The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.
Pacific Gas & Electric Company Bay Area Operations and Maintenance Habitat Conservation Plan Draft Environmental Assessment

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Prepared by:
U.S. Fish and Wildlife Service
2800 Cottage Way, W-2650
Sacramento, CA 95825-1846
Contact: Mike Thomas, Division Chief Conservation Planning Branch
(916) 414-6678

Prepared by:
North State Resources, Inc.
5000 Bechelli Lane, Suite 203
Redding, CA 96002
Contact: Wirt Lanning
Chapter 1. Purpose and Need

We, the United States Fish and Wildlife Service (Service), prepared this Draft Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA). This EA evaluates the effects of issuing an incidental take permit (ITP) under Section 10(a)(1)(B) of the Federal Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.) (Act) for activities covered by Pacific Gas & Electric Company’s (PG&E’s) San Francisco Bay Area Operations and Maintenance Habitat Conservation Plan (Bay Area O&M HCP, or HCP). PG&E has applied for an ITP from the Service pursuant to section 10(a)(1)(B) of the Act. Issuance of a Section 10 ITP constitutes a discretionary federal action by the Service and is thus subject to NEPA, which requires that all federal agencies assess the effects of its action on the human environment.

PG&E, in coordination with the Service, prepared the draft Bay Area O&M HCP in compliance with Section 10(a)(2)(A) of the Act, which requires any application for an ITP include a “conservation plan” that details the impacts of the incidental take requested by the ITP on affected species and how the impacts of the incidental take will be minimized and mitigated to the maximum extent practicable. The issuance of an ITP would enable PG&E to continue current and future O&M activities in the San Francisco Bay Area of California while avoiding, minimizing, and mitigating impacts on threatened and endangered species that could result from such activities.

The study area for this EA includes the following nine Bay Area counties: Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, San Mateo, and San Francisco counties (see Figure 1-1). Within these counties, it includes areas that could be affected by covered activities as defined in the HCP (collectively “Covered Activities”), including PG&E gas and electric transmission and distribution facilities, rights-of-way (ROWs), and buffers around activity areas; lands owned by PG&E and/or subject to PG&E easements to maintain the facilities; private access routes associated with PG&E’s routine maintenance; and mitigation areas acquired to mitigate for impacts resulting from Covered Activities under the HCP. These areas are referred to as the Plan Area and encompass approximately 402,440 acres.

1.1 Background

PG&E is one of the largest combined natural gas and electric utilities in the United States, serving more than 5.3 million electricity customers and 4.3 million natural gas customers in 50 of California’s 58 counties. Nearly 11 percent of its total service area lies within the nine Bay Area counties listed above.

Natural gas is obtained from wells throughout the state and is processed at plants and pressurized at a compressor station prior to transmission or storage. Gas is distributed to individual home and business customers via smaller, lower-pressure distribution pipelines, transitioning from high-pressure lines to smaller, low-pressure lines via pressure regulators or pressure-limiting stations. In the Bay Area, PG&E owns and operates a compressor station and 1,820 miles of transmission pipelines, which convey natural gas to 19,350 miles of distribution lines.
Figure 1-1. Study Area
Chapter 1. Purpose and Need

PG&E acquires electricity from more than 400 electric power generation plants owned by independent power producers or from qualified facilities for resale to its customers. High-voltage transmission lines convey power from generation plants to switching stations or substations, where power is redirected and transformed to lower voltages. Distribution lines carry the lower-voltage service to industrial, commercial, and residential customers. In the Bay Area, PG&E owns and operates 4,430 miles of electric transmission lines and 207 substations, which convey electricity to approximately 23,015 miles of distribution lines. PG&E operates switching stations, substations, and regulator and gas pressure limiting stations to support the transmission and distribution lines.

PG&E’s Bay Area electric and gas transmission and distribution infrastructure, the majority of which was installed between the 1950s and 1970s, requires continued long-term operation and maintenance and implementation of the Community Pipeline Safety Initiative (CPSI) to continue to deliver reliable and safe energy to PG&E customers. (The CPSI is described in Chapter 2 of this EA.) In addition, PG&E occasionally needs to install new or replacement structures to upgrade existing facilities or extend service to new residential or commercial customers.

The Plan Area contains numerous plant and wildlife species listed as threatened and endangered under the Act; it also contains habitat for these species, including critical habitat designated by the Service as being essential to the conservation of several of the listed species. Furthermore, many of these species are endemic to the Plan Area, with some having specific habitat requirements not found outside of the Plan Area. Examples of species endemic to the Plan Area include Delta green ground beetle, Bay checkerspot butterfly, Lange’s metalmark butterfly, San Bruno elfin butterfly, and coyote ceanothus.

PG&E’s proposed activities could affect 18 federally listed wildlife species or their habitat and 13 federally listed plant species or their habitat as well as designated critical habitat for 12 species (9 wildlife species and 3 plant species) over a 30-year period. The potential for incidental take of federally listed wildlife species from PG&E activities triggers PG&E’s need to comply with the Act and other applicable federal and State laws and regulations.

Section 9 of the Act, and its implementing regulations, prohibit take of any fish or wildlife species that is federally listed as threatened or endangered without prior approval pursuant to either Section 7 or Section 10(a)(1)(B) of the Act. Section 7 of the Act requires all federal agencies, in consultation with the Service, to ensure that their actions do not jeopardize the continued existence of species listed as endangered or threatened and protected or result in the destruction or adverse modification of the designated critical habitat of these species. Section 10(a)(1)(B) of the Act provides for issuance of permits to non-federal entities and authorizes take resulting from activities carried out by non-federal entities when there is no other federal agency involved.

