenance, management, and preservation of native and indigenous trees are established in the San Mateo County Heritage Tree Ordinance, Section 11000 (1991), and the San Mateo County Significant Tree Ordinance, Section 12000 (1990). Criteria used in defining a heritage tree include: location, species, and size. A significant tree is any live woody plant with a single stem that is greater than 38 inches dbh. East of Skyline Boulevard, trees of slightly smaller size qualify for inclusion in these ordinances. A 3.5-mile portion of the route, between Ralston Substation and the Carolands Substation, is located east of Skyline Boulevard. A permit is required to remove, trim, or encroach into the dripline of a heritage tree, or to remove any significant tree. The Town of Hillsborough guidelines state that the removal of trees larger than 36 inches shall require a permit (Town of Hillsborough, 2002).

D.4.3 Environmental Impacts and Mitigation Measures for the Proposed Project

D.4.3.1 Significance Criteria

Significance criteria for impacts to biological resources are taken from §15065 and Appendix G of the CEQA Guidelines, and §21083 of the Public Resources Code. Significant impacts to biological resources are not limited to projects affecting only State or Federally listed endangered species. A species that is federal- or State-listed will also be considered rare or endangered if it can be shown to meet the following criteria (CEQA Guidelines, §15380):

- Survival and reproduction of a species in the wild are in immediate jeopardy from one or more causes
- It is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens
- It is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Vegetation Impacts Significance Criteria. The following significance criteria were used to assess the significance of potential project impacts to affected vegetation resources. All impacts that are defined as significant in §15065 of the CEQA Appendix G Guidelines have been designated as significant in this EIR. Significant impacts are those that would result in:

- Substantial disturbance of a special status species or its habitat
- Substantial reduction in the numbers of a special status plant species
- Indirect loss of a special status plant species or its habitat
- Filling or degradation of wetlands and waters subject to the jurisdiction of the USACE pursuant to the Federal Clean Water Act (no net loss of wetlands)
- Creation of substantial barriers for dispersal of plant species
- Compaction of soils, clearing of vegetation, or other activities that substantially increase erosion and sedimentation
- Introduction of non-native plant species or facilitating the dispersal of existing populations of non-native plants.

Wildlife Impacts Significance Criteria. Evaluation of impacts to wildlife resources considers the magnitude of impact, the rarity of the resource, and susceptibility of the resource to impacts. Significance criteria for wildlife impacts are defined in §15065 of the CEQA Appendix G Guidelines. A project is considered to have potentially significant biological impacts if it would:

- Substantially diminish habitat for fish or wildlife species
- Cause a fish or wildlife population to drop below self-sustaining levels
- Interfere substantially with the movement of any resident or migratory fish or wildlife species
- Reduce the number or restrict the range of a rare or endangered species
- Adversely affect species under the protection of the Migratory Bird Treaty Act (burrowing owls, nesting raptors, passerines)
- Threaten to eliminate an animal community
- Filling or degradation of wetlands and waters subject to the jurisdiction of the USACE pursuant to the Federal Clean Water Act (no net loss of wetlands)
- Substantially affect a rare or endangered species or the habitat of that species.

Proposed Project impacts are presented according to the impact categories described within each segment discussion of the Proposed Project. Significant impacts could be identified as either Class I (significant and unmitigable) or Class II (potentially significant but mitigable to less than significant). Mitigation measures are presented for impacts identified; they are numbered and cross-referenced where they apply to more than one impact. Mitigation measures emphasize impact avoidance as the primary means of mitigating potential impacts to natural plant communities, wetlands, and special status species. Effective implementation of these measures would eliminate or minimize project-related impacts to biological

resources that occur within and near the Proposed Project. The following factors were considered in evaluating priority for avoidance include:

- Regulatory status (State and federal legal protection) of species
- Known distribution of species
- Resource concentration/dispersal
- Potential for natural recovery or restoration.

Biological resources that have high sensitivities to impacts are identified and given the highest priority for avoidance. Other forms of mitigation are recommended where avoidance was not possible. Off-site compensation (equivalent mitigation and/or restoration in places outside of the immediate project area) could be used to mitigate for loss and for the recovery lag time inherent in restoration and natural recovery of plant communities and habitats.

D.4.3.2 Applicant Proposed Measures

Table D.4-1 presents the Applicant Proposed Measures (APMs) relevant to biological resources, as presented in the biological resources section of the PEA. These measures will be required as part of the Proposed Project and their implementation will be monitored by the CPUC. In some cases, these APMs have been supplemented with additional requirements presented in mitigation measures.

Table D.4-1. Applicant Proposed Measures – Biological Resources

APM	Description
APM Bio-1. Pre-Construction Tree Surveys.	Standards for maintenance, management, and preservation of native and indigenous trees are established in the San Mateo County Heritage Tree Ordinance and the San Mateo County Significant Tree Ordinance. Tree removal permits or approvals for lost heritage or significant trees will be obtained and mitigation will be coordinated, as required, with the appropriate public and resource agencies. Mitigation for lost trees may not be implemented within the ROW due to fire safety concerns, and instead may be implemented in an alternative, agency-approved location.
APM Bio-2. Environmentally Sensitive Areas	Environmentally sensitive areas, such as the rare plant population in the vicinity of the Ralston Substation, will be identified in the field to minimize the possibility of inadvertent encroachment.
APM Bio-3. Topsoil Salvage	The topsoil from the new footing locations in serpentine grasslands will be salvaged and stockpiled in identified upland work areas within the ROW or other project elements such as substations. After construction is complete, the salvaged topsoil will be spread over the disturbed area. The area will be graded to match the pre-construction natural grade. Once the salvaged topsoil has been spread and the area returned to the pre-existing topography, the area will be revegetated with locally collected, native grass species.
APM Bio-4. Restricted Tower Access at Edgewood County Park	Towers that are located in the sensitive serpentine grassland habitat at Edgewood County Park and Preserve will be accessed during construction only by helicopter or by foot from existing access roads, except in the event of an emergency. Helicopters will be used to move construction equipment and workers to and from the site to minimize construction-related impacts to this sensitive habitat. No new access roads will be constructed. In addition, construction activities will be restricted or minimized during the rainy season and spring, when the Bay checkerspot butterfly is feeding and in flight, and sensitive arachnid species are active.
APM Bio-5. Erosion Control and Revegetation Plan	Following the completion of construction, all affected habitats will be restored, using a mixture of custom-collected native grass species appropriate to the area. A preliminary revegetation plan is contained in PEA Appendix B. The Best Management Practices (BMPs) included in the Stormwater Pollution Prevention Plan (SWPPP) will be implemented during construction to minimize impacts associated with erosion. BMPs will include the installation of sediment and erosion control structures to protect biological resources, including streams, as well as roadways and adjacent properties. Watering for dust control during construction will also be employed.
APM Bio-6. Invasive Species and Sudden Oak Death Control	BMPs will also include measures to reduce the potential introduction or spread of noxious weeds or pathogens, such as sudden oak death. Sudden oak death management protocols are currently being developed for the San Francisco Watershed lands. Coordination with the San Francisco Watershed and resource and public agencies regarding sudden oak pathogen management and invasive plant species will be conducted prior to construction. For example, BMPs could include the establishment of tire wash stations at the main entry points so that vehicle tires can be washed before entering the construction area.

Table D.4-1. Applicant Proposed Measures – Biological Resources

APM	Description
APM Bio-7. Wetlands Avoidance and Restoration	<p>A wetland delineation per the <i>US Army Corps of Engineers (Corps) Wetlands Delineation Manual</i> (USACE, 1987) will be conducted prior to construction. The delineation will use a three-parameter approach that includes an examination of vegetation, soils and hydrology to determine the presence of wetlands. A wetland report will be prepared and submitted to the USACE for verification. Through this process, final calculations of wetland area present in the project area will be obtained for project permitting.</p> <p>Wetlands and aquatic resources such as intermittent and perennial creeks, drainages, and swales that occur within the ROW will be denoted as environmentally sensitive areas and will be avoided during construction to the degree practicable. Many of the larger creeks flow through culverts beneath existing roads and they will not be directly impacted. However, smaller creeks and resources flow across the ROW and could be affected. If the existing wetland or aquatic resource topography is altered by construction, the topography of the area will be restored to match the preexisting condition. For herbaceous and grass-dominated wetlands, it is expected that revegetation will naturally occur once the topography is restored. However, if mixed willow riparian vegetation is lost during construction, this habitat would not be expected to naturally revegetate. A mitigation plan will be prepared detailing riparian restoration activities and this plan will be submitted to the resource agencies for their review and approval before restoration activities are initiated. In addition to planting details, the restoration plan will include information on performance criteria and monitoring.</p>
APM Bio-8. Construction of Bird-Safe Towers	<p>PG&E will construct the new overhead portion of the electric transmission line to ensure that it is bird-safe. The configuration for each tower will meet or exceed APLIC guidelines (APLIC, 1996).</p>
APM Bio-9. Harvestmen Species	<p>Restrict work from December through April in Edgewood Park to avoid work when the harvestman species are active. Areas that were not surveyed because they are outside the survey corridor (e.g., cable pull sites, staging areas) will be surveyed prior to construction and similar mitigation measures will be applied for any potentially suitable habitat that is found. Top soil from new footing locations in serpentine habitats will be stockpiled and used as backfill at the existing footing locations, after the existing towers are removed. Affected serpentine grassland habitats will be revegetated using plants grown from native and locally collected seeds. Refer to the Revegetation and Erosion Control Plan for further detail.</p>
APM Bio-10. Bay Checkerspot Butterfly	<p>Consultation with the USFWS will be conducted to address potential impacts and mitigation measures for the Bay Checkerspot butterfly. During consultation, mitigation measures, as discussed in this table, will be further refined and will likely include measures such as:</p> <ul style="list-style-type: none"> • Implementation of a work restriction in Edgewood Park from December 1 to June 30; • Revegetation of affected habitat with locally grown native grass species; • Top soil from new footing locations in serpentine habitats will be stockpiled and used as backfill at the existing footing locations, after the existing towers are removed; • Construction will occur between July 1 and November 30; • Flagging the limits of work areas to minimize the area disturbed during construction; and implementation of a worker training program to provide information regarding sensitive species and protective measures.
APM Bio-11. Special Status Butterfly Species	<p>Construction. No suitable habitat for these species exists within the overhead portion of the transmission line. The underground portion of the transmission line will be constructed within the paved area of Guadalupe Canyon Parkway. The roadway passes through the San Bruno Mountain Habitat Conservation Plan area where there is known habitat for these butterflies; however, construction work will be limited to paved areas and potentially unpaved shoulder. Therefore, no direct impacts will occur to these species. Temporary indirect impacts, including fugitive dust emissions, could occur to potentially suitable habitat. With implementation of erosion control measures, the potential for indirect impacts to habitat will be less than significant. The BMPs included in the SWPPP will be implemented during construction to minimize impacts associated with erosion to potentially suitable habitat. PG&E will comply with the requirements of the San Bruno Mountain HCP for construction along Guadalupe Canyon Parkway.</p>
APM Bio-12. Tiger Salamander	<p>Pre-construction surveys will be conducted, and will include an investigation of potential burrow locations in the areas that are within dispersal distance of breeding areas, and that will be disturbed by construction. Any individuals found will be relocated by a qualified biologist to suitable habitat.</p>
APM Bio-13. California Red-legged Frog	<p>Consultation with the USFWS will be initiated, and mitigation measures, as discussed in this table will be further refined and may include the following:</p> <ul style="list-style-type: none"> • Any work between the onset of heavy fall rains and June 1 will be done with a qualified biological monitor present; • Immediately prior to construction, surveys will be performed by a biological monitor in construction areas where the CRLF could potentially occur. If any California red legged frogs are found, the frogs will be located to an agency-approved alternative location outside the area of impact (as determined during consultation); • BMPs, as included in the SWPPP, will be implemented during construction to minimize impacts associated with erosion in the proximity of any identified breeding sites. • Restrict work from December through April in Edgewood Park to avoid work when the harvestman species are active. Areas that were not surveyed because they are outside the survey corridor (e.g., cable pull sites, staging areas) will be surveyed prior to construction and similar mitigation measures will be applied for any potentially suitable habitat that is found. Top soil from new footing locations in serpentine habitats will be stockpiled and used as backfill at the existing footing locations, after the existing towers are removed. Affected serpentine grassland habitats will be revegetated using plants grown from native and locally collected seeds. Refer to the Revegetation and Erosion Control Plan for further detail.

Table D.4-1. Applicant Proposed Measures – Biological Resources

APM	Description
APM Bio-14. Western Pond Turtle	Immediately prior to construction, pre-construction surveys will be performed by a qualified biologist in areas where pond turtles could occur. If any turtles are found, they will be relocated to an agency-approved alternative location. BMPs, as included in the SWPPP, will be implemented during construction to minimize impacts associated with erosion and sedimentation to aquatic turtle habitat.
APM Bio-15. San Francisco Garter Snake.	<p>Consultation with the USFWS and CDFG will be initiated and mitigation for potential impacts to SFGS will be developed, and may include measures such as:</p> <ul style="list-style-type: none"> • Seasonal restrictions on tower construction. • Tower construction (foundation construction and tower replacement activities) between Existing Towers 12/79 and 14/95 will be done between August 1 and November 1. • If work must be done outside this timeframe, additional mitigation measures could include temporary exclusion fencing and/or biological monitoring as approved by USFWS, CDFG and species expert Dr. Sam McGinnis. • Flag limits of work areas to minimize area disturbed during construction • Working training will be provided regarding sensitive species and protective measures <p>Project activities in potential dispersal and overwintering habitat will be avoided and/or minimized to the greatest degree possible.</p> <p>Additional trapping and visual surveys will be conducted at the following locations during the Spring 2003 activity period (March through May) to determine the type and extent of mitigation measures needed:</p> <ul style="list-style-type: none"> • San Andreas Lake (eastern shore, north marsh and associated wetlands) • San Mateo Creek Transmission Line crossing area
APM Bio-16 Raptors	<p>Pre-construction surveys for raptors will be conducted prior to the start of construction (for each year that construction occurs). If the results of the pre-construction surveys indicate that a nesting raptor is present within or near work areas, mitigation measures will be developed during consultation with resource agencies and one or more of the following measures will be implemented:</p> <ul style="list-style-type: none"> • Enforcement of work restrictions, such that construction activities occur outside of the applicable nesting/fledging period (typically March 1 to August 1); • Establishment of an avoidance buffer (the distance of the buffer will be developed in consultation with the agencies and will vary depending on species sensitivity, topography, tree cover, terrain, proximity to roads/highways, etc.); and/or • Use of an on-site biological monitor to monitor for signs of disturbance. If the monitor determines that a disturbance is occurring, construction will be halted, and one of the above measures will be implemented. <p>If these measures cannot be feasibly accommodated, PG&E will discuss other measures with resource agencies, including potentially obtaining a permit from USFWS to move the nest and/or fledglings.</p>
APM Bio-17. Special Status Avian Species	<p>Pre-construction surveys for special-status avian species will be conducted within and near the work areas prior to the start of construction (for each year that construction occurs).</p> <p>If the results of the pre-construction surveys indicate that a nesting avian species of concern is present, one or more of the following measures will be implemented:</p> <ul style="list-style-type: none"> • Enforcement of work restrictions, such that construction activities occur outside of the nesting/fledging period; • Establishment of an avoidance buffer (the distance of the buffer will be developed in consultation with the agencies and will vary depending on species sensitivity, topography, tree cover, terrain, proximity to roads/highways, etc.); and/or • Use of an on-site biological monitor to monitor for signs of disturbance. If the monitor determines that a disturbance is occurring, construction will be halted, and one of the above measures will be implemented.
APM Bio-18. Special Status Mammal Species	<p>Potential roost trees that must be removed will be surveyed and identified in the field for application of the following procedures:</p> <p>Before felling the tree:</p> <ol style="list-style-type: none"> 1. Trees should be removed under the warmest possible conditions. 2. Peel any sections of the exfoliating bark off the tree gently and search for any roosting bats underneath. 3. Create noise and vibrations on the tree itself. Noise and vibrations include: <ol style="list-style-type: none"> a. Running chain saw and making shallow cuts in the trunk (where bark has been peeled off). b. Striking the tree base with fallen limbs or tools such as hammers. <p>Felling the tree:</p> <ol style="list-style-type: none"> 4. Disturbance should be near-continuous for ten minutes, and then another ten minutes should pass, before the tree is felled. 5. When cutting sections of the bole, if any hollows or cavities (such as woodpecker holes) are discovered, be especially careful to check for the presence of bats in those areas. Cut slowly and carefully at all times. If possible, section bole near cavities to focus noise and vibrations, and open hollows by sectioning off a side.
APM Bio-19. Dusky-Footed Woodrat	Pre-construction surveys shall be conducted prior to construction during each construction year and nests in stick houses shall be marked in the field and denoted as an Environmentally Sensitive Area and avoided if possible.

D.4.3.3 230 kV/60 kV Overhead Transmission Line

Section D.4.1.5 identifies the biological resources that could be affected by Proposed Project or alternative construction. In order to minimize impacts to these resources, a comprehensive set of mitigation measures has been developed for wildlife and vegetation resources. Following is a discussion of specific identified impacts, followed by recommended mitigation measures. Some measures refer to the requirement for additional surveys or resource identification beyond those that have been completed to date; this is because PG&E has not completed final engineering for its Proposed Project so currently identified tower sites will likely change in final design (assuming that the project or some alternative is approved). Therefore, the survey information that is available to date will need to be updated to ensure avoidance of sensitive habitats as project design is completed.

Impact B-1: Temporary and Permanent Loss of Sensitive Vegetation Communities

The Proposed Project could result in permanent loss and/or temporary disturbance to sensitive plant communities and associated wildlife habitat. Temporary disturbance includes short-term impacts during construction of the new and removal of the existing towers, construction of new and improvements to existing access roads, and work at conductor tensioning/splicing and staging/laydown areas. Permanent loss involves long-term impacts associated with permanent project features (e.g., new transmission towers) that will remain throughout the life of the project. Removal of old towers and replacement with new towers would require work in an approximately 100 feet in diameter centered on the existing tower foundations. The new towers will be either lattice steel towers or tubular steel poles. The amount of permanent area removed will depend on the type of footing structure selected (e.g., drilled pier, spread footing, grillage) and the type of tower selected. For lattice structures, each of the four footings installed would range from four feet in diameter (drilled pier) to a 6 feet by 6 feet area (spread footing). Tubular poles would permanently impact an area of 5 to 7 feet in diameter. Examples of activities that would result in temporary impacts to sensitive vegetation communities include:

- Removal of existing towers/foundations
- Construction access roads
- Conductor tensioning and splicing sites
- Construction staging and laydown areas
- Operational access roads
- Temporary access roads.

Each of these activities would cause the removal of existing vegetation and disturbance of surface soils. In addition, permanent loss of habitat would occur where new tower foundations are installed.

Surface disturbance could occur during construction, operation, and maintenance of the Proposed Project especially when vehicles are driven over existing vegetation that has not been intentionally and regularly cleared to maintain utility access roads or firebreaks. Impacts would be related to the following activities:

- Movement of equipment and project personnel during line-stringing/cable pulling, where ground clearance is not required
- Movement of equipment and project personnel for annual project maintenance, including tree trimming
- Access by general public during life of project.

Each of these activities could cause temporary damage to existing vegetation, but would not likely involve removal or substantial disruption of surface soils. The most common type of surface disturbance is associated with rubber-tired or steel-tracked vehicles used to string/pull the line and transport personnel and materials along the project corridor.

Potential impacts to plant communities could also be caused by the movement of construction/maintenance vehicles and equipment within the transmission line ROW. Impacts could include soil compaction and crushing of vegetation. Not all plant communities are equally sensitive to surface disturbance, not all of these impacts would occur in every plant community, and such disturbance would be limited to areas where other existing surface roads are not available. Quantification of impacts is not possible at this time because final design of the Proposed Project has not been completed. However, surveys have been completed for preliminary tower sites, identified staging areas, and access roads. Based on this information, potential impacts to plants have been identified and mitigation has been developed.

Plant communities that are most predominant in the project vicinity are most likely to be affected by disturbance from vehicles, equipment or project personnel, and include coyote brush scrub, annual grassland, serpentine grassland, oak woodland, Monterey cypress forest, and Monterey pine forest communities. Other plant communities are less likely to be impacted by project-related activities because they only occur in limited portions of the project, including wetland and riparian vegetation, eucalyptus, and chamise chaparral. Surface disturbance to non-sensitive and wide ranging plant communities (e.g., annual grassland plant communities) are generally considered less than significant (Class III), whereas surface disturbance to highly sensitive plant communities (e.g., serpentine grassland) would be considered a Class I impact that is significant even with implementation of mitigation.

Invasive Weeds. The Project ROW already contains several invasive species such as yellow star-thistle and French broom, and construction could result in the introduction of new invasive plants or the spread of existing invasive species into portions of the project area in which invasive species do not already occur. The seeds of invasive species could be transported to other areas by the tires of trucks used during construction. Additionally, the fungal pathogen that causes sudden oak death (*Pytophthora ramorum*) has been reported in Crystal Springs Reservoir, nearby the project area (University of California, Berkeley 2002; R. Breuer, August 20, 2002). It is possible that construction equipment and foot traffic could spread the pathogen, should it be present within the ROW. The spread of noxious weeds or pathogens would be considered a Class II impact that is significant, but mitigable by avoidance measures described in Mitigation Measures B-1b and B-3a (below) and APM 6.6 (Invasive Species and Sudden Oak Death Control).

Wetlands and Riparian Vegetation. Approximately 0.2 acres of wetlands and up to 0.1 acres of other waters would be temporarily impacted from construction primarily as a result of vehicular and equipment traffic between the towers and other sites (e.g., cable pulling, staging, and access roads). Minor clearing or grading of cable pull or staging sites could also result in temporary impacts to a few wetland or aquatic resources. No permanent loss of wetlands or riparian habitat are expected as a result of the project. Although wetland and riparian habitats are considered sensitive, construction would only temporarily impact a small amount of wetland and riparian plant communities. Thus, impacts to wetland and/or riparian vegetation are considered potentially significant (Class II), but mitigable to less than significant levels by avoidance, restoration, and/or off-site compensation as described by APM 6.7 (Wetlands Avoidance and Restoration) and in greater detail in Mitigation Measure B-1a below.

Serpentine Grassland. Serpentine grassland vegetation would be temporarily and permanently impacted within the overhead transmission line portion of the Proposed Project. Serpentine grassland may be temporarily affected at pulling sites and by the movement of construction vehicles along the ROW and

would be permanently affected by placement of new towers and access roads. The new tower footings will be installed primarily below ground, with typically only a 2.5-foot diameter footing exposed at the ground surface. Since the existing towers currently use a 2-foot diameter footing, the total additional above-ground area that will be occupied by the new tower footings is expected to be on the order of 8 square feet per tower. However, in addition to this permanent disturbance, temporary disturbance would occur over a much larger area during construction and together would create potentially significant impacts, requiring mitigation as defined below.

Serpentine grasslands will be encountered in Edgewood County Park, in the Ralston to Carolands segment, and in the Burlingame segment. In Edgewood Park, these serpentine grasslands are located in an area where star thistle is relatively common, and treatment plots for the Park's Invasive Species Removal Test Program are located close to Towers 0/3 through 0/5. Temporary disturbance in these serpentine areas consists of disturbance around existing and new tower footings. No new access roads, cable pulling sites, or staging areas are planned in Edgewood Park.

Along Ralston-Pulgas Ridge and Haynes-Black Mountain Road (a portion of Buri-Buri Ridge), some tower locations and access roads are located on a mowed firebreak area within and adjacent to serpentine grasslands. Three pulling sites are located in these areas in addition to the tower sites, and major construction would occur by helicopter.

Temporary disturbance in Edgewood Park is expected to be limited to less than one acre. This grassland supports several special-status species including the endangered Bay Checkerspot butterfly. APM 6.4 would restrict tower access at Edgewood County Park and would require helicopter tower installation and seasonal construction timing restrictions. APM 6.3 would salvage and stockpile topsoil in order to return the area to the pre-existing topography. Temporary work areas will be further limited through implementation of Mitigation Measures B-1b. Other serpentine grasslands within or near the project are not known to support special-status species, although these areas do support the Bay Checkerspot butterfly's larval food plant and may support this species.

Impacts to serpentine grassland would potentially affect the many special status plant and wildlife species that are known occur within this habitat. Therefore, overall temporary and permanent impacts to these plant communities are considered to be significant (Class I), even with implementation of recommended mitigation. Mitigation Measures B-1b and B-1c, are still recommended to reduce potential impacts as much as feasible.

Table D.4-2 below lists nine plant species that are known or potentially occur in the project. Only one of these species (Marin dwarf flax) was observed in the study area during rare plant surveys conducted in 2001 and 2002. While the entire project area has been surveyed, additional surveys for seasonal blooming plants remain to be completed in the summer of 2003.

During surveys in late winter and early spring of 2003, no rare plants were found on proposed new or restored access roads or cable pulling sites. One rare plant, Marin dwarf flax, was found at two of the 17 possible helicopter staging areas. Loss of habitat for this plant would create significant adverse impacts to serpentine habitat and rare plant populations because the two affected helicopter sites are part of the "Pulgas Ridge" grasslands, known to support many rare and endemic species. After completion of biological surveys, PG&E determined that these two sites would not be used; therefore, any effects on biological resources at cable pulling sites, access roads, and helicopter staging areas would be mitigated to less than significant levels with implementation of the mitigation measures presented below for Impact B-1.

Because final design may result in relocation of specific tower locations, this section focuses on the nine species with the potential to occur in the Proposed Project area, listed in Table D.4-2. Mitigation Measure B-1e requires that these surveys be completed.

Table D.4-2. Sensitive Plant Species Potentially Occurring in the Jefferson-Martin Project Area¹

Common Name	Scientific Name	USFWS Status	CDFG Status	CNPS Status	Habitat in Study Area	Occurrence Potential	Observed in Field
San Mateo Thornmint	<i>Acanthomintha duttoni</i>	E	E	1B	Yes	Moderate	No
Fountain Thistle	<i>Cirsium fontinale fontinale</i>	E	E	1B	Yes	Low	No
Western Leatherwood	<i>Dirca occidentalis</i>	-	-	1B	Yes	Moderate	No
San Mateo Sunflower	<i>Eriophyllum latilobum</i>	E	E	1B	Yes	Low	No
Fragrant Fritillary	<i>Fritillaria liliacea</i>	-	-	1B	Yes	Moderate	No
Marin Flax	<i>Hesperolinon congestum</i>	PT	T	1B	Yes	Moderate	Yes
White Rayed Pentachaeta	<i>Pentachaeta bellidiflora</i>	PE	E	1B	Yes	Moderate	No
Crystal Springs Lessingia	<i>Lessingia arachnoidea</i>	-	-	1B	Yes	Moderate	No
San Francisco Campion	<i>Silene verecunda verecunda</i>	-	-	1B	Yes	Moderate	No

Mitigation Measures for Impact B-1, Temporary and Permanent Loss of Sensitive Vegetation Communities

PG&E has committed to implementation of APMs Bio-2 through Bio-5 and Bio-9 to protect sensitive vegetation communities. Nine additional mitigation measures are recommended below to protect these communities. The objective of Mitigation Measures B-1a through B-1i is to reduce potential impacts to significant natural plant communities within and adjacent to the proposed transmission corridor to less than significant levels. Mitigation can protect most vegetation communities and reduce impacts to less than significant levels (Class II). However, even with the mitigation described below, and with applicable APMs, impacts to serpentine grassland would still be considered significant (Class I).

B-1a Perform Wetlands Delineation and Avoidance (supplements APM Bio-7). A jurisdictional delineation of wetlands within the proposed transmission line corridor shall be performed by PG&E and verified by the U.S. Army Corps of Engineers., In addition, a formal mapping and assessment of riparian habitat shall be completed to satisfy CDFG 1601 (Streambed Alteration Agreement) requirements, where project activities (i.e., construction roads) cross the beds or banks of jurisdictional streams. Surveys, mapping and assessment shall be completed and reports submitted to the CPUC at least 60 days before start of construction. Results of these surveys (identification of wetlands and riparian habitat) shall be utilized to define areas that are to be avoided in final tower siting and location of access roads and other project components. A report summarizing wetland habitat findings with respect to tower locations, along with copies of all maps and assessments shall be submitted to the CPUC for review and approval.

Wetlands and aquatic resources such as intermittent and perennial creeks, drainages, and swales that occur within the ROW shall be identified as environmentally sensitive areas and shall be avoided during construction. If the existing wetland or aquatic resource topography is altered by construction, the topography of the area shall be restored to match the preexisting condition. A Wetlands Restoration Plan shall be prepared detailing wetland and riparian restoration activities and this plan shall be submitted to the CPUC and resource agencies for review and approval before restoration activities are initiated. The restoration plan shall include planting information and definition of performance criteria and monitoring requirements.

B-1b Provide Restoration/Compensation for Vegetation Losses. Where impacts to wetlands, riparian, and serpentine grassland habitats cannot be avoided, PG&E shall either restore temporarily disturbed areas to pre-construction conditions following construction or provide compensation for vegetation losses as required by the appropriate resource agencies (USFWS and CDFG).

Where on-site restoration is planned for mitigation of impacts to natural vegetation communities, the Applicant shall develop a Habitat Restoration Plan, which shall be submitted to the CPUC and the U.S. Army Corps of Engineers (for wetlands), the California Department of Fish and Game (CDFG) (for riparian habitat), and the Regional Water Quality Control Board (RWQCB) at least 60 days prior to the start of any construction for their review and approval. The plan shall define the amount and type of habitat that will be permanently and temporarily impacted by any project-related activity, and shall include a discussion of the type and replacement ratios developed and accepted by the resource agencies (above). For natural community mitigation, the plan shall also include specifying the location of habitat type to be created, details on soil preparation, seed collection, planting, maintenance, and monitoring for on-site restoration efforts. Quantitative success criteria shall also be presented. The mitigation objective for affected significant natural plant communities shall be restoration to pre-construction conditions as measured by species cover, species composition, and species diversity. Success criteria shall be established by comparison with reference sites approved by the appropriate agencies.

Creation or restoration of habitat shall be monitored for five years after mitigation site construction to assess progress and identify problems. Remedial actions (e.g., additional planting or erosion control) shall be taken during the five-year period if necessary to ensure the success of the restoration effort.

B-1c Protect Serpentine Grasslands and Edgewood Park. PG&E shall implement restricted tower access and topsoil salvage requirements defined in APMs Bio-3 and Bio-4

To further protect serpentine grasslands, partial tower removal shall be evaluated in a report submitted to the CPUC. This option shall include cutting tower legs and leaving foundations in place in order to avoid extensive disturbance to sensitive habitat, in order to reduce the potential for invasive plants and weeds to become established. This measure shall apply to all work in identified serpentine grassland areas, including from Towers 0/1 to 0/5 (Edgewood Park), Towers 5/27 to 8/50 (Ralston to Carolands Substation), and Towers 10/63 to 10/68 (Burlingame area).

B-1d Perform Pre-construction Surveys and Provide Monitors. Pre-construction surveys shall be performed for identification of all special status plant and animal species within 200 feet of project construction activities (including towers, access roads, cable pulling sites, laydown sites, and other work areas). Avoidance measures vary for each species and are specified under Mitigation Measure B-1e for rare plants, and under Mitigation Measures B-8a for special status wildlife species

Biological monitors, employed by PG&E and approved by the CPUC, shall locate and stake identified sensitive resources in specified areas before construction activities begin and inspect areas prior to construction to ensure that barrier fencing, stakes, and required setback buffers are maintained. Special status species habitat, as well as jurisdictional wetlands riparian habitat, and serpentine grassland (as identified during 2002 and 2003 field surveys), shall be flagged prior to the start of construction of any project components. The CPUC shall be notified prior to the start of flagging activities so a CPUC-designated biologist may observe these activities.

Maps and reports identifying locations of special status plants and animals found in pre-construction surveys, as well as proposed exclusion-fence locations, shall be provided to the CPUC for review and approval prior to the start of construction.

Construction activities within significant plant communities shall be minimized by placing towers so as to span these areas, maximizing the use of existing access roads, and minimizing the construction of new access roads. Prior to confirming final transmission corridor design, the locations of all project components (towers, roads, temporary work areas, etc.) shall be defined on a map that also illustrates locations of wetlands, riparian habitat, and special status plants and wildlife, and this shall be provided to the CPUC for review and approval.

- B-1e Complete Rare Plant Surveys.** Prior to construction, comprehensive rare plant surveys shall be conducted in previously unsurveyed areas for all plants that have been identified within the study area and those plants with the potential to occur in the study area (as defined in Tables 4-1). Surveys shall be conducted within appropriate areas along the selected construction ROW and in areas susceptible to surface disturbance by construction vehicles or personnel. Rare plant surveys of the ROW, cable pulling sites, laydown areas, and access roads shall be appropriately timed to cover the blooming periods of the nine special status plant species known to occur in the area (as identified in Table D.4-2). Maps depicting the results of these surveys shall be prepared and shall include other recently mapped special status plant occurrences in the area to ensure that the full scope of rare plant habitat in the project corridor vicinity is delineated.

Any special status plant occurrences located within 200 feet of the approved project construction corridor (e.g., the Marin Flax population on Pulgas Ridge) shall be fenced prior to the start of any construction, and if feasible, towers or other project components shall not be placed in areas where these plant populations have been identified. Maps and reports, as well as proposed fence locations, shall be provided to the CPUC's approved biological monitor for review and approval prior to the start of construction. The locations of special status plant populations shall also be provided to construction personnel so they can be avoided.