Many of PG&E’s proposed activities are minor and may not involve permits or authorizations from other federal agencies (i.e., a Clean Water Act (CWA) Section 404 permit from the U.S. Army Corps of Engineers) and thus do not have a Section 7 nexus. For activities not requiring other federal permits, and in order to comply with the Act, PG&E would need to prepare and implement project-specific habitat conservation plans, resulting in excessive time delays and costs and preventing PG&E from efficiently implementing activities mandated by the California Public Utilities Commission (CPUC) and other state and federal agencies to ensure the delivery of safe and reliable energy.
To avoid project-by-project permitting for the proposed activities, PG&E submitted an application requesting an ITP from the Service under Section 10(a)(1)(B) of the Act to allow incidental take of the 18 covered wildlife species for the specified 30-year time period. The Bay Area O&M HCP will provide direction on Act compliance requirements for all Covered Activities, which are described in Chapter 2 of this EA. In support of the application, PG&E prepared the Draft Bay Area O&M HCP to address the incidental take of the 18 federally listed wildlife species in the Plan Area that may be taken as a result of the Covered Activities and to identify measures to avoid or minimize effects on the species and mitigate the impact of the taking. Although the Section 9 prohibitions on take do not generally apply to federally listed plants, plant species can be covered in a habitat conservation plan in recognition of the conservation benefits and provided by the habitat conservation plan and to assist the Service in reviewing the effects to listed plants resulting from Covered Activities (see Section 1.2.1, Endangered Species Act below).

This EA was prepared as part of the Service’s decision-making process to evaluate and disclose to the public the consequences of issuing an ITP for federally listed species on the human environment. Under the Act, the Service is required to conserve the ecosystems upon which endangered and threatened species depend and ensure the long-term survival of the species. The Service’s mission “is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.”

Past development in the nine Bay Area counties has supported human population and economic growth that has resulted in the loss of habitat for endangered and threatened species, and the Service has identified habitat loss and degradation as one of the primary factors threatening the survival and recovery of the 31 federally listed species covered by the Bay Area O&M HCP. Therefore, the Service has developed recovery plans for many of these species, and the Bay Area contains recovery areas for several of the listed species covered by the Bay Area O&M HCP to identify measures to aid in their recovery. Conserving species involves protecting and often restoring habitat where the species can thrive. PG&E incorporated potential recovery actions described in the recovery plans for several covered species to aid in the overall recovery of these species. In addition to species listed as threatened and endangered, as well as developing recovery plans for these species, the Service has also designated critical habitat within the Plan Area for some listed species.

1.2 Regulatory Context

1.2.1 Endangered Species Act

The Act protects fish and wildlife species that are listed as threatened or endangered and their habitats. Endangered is defined in the Act as “…any species which is in danger of extinction throughout all or a significant portion of its range. Threatened is defined in the Act as “…any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act is administered by the Service for terrestrial and freshwater species and by the National Marine Fisheries Service (NMFS) for marine species and anadromous fishes.

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered fish or wildlife species. The Act defines take as “to harass, harm, pursue, hunt, shoot,
wound, kill, trap, capture or collect, or to attempt to engage in any such conduct.” 50 Code of Federal Regulations (CFR) 17.3 defines the term harass as “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering.” 50 CFR 17.3 also defines harm as “an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering.” Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Section 7(a)(2) of the Act requires all federal agencies, in consultation with the Service, to “insure that any action authorized, funded, or carried out” by that agency “is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification” of critical habitat. Formal consultation under Section 7 concludes with a biological opinion prepared by the Service and issued to the lead federal agency. The Service’ issuance of an incidental take permit under Section 10(a)(1)(B) is an action subject to the provisions of Section 7 of the Act. Therefore, to ensure issuance of the proposed ITP will not jeopardize the continued existence of a listed species or result in the adverse modification of critical habitat, the Service must conduct an intra-service Section 7 consultation prior to the issuance of the ITP.

Section 10 of the Act establishes two processes through which a “nonfederal entity” (e.g., PG&E) can apply for a permit allowing take of federally listed animal species under certain restricted circumstances, Section 10(a)(1)(A) and Section 10(a)(1)(B). Section 10(a)(1)(B) allows for incidental take permits associated with habitat conservation plans, where the take is incidental to otherwise lawful activities and may not be the purpose of the activities. Permits authorizing incidental take are issued by the Service and/or NMFS, depending on the species involved. A key requirement for issuance of a permit under Section 10(a)(1)(B) is preparation of a habitat conservation plan that fully analyzes the impacts of the proposed take and describes the measures that will be taken to minimize and mitigate the impact of the taking. The Bay Area O&M HCP was prepared to comply with Section 10 requirements.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction or the destruction of endangered plants on non-Federal areas in violation of State law or regulation (i.e., California Fish & Game Code §§ 2050-2085) or in the course of any violation of a State criminal trespass law (i.e., Penal Code §§ 594-625c). In addition, the Service is required to review the effects of its own actions on listed plants, even when those listed plants are found on private lands.

1.2.2 National Environmental Policy Act

NEPA, established in 1969 (42 U.S.C. 4321 et seq.), requires that federal agencies proposing major actions that could result in significant effects on the quality of the human environment prepare a detailed statement of environmental effects. The Service has preliminarily determined that an EA is the appropriate level of review for the Proposed Action. An EA must provide a detailed statement of
the environmental impacts of the action, the no action alternative, and measures to mitigate adverse
effects of the proposed action (42 U.S.C. § 4332(C)). While NEPA does not mandate any particular
result, it requires the agency to follow particular procedures in its decision-making process. The
purpose of these procedures is to ensure that the agency has the best possible information to make an
“intelligent, optimally beneficial decision” and to ensure that the public is fully apprised of any
environmental risks that may be associated with the Proposed Action.

The Council on Environmental Quality (CEQ) was established by NEPA to formulate and
recommend national policies that ensure that the programs of the federal government promote
improvement of the quality of the environment. In doing so, the CEQ established regulations (40
CFR 1500–1508) to assist federal agencies in implementing NEPA. These CEQ regulations will be
used in conjunction with applicable Department of Interior and Service NEPA guidance documents to
ensure that the environmental impacts of the Proposed Action are fully considered.

1.3 Species Covered by the HCP

The HCP presents a conservation strategy and monitoring, reporting, and adaptive management
program to avoid, minimize, and mitigate for the potential effects on 18 covered wildlife species and
13 covered plant species and (collectively “Covered Species) and associated critical habitat for 12
Covered Species as a result of implementation of routine O&M activities and minor new construction.
Species proposed to be covered under the HCP include only those species that are federally listed as
threatened or endangered; are known to occur or have a high potential to occur in the Action Area;
have a potential to be affected by the Covered Activities; and have sufficient data available to
estimate effects. Some federally listed species are also State of California listed. Wildlife and plant
species proposed to be covered by the HCP are listed in Table 1-1 and Table 1-2, respectively.

Table 1-1. Wildlife Species Covered by Proposed Bay Area O&M HCP

<table>
<thead>
<tr>
<th>Species</th>
<th>Statusa</th>
<th>Federal</th>
<th>State</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>California freshwater shrimp</td>
<td>E</td>
<td>E</td>
<td></td>
<td>Very specific distribution in Sonoma, Marin, and Napa counties.</td>
</tr>
<tr>
<td><em>Syncaris pacifica</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conservancy fairy shrimp</td>
<td>E</td>
<td>—</td>
<td></td>
<td>Occurs only in northwestern Solano County.</td>
</tr>
<tr>
<td><em>Branchinecta conservatio</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longhorn fairy shrimp</td>
<td>E</td>
<td>—</td>
<td></td>
<td>Occurs only in specific, localized habitat type (sandstone or rocky</td>
</tr>
<tr>
<td><em>Branchinecta longiantenna</em></td>
<td></td>
<td></td>
<td></td>
<td>vernal pools) in Alameda and Contra Costa counties.</td>
</tr>
<tr>
<td>Vernal pool fairy shrimp</td>
<td>T</td>
<td>—</td>
<td></td>
<td>Occurs only in specific, localized habitat type (vernal pools) in</td>
</tr>
<tr>
<td><em>Branchinecta lynchi</em></td>
<td></td>
<td></td>
<td></td>
<td>Alameda, Contra Costa, Napa, and Solano counties.</td>
</tr>
<tr>
<td>Vernal pool tadpole shrimp</td>
<td>E</td>
<td>—</td>
<td></td>
<td>Occurs only in specific, localized habitat type (vernal pools) in</td>
</tr>
<tr>
<td><em>Lepidurus packardi</em></td>
<td></td>
<td></td>
<td></td>
<td>Alameda, Contra Costa, and Solano counties.</td>
</tr>
</tbody>
</table>
### Table 1-1. Wildlife Species Covered by Proposed Bay Area O&M HCP

<table>
<thead>
<tr>
<th>Species</th>
<th>Statusa</th>
<th>Federal</th>
<th>State</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta green ground beetle <em>Elaphrus viridis</em></td>
<td>T</td>
<td>—</td>
<td>Occurs in localized habitat type (vernal pool complexes) in the greater Jepson Prairie area in south-central Solano County.</td>
<td></td>
</tr>
<tr>
<td>Bay checkerspot butterfly <em>Euphydryas editha bayensis</em></td>
<td>T</td>
<td>—</td>
<td>Extant only in Santa Clara and San Mateo counties.</td>
<td></td>
</tr>
<tr>
<td>Callippe silverspot butterfly <em>Speyeria callippe</em></td>
<td>E</td>
<td>—</td>
<td>Occurs in limited areas of San Mateo, Solano, and San Francisco counties.</td>
<td></td>
</tr>
<tr>
<td>Lange’s metalmark butterfly <em>Apodemia mormo langei</em></td>
<td>E</td>
<td>—</td>
<td>Very localized distribution; occurs in Contra Costa County near Antioch.</td>
<td></td>
</tr>
<tr>
<td>San Bruno elfin butterfly <em>Incisalia mossii bayensis</em></td>
<td>E</td>
<td>—</td>
<td>Very localized distribution; occurs in San Mateo County. Other populations reported though not confirmed through surveys.</td>
<td></td>
</tr>
</tbody>
</table>

**Amphibians**

<table>
<thead>
<tr>
<th>Species</th>
<th>Statusa</th>
<th>Federal</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>California tiger salamander <em>Ambystoma californiense</em> (Central CA DPS)</td>
<td>T</td>
<td>T</td>
<td>Occurs in Alameda, Contra Costa, Santa Clara, and Solano counties.</td>
</tr>
<tr>
<td>California tiger salamander <em>Ambystoma californiense</em> (Sonoma County DPS)</td>
<td>E</td>
<td>T</td>
<td>Geographically separated population in Sonoma County.</td>
</tr>
<tr>
<td>California red-legged frog <em>Rana draytonii</em></td>
<td>T</td>
<td>SSC</td>
<td>Occurs in all Plan Area counties.</td>
</tr>
</tbody>
</table>

**Reptiles**

<table>
<thead>
<tr>
<th>Species</th>
<th>Statusa</th>
<th>Federal</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alameda whipsnake <em>Masticophis lateralis euryxanthus</em></td>
<td>T</td>
<td>T</td>
<td>Occurs in Alameda, Contra Costa, and portions of Santa Clara counties.</td>
</tr>
<tr>
<td>San Francisco garter snake <em>Thamnophis sirtalis tetraetaenia</em></td>
<td>E</td>
<td>E; FP</td>
<td>Occurs only in San Mateo County.</td>
</tr>
</tbody>
</table>