- B-1f Protect Sensitive Habitats During Construction.** PG&E shall map and flag or fence overland travel routes and project access areas prior to construction or periodic maintenance during operation and shall ensure that vehicles or project personnel do not disturb identified areas. Areas flagged shall include serpentine grassland, wetland, riparian, and any other sensitive resource identified by the project biologist. The mapping/flagging shall be reviewed by a CPUC-approved biologist prior to use of these routes for construction to ensure adequate protection for sensitive plant communities. Project components shall be designed to avoid or minimize disturbance to these sensitive areas. The total area of disturbance to each plant community within the Proposed Project shall be quantified and provided to the CPUC and the resource agencies (USFWS and CDFG) to determine appropriate mitigation. If it is determined that special status plant communities cannot be avoided, Mitigation Measure B-8b shall be implemented.

- B-1g Implement Weed Control.** PG&E shall protect against the potential introduction or spread of noxious weeds or pathogens, such as sudden oak death. Sudden oak death management protocols are currently being developed for the San Francisco Watershed lands; PG&E shall coordinate with the SFPUC and resource and public agencies regarding sudden oak pathogen management and invasive plant species shall be conducted prior to construction.

- PG&E shall prevent invasion of invasive, non-native plant species into sensitive plant species habitats and vegetation types by conducting:
- Implementation of measures during construction, such as cleaning vehicles prior to off-road use, using weed-free imported soil, restricted vegetation removal and requiring topsoil storage.
- Development and implementation of weed management procedures to monitor and control the spread of weed populations along the ROW.

The following measures shall be implemented to control the introduction of weed¹ species within areas disturbed during transmission line construction; implementation of these measures during construction shall be verified by the CPUC Environmental Monitor:

- Vehicles used in transmission line construction shall be cleaned prior to operation off of maintained roads.
- Fill material, soil amendments, gravel etc. required for construction/restoration activities shall be obtained from a source that can certify the soil as being “weed free.”
- Existing vegetation shall be cleared only from areas scheduled for immediate construction work (within 10 days) and only for the width needed for active construction activities.
- During construction, the upper 12 inches of topsoil (or less depending on existing depth of topsoil) shall be salvaged and replaced wherever the transmission line is trenched through open land (not including graded roads and road shoulders).
- Disturbed soils shall be revegetated with an appropriate seed mix that does not contain weeds (as defined below); revegetation in sensitive vegetation types shall adhere to the relevant mitigation measures.

B-1h Negotiate Compensation for Loss of Significant Plant Communities. If the CPUC-approved Project Biologist, in consultation with project engineers, determines that avoidance or restoration of temporary impacts is not feasible or where permanent impacts (i.e., loss of habitat) to significant plant communities occur from access road or tower installation, compensation for the loss of these communities shall be provided by PG&E. Compensation shall be provided to levels acceptable by the CPUC, USFWS, CDFG, and USACE. In order to determine appropriate compensation, habitat loss shall be defined in a report submitted to the CPUC and resource agencies. The report shall identify appropriate compensation for loss of each type of resource (e.g., purchase of mitigation lands or donation to habitat preservation areas).

B-1i Implement Worker Education. A Worker Environmental Awareness Program (WEAP) shall be implemented for construction crews by a qualified biologist(s) provided by PG&E and approved by the CPUC prior to the commencement of construction activities. Training materials and briefings shall include but not be limited to, discussion of the Federal and State Endangered Species Acts, the consequences on noncompliance with these acts, identification and values of sensitive plant and wildlife species and significant natural plant community habitats, fire protection measures, hazardous substance spill prevention and containment measures, and review of mitigation requirements. Training materials and a course outline shall be provided to the CPUC for review

¹ A “weed” is defined here as any plant species (1) included on the California Exotic Pest Plant Council List A or the Red Alert list of species which are serious problems in wildlands (CalEPPC, 1999), or (2) identified as a noxious weed with potential to damage agriculture by the California Department of Agriculture.

and approval at least 30 days prior to the start of construction. PG&E shall provide to the CPUC a list of construction personnel who have completed training, and this list shall be updated by PG&E as required when new personnel start work. No construction worker may work in the field for more than 5 days without receiving the WEAP.

Impact B-2: Loss of or Damage to Trees

A limited number of trees (to be determined based on final project design) would be permanently removed or trimmed to install the new tower footings. During construction, temporary impacts to trees will occur within the ROW and project-affected areas elements such as cable pull sites, access roads, and staging areas due to clearing or grading. Due to ongoing vegetation clearing to reduce fire hazard, however, few trees occur next to the existing tower footings and new towers generally have been sited in areas that do not support trees. Therefore, few trees are expected to be permanently lost due to the installation of towers. Tree trimming may also be required along existing access roads in order to provide sufficient clearance between the treetops and the conductors or for safe vehicular transport.

Currently, trees continually re-establish themselves naturally throughout the ROW after fire hazard removal, and it is expected that this would continue after project implementation. A substantial number of trees occur in the extensive Water Department lands adjacent to the project area. Because some limited natural revegetation will occur after removal, and there are extensive stands of trees nearby, the permanent or temporary loss of a few trees, many of which are not native, is not considered significant.

Standards for maintenance, management, and preservation of native and indigenous trees are established in the San Mateo County Heritage Tree Ordinance and the San Mateo County Significant Tree Ordinance. As described in APM 6.1 (Pre-Construction Tree Surveys) and further detailed in Mitigation Measure B-2a, pre-construction tree surveys would be conducted prior to construction to determine the number and species of trees to be removed and if trees to be removed are protected by local ordinances.

Per County ordinances, tree trimming and encroachment into the dripline of a heritage or significant tree is prohibited without obtaining prior approval or a permit. Mitigation Measures B-2a (Compensate for Tree Loss) along with APM 6.1 (Pre-Construction Tree Surveys), will be implemented to ensure that no heritage or significant trees are adversely affected without obtaining proper approvals. This mitigation will ensure that potentially significant (Class II) impacts are reduced to less than significant levels.

B-2a Compensate for Tree Loss. Standards for maintenance, management, and preservation of native and indigenous trees are established in the San Mateo County Heritage Tree Ordinance and the San Mateo County Significant Tree Ordinance. Tree removal permits or approvals for lost heritage or significant trees shall be obtained and mitigation shall be coordinated, as required, with the appropriate public and resource agencies. Mitigation for lost trees may not be implemented within the ROW due to fire safety concerns, and instead may be implemented in an alternative, agency-approved location.

PG&E shall avoid, minimize, and compensate for impacts to trees, including those protected by local ordinances, by:

- Pre-construction identification, fencing and avoidance of trees to the maximum extent during construction.
- Consultation with local jurisdiction if unavoidable impacts to locally protected trees (“Protected Trees”) are likely to occur.

- Development and implementation of a Tree Replacement Plan for loss and/or significant damage to trees.
- Supervision and verification of the implementation of these measures by the Environmental Monitor.

The initial step for this measure shall be to determine the size and location of all trees located within and adjacent to the project right-of-way, work areas, staging areas, and launcher/receiver stations. These trees shall be then assessed by a qualified biologist or arborist to identify and map Protected Trees. If it is determined that the project will trim, remove, or damage the roots of Protected Trees, avoidance measures shall be taken. Avoidance shall consist of installing protective fencing around the dripline of any Protected Tree. All construction activities, including excavation, grading, leveling, and disposal or deposition of harmful materials shall be prohibited inside the dripline fence. Attachment of wires, ropes, or signs to Protected Trees shall also be prohibited. The approved CPUC Environmental Monitor shall supervise compliance with these protective measures prior to and during construction activities.

If trimming, removal or root damage to a Protected Tree is unavoidable, the appropriate jurisdiction shall be consulted. Further actions may require a permit that would include fees and/or replacement for affected trees. Proposed trimming or other damage to Protected Trees along the proposed route shall be evaluated by a qualified arborist, who shall identify appropriate measures to minimize tree loss and shall supervise all associated activities in accordance with permit conditions issued by the responsible jurisdiction.

If the Proposed Project requires removal of trees (Protected Trees or others), a qualified forester, arborist, or restoration ecologist shall evaluate the tree replacement procedures to ensure that the replacement would be consistent with applicable local jurisdiction requirements, such as San Mateo County Tree Ordinances, and with additional permit conditions imposed by the local agency (e.g., local oak tree protection requirements). Additional mitigation may be required by CDFG for impacts to riparian trees. Tree removal shall not be permitted until a qualified forester, arborist, or restoration ecologist has reviewed the following procedures:

- Identification of proposed tree removal locations.
- A discussion demonstrating how maximum avoidance has been accomplished and why the trees proposed for removal cannot be avoided.
- Discussion of appropriate tree replacement ratios, as defined by the local jurisdiction, or, at a minimum, a 3:1 replacement to removed/impacted ratio for non-protected trees.
- Identification of suitable tree replacement locations within or immediately adjacent to the original tree impact area.
- Tree species and size specifications.
- Proposed understory native seed mix composition and application methods.
- Planting methodology, including spacing and proper timing of plant installation.
- Description of protective staking and caging measures.
- Description of irrigation and plant maintenance regime.
- Description of five-year monitoring effort to measure replacement success.
- Success criteria (including survival rates) and contingency measures in case of mitigation failure.
- Submission of an annual monitoring report to responsible agencies evaluating mitigation success.

- Successful implementation of tree replacement shall be evaluated five years after all human support (e.g., replanting, fertilization, irrigation) has ceased. At that time, a report shall be submitted to the local jurisdiction, and CDFG, if requested, summarizing the results. A determination will be made by these agencies as to whether continued monitoring is required and/or whether implementation of additional tree support measures (e.g., replanting, fertilization, irrigation) is required.

Impact B-3: Erosion and Sedimentation

Erosion and sedimentation have the potential to occur during and after construction and are routinely related to the following activities:

- Exposure of surface soils from removal of vegetation
- Compaction of soils and disturbance of soil profile from vehicle movement.

Erosion and sedimentation can temporarily or permanently damage vegetation communities by removing or substantially disrupting surface soil layers. Drainages, wetlands, and riparian areas could be substantially degraded by the accumulation of sediments and alteration of natural hydrologic characteristics. Specific impacts and mitigation measures are described below, as well as in Sections D.6 (Geology, Soils, and Paleontology) and Section D.7 (Hydrology and Water Quality). Impacts from movement of equipment and project personnel can vary in magnitude from minor to severe, depending on variables such as vegetation type, soil morphology, topography, and construction equipment and other vehicles. Efforts to restore areas that have not been severely affected by these impacts may cause more damage than the original impact.

Grading, excavation, and similar activities during construction, and permanent re-contouring of slopes for access roads and pole sites, could increase the potential for erosion of disturbed surfaces prior to reclamation. Short-term water erosion of soils on slopes greater than approximately 15 percent would occur during heavy storms, which could affect downslope vegetation. Erosion and sedimentation could adversely affect drainages and wetlands within and adjacent to the project area and might delay or prevent suitable recovery of disturbed surfaces. Erosion and sedimentation is considered a potentially significant (Class II) impact, requiring mitigation. In APM 6.5 (Erosion Control and Revegetation Plan), PG&E references its preliminary revegetation plan contained in PEA Appendix B and its Stormwater Pollution Prevention Plan. Mitigation Measure H-1a (Section D.7, Hydrology and Water Quality), and APM 9.1 (Implementation of Erosion Control and Sediment Transport Plan) require preparation and implementation of a comprehensive Erosion Control Plan. Mitigation Measure B-3a presents the requirement for a plan that will include additional specific requirements to protect biological resources from erosion and sedimentation. Implementation of this measure would ensure that this impact is less than significant (Class II).

Mitigation Measure for Impact B-3: Erosion and Sedimentation

B-3a Restoration After Construction. PG&E shall prepare and implement a Revegetation and Restoration Plan that shall define specific measures to ensure successful restoration of all affected habitats. The Plan shall include required use of a mixture of custom-collected native grass species appropriate to the area. Restoration activities shall commence immediately after completion of construction, and shall be monitored for at least five years. The Plan shall be submitted to the CPUC for review and approval at least 60 days before completion of construction.

Impact B-4: Wildlife Habitat Removal

Wildlife habitat removal includes activities such as: (1) ground surface grading and blading, (2) tree or shrub removal, (3) tree trimming, or (4) scraping of road surfaces that disturbs surface and subsurface soils. Each of these activities could effectively remove existing habitat, thereby reducing its availability to local wildlife populations. Habitat removal could occur primarily during project construction, when vehicles require access to structure locations. In some areas, access would require construction of new roads or upgrading of existing roads. Blading of previously undisturbed surfaces may also occur to access structure locations. Blading would remove rocks, large shrubs, and other objects from the soil surface, leaving a relatively clear pathway for construction vehicles. In addition, habitat could be removed at tower structure locations, conductor tensioning and splicing locations, and at construction staging/laydown areas. Construction staging/laydown areas, and conductor pulling/tensioning may not be graded in all cases; however, it is anticipated that these areas could be substantially damaged by vehicle parking and materials storage activities during construction.

Wildlife habitat would be temporarily removed during construction of access roads, cable pulling areas, staging areas, and towers, and permanently removed by placement of the tower footings, thereby reducing the amount of habitat available to local wildlife populations. Habitat removal would occur primarily during project construction when vehicles require access to tower structures and cable pulling sites. Staging and cable pulling areas may not be graded in all cases; however, it is anticipated that these areas could be substantially affected by vehicle parking and materials storage activities during construction.

Permanent and temporary loss of habitat within the ROW could affect some small mammal, reptile and/or amphibian species with very limited home ranges and mobility. For these species, the clearing for access roads and staging areas could represent a slight reduction in the carrying capacity of a portion of their home range until a productive vegetation cover is re-established. However, most of these species are common and widely distributed throughout the area and the loss of some individuals as a result of habitat removal would have a negligible impact on populations of the species throughout the region. As described in the vegetation impacts section, a few trees would be removed, and/or trimmed, and other vegetation types may be temporarily lost or affected. Although these vegetation types provide habitat for a variety of wildlife species, extensive amounts of forested and wooded habitat occur nearby in the Watershed Lands. Therefore, the potential clearing of habitat for most of the smaller wildlife species along the proposed alignment is considered a Class III impact, adverse but less than significant. Consequently, no mitigation is proposed for loss of wildlife habitat.

The affected wildlife habitat types and associated acreages that would be temporarily and or permanently removed during construction of the proposed overhead project will be estimated prior to any construction-related activities. The impact acreages and the agency-acceptable compensation ratios will be presented in a habitat restoration plan submitted to the CPUC and the U.S. Army Corps of Engineers (for wetlands), the California Department of Fish and Game (CDFG) (for riparian habitat), and the Regional Water Quality Control Board (RWQCB) at least 60 days prior to the start of any construction for their review and approval (Mitigation Measure B-1b).

Impact B-5: Direct Wildlife Mortality

Direct loss of small mammals, reptiles, and other less mobile species could result primarily from the use of construction vehicles during stringing of the line, and use of other construction or maintenance vehicles within the 100-foot ROW. Surface disturbance during construction and maintenance of the Proposed

Project could result in a potential loss of less mobile individual animals and/or ground nests. Clearing, grading, excavating and/or burying habitats could also lead to mortality of small mammals, reptiles, and nesting birds with eggs or young, resulting in an adverse but less than significant impact (Class III).

Direct mortality could also occur as a result of animal-vehicle collisions. During construction, equipment and other vehicles could collide with wildlife on construction sites or during travel to and from sites. Most mortality, if it occurred, would probably be on paved highways such as I-280, where project-related vehicles would be traveling at higher speeds than on dirt or gravel roads. Wildlife that are particularly vulnerable to collisions with vehicles are species that are inconspicuous, slow moving, and/or nocturnal. Potential wildlife mortality related to vehicle collisions with most common mammal, bird, and reptile species (i.e., non-sensitive species) would be considered a potentially significant (Class II) impact, mitigable with implementation of Mitigation Measure B-5a.

Mitigation Measure for Impact B-5, Direct Wildlife Mortality

The purpose of this measure is to provide specific directions and descriptions of actions that would reduce mortality among wildlife in the vicinity of the project during construction. Effective application of this mitigation measure would result in little mortality among wildlife in the vicinity of the Proposed Project during construction, thereby reducing impacts to wildlife to less than significant levels (Class II).

B-5a Protect Wildlife During Construction. In order to reduce direct mortality impacts during construction, PG&E shall impose the following conditions on all construction personnel. These requirements shall also be explained in the WEAP (required in Mitigation Measure B-1i):

- Vehicles shall not exceed 10 mph on the entire ROW or along designated portions of access roads where special status wildlife species are known to occur. These locations shall be determined during pre-construction surveys and identified on project maps prior to the onset of construction. All other areas along dirt access roads outside the limits of known special status wildlife species habitat shall have a 15 mph speed limit, consistent with BAAQMD Control Measures for Construction Emissions of PM10 discussed in the Air Quality Section (Section D.10).
- Litter or other debris that may attract animals shall be removed from the project area; organic waste shall be stored in enclosed receptacles, removed from the project site daily, and disposed of at a suitable waste facility
- No pets shall be allowed in the construction area, including access roads and staging areas
- Construction crews shall be educated regarding sensitive wildlife that could be encountered on highways and how to safely avoid them. Crew behavior shall be monitored by a qualified biologist approved by CPUC.