**Birds**

<table>
<thead>
<tr>
<th>Species</th>
<th>Statusa</th>
<th>Federal</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Ridgway’s rail <em>Rallus obsoletus</em></td>
<td>E</td>
<td>E; FP</td>
<td>Nesting occurs in all Plan Area counties except San Francisco.</td>
</tr>
</tbody>
</table>

**Mammals**

<table>
<thead>
<tr>
<th>Species</th>
<th>Statusa</th>
<th>Federal</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt marsh harvest mouse <em>Reithrodontomys raviventris</em></td>
<td>E</td>
<td>E; FP</td>
<td>Occurs in all Plan Area counties except San Francisco County.</td>
</tr>
</tbody>
</table>
### Table 1-1. Wildlife Species Covered by Proposed Bay Area O&M HCP

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Joaquin kit fox</td>
<td></td>
<td><strong>Occurs in Alameda, Contra Costa, and Santa Clara counties.</strong></td>
</tr>
<tr>
<td><em>Vulpes macrotis mutica</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: State-listing status included for informational purposes only. Status abbreviations:*

**Federal**
- E = listed as endangered under the Endangered Species Act.
- T = listed as threatened under the Endangered Species Act.

**State**
- E = listed as endangered under the California Endangered Species Act.
- T = listed as threatened under the California Endangered Species Act.
- FP = fully protected under the California Fish and Game Code.
- SSC = species of special concern in California.
- — = no listing.

*Note: DPS – Distinct Population Segment*

*Note: Although it has two distinct population segments, California tiger salamander is one species.*

### Table 1-2. Plant Species Covered by Proposed Bay Area O&M HCP

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallid manzanita <em>Arctostaphylos pallida</em></td>
<td>T</td>
<td>Perennial plant</td>
</tr>
<tr>
<td>Sonoma sunshine <em>Blennosperma bakeri</em></td>
<td>E</td>
<td>Annual wildflower</td>
</tr>
<tr>
<td>Coyote ceanothus <em>ferrisae</em></td>
<td>E</td>
<td>Shrub</td>
</tr>
<tr>
<td>Fountain thistle <em>Cirsium fontinale var. fontinale</em></td>
<td>E</td>
<td>Perennial herb</td>
</tr>
<tr>
<td>Santa Clara Valley dudleya <em>abramsii subsp. setchellii</em></td>
<td>E</td>
<td>Perennial succulent</td>
</tr>
<tr>
<td>Contra Costa wallflower <em>Erysimum capitatum var. angustatum</em></td>
<td>E</td>
<td>Annual wildflower, occurs in large numbers where present.</td>
</tr>
<tr>
<td>Marin dwarf-flax <em>Hesperolinon congestum</em></td>
<td>T</td>
<td>Annual herb</td>
</tr>
<tr>
<td>Burke’s goldfields <em>Lasthenia burkei</em></td>
<td>E</td>
<td>Annual wildflower</td>
</tr>
<tr>
<td>Contra Costa goldfields <em>Lasthenia conjugens</em></td>
<td>E</td>
<td>Annual wildflower, occurs in large numbers where present.</td>
</tr>
</tbody>
</table>
### Table 1-2. Plant Species Covered by Proposed Bay Area O&M HCP

<table>
<thead>
<tr>
<th>Species</th>
<th>Statusa</th>
<th>Federal</th>
<th>State</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sebastopol meadowfoam <em>Limnanthes vinculans</em></td>
<td></td>
<td>E</td>
<td>E</td>
<td>Annual herb</td>
</tr>
<tr>
<td>Antioch Dunes evening primrose <em>Oenothera deltoides</em> ssp. <em>howellii</em></td>
<td></td>
<td>E</td>
<td>E</td>
<td>Perennial plant</td>
</tr>
<tr>
<td>White-rayed pentachaeta <em>bellidiflora</em></td>
<td></td>
<td>E</td>
<td>E</td>
<td>Annual wildflower</td>
</tr>
<tr>
<td>Metcalf Canyon jewelflower <em>Streptanthus glandulosus</em> subsp. <em>albidus</em></td>
<td></td>
<td>E</td>
<td>—</td>
<td>Annual wildflower</td>
</tr>
<tr>
<td><strong>Total: 13</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

aState listing status is for informational purposes only. Status abbreviations:

**Federal**
- E = listed as endangered under the federal Endangered Species Act.
- T = listed as threatened under the federal Endangered Species Act.

**State**
- E = listed as endangered under the California Endangered Species Act.
- T = listed as threatened under the California Endangered Species Act.
- — = no listing.

### 1.4 Proposed Action Addressed in This EA

The proposed action considered in this EA is the Service’s issuance of a Section 10(a)(1)(B) ITP for activities covered in the HCP. PG&E submitted its proposed HCP to the Service with its application for a federal permit to obtain authorization for incidental take\(^1\) of 18 wildlife and 13 plant species all of which are federally listed as threatened or endangered. The proposed permit duration for the Bay Area O&M HCP is 30 years. Chapter 2 of this EA presents an overview of the HCP, activities covered under the HCP, existing PG&E environmental programs and practices, and proposed measures to avoid, minimize, and mitigate adverse effects on the covered plant and wildlife species and their habitats. Additional details on the Covered Activities, including PG&E O&M methods and techniques, and the conservation approach are provided in the Draft HCP in Appendix A of this EA.

### 1.5 Proposed Plan Area Addressed in This EA

PG&E provides services to the nine Bay Area counties (Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma); collectively this area is referred to as the study area. PG&E facilities, however, are located within a smaller portion of the nine counties. The focus of this EA is on those resources that could be affected by activities covered under the HCP;

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\(^1\) Incidental take is generally defined as direct or indirect harm to a species, including habitat loss, which is incidental to an otherwise lawful activity (e.g., land development, improvement to public infrastructure).
these areas are collectively referred to as the Plan Area in the HCP and in this EA. Although activities described in this chapter and in the HCP will be conducted only within the Plan Area, this EA addresses potential environmental effects of those actions that may extend beyond the Plan Area, as appropriate. For example, air quality effects (such as those from vehicular traffic and power plant emissions) that are created by activities within the Plan Area need to be analyzed within the appropriate air basins. The Plan Area encompasses approximately 402,440 acres (Table 1-3 and Figure 1-1) and is limited to PG&E’s gas and electric transmission and distribution facilities, the lands owned by PG&E and/or subject to PG&E easements for these facilities, private access routes associated with PG&E’s Covered Activities, and mitigation areas for effects resulting from PG&E’s Covered Activities. Of the 402,440 acres, 128,735 acres (32%) are in natural land-cover types, 246,777 acres (61%) are in urban areas, and 26,928 acres (7%) are in agricultural areas.

Table 1-3 summarizes the land area associated with each type of activity or facility. O&M activities described in the HCP would be limited to existing PG&E ROWs. Minor new construction activities could require the acquisition of additional small acreages of ROW, but these would be adjacent to, or extend from, existing facilities. To describe the potential effects in the Plan Area in sufficient detail, a buffer was established along electric transmission lines to include the facility and immediately adjacent lands; the buffers vary by facility size (200 feet for 500 kilovolt (kV) lines, 120 feet for 230 kV lines, and 80 feet for 60/70/115 kV lines). Similar buffers were established to develop the Plan Area components of the gas transmission and distribution ROWs.

<table>
<thead>
<tr>
<th>Plan Area Components</th>
<th>Total HCP Plan Area (acres)</th>
<th>Urban Land-Cover Type (acres)</th>
<th>Agricultural Land-Cover Type (acres)</th>
<th>Natural Land-Cover Type (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric transmission (160–400 feet width)</td>
<td>61,637</td>
<td>16,829</td>
<td>5,013</td>
<td>39,795</td>
</tr>
<tr>
<td>Electric distribution (50 feet width)</td>
<td>154,606</td>
<td>95,615</td>
<td>13,216</td>
<td>45,774</td>
</tr>
<tr>
<td>Gas transmission (300 feet width)</td>
<td>49,186</td>
<td>25,032</td>
<td>5,174</td>
<td>18,980</td>
</tr>
<tr>
<td>Gas distribution (50 feet width)</td>
<td>111,361</td>
<td>96,009</td>
<td>2,422</td>
<td>12,930</td>
</tr>
<tr>
<td>Minor new construction</td>
<td>3,768</td>
<td>377</td>
<td>377</td>
<td>3,014</td>
</tr>
<tr>
<td>Estimate for unmapped facilities</td>
<td>16,882</td>
<td>12,915</td>
<td>726</td>
<td>3,241</td>
</tr>
<tr>
<td>Mitigation areas</td>
<td>5,000</td>
<td></td>
<td></td>
<td>5,000</td>
</tr>
<tr>
<td><strong>Total Plan Area</strong></td>
<td><strong>402,440</strong></td>
<td><strong>246,777</strong></td>
<td><strong>26,928</strong></td>
<td><strong>128,735</strong></td>
</tr>
</tbody>
</table>
Chapter 1. Purpose and Need

Table 1-3. Plan Area Components

<table>
<thead>
<tr>
<th>Sources:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land-cover type totals by facility type were derived by overlapping facility boundaries with mapped land-cover types. Land-cover types were derived from:</td>
</tr>
<tr>
<td>The USDA Forest Service 2000 and 2007 Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) geodatabase (USDA Forest Service 2000 and 2007);</td>
</tr>
<tr>
<td>The California Department of Forestry and Fire Protection 2002 Multi-Source Land-Cover Data, (v02_2); and</td>
</tr>
<tr>
<td>The San Francisco Estuary Institute 1996 Modern Baylands EcoAtlas data.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric transmission buffer corridor varies depending on the facility size (500 kV—200 feet, 230 kV—120 feet, and 60/70/115 kV—80 feet).</td>
</tr>
<tr>
<td>Minor new construction is estimated at 1% of the total ROWs and assumed to occur within 80% natural vegetation, 10% urban areas, and 10% agricultural lands based on PG&amp;E’s assessment of the land-cover types likely to be affected by new construction.</td>
</tr>
<tr>
<td>Unmapped facilities are estimated at 1% of electric and gas transmission, 3% of electric distribution, and 10% of gas distribution based on discussions with facility staff; they are assumed to occur in proportion to the land-cover type for mapped facilities based on where PG&amp;E facilities are located.</td>
</tr>
</tbody>
</table>

1.6 Purpose of and Need for the Proposed Action

NEPA (40 CFR 1502.13) requires an EA to briefly describe the underlying purpose and need for the agency’s proposed and alternative actions. The purpose and need for the proposed federal action is to achieve the following goals:

- respond to PG&E’s application for a Section 10(a)(1)(B) ITP for the 31 Covered Species (18 wildlife species and 13 plant species) based on the Covered Activities proposed in the HCP. Incidental take may occur as a result of the following general categories of Covered Activities: operations and maintenance of existing facilities, minor construction of new facilities, and implementation of conservation actions within approximately 402,440 acres of lands comprising the Plan Area within the nine counties in the San Francisco Bay Area. The Service’s decision on issuance of an ITP will consider the applicant’s objectives, as described in Sections ES.1 and 1.2 of the Bay Area O&M HCP.

- protect and preserve the 31 Covered Species by protecting and enhancing high quality habitat for all 31 Covered Species in the Plan Area.

- conserve the ecosystems that the Covered Species depend on by partnering with other under development and permitted habitat conservation plans in the Bay Area to preserve large, contiguous areas of the Covered Species’ habitat, including designated critical habitat in the Plan Area.

- ensure the long-term survival of the Covered Species through protection and management of the species and their habitats in the Plan Area by contributing to the network of permanently protected and managed lands that support populations of Covered Species.