Impact B-6: Wildlife Disturbance from Human Presence

Indirect impacts on wildlife could occur as a result of noise and increased human presence throughout the project area, with heaviest concentrations occurring during access to and construction at tower locations, during stringing of the line, and at construction staging and pulling areas. These activities are likely to temporarily displace a variety of wildlife from adjacent habitats, lowering the overall habitat availability and effectiveness of these areas. These zones are not likely to be completely abandoned by wildlife, but the effective use of these areas could be reduced during construction, depending on a number of factors such as the particular wildlife species, time of year, presence of topographic features, and amount of foliage and vegetation present. Since this effect could potentially be detrimental to some wildlife during their critical

life stages and could increase competitive pressures among adjacent populations and habitats, the impact could be significant. Indirect impacts resulting from human disturbance during project construction, maintenance, or the reclamation process (due to heavy vehicle operation, or helicopter flights, etc.) could therefore cause some wildlife displacement to other habitats, which may or may not be able to support additional animals. Impacts as a result of increased human disturbance may also include reduced reproductive success in local wildlife populations, including songbirds, small mammals, reptiles, and special status species.

Disturbance from increased human presence is therefore considered a Class II impact, potentially significant but mitigable to less than significant levels. Consequently, mitigation measures should be implemented as defined below.

Mitigation Measures for Impact B-6, Wildlife Disturbance from Human Presence

The primary mitigation measures to reduce potential impacts to wildlife resulting from increased human presence during construction are avoidance by pre-construction surveys to determine wildlife presence or absence and appropriate construction timing to avoid.

Effective application of mitigation measures to conduct pre-construction surveys to determine wildlife presence or absence (B-1c), implementation of a WEAP (B-1i) appropriate demarking of resources (B-1f), appropriate construction timing (B-1e and B-8a), and measures to limit access to the approved work zone (B-5a) would reduce this potentially significant impact to less than significant levels (Class II).

Impact B-7: Bird Electrocution and Tower/Line Collisions

Electrocution. Raptors and other large aerial perching birds are most susceptible to electrocution because of their size, distribution, and behavior (Olendorff et al., 1981). They often perch on tall structures that offer optimal views of potential prey. Bird electrocutions occur when the wingspan of the bird is greater than the spacing between any two conductors on a power pole or when a bird bridges the gap between a conductor and a ground wire. The high-voltage 230 kV transmission lines, however, will have clearances between conductors or between conductors and ground that are sufficient to protect even the largest birds (APLIC, 1996), and therefore will present little to no risk of bird electrocution.

Electrocution occurs only when a bird simultaneously contacts two conductors of different phases or a conductor and a ground. This happens most frequently when a bird attempts to perch on a structure with insufficient clearance between these elements. On a 230 kV transmission line, all clearances between conductors or between conductors and ground are sufficient to protect even the largest birds (APLIC, 1996). Because the clearances on the 60 kV line will be as large as those on the 230kV side, no electrocution impacts along the transmission line are expected. Bird electrocutions, however, could occur at the Jefferson and Ralston Substations or with any low voltage power lines (less than 69 kV) associated with these substations, where conductors are closer together than 80 inches (the wingspan of the largest North American raptor or waterfowl). All distances between conductors or conductors and a ground would be a minimum of five feet in a typical 230 kV transmission tower, such as the Jefferson-Martin Project. Therefore, the potential for electrocution of birds by the transmission line is considered to be adverse but less than significant impact (Class III)..

Collision. Bird collisions with power lines generally occur when: (1) a power line or other aerial structure transects a daily flight path used by a concentration of birds, and (2) migrants are traveling at reduced altitudes and encounter tall structures in their path (Brown, et al., 1993). Collision rates generally increase in low light conditions, during inclement weather, such as rain or snow, during strong winds, and during panic flushes when birds are startled by a disturbance or are fleeing from danger. Collisions

are more probable near wetlands, valleys that are bisected by power lines, and within narrow passes where power lines run perpendicular to flight paths. The potential for bird collisions with the Proposed Project's power lines or substation facilities occurs in all areas of the overhead transmission line, and is greatest in those locations that are near the open water and wetlands associated with Upper and Lower Crystal Springs Reservoirs and San Andreas Lake.

Therefore, operational impacts of the proposed transmission line include the potential for bird mortality from collisions with wires and tower structures. Passerines (i.e., songbirds) are known to collide with wires (APLIC, 1994), particularly during nocturnal migrations or poor weather conditions (Avery et al., 1978). However, passerines have a lower potential for collisions than larger birds. Some behavioral factors contribute to a lower collision mortality rate for these birds. Passerines tend to fly under power lines, as opposed to larger species, which generally fly over the lines and risk colliding with the higher static lines, and many smaller birds tend to reduce their flight activity during poor weather conditions (Avery et al., 1978).

One of the primary factors in determining the potential for birds' collisions with transmission lines is the number of birds flying through the area. For instance, a Mare Island study (Hartman et al., 1992) found that both bird flights and collision mortality were much greater on a section of a 115 kV pole line that paralleled a tidally influenced salt pond than on a section that passed through a hayfield. High use of the salt pond by migratory waterfowl and shorebirds resulted in more collisions than a hayfield that is generally used by fewer birds. Other factors that influence the rate of bird collision are species, age, flocking behavior, weather conditions, land use, topography, and line placement and configuration (APLIC, 1994).

It is difficult to predict the magnitude of collision-caused bird mortality without extensive information on bird species and movements in the project vicinity. These data are not available for the proposed transmission line corridor. However, it is generally expected that collision mortality would be greatest where the movements of susceptible species are the greatest (e.g., near wetlands, open waterbodies, etc.). In addition, the placement and visibility of the line would influence collision mortality.

PG&E states in APM Bio-8 that it will construct the new overhead portion of the electric transmission line and the overhead 144 fiber-optic ground wire to ensure that it is bird-safe. The configuration for each tower and the spacing of conductors within the project's substations will meet or exceed APLIC guidelines (APLIC 1996) to minimize the risk of bird electrocutions and collisions with the project facilities. However, to ensure appropriate reduction of impacts, Mitigation Measure B-7a is required.

The potential for collision mortality of waterfowl and other birds is a potentially significant (Class II) impact. It is especially of concern because the proposed transmission line would include the installation of a single 144-fiber optic groundwire that would run the length of the line above the 230 kV circuit. However, due to the lack of site-specific information in the project area related to the direction of bird flight and the frequency of corridor crossing, the Mitigation Measure B-7a is presented with an option for a bird collision study as a first step toward confirming the impact potential. In addition to APMs 6.8 (Construction of Bird-Safe Towers), 6.16 (Mitigation for Impacts to Special-Status Raptor Species), and 6.17 (Mitigation for Impacts to Other Special Status Avian Species), Mitigation Measure B-7a would ensure this impact is reduced to less than significant. Specific species are addressed under Impact B-8 below.

Mitigation Measure for Impact B-7, Bird Electrocutation and Collision Impacts

B-7a At least 60 days prior to installation of conductors, PG&E shall either (a) perform a study to determine the potential for bird strikes in the areas identified below and then, depending on study results, install bird strike diverters, or (b) implement bird strike diverters as defined below. The study shall evaluate the actual bird strike incidents at existing transmission lines in the vicinity of the approved project corridor. If this study determines that bird strikes would not constitute a significant impact, PG&E shall document study results and submit a report to the CPUC for review and approval. Upon CPUC approval, compliance with the remainder of this measure would not be required. If PG&E opts not to complete this study or if study results confirm the potential benefits of bird flight diverters, the remainder of this measure shall be implemented. The protocol for this study (including the time period, survey intervals, and impact significance criteria) shall be approved by the CPUC, the U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (CDFG).

If PG&E does not perform the study defined above or if study results determine that flight diverters would likely be beneficial, PG&E shall install bird flight diverters on the 144-fiber optic ground wire in areas prescribed by the CPUC, the U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (CDFG).

Impact B-8: Habitat Removal or Disturbance of Special Status Wildlife Species

In general, construction and operational impacts of the Proposed Project on special status wildlife species and their habitats would be similar to those discussed in the sections for general wildlife (Impacts B-4 through B-6). However, similar impacts can have greater effects on special status wildlife species, since the distribution and abundance of many of these species are limited.

Thirty-seven special status wildlife species including 10 invertebrates, two fish, three amphibians, three reptiles, twelve birds, and seven mammals are identified as potentially occurring within the Proposed Project area (see EIR Appendix 5, Biological Resources). Of these 37 species, however, only 29 are considered to potentially be adversely impacted by the Proposed Project, due to the location of documented sightings, individual habitat requirements, and the species' nature and susceptibility to disturbance. These 29 species are either known to occur or have a high probability of occurring within or near the project, and are presented in Table D.4-3 below, and the mitigation measures specific to each of the 29 potentially impacted wildlife special status species are presented in Mitigation Measure B-8a following the table.

Table D.4-3. Special Status Wildlife Species Potentially Impacted within the Project Area

Special Status Wildlife	Occurrence in the Project Area
Edgewood blind and Edgewood Park microblind harvestmen	Each of these species is known to occur in serpentine grassland habitat within Edgewood Park between existing Towers 0/1 through 0/5, and near existing Tower 0/6. Construction activities that disturb vegetation or soils in serpentine grassland habitat may result in the direct loss of individuals.
Ricksecker's water scavenger beetle	The Ricksecker's water beetle is known to occur at the Pulgas Water Temple and its natural wetland habitat may include a perennial stream that is crossed by the ROW.
Bay checkerspot butterfly	Several towers will be installed in sensitive serpentine grassland habitat, which is suitable habitat for the Bay Checkerspot butterfly.
Mission blue butterfly	No suitable habitat for these species exists within the overhead portion of the transmission line. The underground portion of the transmission line will be constructed within the paved area of Guadalupe Canyon Parkway. The roadway passes through the San Bruno Mountain Habitat Conservation Plan area where there is known habitat for these butterflies; however, construction work will be limited to paved areas and potentially unpaved shoulder.
San Bruno Elfin Butterfly	
Callippe silverspot butterfly	

Table D.4-3. Special Status Wildlife Species Potentially Impacted within the Project Area

Special Status Wildlife	Occurrence in the Project Area
California tiger salamander	Some marginal potential California Tiger Salamander (CTS) breeding habitat occurs in areas such as the Caltrans retention basins. CTS breeding sites, adults, if present, could potentially migrate from the basins to burrow sites within the project area.
California red-legged frog	<p>California red-legged frogs (CRLF) were observed in the Crystal Springs Golf Course irrigation pond about 300 feet west of the alignment. The habitat between the alignment and the irrigation pond is maintained as a golf course and does not provide suitable aestivation habitat for the frogs; however, it is possible that CRLF could migrate through the cable pull site in the golf course or the ROW. In addition, several known breeding populations located near Lower and Upper Crystal Springs Reservoirs and San Andreas Lake. These are located between 150 feet and 3,500 feet west of the ROW, respectively. CRLF was also observed at a retention basin north of Tower 12/80 in April 2002. This pond, and a retention basin to the south near Tower 12/79, are considered potential breeding locations. These ponds are both located directly adjacent to the access road that will be used during construction, but no frogs were observed in these ponds during the 2002 surveys.</p> <p>Potential breeding habitat within 1-mile of the project was reported east of I-280, but these areas considered isolated from the project by the Highway 280 barrier. No other potential breeding habitat for the CRLF was observed in the ROW.</p> <p>It is possible that San Andreas Lake shoreline will need to be stabilized at two Existing Tower locations (12/83 and 12/84), and that CRLFs could potentially move into this area from the breeding site at the north marsh of the Lake. Similarly, a pond containing CRLF occurs directly adjacent to an existing stabilized access road that will be used during construction. It is possible that CRLF could disperse from this pond into the ROW.</p>
Western pond turtle	<p>The San Andreas Lake shoreline may be temporarily disturbed during removal of existing Towers 12/83 and 13/84; new towers will be placed farther back from the bank. The species might also be found at the Golf Course Pond, Caltrans retention ponds or other wetlands near the ROW. Additionally, the turtle could use upland areas within the ROW during dispersal in the vicinity of these wet areas. If they migrate through or nest in the ROW during construction, Western pond turtles could be impacted by construction activities such as movement of workers and equipment during foundation excavation, pouring of concrete, or vehicular and equipment travel.</p> <p>Indirect impacts, such as sedimentation and changes in water quality, could also occur to aquatic turtle habitat as a result of construction.</p>
San Francisco garter snake	<p>The San Francisco garter snake (SFGS) has a high potential of occurrence in the area from Hillcrest Blvd. north, especially between Towers 13/83 and 13/84 near San Andreas Lake, and the small seasonal wetland west of the ROW south of Sneath Lane (between Existing Towers 14/95 and 14/97). The SFGS was observed near the Sneath Lane Substation near Towers 14/97 and 14/98 during the CRLF surveys.</p> <p>In addition, the north marsh of San Andreas Lake contains a breeding population and dispersal could potentially occur around the northeast shoreline, and between Existing Towers 12/79 and 13/84. Breeding populations were also documented at the following locations, but they are not expected to be impacted by the project:</p> <ul style="list-style-type: none"> • Upper Crystal Springs Reservoir southern marsh and small adjacent retention basin • Lower Crystal Springs Reservoir north marsh and adjacent Tracy Lake area <p>SFGS could potentially disperse into the ROW from the San Andreas Lake population and impacts to snakes could potentially occur as a result of construction (e.g., equipment passage and movement or trampling by construction workers).</p>
Golden eagle	<p>Permanent impacts to potential raptor nesting habitat could occur during construction, as a result of tree removal. Temporary impacts to potential raptor nesting habitat and/or foraging habitat could occur during construction as a result of loss of habitat use in areas of work and equipment movement. In addition, disruption of potentially breeding raptors could occur as a result of increased human activity in the ROW (e.g., due to the use of heavy equipment and human traffic) during the breeding season (typically March 1 to August 1).</p> <p>Other raptors, such as red-tailed hawk, red-shouldered hawk, and great horned owl are protected under the Migratory Bird treaty Act are known from the project area. Appropriate nesting habitat for these species occurs throughout the overhead transmission line project area in adjacent and surrounding woodlands and suburban areas. Construction activities could disturb nesting raptors and lead to nest abandonment or poor reproductive success.</p>
Cooper's hawk	
Sharp-shinned hawk	
Ferruginous hawk	
Northern harrier	
White-tailed kite	
Merlin	

Table D.4-3. Special Status Wildlife Species Potentially Impacted within the Project Area

Special Status Wildlife	Occurrence in the Project Area
Olive-sided flycatcher	Temporary impacts to potential avian nesting habitat and/or foraging habitat could occur during construction, as a result of loss of habitat use in areas of work and equipment movement. In addition, disruption of potentially nesting avian species could occur as a result of increased human activity in the ROW (e.g., due to the use of heavy equipment and human traffic) during the breeding season (typically April 1 to August 31).
California yellow warbler	
Pacific-slope flycatcher	
San Francisco common yellowthroat	
Purple martin	
Allen's hummingbird	
Pallid bat	Permanent impacts to potential roosting habitat could occur during construction, as a result of tree removal. Temporary impacts to potential tree-roosting bat habitat could occur during vegetation removal at work areas or along new access roads. In addition, disruption of individual tree-roosting bats could occur as a result of disturbance and tree removal or trimming.
Long-eared myotis	
Long-legged myotis	
San Francisco dusky-footed woodrat	Construction activities could result in impacts to dusky-footed woodrats that occur within or near the project. Particularly at existing Tower 3/22 where two stick nests were observed during the 2002 surveys.

In addition to the special status raptors presented in Table D.4-3, other raptor species, protected under the U.S. Migratory Bird Treaty Act, may also be impacted if active nests are destroyed or disturbed by project-related actions.

Disturbance from habitat removal or disturbances to special status wildlife species is considered a Class II impact, potentially significant but can be mitigated to less than significant levels. Consequently, the following mitigation measure is proposed in addition to APMs 6.9 (Mitigation for Impacts to Special Status Harvestman Species), 6.10 (Mitigation for Impact to the Bay Checkerspot Butterfly), 6.11 (Mitigation for Impacts to Special Status Butterflies), 6.12 (Mitigation for Impacts to the California Tiger Salamander), 6.13 (Mitigation for Impacts to the California Red-Legged Frog), 6.14 (Mitigation for Impacts to the Western Pond Turtle), 6.15 (Mitigation for Impacts to the San Francisco Garter Snake), 6.16 (Mitigation for Impacts to Special Status Raptor Species), 6.17 (Mitigation for Impacts to Other Special Status Avian Species), 6.18 (Mitigation for Impacts to Special Status Mammal Species), 6.19 (Mitigation to Impacts to the Dusky-Footed Woodrat).

Mitigation Measure for Impact B-8, Impacts on Special Status Wildlife Species

The purpose of this measure is to provide specific proposed actions to reduce potential impacts to special status wildlife species in the vicinity of the project. Effective application of all prior proposed mitigation measures to eliminate or minimize impacts to vegetation and wildlife (B-1a through B-7a) and the following specific measures (B-8a and B-8b) would reduce potentially significant (Class II) impacts to special status species to less than significant levels.