In addition to the goals above, the Service also considered the applicant’s objective to continue operating and maintaining PG&E’s natural gas and electrical infrastructure in the nine Bay Area counties, including approximately 4,430 miles of electrical transmission lines, 23,015 miles of
distribution lines, as well as approximately 19,350 miles of natural gas distribution pipelines and 1,820 miles of natural gas transmission lines. This purpose and need establishes the basis for determining whether other viable alternatives to the proposed action may meet the intended purpose, applicant’s objectives, and reduce potential effects.
Figure 1-1
Study Area
Chapter 2. Proposed Action and Alternatives

As referenced in the Council for Environmental Quality, NEPA regulations regarding the contents of an EA (40 CFR 1508.9[b]), NEPA Section 102[2][E] require federal agencies to develop, study, and briefly describe alternatives to any proposed action with the potential to result in unresolved resource conflicts. This chapter describes the alternatives considered by the Service in this EA: the Proposed Action, the No Action Alternative, and alternatives considered but rejected from further evaluation.

2.1 Alternatives and HCP Development Process

The Service and permit applicant, PG&E, considered a full range of alternatives to meet the purpose and need of the proposed action, including the proposed Bay Area O&M HCP, consideration of changed O&M practices, consideration of only large maintenance projects, and participation in existing HCPs.

The size and configuration of the various operations and maintenance activities were largely informed by the applicant’s objective to continue operating and maintaining their natural gas and electrical infrastructure in the nine Bay Area counties, including approximately 4,430 miles of electrical transmission lines, 23,015 miles of distribution lines as well as approximately 19,350 miles of natural gas distribution pipelines and 1,820 miles of natural gas transmission lines. The majority of this infrastructure is already in place and must remain in or in close proximity to PG&E’s existing ROWs. With these criteria in mind, the Service considered alternatives that would meet the Service’s purpose and need as well as the applicant’s objective while minimizing project-related environmental effects, including take of federally listed species.

The following sections describe alternatives analyzed in detail in this EA, including a No Action Alternative and Proposed Action alternative, and other alternatives considered but eliminated from detailed consideration.

2.2 Alternative 1: Proposed Action

The Proposed Action is issuance of an ITP and implementation of the HCP. PG&E submitted its proposed HCP to the Service with its application for a federal permit to obtain authorization for incidental take1 of 13 plant and 18 wildlife species, all of which are currently listed as threatened or endangered under the federal Act. The Service permit in conjunction with other federal and state permits (e.g., the incidental take permit for state-listed species from the California Department of Fish and Wildlife [CDFW]) would enable PG&E to continue current and future operations, maintenance, and minor new construction in the Bay Area over the next 30 years (permit term) while minimizing and mitigating impacts on threatened and endangered species that could result from such activities.

This section presents an overview of the Draft HCP, activities covered under the HCP, existing PG&E environmental programs and practices, and proposed measures to avoid or minimize adverse

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1 Incidental take is generally defined as direct or indirect harm to a species, including habitat loss, which is incidental to an otherwise lawful activity (e.g., land development, improvement to public infrastructure).
effects on the covered plant and wildlife species and their habitats. Additional details on the Covered Activities, including PG&E O&M methods and techniques, and the conservation approach are provided in the Draft HCP in Appendix A of this EA.

### 2.2.1 Covered Activities

The HCP covers all PG&E O&M, minor new construction, and CPSI activities related to its natural gas and electric transmission and distribution systems that may result in take of Covered Species in the Plan Area. Note that for brevity, the terms O&M program, O&M, and O&M activities are used throughout this document to include any of the Covered Activities because of the similarities between the activities. The specific types of activities are distinguished only when a difference in environmental outcomes is expected.

Covered Activities would occur at or near the existing facilities. Minor new construction activities include installing new or replacement structures to upgrade facilities or to extend service to new customers.

Access to work areas would be via existing public or private roads, to the extent feasible. Temporary road construction or off-road travel would be minimized. Specific methods for construction would be identified for individual activities; typical methods are described in the Draft HCP (Appendix A of this EA, Chapter 3, Covered Activities). PG&E and its contractors would implement applicable best management practices (BMPs) identified in the California Stormwater Best Management Practices Handbook published by the California Stormwater Quality Association, and disturbed areas would be cleaned up and restored following the activity. The Covered Activities do not include any work on facilities outside the Plan Area or new construction actions unrelated to maintenance, repair, and operation of existing pipelines and transmission/distribution lines, except for minor new construction as described above.

The HCP does not cover:

- activities implemented outside of the Plan Area;
- activities undertaken by entities other than PG&E or those companies or individuals performing work that is not on PG&E’s behalf; or
- application of herbicides, rodenticides, or fungicides.

### 2.2.1.1 Operation and Maintenance Activities

#### Operation Activities

Operation activities typically include inspecting, monitoring, testing, and operating valves, enclosures, switches, and other components. These Covered Activities involve utility personnel working at existing facilities in existing ROWs; personnel typically use existing access roads. A list of typical PG&E O&M activities is provided in Table 2-1. The letters and numbers in the table (e.g., G1, G2, E1, E2) are keyed to the designations provided in Chapter 3 of the Draft HCP.
**Maintenance Activities**

Maintenance activities include repairing and replacing facilities, structures, and access roads. This work includes reconductoring electric transmission and distribution projects and gas pipeline replacement. This work also includes emergency repair and replacement and vegetation management, including tree pruning and removal. These activities take place at existing facilities in existing ROWs. Emergency work is defined in PG&E’s Utility Procedure ENV-8003P-01 as “A project or activity which includes but is not limited to emergency repairs to facilities necessary to maintain service essential to the public health, safety or welfare. Emergency repairs include those that require a reasonable amount of planning where delay of project or activity would result in significant safety or environmental impacts. Furthermore, emergency projects include specific actions necessary to prevent or mitigate an emergency.” The O&M activities described below are the same as those conducted for emergency work (e.g., the amount and extent must be the same), with the difference being the timing and urgency of completing the work. Emergency work typically requires immediate repairs and thus an abbreviated environmental review process or no environmental review process. If not pre-screened, emergency work would require post-project assessments to determine impacts and associated mitigation.