B-8a Protection for Special Status Wildlife Species. The actions required below for protection of specific wildlife species shall be clearly defined by PG&E in a Special Status Wildlife Protection Plan provided to the CPUC for review and approval 60 days before the start of construction. The Plan shall define the specific areas in which each species is expected to occur, the results of all pre-construction surveys and seasonal surveys conducted prior to construction, and specific protective measures that will be taken during construction (including but not limited to those defined below). Where construction will occur within or near known or potential special status species or their habitat, the Applicant shall perform the following actions:

- **Edgewood Blind and Edgewood Park Microblind Harvestman.** The topsoil from the new footing locations will be salvaged and stockpiled, then used as backfill where the existing footings are removed. The area will be revegetated with locally collected, native grass species APM 6.5 (Erosion Control and Revegetation Plan), Mitigation Measure H-1a (Section D.7, Hydrology and Water Quality), and APM 9.1 (Implementation of Erosion Control and Sediment Transport Plan) all require preparation and implementation of a comprehensive Erosion Control Plan.

Towers that are in the sensitive serpentine grassland habitat at Edgewood County Park and Preserve will be accessed during construction only by helicopter or by foot from existing access roads, except in the event of an emergency. No new access roads will be constructed in these locations. In addition, construction activities shall be restricted during the rainy season and spring when these sensitive harvestman species are active (Mitigation Measure B-1c).

- **Bay Checkerspot Butterfly.** The topsoil from the new footing locations shall be salvaged and stockpiled, then used as backfill where the existing footings are removed. The area shall be revegetated with locally collected, native grass species (Mitigation Measure H-1a, Section D.7, Hydrology and Water Quality). In order to minimize impacts from vehicular traffic, towers that are located in the sensitive serpentine grassland habitat at Edgewood County Park and Preserve shall be accessed during construction only by helicopter or by foot from existing access roads, except in the event of an emergency. In addition, construction activities shall be restricted or minimized from December 1 through June 30 during the larval feeding and adult flight season when the Bay Checkerspot butterfly is active.

Some temporary disturbance of serpentine habitat (e.g., removal or trampling of vegetation) shall occur during construction, due to movement of workers and/or equipment during foundation excavation and pouring of concrete. Adverse effects to serpentine grasslands during construction shall be minimized to the greatest degree possible by prohibiting vehicular access and using helicopters to move workers and equipment. Following the completion of construction, affected serpentine habitat in Edgewood Park shall be restored, using local native grass species.

PG&E shall consult with the USFWS to address potential impacts and mitigation measures for the Bay Checkerspot butterfly. During consultation, mitigation requirements may be further refined.

- **Mission Blue Butterfly, San Bruno Elfin Butterfly, Callippe Silverspot Butterfly.** Construction in the San Bruno Mountain Habitat Conservation Plan Area shall be limited to the existing paved roadway of Guadalupe Canyon Road. Indirect impacts, including fugitive dust emissions, could occur to potentially suitable habitat, but shall be mitigated with implementation of dust control measures (Air Quality) and erosion control measures presented in APMs 6.5 and 9.1 and Mitigation Measure H-1a (Section D.7, Hydrology and Water Quality). PG&E shall comply with the requirements of the San Bruno Mountain HCP for construction along Guadalupe Canyon Parkway.
- **Ricksecker's Water Scavenger Beetle.** No construction activity shall occur within the perennial stream that is crossed by the ROW and is considered habitat for this species. Temporary indirect impacts to this stream may occur as a result of erosion and sedimentation during construction-related activities, but shall be mitigated with implementation of erosion control measures presented in Mitigation Measure H-1a (Section D.7, Hydrology and Water Quality).

- **California Tiger Salamander.** Pre-construction surveys shall be conducted, and shall include an investigation of potential burrow locations in the areas that are within dispersal distance of breeding areas, and that shall be disturbed by construction. Any individuals found shall be relocated by a qualified biologist to suitable habitat.
- **California Red-Legged Frog.** In all areas that potentially support California red-legged frog habitat (including areas listed in Table D.4-3), the Applicant shall perform pre-construction surveys to determine if this species is present at these and other locations that may support this species.

If pre-construction surveys identify red-legged frogs within or adjacent to the ROW, then, no more than one week prior to the start of construction in these areas, the animals shall be captured by an agency-approved wildlife biologist. The captured individuals shall either be relocated to appropriate habitat outside of the disturbance corridor or shall be held in captivity until construction is completed through their habitat. The decision of whether or not and where to relocate the animals shall be made by the wildlife biologist in consultation with the USFWS, based on site-specific conditions affecting the animals' safety. For the red-legged frog, mitigation activities would have to occur within the framework of the USFWS biological opinion (B-8b), a memorandum of understanding (between CDFG and USFWS), or other permit or instruction coming from USFWS or CDFG pursuant to federal or State endangered species legislation. The capture sites shall be monitored and appropriate measures taken during construction to ensure that any relocated animals do not move back into the construction corridor.

Additionally, the Applicant shall ensure that a qualified biological monitor be present at construction areas near known or potential habitat, and that BMPs, as included in the SWPPP, shall be implemented during construction to minimize impacts associated with erosion in the proximity of any identified habitat.

- **San Francisco Garter Snake.** Mitigation for potential impacts to SFGS shall include:
 - No construction activities shall occur within suitable SFGS breeding sites or SFGS wetland habitats
 - Flagging of the designated work areas as required by Mitigation Measure B-1f; the presence of biological monitors; and worker environmental awareness training as required in Mitigation Measure B-1i
 - Consultation with the USFWS and CDFG shall be initiated by PG&E to define specific mitigation for potential impacts to SFGS, which may include:
 - Seasonal restrictions on tower construction
 - Tower construction (foundation construction and tower replacement activities) between Towers 12/79 and 14/95 shall be done between August 1 and November 1.
 - If work must be done outside this timeframe, additional mitigation measures could include temporary exclusion fencing and/or biological monitoring as approved by USFWS.
 - Project activities in potential dispersal and overwintering habitat shall be avoided and/or minimized to the greatest degree possible.
 - Additional trapping and visual surveys shall be conducted at the following locations during the Spring 2003 activity period (March through May) to determine the type and extent of specific protective measures needed.

- **Western Pond Turtle.** Where construction is to occur near known or potential habitat for western pond turtle (i.e., water crossing and near ponds), pre-construction surveys shall be conducted to determine the presence or absence of this species. If pond turtles are observed, a determination shall be made in consultation with USFWS and CDFG as to whether or not construction shall adversely impact this species and what measures shall be implemented. Potential impacts to this species shall be minimized through implementation of pre-construction surveys by a qualified biologist who is approved by the resources agencies in identifying and relocating this species. In order to minimize impacts to the aquatic environment (supplements APM Bio-14), mitigation shall also include implementation of erosion and sedimentation control through the required preparation and implementation of a comprehensive Erosion Control Plan ([APM 6.5 (Erosion Control and Revegetation Plan), Mitigation Measure H-1a (Section D.7, Hydrology and Water Quality), and APM 9.1 (Implementation of Erosion Control and Sediment Transport Plan)]. require preparation and implementation of a comprehensive Erosion Control Plan) to minimize impacts to the aquatic environment (supplements APM Bio-14).
- **Nesting Songbirds** (Olive-Sided Flycatcher, California Yellow Warbler, Pacific-Slope Flycatcher, San Francisco Common Yellowthroat, Purple Martin, Allen's Hummingbird). Disruption of potentially nesting avian species could occur as a result of increased human activity in the ROW (e.g., due to the use of heavy equipment and human traffic) during the breeding season (typically April 1 to August 31). Pre-construction surveys for nesting avian species shall be conducted prior to construction. If nesting species are identified within or near work areas that could be impacted by construction activities, measures to avoid or minimize impacts shall be developed during consultation with the resource agencies and implemented in the project area. These could include a work restriction in some areas during the breeding and fledging season (typically April 1 to August 31).

Additional mitigation may include establishment of an avoidance buffer (the distance of the buffer shall be developed in consultation with the agencies and shall vary depending on species sensitivity, topography, tree cover, terrain, proximity to roads/highways, etc.); and use of an on-site biological monitor to monitor for signs of disturbance. If the monitor determines that a disturbance is occurring, construction shall be halted, and the agencies shall be contacted as to the measures that shall be implemented.

- **Raptor Species.** PG&E shall avoid disturbance to active raptor nests at all locations. Pre-construction surveys shall be performed in all areas to identify potential raptor nesting sites within or near the ROW.

No pre-construction surveys shall be required if construction activities are to occur only during the non-breeding season (September 1 through January 31). If, however, construction activities are scheduled to occur during the breeding season (February 1 through August 31), pre-construction surveys of all potentially active nest sites within 500 feet of the construction corridor shall be conducted in areas that may potentially have nesting raptors, including ground nesting raptor species such as northern harrier and short-eared owl. If surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation shall be required.

If active nests are found, a 500-foot, no-disturbance buffer shall be established around the active nest(s). The size of individual buffers can be adjusted, following a site evaluation by a qualified raptor biologist, which shall depend upon the presence of topographical features that obstruct the line of site from the construction activities to the nest or observations of the nesting pair

during construction based on the level of ongoing disturbance (e.g., farming activities or road traffic) and the observed sensitivity of the birds. Site evaluations and buffer adjustments shall be made in consultation with the local CDFG representative. The portion of the project that is within the designated buffer shall be identified in the field by staking and flagging (B-7a).

If these measures cannot be feasibly accommodated, PG&E shall discuss other measures with resource agencies, including potentially obtaining a permit from USFWS to move the nest and/or fledglings (supplements APM Bio-16).

- **Special Status Bats. Pallid Bat, Long-Eared Myotis, Long-Legged Myotis.** Prior to construction, all potential roost trees that must be removed shall be surveyed and identified in the field. The findings of these surveys shall be presented to the SFPUC, USFWS and CDFG to determine if further bat surveys are required. Reasonable evidence of consultation, agencies' decisions, and subsequent implementation (if additional surveys are deemed necessary) shall be presented to the CPUC. Correspondence with the agencies could result in further protective measures. All requirements of APM Bio-18 shall be implemented.
- **San Francisco Dusky-Footed Woodrat.** Requirements of APM Bio-19 shall be implemented. If stick nests cannot be avoided, PG&E shall consult with the CDFG to determine appropriate mitigation, such as relocation of the woodrats. Evidence and/or documentation of consultation, decisions, and implementation shall be presented to the CPUC.

B-8b Consultation with Resource Agencies. If, after applying Mitigation Measures B-1a through B-8a, the CPUC-approved Project Biologist determines that all impacts on special status plant and wildlife species cannot be avoided, PG&E shall initiate FESA Section 7 Consultation with the U.S. Fish & Wildlife Service for federally listed species and/or CESA 2080 Consultation will be initiated with the California Department of Fish and Game for State-listed species. These consultations shall determine requirements for obtaining a (FWS) Biological Opinion and/or (CDFG) Incidental Take Permit. PG&E shall obtain any such required Biological Opinion or Incidental Take Permit and, in that process, shall work cooperatively with the appropriate agency or agencies to develop appropriate mitigation measures to offset impacts to the affected species. PG&E shall thereafter implement all mitigation recommendations of the FWS and/or CDFG that result from these consultations and shall provide evidence of implementation to the CPUC.

D.4.3.4 Transition Station

The proposed Transition Station site is located in a developed urban area on a highly disturbed unvegetated dirt and gravel parking lot. Therefore, no impacts to biological resources are expected and no mitigation is proposed for this portion of the project.

D.4.3.4 230 kV Underground Transmission Line

The entire underground transmission portion of the Proposed Project is located within developed roadways in mostly developed and disturbed urban and commercial areas of San Bruno. The underground portion of the transmission route that occurs in the rural areas of San Bruno Mountain area will also be located in a large roadway (Guadalupe Canyon Parkway). Indirect impacts, including fugitive dust emissions, could occur to potentially suitable habitat for special status butterflies in the San Bruno Mountain area. This potential impact, however, will be mitigated to less than significant levels (Class II) with implementation of dust and erosion control measures presented in APM 6.5 (Erosion Control and Revegetation Plan), Mitigation Measures A-1a (Section D.10, Air Quality), H-1a (Section D.7, Hydrology and Water

Quality), APM 9.1 (Implementation of Erosion Control and Sediment Transport Plan), and mitigation developed for the three special status butterflies found on San Bruno Mountain (Mitigation Measure B-8a). No additional impacts to biological resources are expected in this portion of the project and no further mitigation is proposed.

D.4.3.6 Substations, Switchyards, and Taps

The new construction at substations and switchyards will occur within or adjacent to the footprint of these existing facilities which are highly maintained and devoid of vegetation. Installation of the tap locations will occur within the proposed overhead transmission line ROW, and no additional construction-related impacts are expected. Consequently, the proposed construction at substations, switchyards, and taps, is not expected to impact biological resources.

The configuration of conductors and other electrical hardware at substations, switchyards, and taps would not change sufficiently from existing conditions to result in increased bird mortalities due to electrocution and collision, and is therefore considered an adverse impact (Class III), less than significant. No mitigation is required.

D.4.4 Environmental Impacts and Mitigation Measures for Southern Area Alternatives

D.4.4.1 PG&E Route Option 1B – Underground

Environmental Setting

The biological resources in the vicinity of this alternative would be similar to those described in Section D.4.1 for the Proposed Project. This alternative would occur within the southern portion of the project area, an area known to contain numerous parks, preserves, and watershed lands. Special status species in this area include those plants and insects associated with serpentine grasslands, coast live oak woodland, coyote bush scrub, and chaparral.

Most of this alternative route would be underground within Cañada Road, Skyline Boulevard, or Trousdale Road with little potential for effect on biological resources, but one portion would require different construction methods. The crossing of Crystal Springs Dam (at San Mateo Creek) could affect plant and wildlife species because of options involving construction of new overhead/underground transition stations and options that would affect Lower Crystal Springs Reservoir. Crystal Springs Dam supports a population of California red-legged frogs that live in wet depressions on the top of the dam.

Environmental Impacts and Mitigation

This alternative would be almost entirely within paved surfaces of existing roadways, and would therefore result in far fewer impacts to biological resources than the Proposed Project. The feasibility of attaching the transmission line to the existing dam has not yet been determined. Thus, two options for the crossing of San Mateo Creek Gorge have been proposed, including: (1) a dam attachment option, (2) a short segment of overhead transmission line option, and (3) an option in which an underwater cable would bypass the dam area within the Lower Crystal Springs Reservoir. The following is a discussion of the potential biological resources impacts and the proposed mitigation for these options.

PG&E Route Option 1B – Underground With Dam Attachment Option. The dam attachment option would place the transmission cables on the face of the dam, and thus would not impact any vegetation communities. The dam attachment, however, would be placed directly adjacent to known California red-legged frog habitat that occurs in aquatic habitat found on top of the Crystal Springs Dam. Construction activities related to installation of the transmission line on the dam crossing could directly impact California red-legged frogs resulting in a significant impact to this species. Effective application of wildlife mitigation developed for the Proposed Project would reduce the severity of this potential impact, but without more detailed information on construction methodologies, it cannot be determined that significant impacts to the CRLF could be avoided even with the implementation of mitigation measures. Mitigation would include: conducting pre-construction surveys to determine wildlife presence or absence (Mitigation Measure B-1d), implementation of a WEAP (Mitigation Measure B-1i), appropriate demarking of resources (B-1e), appropriate construction timing (B-1e), measures to limit access to the approved work zone (B-5a), and other mitigation requirements specific to the CRLF (Mitigation Measure B-8a).

PG&E Route Option 1B – Overhead Transmission Line Segment Across San Mateo Creek. With the exception of two transition stations and connecting conductors at the San Mateo Creek Gorge crossing, this alternative would limit construction to existing roadways, and would not impact any vegetation communities. Installation at the transition stations and construction of the associated access roads would likely result in permanent and temporary impacts to vegetation, but surveys did not identify rare plants or sensitive plant communities and wildlife at these locations.

The potential for vegetation and wildlife impacts associated with installation and access to the transition stations is generally the same as those described for towers of the Proposed Project (Impacts B-1 through B-8). Effective application of mitigation developed for vegetation and wildlife impacts resulting from the Proposed Project (Mitigation Measure B-1 through B-9a) would reduce potential vegetation impacts to less than significant levels (Class II).

Impact B-9: PG&E Route Option 1B – Underwater Crossing Around Dam

PG&E has also suggested use of an approximately 3,000-foot underwater cable to bypass the dam and its population of CRLF. The cable would diverge from Cañada Road south and north of the dam and would be installed down the bank and into the lake.

With this underwater cable option, biological resources of the lakes have the potential to be affected by heat from the transmission lines. PG&E has calculated that heat associated with conduction would result in water temperatures of approximately 90°C immediately adjacent to the cable, under normal conditions. However, this heating effect would rapidly dissipate, resulting in a return to ambient water temperatures approximately one meter from the cable. Considering natural seasonal convection of cooler and warmer lake waters, two scenarios were considered by PG&E: (1) isothermal conditions (temperatures the same at all depths) associated with early spring or late fall, and (2) stratified conditions (where temperatures vary with depth) associated with mid-spring to mid-fall seasons. During early spring or late fall, temperature increases associated with cable heating should result in warmer water that would rise to the reservoir surface and release heat to the atmosphere. Between mid-spring and mid-fall, temperature increases would result in warmer water that would rise and be trapped beneath the thermocline.

To put this heat input into perspective, the heat gain attributable to the cable is approximately 1,100 Btu per day per foot of cable. Assuming a one-foot wide area of heating, this cable-induced heat input per linear foot of cable is approximately equal to the net natural heat input per square foot of reservoir surface during spring, or net heat loss per square foot during fall (net natural heat input consists of solar radiation

plus long wave atmospheric radiation, minus long wave outgoing radiation, evaporation, and conduction). Factoring in the difference in affected area of the cable-induced heating versus the total reservoir surface area, total cable heat input represents about 0.001 percent of the total heat input from natural conditions, and therefore would not measurably affect reservoir temperatures during spring or fall.

During mid-spring to mid-fall, rising water associated with cable-induced heating would rapidly spread horizontally beneath the thermocline and would result in estimated temperature increases of less than 0.1°C within a one foot depth immediately below the thermocline.

In summary, for both stratified and isothermal scenarios, PG&E found that any overall reservoir heating associated with the cable would be less than the resolution of conventional temperature recorders and would therefore be immeasurable, although some heating would be measurable immediately adjacent to the cable. Because these effects would overall be small and only limited to the area immediately adjacent to the cable alignment, they would not create any significant impacts to biological resources within the reservoir.

Water quality could be potentially impacted from boat operation, cable installation, and/or cable operation, which could in turn affect the habitat for wildlife, aquatic resources, and/or marine biology. The primary water quality issue associated with underwater cable installation would be possible fuel and/or oil leakage or spill from the motorized watercraft. Disturbed areas adjacent to the bore sites would also need to be stabilized to prevent sediment deposition into the reservoir. The underwater cables and casings would not contain any liquid material or other product that could leak during operation and degrade water quality. Mitigation Measure H-2a (in Section D.7, Hydrology and Water Quality) requires protective measures to prevent water quality degradation.

The biological resources within the Upper and Lower Crystal Springs Reservoirs are not well known and boating and fishing are restricted in the reservoirs. However, in 1995 the SFPUC conducted some limited fish population sampling by boat electrofishing and gill netting that documented the occurrence of the major fish species that were residing in the reservoirs. The following species were found:

- Rainbow trout
- Sacramento sucker
- Largemouth bass
- Common carp
- Prickly sculpin
- Bluegill

While no sensitive fish species have been identified that would be threatened by lake construction or the heat from cables on the lakebed, the potential disturbance of the shoreline riparian habitat creates a potentially significant impact (Impact B-1, vegetation losses in wetlands and riparian communities). Mitigation Measures B-1a, B-1b, and B-1e would require delineation of wetlands and identification of sensitive vegetation species and would be required to reduce potential impacts if this alternative were approved. However, trenching through this lakeside habitat could still result in a significant loss of valuable habitat. Mitigation Measure B-9a is recommended to ensure avoidance; with this mitigation measure, impacts would be less than significant (Class II).

Mitigation Measure for Impact B-9: Underwater Cable in Lower Crystal Springs Reservoir

B-9a Habitat Loss from Underwater Cable Installation. PG&E shall perform detailed surveys at areas proposed to be trenched for cable access to Lower Crystal Springs Reservoir and shall submit these surveys to the CPUC for review and approval. If these surveys show potential effects on sensitive species or habitats as determined by the CPUC-designated biologist, PG&E shall use directional drilling techniques to install the cable, avoiding all impacts to the shoreline.

Comparison to Proposed Route Alternative

Dam Attachment Option. Potential impacts from the Proposed Project would be much greater than this alternative since this option would not result in vegetation impacts. The proximity of the known California red-legged frog population that occurs on the Crystal Springs Dam, however, creates the likelihood of potential impacts to this species, as compared to the Proposed Project.

Overhead Transmission Line Segment Across San Mateo Creek. While this option would require disturbance at seven new tower locations (five towers the same as Proposed Project towers), impacts would be less than for the Proposed Project. Due to the small fraction of vegetation that would be impacted by this alternative in comparison with that affected by the Proposed Project, impacts to biological resources would be much less than the Proposed Project.

Underwater Crossing Around the Dam. This crossing option would avoid effects to the CRLF on the dam, and would allow Route Option 1B to continue underground north and south of the dam, avoiding new impacts within the existing 60 kV corridor. Impacts of the underwater crossing would be less than significant with implementation of Mitigation Measure B-9a.

Summary. All three options to Route Option 1B's crossing of the Crystal Springs Dam are feasible and provide overall biological resources benefits in comparison to the Proposed Project because no overhead towers would be constructed or removed, no new conductors and fiber optic wires would present collision potential for birds, and most construction would occur within paved roadways.

D.4.4.2 Partial Underground Alternative

Environmental Setting

The biological resources in the vicinity of this alternative would be similar to those described in Section D.4.1. However, the construction methods are different since a significant portion of underground construction would be required.

Environmental Impacts and Mitigation

Southern Alternative Segment – Overhead. This alternative would allow removal of existing towers in Edgewood Park and the Pulgas Ridge Preserve, relocating both the 60 and 230 kV lines to overhead towers in the vicinity of Cañada Road. The alternative would require tower removal in some of the region's most valuable and sensitive habitat, within Edgewood Park. This activity is a component of the Proposed Project (which would require both installation of new towers and removal of existing towers). Mitigation Measure B-1c (protective measures for sensitive habitats, including during tower removal) would be required. Impacts to sensitive plant species and habitat would still occur in Edgewood Park (Impact B-1), but from tower removal only (no new towers would be installed), so the significant impact of vegetation loss on sensitive vegetation communities of the Proposed Project would not occur with this alternative. Impacts of tower removal would be mitigable to less than significant levels (Class II) with implementation of Mitigation Measures B-1a through B-1i to protect sensitive habitat areas.

The overhead transmission line portions of this alternative would result in similar types of impacts and require the same mitigation as those described for the Proposed Project (Impacts B-1 through B-8 and Mitigation Measures B-1a through B-8a). These impacts would be less than significant with implementation of all relevant mitigation measures.

Underground Segment – Ralston to Carolands Substations. This segment of the Partial Underground Alternative would result in trenching activities in areas that are known to support serpentine grassland habitat, adjacent to the residential areas of The San Mateo Highlands and the Town of Hillsborough. The underground transmission line would be installed within existing dirt roads that parallel the existing 60 kV power line corridor, but construction disturbance would extend into undisturbed areas east and west of the existing road. Approximately a 40-foot minimum ROW would be necessary for project construction. As described in the Project Description (Section B), this construction area would include the transmission line trench, an excavation safety zone on either side, a spoils pile, and room for construction vehicle and equipment access.

The route would transition to underground near Tower 5/27 on the east side of Ralston Substation and would travel north in non-native grassland east of the existing ROW along the fence line. Between Ralston Substation and Tower 5/30 the route would enter a 15-foot wide existing degraded-pavement access road, which is disturbed and compacted. Though some vegetation exists within cracks in the roadway, the vegetation in this area is primarily non-native, common grassland species. Extending approximately 20 to 60 feet east from the access road to the backyard fence line of residences along Lexington Avenue in the San Mateo Highlands is a recently-disked firebreak. This firebreak consists of regularly disturbed habitat, maintained clear of vegetation by the SFPUC and separating the open space within the SFPUC property boundary from the adjacent residences. The firebreak would not support sensitive vegetation or habitat and could potentially be used as part of the construction ROW along this section.

North of Tower 5/30, the existing 60 kV power line diverges from residences and the disturbed area of the firebreak by approximately 105 feet. The road itself and the habitat separating it from the firebreak become overgrown and the access road is no longer paved. Though the road is still compacted and somewhat disturbed, there is the potential for sensitive plant species or butterfly host plants (e.g., Marin western flax) to occur in the roadway itself. Between Tower 5/30 and Tower 5/32, the construction zone for the underground transmission line would require disturbance of sensitive serpentine bunchgrass habitat, known to support Marin western flax and fragrant fritillary and habitat for the Bay checkerspot butterfly (see Figure D.4-5). North of Tower 5/32 to Tower 6/34 the habitat is similar, but the area also contains serpentine bedrock within the roadway, which would make trenching more difficult, minimizing the ability of the construction crew to maintain a narrow zone of disturbance. At Tower 6/34 the route would cross Bunker Hill Road (via a bored crossing) and continue along the dirt road into Hillsdale Junction Switching Station. North of Bunker Hill Road, the habitat is less sensitive.

The portion of this underground segment of the route that trenches through sensitive habitat would temporarily disturb approximately 3.0 acres of habitat associated with transmission line construction and the 40-foot minimum construction ROW. No permanent habitat loss would occur, since the underground line would be under the existing roadway which is currently used by SFPUC and PG&E personnel for operation and maintenance activities.

North of Crystal Springs Dam along the western edge of the Town of Hillsborough and Black Mountain Road, this alternative would be trenched underground through another area of sensitive habitat (see Figure D.4-6), although in this area the vegetation is more common than that south of Bunker Hill Road. From Tower 7/44, the route would travel underground in a 25-foot wide cut-grass access road. Approximately a 45-foot width of non-native grassland, which could possibly be used as a construction ROW, separates the access road from the fence line along Black Mountain Road. Chaparral and dense vegetation border the access road to the west. Between Towers 7/45 and 8/46, the access road bears west to avoid a drainage depression, under which the transmission line may have to be bored. A gas pipeline parallels the existing corridor to the east.

From just south of Tower 8/46 to the north of Tower 8/47 by Hayne Road, the transmission line route would enter sensitive serpentine habitat, which supports serpentine bunchgrass and Marin western flax. Construction within the 40-foot ROW, including the roadway, only between these two towers would temporarily disturb more than 0.7 acres (approximately 31,680 square-feet) of highly sensitive habitat.

Trenching in serpentine grassland could result in permanent impacts to serpentine grasslands both within and adjacent to the areas being trenched by altering the existing soil conditions (i.e., soil composition and compaction) and the existing hydrology (i.e., existing surface and groundwater flow, erosion, sedimentation). However, because the underground segment is designed to be entirely within the already disturbed dirt/gravel road, permanent impacts would be minimal. Impacts to serpentine grasslands at this location would result from removal of existing vegetation, and could result from vegetation trampling associated with foot and vehicular traffic, and development of additional measures specific to reestablishing the pre-existing soil and vegetation conditions following trenching (e.g., proper compaction, topsoil replacement, revegetation with native seed mix, vegetation success monitoring). Trenching activities in this area would require implementation of Mitigation Measures B-1d through B-3a, B-5a, B-8a, B-8b, all recommended for the Proposed Project.

Temporary impacts to the serpentine grasslands resulting from this alternative would affect areas of special status species that are known to occur in this vicinity, including plants such as fragrant fritillary, fountain thistle, and Marin western flax, and wildlife such as the Bay checkerspot butterfly. Mitigation for impacts from this alternative on serpentine grasslands and the associated plants and wildlife would reduce impacts, but with standard construction techniques and a wide zone of disturbance, impacts from construction would likely remain significant. Trenching in serpentine soils may result in significant unmitigable impacts to sensitive serpentine habitat and special status plant and animal species that may occur in these areas. Therefore, Mitigation Measure B-1j is recommended to minimize impacts in this sensitive habitat area. Implementation of this measure would reduce impacts to serpentine plant assemblages to less than significant levels (Class II).

Mitigation Measure for Impact B-1: Temporary or Permanent Loss of Sensitive Vegetation

B-1j Construction Restriction in Valuable Habitat. If the Partial Underground Alternative is approved, PG&E shall restrict all underground construction activities to a 40-foot wide corridor, defined and fenced by CPUC-approved biological monitor to avoid the most valuable plant habitat adjacent to the route. Adjacent areas to the west and east of the existing access road shall be fenced temporarily to prevent access and a monitor shall be present at all times within 1,000 feet of ongoing construction activity. PG&E shall restrict all construction vehicles and personnel to the defined 40-foot zone, utilizing only disturbed access roads or the disked firebreak to access the underground construction areas or for equipment or spoils storage.

West of Burlingame/I-280 Overhead Segment. The Partial Underground Alternative also includes a route segment that would follow a new corridor west of the I-280 in order to eliminate the existing and proposed towers from the area adjacent to residences in Burlingame. The Proposed Project area between Towers 10/63 and 10/68 (Burlingame) would be within an area of serpentine plant assemblages, and this alternative route segment would avoid those plants as well as moving the route away from residences. The alternative towers would be located in an area where there is no existing transmission infrastructure. Surveys have been conducted for proposed tower locations (illustrated in Appendix 1), and no rare plants or sensitive wildlife habitat was identified. However, the access to this area is poor; existing older dirt roads would need to be widened and improved, new tower sites developed, and conductor pull sites cleared. As a result, despite avoiding the serpentine area that would be affected by removal and construction of the four towers west of Burlingame, this alternative segment would create substantially greater disturbance in non-sensitive plant and wildlife habitat areas.

Comparison to Proposed Route Alternative

The Partial Underground Alternative would have its most potentially significant impacts to biological resources as a result of (1) potential for impacting special status plant species and butterfly food plants as a result of trenching activities in serpentine habitat between Ralston Substation and Bunker Hill Road (and to a lesser extent along Black Mountain Road), and (2) construction and access disturbance to a new area of the SFPUC Peninsula Watershed west of the I-280. This alternative would eliminate the Proposed Project's installation of new towers within Edgewood Park, would allow removal of existing towers, eliminating the need for future maintenance activities in that highly sensitive area, and would relocate the towers (Burlingame) out of identified serpentine area and away from existing Burlingame residences.

D.4.5 Environmental Impacts and Mitigation Measures for Northern Area Alternatives

D.4.5.1 West of Skyline Transition Station

Environmental Setting

The biological resources in the vicinity of this alternative are similar to those described in Section D.4.1 for the Proposed Project.

Environmental Impacts and Mitigation

Similar to the 80-foot-by-100-foot enclosed area of the proposed transition station, the footprint of the West of Skyline Transition Station would permanently remove approximately 8,000 square feet of vegetation and wildlife habitat within the SFPUC watershed lands. The three underground routes from the West of Skyline Transition Station would not result in any additional biological impacts since these alternatives would be in city streets and would not impact vegetation or wildlife habitat. Therefore, each of these route options is considered to have the same potential to impact biological resources. The difference in impact would result only from the construction of the proposed transition station itself.

The construction and operation of the West of Skyline Transition Station would generally result in similar impacts as those described for the Proposed Project (Impacts B-1 through B-8) because construction would occur in the same ROW. The permanent removal of vegetation and wildlife habitat associated with construction would be considered a potentially significant impact (Class II) if sensitive habitat or special status species were affected. Similarly, electrical structures and ground wires at the transition station could increase bird electrocution and collision-related mortalities. Effective application of mitigation measures developed for vegetation and wildlife impacts resulting from the Proposed Project (Mitigation Measure B-1a through B-8b), along with Mitigation Measure B-1k (below) would reduce these potential impacts to less than significant levels (Class II). Mitigation Measure B-1k is recommended to minimize the extent of ground disturbance at this site, which would be approximately 800 square feet (40 feet by 40 feet) versus the 8,000 square feet associated with the transition station facilities. Figures B-7b and B-7c in the Project Description (Section B.2.4) illustrate the difference between a transition tower and a transition station.

B-1k Use Transition Tower Instead of Station. If the West of Skyline Transition Station is approved, PG&E shall use a transition tower (rather than a station) to allow the overhead 230 kV transmission line to transition to underground. The specific location and design of the tower shall be submitted to the CPUC for review and approval at least 60 days prior to the start of construction.

Comparison to Proposed Transition Station

The Proposed Project transition station is located on a disturbed unvegetated parking area, and would not result in the removal of vegetation and wildlife habitat. Therefore, even with implementation of Mitigation Measure B-1k, the West of Skyline Transition Station alternative would disturb more vegetation and potential habitat than would the Proposed Project.

D.4.5.2 Sneath Lane Transition Station

Environmental Setting

The biological resources in the vicinity of this alternative would be similar to those described in Section D.4.1, because a portion of the Proposed Project would continue to the Sneath Lane Substation.

Environmental Impacts and Mitigation

The Sneath Lane Transition Station would be placed on graded non-vegetated land adjacent to an existing substation (Sneath Lane Substation). The overhead and underground transmission line options associated with this alternative would be placed along existing and highly disturbed and non-vegetated roadways and in an area with existing power line infrastructure. Due to the lack of vegetation and wildlife habitat and the high level of disturbances associated with this alternative, no impacts to biological resources are expected other than potential bird electrocution and collision impacts associated with the transition station structures and conductors. Effective implementation of mitigation for bird electrocution and collisions developed for the Proposed Project (Mitigation Measure B-7a), however, would reduce this potentially significant impact to less than significant (Class II).

Comparison to Proposed Transition Station

Neither the Sneath Lane Transition Station Alternative nor the proposed transition station would affect vegetation and wildlife habitat, and both share the same potential for bird electrocution and collision-related impacts. Therefore, potential impacts from the Sneath lane Alternative are considered similar to the Proposed Project.

D.4.5.3 Cherry Avenue Alternative

Environmental Setting

This entirely underground alternative has no recognized biological resource impacts.