PG&E frequently uses third parties to perform O&M work and is responsible for the performance of third parties. The incidental take permit would cover the activities of third parties conducting a Covered Activity on a PG&E facility and on behalf of PG&E. These contractors may carry out any of the Covered Activities, although the largest activities are generally conducted with PG&E oversight. Prior to initiating ground-disturbing activities in habitat of Covered Species, PG&E would require these contractors to agree to adhere to all relevant terms and conditions of the HCP and ITP and to participate in training regarding Avoidance and Minimization Measures (AMMs) and permit terms and conditions.

**Table 2-1. Typical Operations and Maintenance Activities**

<table>
<thead>
<tr>
<th>Natural Gas System</th>
<th>Electrical System</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1. Patrols</td>
<td>E1. Patrols</td>
</tr>
<tr>
<td>G2. Inspections</td>
<td>E2. Inspections</td>
</tr>
<tr>
<td>G3a. Pipeline remedial maintenance</td>
<td>E3. Insulator washing or replacement</td>
</tr>
<tr>
<td>G3b. Internal pipeline inspections</td>
<td></td>
</tr>
<tr>
<td>G4. Compressor station upgrades and maintenance</td>
<td>E4. Substation maintenance</td>
</tr>
<tr>
<td>G5. Pipeline electric test system installation</td>
<td>E5. System outage repair</td>
</tr>
<tr>
<td>G6. Pipeline valve maintenance - Recoating</td>
<td>E6a. Tower replacement or repair</td>
</tr>
<tr>
<td></td>
<td>E6b. Boardwalk Repair and Replacement</td>
</tr>
<tr>
<td>G7. Pipeline valve maintenance – replacement or automation</td>
<td>E7. Facility installations (shoo-flies)</td>
</tr>
<tr>
<td>G8. Pipeline cathodic protection</td>
<td>E8a. Pole equipment repair and replacement</td>
</tr>
<tr>
<td></td>
<td>E8b. Utility/wood pole replacement</td>
</tr>
</tbody>
</table>
## Table 2-1. Typical Operations and Maintenance Activities

<table>
<thead>
<tr>
<th>Natural Gas System</th>
<th>Electrical System</th>
</tr>
</thead>
<tbody>
<tr>
<td>E9b. Line Reconductoring – Distribution</td>
<td></td>
</tr>
<tr>
<td>G10. Pipeline coating replacement</td>
<td>E10. Vegetation management</td>
</tr>
<tr>
<td></td>
<td>E10a. Routine maintenance</td>
</tr>
<tr>
<td></td>
<td>E10b. Pole clearing</td>
</tr>
<tr>
<td></td>
<td>E10c. Removal Activities</td>
</tr>
<tr>
<td></td>
<td>E10d. Transmission Vegetation/ROW Management</td>
</tr>
<tr>
<td></td>
<td>E10e. Tower cage clearing</td>
</tr>
<tr>
<td></td>
<td>E10f. Fee strip maintenance</td>
</tr>
<tr>
<td>G11. Pipeline replacement</td>
<td>E11a. Wood Pole Test and Treat – Inspection and Maintenance</td>
</tr>
<tr>
<td></td>
<td>E11b. Wood Pole Test and Treat – Reinforcement</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>G13b. Pipeline Access Road Management</td>
<td></td>
</tr>
<tr>
<td>G16. CPSI – Pipeline Replacement</td>
<td></td>
</tr>
<tr>
<td>G17. CPSI – Valve Replacement or Automation</td>
<td></td>
</tr>
<tr>
<td>G18. CPSI – Hydrostatic Testing</td>
<td></td>
</tr>
</tbody>
</table>

PG&E established corridors around its facilities to identify areas that have a potential to be affected by O&M activities and these areas are collectively called the Plan Area. Maximum facility corridor widths were established based on the facility type to conservatively establish a maximum area in which O&M activities would occur. Table 2-2 summarizes the land area associated with each type of activity or facility. O&M activities would be limited to the existing PG&E ROWs. Minor new construction activities could require the acquisition of additional small acreages of ROWs, but these would be adjacent to, or extend from, existing facilities. A buffer was established along electrical transmission lines to include the facility and immediately adjacent lands; the buffers vary by facility size (200 feet for 500 kilovolt (kV) lines, 120 feet for 230 kV lines, and 80 feet for 60/70/115 kV lines.)
Table 2-2. Type and Size of Facilities and Work Areas

<table>
<thead>
<tr>
<th>Type of Facility</th>
<th>Size of Facility</th>
<th>Maximum Facility Corridor Width (feet)</th>
<th>Buffer Area (feet)</th>
<th>Work Area (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical transmission</td>
<td>500 kV</td>
<td>200</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>Electrical transmission</td>
<td>230 kV</td>
<td>120</td>
<td>120</td>
<td>240</td>
</tr>
<tr>
<td>Electrical transmission</td>
<td>60/70/115 kV</td>
<td>80</td>
<td>80</td>
<td>160</td>
</tr>
<tr>
<td>Gas transmission</td>
<td>All</td>
<td>150</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>All distribution facilities</td>
<td>All</td>
<td>25</td>
<td>25</td>
<td>50</td>
</tr>
</tbody>
</table>

A summary of both gas and electric operations and maintenance activities and their average disturbance sizes are provided in Table 2-3.