Environmental Impacts and Mitigation

The Cherry Avenue Alternative would be placed underground within an urban/commercial setting within paved roadways. Due to the lack of vegetation and wildlife habitat and the high level of disturbances associated with this alternative, no impacts to biological resources are expected and no mitigation is proposed.

Comparison to Proposed Route Alternative

With respect to biological resources, this alternative and the Proposed Project would have similar impacts (no impacts).

D.4.5.4 PG&E's Route Option 4B – East Market Street

Environmental Setting

This entirely underground alternative has no recognized biological resource impacts.

Environmental Impacts and Mitigation

This alternative would be placed underground within an urban/commercial setting within highly disturbed paved roadways, parking lots, and the BART ROW. Due to the lack of vegetation and wildlife habitat and the high level of disturbances associated with this alternative, no impacts to biological resources are expected and no mitigation is proposed.

Comparison to Proposed Route Alternative

With respect to biological resources, this alternative and the Proposed Project would have similar impacts (no impacts).

D.4.5.5 Junipero Serra Alternative

Environmental Setting

This entirely underground alternative has no recognized biological resource impacts.

Environmental Impacts and Mitigation

The Junipero Serra Alternative would be placed underground within an urban/commercial setting within paved roadways. Due to the lack of vegetation and wildlife habitat and the high level of disturbances associated with this alternative, no impacts to biological resources are expected and no mitigation is proposed.

Comparison to Proposed Route Alternative

With respect to biological resources, this alternative and the Proposed Project would have similar impacts (no impacts).

D.4.5.6 Modified Existing 230 kV Underground ROW

Environmental Setting

This entirely underground alternative has no recognized biological resource impacts. However, this alternative would cross a tributary to Colma Creek at the north end of Shaw Road, where a large wetland area is located south of the I-Fly parking lot.

Environmental Impacts and Mitigation

The Modified Existing 230 kV Alternative would be placed underground within an urban/commercial setting within paved roadways and parking lots, and adjacent to the UPRR ROW. Most of the route lacks vegetation and wildlife habitat due to the high level of disturbance associated with this alternative, but the crossing of the Colma Creek tributary has potential to affect wetlands. Coordination with CDFG on the Stream Alteration Permit would be critical, and a directional drill or bored crossing would be required. Mitigation Measure B-11 would ensure impacts are less than significant.

Mitigation Measure for Creek Crossing

B-11 Colma Creek Crossing -- Frac-Out Contingency Plan. The crossing of Colma Creek tributary north of Shaw Drive shall be by bore or directional drill to avoid affecting the wetlands habitat. Coordination with the CDFG shall be required to ensure appropriate preparation for possible unanticipated release of drilling fluids (“frac-out”). PG&E shall prepare and submit for CPUC and CDFG approval an HDD “frac-out” prevention and response plan which contains the following provisions (or similar measures which have the same effect):

- HDD crews shall strictly monitor drilling fluid pressures.
- Obtain site-specific geotechnical data at all water crossings where HDD is to be used to determine the appropriate depth below bed of waterway.
- Implement sizing techniques (move bores back and forth slowly to keep track of potential frac-outs)
- Consider potential application of surface casings to add a protective outer layer.
- No nighttime drilling shall be allowed unless absolutely required.
- Containment equipment for drilling fluids shall be maintained on site.
- Turbidity downstream of the drill site shall be monitored.
- Work shall be immediately stopped if a seep into a stream is detected such as by a loss in pressure or visual observation of changes in turbidity or surface sheen.
- All bentonite seeps into waters of the State or sensitive habitat shall be immediately reported to the Project’s resource coordinator, the CPUC, and the appropriate resource agencies (i.e., NOAA, USFWS, CDFG, Reclamation Board, USACE, applicable RWQCB’s, San Mateo County, and DWR).
- Use non-toxic fluorescent dye in the drilling mud to allow easier identification of frac-outs.

Comparison to Proposed Route Alternative

As with the northern segment of the Proposed Project, this alternative has no recognized biological resource impacts except for the crossing of the Colma Creek tributary, which would be bored to eliminate potential impacts to wetlands. However, this alternative would avoid passing through San Bruno Mountain.

D.4.6 No Project Alternative

If the No Project Alternative were selected, the biological resources of the Proposed Project corridor would not be affected by project construction and operation. The components of the No Project Alternative would occur almost entirely within urban areas (e.g., the CCSF turbines are assumed to be located on existing industrial sites) so biological impacts would be minimal. The No Project Alternative does include the assumption that the San Mateo-Martin #4 reconductoring project would be completed; this project would require construction across San Bruno Mountain in areas protected by the HCP. However, this project is being evaluated under CEQA by the CPUC in a separate proceeding, and it is assumed that all biological impacts will be mitigated to less than significant levels through aggressive implementation of protective measures.

D.4.7 Mitigation Monitoring Table

Table D.4-4 presents the mitigation monitoring, compliance, and reporting requirements for mitigation measures that would protect biological resources.

Table D.4-4. Mitigation Monitoring Program – Biological Resources

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
B-1: Temporary and Permanent Loss of Sensitive Vegetation Communities (Class I for serpentine habitats; Class II elsewhere)	B-1a: Perform Wetlands Delineation and Avoidance (supplements APM Bio-7). A jurisdictional delineation of wetlands within the proposed transmission line corridor shall be performed by PG&E and verified by the U.S. Army Corps of Engineers. In addition, a formal mapping and assessment of riparian habitat shall be completed to satisfy CDFG 1601 (Streambed Alteration Agreement) requirements, where project activities (i.e., construction roads) cross the beds or banks of jurisdictional streams. Surveys, mapping and assessment shall be completed and reports submitted to the CPUC at least 60 days before start of construction. Results of these surveys (identification of wetlands and riparian habitat) shall be utilized to define areas that are to be avoided in final tower siting and location of access roads and other project components. A report summarizing wetland habitat findings with respect to tower locations, along with copies of all maps and assessments shall be submitted to the CPUC for review and approval. Wetlands and aquatic resources such as intermittent and perennial creeks, drainages, and swales that occur within the ROW shall be identified as environmentally sensitive areas and shall be avoided during construction. If the existing wetland or aquatic resource topography is altered by construction, the topography of the area shall be restored to match the preexisting condition. A Wetlands Restoration Plan shall be prepared detailing wetland and riparian restoration activities and this plan shall be submitted to the CPUC and resource agencies for review and approval before restoration activities are initiated. The restoration plan shall include planting information and definition of performance criteria and monitoring requirements.	Entire Route	Review and approval of wetlands delineation and a Wetlands Restoration Plan and biological monitoring	Avoidance of wetlands and successful implementation of the restoration plan requirements	CPUC	Prior to, during, and after construction
B-1, cont.	B-1b: Provide Restoration/Compensation for Vegetation Losses. Where impacts to wetlands, riparian, and serpentine grassland habitats cannot be avoided, PG&E shall either restore temporarily disturbed areas to pre-construction conditions following construction or provide compensation for vegetation losses as required by the appropriate resource agencies (USFWS and CDFG). Where on-site restoration is planned for mitigation of	Entire route	Review and approval of Habitat Restoration Plan and biological monitoring	Successful implementation of requirements of the Habitat Restoration Plan	CPUC and the U.S. Army Corps of Engineers (for wetlands), the California Department of Fish and Game (CDFG) (for riparian	Prior to, during, and after construction

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	<p>impacts to natural vegetation communities, the Applicant shall develop a Habitat Restoration Plan, which shall be submitted to the CPUC and the U.S. Army Corps of Engineers (for wetlands), the California Department of Fish and Game (CDFG) (for riparian habitat), and the Regional Water Quality Control Board (RWQCB) at least 60 days prior to the start of any construction for their review and approval. The plan shall define the amount and type of habitat that will be permanently and temporarily impacted by any project-related activity, and shall include a discussion of the type and replacement ratios developed and accepted by the resource agencies (above). For natural community mitigation, the plan shall also include specifying the location of habitat type to be created, details on soil preparation, seed collection, planting, maintenance, and monitoring for on-site restoration efforts. Quantitative success criteria shall also be presented. The mitigation objective for affected significant natural plant communities shall be restoration to pre-construction conditions as measured by species cover, species composition, and species diversity. Success criteria shall be established by comparison with reference sites approved by the appropriate agencies. Creation or restoration of habitat shall be monitored for five years after mitigation site construction to assess progress and identify problems. Remedial actions shall be taken during the five-year period if necessary to ensure the success of the restoration effort.</p>				<p>habitat), and the Regional Water Quality Control Board (RWQCB)</p>	

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
B-1 cont.	<p>B-1c: Protect Serpentine Grasslands and Edgewood Park. PG&E shall implement restricted tower access and topsoil salvage requirements defined in APMs Bio-3 and Bio-4. To further protect serpentine grasslands, partial tower removal shall be evaluated in a report submitted to the CPUC. This option shall include cutting tower legs and leaving foundations in place in order to avoid extensive disturbance to sensitive habitat, in order to reduce the potential for invasive plants and weeds to become established. This measure shall apply to all work in identified serpentine grassland areas, including from Towers 0/1 to 0/5 (Edgewood Park), Towers 5/27 to 8/50 (Ralston to Carolands Substation), and Towers 10/63 to 10/68 (Burlingame area).</p>	Identified serpentine grassland areas	Review and approval of partial tower removal plan and restricted tower access monitored by the biological monitor	Minimal disturbance to serpentine grassland habitat through restricted access and possibly partial tower removal	CPUC	Prior to and during construction

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
B-1 cont.	<p>B-1d: Perform Pre-construction Surveys and Provide Monitors. Pre-construction surveys shall be performed for identification of all special status plant and animal species within 200 feet of project construction activities (including towers, access roads, cable pulling sites, laydown sites, and other work areas). Avoidance measures vary for each species and are specified under Mitigation Measure B-2a for rare plants, and under Mitigation Measures B-10a for special status wildlife species</p> <p>Biological monitors, employed by PG&E and approved by the CPUC, shall locate and stake identified sensitive resources in specified areas before construction activities begin and inspect areas prior to construction to ensure that barrier fencing, stakes, and required setback buffers are maintained. Special status species habitat, as well as jurisdictional wetlands riparian habitat, and serpentine grassland (as identified during 2002 and 2003 field surveys), shall be flagged prior to the start of construction of any project components. The CPUC shall be notified prior to the start of flagging activities so a CPUC-designated biologist may observe these activities. Maps and reports identifying locations of special status plants and animals found in pre-construction surveys, as well as proposed exclusion-fence locations, shall be provided to the CPUC for review and approval prior to the start of construction. Construction activities within significant plant communities shall be minimized by placing towers so as to span these areas, maximizing the use of existing access roads, and minimizing the construction of new access roads. Prior to confirming final transmission corridor design, the locations of all project components (towers, roads, temporary work areas, etc.) shall be defined on a map that also illustrates locations of wetlands, riparian habitat, and special status plants and wildlife, and this shall be provided to the CPUC for review and approval.</p>	Entire route	Map and report the identification and location of special status species and all final components of the Proposed Project. Hire an approved monitor.	Successful avoidance of special status species and sensitive vegetation communities	CPUC	Prior to and during construction
B-1 cont.	<p>B-1e: Complete Rare Plant Surveys. Prior to construction, comprehensive rare plant surveys shall be conducted in previously unsurveyed areas for all plants that have been identified within the study area and those plants with the potential to occur in the study area (as defined in Tables 4-1). Surveys shall be conducted</p>	Previously unsurveyed areas	Identification, mapping, and avoidance of areas with rare plants	Avoidance of rare plants and successful biological monitoring.	CPUC	Prior to and during construction

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	<p>within appropriate areas along the selected construction ROW and in areas susceptible to surface disturbance by construction vehicles or personnel. Rare plant surveys of the ROW, cable pulling sites, laydown areas, and access roads shall be appropriately timed to cover the blooming periods of the nine special status plant species known to occur in the area (as identified in Table D.4-2). Maps depicting the results of these surveys shall be prepared and shall include other recently mapped special status plant occurrences in the area to ensure that the full scope of rare plant habitat in the project corridor vicinity is delineated.</p> <p>Any special status plant occurrences located within 200 feet of the approved project construction corridor (e.g., the Marin Flax population on Pulgas Ridge) shall be fenced prior to the start of any construction, and if feasible, towers or other project components shall not be placed in areas where these plant populations have been identified. Maps and reports, as well as proposed fence locations, shall be provided to the CPUC's approved biological monitor for review and approval prior to the start of construction. The locations of special status plant populations shall also be provided to construction personnel so they can be avoided.</p>					
B-1 cont.	<p>B-1f: Protect Sensitive Habitats During Construction. PG&E shall map and flag or fence overland travel routes and project access areas prior to construction or periodic maintenance during operation and shall ensure that vehicles or project personnel do not disturb identified areas. Areas flagged shall include serpentine grassland, wetland, riparian, and any other sensitive resource identified by the project biologist. The mapping/flagging shall be reviewed by a CPUC-approved biologist prior to use of these routes for construction to ensure adequate protection for sensitive plant communities. Project components shall be designed to avoid or minimize disturbance to these sensitive areas. The total area of disturbance to each plant community within the Proposed Project shall be quantified and provided to the CPUC and the resource agencies (USFWS and CDFG) to determine appropriate mitigation. If it is determined that special status plant com-</p>	Entire route	Map and fence or flag sensitive habitats and use an approved biological monitor.	Vehicles or project personnel do not disturb identified areas	CPUC and resource agencies (USFWS and CDFG)	Prior to and during construction and operations

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	munities cannot be avoided, Mitigation Measure B-10b shall be implemented.					
B-1 cont.	<p>B-1g: Implement Weed Control. PG&E shall protect against the potential introduction or spread of noxious weeds or pathogens, such as sudden oak death. Sudden oak death management protocols are currently being developed for the San Francisco Watershed lands; PG&E shall coordinate with the SFPUC and resource and public agencies regarding sudden oak pathogen management and invasive plant species shall be conducted prior to construction.</p> <ul style="list-style-type: none"> PG&E shall prevent invasion of invasive, non-native plant species into sensitive plant species habitats and vegetation types by conducting: Implementation of measures during construction, such as cleaning vehicles prior to off-road use, using weed-free imported soil, restricted vegetation removal and requiring topsoil storage. Development and implementation of weed management procedures to monitor and control the spread of weed populations along the ROW. <p>The following measures shall be implemented to control the introduction of weed² species within areas disturbed during transmission line construction; implementation of these measures during construction shall be verified by the CPUC Environmental Monitor:</p> <ul style="list-style-type: none"> Vehicles used in transmission line construction shall be cleaned prior to operation off of maintained roads. Fill material, soil amendments, gravel etc. required for construction/restoration activities shall be obtained from a source that can certify the soil as being “weed free.” Existing vegetation shall be cleared only from areas scheduled for immediate construction work (within 10 days) and only for the width needed for active construction activities. 	Entire route	Proof of coordination regarding sudden oak pathogen management and invasive plant species (approved revegetation seed mix)	Minimize potential introduction or spread of noxious weeds or pathogens as verified by the biological monitor	CPUC, SFPUC, and resource and public agencies	Prior to, during, and after construction

² A “weed” is defined here as any plant species (1) included on the California Exotic Pest Plant Council List A or the Red Alert list of species which are serious problems in wildlands (CalEPPC, 1999), or (2) identified as a noxious weed with potential to damage agriculture by the California Department of Agriculture.

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	<ul style="list-style-type: none"> During construction, the upper 12 inches of topsoil (or less depending on existing depth of topsoil) shall be salvaged and replaced wherever the transmission line is trenched through open land (not including graded roads and road shoulders). Disturbed soils shall be revegetated with an appropriate seed mix that does not contain weeds (as defined below); revegetation in sensitive vegetation types shall adhere to the relevant mitigation measures. 					
B-1 cont.	<p>B-1h: Negotiate Compensation for Loss of Significant Plant Communities. If the CPUC-approved Project Biologist, in consultation with project engineers, determines that avoidance or restoration of temporary impacts is not feasible or where permanent impacts (i.e., loss of habitat) to significant plant communities occur from access road or tower installation, compensation for the loss of these communities shall be provided by PG&E. Compensation shall be provided to levels acceptable by the CPUC, USFWS, CDFG, and USACE. In order to determine appropriate compensation, habitat loss shall be defined in a report submitted to the CPUC and resource agencies. The report shall identify appropriate compensation for loss of each type of resource (e.g., purchase of mitigation lands or donation to habitat preservation areas).</p>	Entire route	Submit report of habitat loss and identification of appropriate compensation	Compensation of habitat loss to the appropriate resource agencies	CPUC, USFWS, CDFG, and USACE	Prior to and during construction

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
B-1 cont.	B-1i: Implement Worker Education. A Worker Environmental Awareness Program (WEAP) shall be implemented for construction crews by a qualified biologist(s) provided by PG&E and approved by the CPUC prior to the commencement of construction activities. Training materials and briefings shall include but not be limited to, discussion of the Federal and State Endangered Species Acts, the consequences on noncompliance with these acts, identification and values of sensitive plant and wildlife species and significant natural plant community habitats, fire protection measures, hazardous substance spill prevention and containment measures, and review of mitigation requirements. Training materials and a course outline shall be provided to the CPUC for review and approval at least 30 days prior to the start of construction. PG&E shall provide to the CPUC a list of construction personnel who have completed training, and this list shall be updated by PG&E as required when new personnel start work. No construction worker may work in the field for more than 5 days without receiving the WEAP.	All workers along the route	Implement CPUC approved WEAP	Proof of attendance of all new personnel	CPUC	Prior to construction
B-2: Loss or Damage to Trees (Class II)	B-2a: Compensate for Tree Loss. Standards for maintenance, management, and preservation of native and indigenous trees are established in the San Mateo County Heritage Tree Ordinance and the San Mateo County Significant Tree Ordinance. Tree removal permits or approvals for lost heritage or significant trees shall be obtained and mitigation shall be coordinated, as required, with the appropriate public and resource agencies. Mitigation for lost trees may not be implemented within the ROW due to fire safety concerns, and instead may be implemented in an alternative, agency-approved location. PG&E shall avoid, minimize, and compensate for impacts to trees, including those protected by local ordinances, by: <ul style="list-style-type: none"> • Pre-construction identification, fencing and avoidance of trees to the maximum extent during construction. • Consultation with local jurisdiction if unavoidable impacts to locally protected trees (“Protected Trees”) are likely to occur. • Development and implementation of a Tree Replacement Plan for loss and/or significant damage to trees. • Supervision and verification of the implementation of these measures by the Environmental Monitor. 	Entire route	Comply with applicable tree ordinances. Identify and fence trees and develop a Tree Replacement Plan	Avoid, minimize, and compensate for impacts to trees as included in the Tree Replacement Plan with compliance verified by the biological monitor.	CPUC and San Mateo County and local jurisdictions	Prior to, during, and after construction

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	<p>The initial step for this measure shall be to determine the size and location of all trees located within and adjacent to the project right-of-way, work areas, staging areas, and launcher/receiver stations. These trees shall be then assessed by a qualified biologist or arborist to identify and map Protected Trees. If it is determined that the project will trim, remove, or damage the roots of Protected Trees, avoidance measures shall be taken. Avoidance shall consist of installing protective fencing around the dripline of any Protected Tree. All construction activities, including excavation, grading, leveling, and disposal or deposition of harmful materials shall be prohibited inside the dripline fence. Attachment of wires, ropes, or signs to Protected Trees shall also be prohibited. The approved CPUC Environmental Monitor shall supervise compliance with these protective measures prior to and during construction activities.</p> <p>If trimming, removal or root damage to a Protected Tree is unavoidable, the appropriate jurisdiction shall be consulted. Further actions may require a permit that would include fees and/or replacement for affected trees. Proposed trimming or other damage to Protected Trees along the proposed route shall be evaluated by a qualified arborist, who shall identify appropriate measures to minimize tree loss and shall supervise all associated activities in accordance with permit conditions issued by the responsible jurisdiction.</p> <p>If the Proposed Project requires removal of trees (Protected Trees or others), a qualified forester, arborist, or restoration ecologist shall evaluate the tree replacement procedures to ensure that the replacement would be consistent with applicable local jurisdiction requirements, such as San Mateo County Tree Ordinances, and with additional permit conditions imposed by the local agency (e.g., local oak tree protection requirements). Additional mitigation may be required by CDFG for impacts to riparian trees. Tree removal shall not be permitted until a qualified forester, arborist, or restoration ecologist has reviewed the following procedures:</p> <ul style="list-style-type: none"> • Identification of proposed tree removal locations. • A discussion demonstrating how maximum avoidance has been accomplished and why the trees proposed for removal cannot be avoided. 					

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	<ul style="list-style-type: none"> • Discussion of appropriate tree replacement ratios, as defined by the local jurisdiction, or, at a minimum, a 3:1 replacement to removed/impacted ratio for non-protected trees. • Identification of suitable tree replacement locations within or immediately adjacent to the original tree impact area. • Tree species and size specifications. • Proposed understory native seed mix composition and application methods. • Planting methodology, including spacing and proper timing of plant installation. • Description of protective staking and caging measures. • Description of irrigation and plant maintenance regime. • Description of five-year monitoring effort to measure replacement success. • Success criteria (including survival rates) and contingency measures in case of mitigation failure. • Submission of an annual monitoring report to responsible agencies evaluating mitigation success. <p>Successful implementation of tree replacement shall be evaluated five years after all human support (e.g., replanting, fertilization, irrigation) has ceased. At that time, a report shall be submitted to the local jurisdiction, and CDFG, if requested, summarizing the results. A determination will be made by these agencies as to whether continued monitoring is required and/or whether implementation of contingency measures is required.</p>					
B-3: Erosion and Sedimentation (Class II)	B-3a: Restoration After Construction. PG&E shall submit a final Revegetation and Restoration Plan to the CPUC for review and approval at least 60 days before completion of construction. The plan shall define specific measures to ensure successful restoration of all affected habitats, and it shall include use of a mixture of custom-collected native grass species appropriate to the area. The plan shall define the timing of restoration activities, and the long-term monitoring required.	Entire route	Review and approval of Revegetation and Restoration Plan	Implement successful restoration of all affected habitats as verified by the biological monitor.	CPUC	During and after construction

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
<p>B-5: Direct Wildlife Mortality (Class II)</p>	<p>B-5a: Protect Wildlife During Construction. In order to reduce direct mortality impacts during construction, PG&E shall impose the following conditions on all construction personnel. These requirements shall also be explained in the WEAP (required in Mitigation Measure B-1i):</p> <ul style="list-style-type: none"> • Vehicles shall not exceed 10 mph on the entire ROW or along designated portions of access roads where special status wildlife species are known to occur. These locations shall be determined during pre-construction surveys and identified on project maps prior to the onset of construction. All other areas along dirt access roads outside the limits of known special status wildlife species habitat shall have a 15 mph speed limit, consistent with BAAQMD Control Measures for Construction Emissions of PM₁₀ discussed in the Air Quality Section (Section D.10). • Litter or other debris that may attract animals shall be removed from the project area; organic waste shall be stored in enclosed receptacles, removed from the project site daily, and disposed of at a suitable waste facility • No pets shall be allowed in the construction area, including access roads and staging areas • Construction crews shall be educated regarding sensitive wildlife that could be encountered on highways and how to safely avoid them. Crew behavior shall be monitored by a qualified biologist approved by CPUC. 	<p>Entire route</p>	<p>Monitoring of crew behavior by the biological monitor</p>	<p>Reduce direct mortality impacts on wildlife with compliance of stated conditions as verified by the biological monitor.</p>	<p>CPUC</p>	<p>Prior to and during construction</p>

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
B-7: Bird Electrocution and Collision Impacts (Class II/III)	B-7a: Prior to installation of conductors, PG&E shall either (a) perform a study to determine the potential for bird strikes in the areas identified below and then, depending on study results, install bird strike diverters, or (b) implement bird strike diverters as defined below. The study shall evaluate the actual bird strike incidents at existing transmission lines in the vicinity of the approved project corridor. If this study determines that bird strikes would not constitute a significant impact, PG&E shall document study results and submit a report to the CPUC for review and approval. Upon CPUC approval, compliance with the remainder of this measure would not be required. If PG&E opts not to complete this study or if study results confirm the potential benefits of bird flight diverters, the remainder of this measure shall be implemented. The protocol for this study (including the time period, survey intervals, and impact significance criteria) shall be approved by the CPUC, the U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (CDFG). If PG&E does not perform the study defined above or if study results determine that flight diverters would likely be beneficial, PG&E shall install bird flight diverters on the 144-fiber optic ground wire in areas prescribed by the CPUC, the U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (CDFG).	Southern segment	Perform a study to determine the potential for bird strikes or install bird strike diverters	Minimize bird strikes by installing flight diverters or by implementing recommendations of the study.	CPUC and appropriate resource agencies	Prior to and during construction
B-8: Impacts on Special Status Wildlife Species (Class II)	B-8a: Protection for Special Status Wildlife Species. The actions required below for protection of specific wildlife species shall be clearly defined by PG&E in a Special Status Wildlife Protection Plan provided to the CPUC for review and approval 60 days before the start of construction. The Plan shall define the specific areas in which each species is expected to occur, the results of all pre-construction surveys and seasonal surveys conducted prior to construction, and specific protective measures that will be taken during construction (including but not limited to those defined below). Where construction will occur within or near known or potential special status species or their habitat, the Applicant shall perform the following actions: <ul style="list-style-type: none"> • Edgewood Blind and Edgewood Park Microblind Harvestman. The topsoil from the new footing locations will be salvaged and stockpiled, then used as backfill 	Entire route	Review and approval of Special Status Wildlife Protection Plan and implementation of plan.	Compliance with plan thereby minimizing effects on special status wildlife species and habitat, as verified by the biological monitor.	CPUC	Prior to and during construction

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	<p>where the existing footings are removed. The area will be revegetated with locally collected, native grass species APM 6.5 (Erosion Control and Revegetation Plan), Mitigation Measure H-1a (Section D.7, Hydrology and Water Quality), and APM 9.1 (Implementation of Erosion Control and Sediment Transport Plan) all require preparation and implementation of a comprehensive Erosion Control Plan. Towers that are in the sensitive serpentine grassland habitat at Edgewood County Park and Preserve will be accessed during construction only by helicopter or by foot from existing access roads, except in the event of an emergency. No new access roads will be constructed in these locations. In addition, construction activities shall be restricted during the rainy season and spring when these sensitive harvestman species are active (Mitigation Measure B-1c).</p> <ul style="list-style-type: none"> • Bay Checkerspot Butterfly. The topsoil from the new footing locations shall be salvaged and stockpiled, then used as backfill where the existing footings are removed. The area shall be revegetated with locally collected, native grass species (Mitigation Measure H-1a, Section D.7, Hydrology and Water Quality). In order to minimize impacts from vehicular traffic, towers that are located in the sensitive serpentine grassland habitat at Edgewood County Park and Preserve shall be accessed during construction only by helicopter or by foot from existing access roads, except in the event of an emergency. In addition, construction activities shall be restricted or minimized from December 1 through June 30 during the larval feeding and adult flight season when the Bay Checkerspot butterfly is active. Some temporary disturbance of serpentine habitat (e.g., removal or trampling of vegetation) shall occur during construction, due to movement of workers and/or equipment during foundation excavation and pouring of concrete. Adverse effects to serpentine grasslands during construction shall be minimized to the greatest degree possible by prohibiting vehicular access and using helicopters to move workers and equipment. Following the completion of construction, affected serpentine habitat in Edgewood Park shall be restored, using local native grass species. PG&E shall consult with the USFWS to address potential 					

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	<p>impacts and mitigation measures for the Bay Checkerspot butterfly. During consultation, mitigation requirements may be further refined.</p> <ul style="list-style-type: none"> • Mission Blue Butterfly, San Bruno Elfin Butterfly, Callippe Silverspot Butterfly. Construction in the San Bruno Mountain Habitat Conservation Plan Area shall be limited to the existing paved roadway of Guadalupe Canyon Road. Indirect impacts, including fugitive dust emissions, could occur to potentially suitable habitat, but shall be mitigated with implementation of dust control measures (Air Quality) and erosion control measures presented in APMs 6.5 and 9.1 and Mitigation Measure H-1a (Section D.7, Hydrology and Water Quality). PG&E shall comply with the requirements of the San Bruno Mountain HCP for construction along Guadalupe Canyon Parkway. • Ricksecker's Water Scavenger Beetle. No construction activity shall occur within the perennial stream that is crossed by the ROW and is considered habitat for this species. Temporary indirect impacts to this stream may occur as a result of erosion and sedimentation during construction-related activities, but shall be mitigated with implementation of erosion control measures presented in Mitigation Measure H-1a (Section D.7, Hydrology and Water Quality). 					
B-8, cont.	<p>B-8b: Consultation with Resource Agencies. If, after applying Mitigation Measures B-1a through B-8a, the CPUC-approved Project Biologist determines that all impacts on special status plant and wildlife species cannot be avoided, PG&E shall initiate FESA Section 7 Consultation with the U.S. Fish & Wildlife Service for federally listed species and/or CESA 2080 Consultation will be initiated with the California Department of Fish and Game for State-listed species. These consultations shall determine requirements for obtaining a (FWS) Biological Opinion and/or (CDFG) Incidental Take Permit. PG&E shall obtain any such required Biological Opinion or Incidental Take Permit and, in that process, shall work cooperatively with the appropriate agency or agencies to develop appropriate mitigation measures to offset impacts to the affected species. PG&E shall thereafter implement all mitigation recommendations of the FWS and/or CDFG that result from these consultations and shall provide evidence of implementation to the CPUC.</p>	Entire route	Consult with resource agencies, obtain appropriate permits, and/or implement recommended mitigation.	Minimize impacts on special status plant and wildlife species that cannot be avoided as verified by the biological monitor.	CPUC, USFWS, and CDFG	Prior to and during construction

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Mitigation Measures for Alternatives						
B-9: Underwater Impacts to Crystal Springs Dam (Class II)	B-9a: Habitat Loss from Underwater Cable Installation. PG&E shall perform detailed surveys at areas proposed to be trenched for cable access to Lower Crystal Springs Reservoir and shall submit these surveys to the CPUC for review and approval. If these surveys show potential effects on sensitive species or habitats as determined by the CPUC-designated biologist, PG&E shall use directional drilling techniques to install the cable, avoiding all impacts to the shoreline.	Vicinity of Lower Crystal Springs Reservoir (PG&E Route Option 1B Alternative)	Review and approval of sensitive species and habitats surveys.	Minimize effects on sensitive species and habitats or use directional drilling to avoid impacts.	CPUC	Prior to construction
B-1: Temporary and Permanent Loss of Sensitive Vegetation Communities (Partial Underground Alternative) (Class II)	B-1j: Construction Restriction in Sensitive Habitat. If the Partial Underground Alternative is approved, PG&E shall restrict all underground construction activities to a 40-foot-wide corridor, defined and fenced by CPUC-approved biological monitor to avoid the most valuable plant habitat adjacent to the route. Adjacent areas to the west and east of the existing access road shall be fenced temporarily to prevent access and a monitor shall be present at all times within 1,000 feet of ongoing construction activity. PG&E shall restrict all construction vehicles and personnel to the defined 40-foot zone, utilizing only disturbed access roads or the disked firebreak to access the underground construction areas or for equipment or spoils storage.	Underground construction in southern segment (Partial Underground Alternative)	Define, fence, and limit construction to a 40-foot wide corridor.	Restrict activity to within the defined corridor as verified by the biological monitor	CPUC	Prior to and during construction
B-1: Temporary and Permanent Loss of Sensitive Vegetation Communities (West of Skyline Transition Station Alternative) (Class II)	B-1k: Use Transition Tower Instead of Station. If the West of Skyline Transition Station is approved, PG&E shall use a transition tower (rather than a station) to allow the overhead 230 kV transmission line to transition to underground. The specific location and design of the tower shall be submitted to the CPUC for review and approval at least 60 days prior to the start of construction.	West of Skyline Transition Station (West of Skyline Transition Station Alternative)	Review and approval of specific tower location and design	Use of a tower	CPUC	Prior to construction
B-1: Temporary and Permanent Loss of Sensitive Vegetation Communities (Modified Existing 230 kV Underground Alternative) (Class II)	B-1l: Colma Creek Crossing; Frac-Out Contingency Plan. The crossing of Colma Creek tributary north of Shaw Drive shall be by bore or directional drill to avoid affecting the wetlands habitat. Coordination with the CDFG shall be required to ensure appropriate preparation for possible unanticipated release of drilling fluids (“frac-out”). PG&E shall prepare and submit for CPUC and CDFG approval an HDD “frac-out” prevention and response plan which contains the following provisions (or similar measures which have the same effect):	Colma Creek Crossing (Modified Existing 230 kV Underground Alternative)	Review and approval of HDD “frac-out” prevention and response plan	Compliance with conditions in the plan as verified by the biological monitor	CPUC and CDFG	Prior to and during construction

Table D.4-4. Mitigation Monitoring Program – Biological Resources (cont.)

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	<ul style="list-style-type: none"> • HDD crews shall strictly monitor drilling fluid pressures. • Obtain site-specific geotechnical data at all water crossings where HDD is to be used to determine the appropriate depth below bed of waterway. • Implement sizing techniques (move bores back and forth slowly to keep track of potential frac-outs) • Consider potential application of surface casings to add a protective outer layer. • No nighttime drilling shall be allowed unless absolutely required. • Containment equipment for drilling fluids shall be maintained on site. • Turbidity downstream of the drill site shall be monitored. • Work shall be immediately stopped if a seep into a stream is detected such as by a loss in pressure or visual observation of changes in turbidity or surface sheen. • All bentonite seeps into waters of the State or sensitive habitat shall be immediately reported to the Project's resource coordinator, the CSLC, and the appropriate resource agencies (i.e., NOAA, USFWS, CDFG, Reclamation Board, USACE, applicable RWQCB's, applicable county, and DWR). • Use non-toxic fluorescent dye in the drilling mud to allow easier identification of frac-outs. 					