Table 2-3. Operation and Maintenance Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Natural Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual Frequency</td>
</tr>
<tr>
<td>G1. Patrons(^a)</td>
<td>1</td>
</tr>
<tr>
<td>G2. Inspections</td>
<td>1</td>
</tr>
<tr>
<td>G3a. Remedial Maintenance – Fencing</td>
<td>10</td>
</tr>
<tr>
<td>G3a. Remedial Maintenance – Ergon Mats</td>
<td>1</td>
</tr>
<tr>
<td>G3b. Internal Pipeline Inspection</td>
<td>50</td>
</tr>
<tr>
<td>G4. Compressor Station Upgrades and Maintenance</td>
<td>1</td>
</tr>
<tr>
<td>G5. Pipeline Electric Test System Installations</td>
<td>7</td>
</tr>
<tr>
<td>G6. Valve Maintenance</td>
<td>5</td>
</tr>
<tr>
<td>G7. Valve Maintenance – Replacement or Automation</td>
<td>5</td>
</tr>
<tr>
<td>G8. Pipeline Cathodic Protection</td>
<td>5</td>
</tr>
<tr>
<td>G9. Pipeline Lowering</td>
<td>0.33</td>
</tr>
<tr>
<td>G10. Pipeline Coating Replacement</td>
<td>0.20</td>
</tr>
<tr>
<td>G11. Pipeline Replacement</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 2-3. Operation and Maintenance Activities

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>G12. Telecom Site Maintenance</td>
<td></td>
<td>1</td>
<td>0.34</td>
<td>0.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G13b. Pipeline Access Road Management</td>
<td></td>
<td>5</td>
<td>0.01</td>
<td>0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G14. Gas Pressure Limiting Station Construction</td>
<td></td>
<td>0.20</td>
<td>0.23</td>
<td>0.09</td>
<td>0.55</td>
<td>0.11</td>
</tr>
<tr>
<td>G15. New Customer Pipeline Installation</td>
<td></td>
<td>1</td>
<td>0.06</td>
<td>0.06</td>
<td>2.42</td>
<td>2.42</td>
</tr>
<tr>
<td>G16. CPSI – Pipeline Replacement</td>
<td></td>
<td>8</td>
<td>2.38</td>
<td>19.00</td>
<td>1.82</td>
<td>14.55</td>
</tr>
<tr>
<td>G17. CPSI – Valve Replacement or Automation</td>
<td></td>
<td>8</td>
<td>0.52</td>
<td>4.13</td>
<td>0.01</td>
<td>0.06</td>
</tr>
<tr>
<td>G18. CPSI – Hydrostatic Testing</td>
<td></td>
<td>5</td>
<td>0.51</td>
<td>2.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal Gas</strong></td>
<td></td>
<td><strong>68</strong></td>
<td><strong>30.2</strong></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Electrical**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E1. Patrols</td>
<td></td>
<td>1</td>
<td>0</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>E2. Inspections</td>
<td></td>
<td>1</td>
<td>0</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>E3. Insulator Washing or Replacement</td>
<td></td>
<td>1</td>
<td>0</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>E4. Substation Maintenance</td>
<td></td>
<td>1</td>
<td>0.46</td>
<td>0.46</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>E5. Outage Repair</td>
<td></td>
<td>500</td>
<td>0.01</td>
<td>5.56</td>
<td>–</td>
<td>–</td>
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<tr>
<td>E6a. Tower Replacement or Repair (incl Telecommunication Attachments)</td>
<td></td>
<td>360</td>
<td>0.02</td>
<td>8.26</td>
<td>–</td>
<td>0.41</td>
</tr>
<tr>
<td>E6b. Boardwalk Repair and Replacement</td>
<td></td>
<td>15</td>
<td>0.002</td>
<td>0.03</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>E7. Facility Installations (Shoo-Fly)</td>
<td></td>
<td>100</td>
<td>0.06</td>
<td>5.74</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>E8a. Pole &amp; Equipment Repair or Replacement</td>
<td></td>
<td>500</td>
<td>0</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>E8b. Utility/Wood Pole Replacement</td>
<td></td>
<td>500</td>
<td>0.002</td>
<td>0.80</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>E9a. Line Reconductoring – Transmission</td>
<td></td>
<td>10</td>
<td>21.52</td>
<td>215.22</td>
<td>0.036</td>
<td>0.36</td>
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<tr>
<td>E9b. Line Reconductoring – Distribution</td>
<td></td>
<td>250</td>
<td>0.002</td>
<td>0.57</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>E10a. Vegetation Management – Routine Maintenance</td>
<td></td>
<td>20</td>
<td>–</td>
<td>–</td>
<td>0.09</td>
<td>1.84</td>
</tr>
<tr>
<td>E10b. Vegetation Management – Pole Clearing</td>
<td></td>
<td>100</td>
<td>–</td>
<td>–</td>
<td>0.002</td>
<td>0.23</td>
</tr>
</tbody>
</table>
### Table 2-3. Operation and Maintenance Activities

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E10c. Vegetation Management – Removal Activities</td>
<td>25</td>
<td>—</td>
<td>—</td>
<td>0.1</td>
<td>2.50</td>
</tr>
<tr>
<td>E10d. Vegetation Management – Transmission Vegetation/ROW Management</td>
<td>10</td>
<td>1.88</td>
<td>18.80</td>
<td>3.03</td>
<td>30.30</td>
</tr>
<tr>
<td>E10e. Cage Clearing – Electric Transmission Structures</td>
<td>8</td>
<td>0.04</td>
<td>0.29</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>E10f. Fee Strip Maintenance – Electric Transmission Line ROW</td>
<td>1</td>
<td>3.03</td>
<td>3.03</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>E11a. Wood Pole Test and Treat – Inspection and Maintenance</td>
<td>6,000</td>
<td>0.0002</td>
<td>1.24</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>E11b. Wood Pole Test and Treat – Reinforcement</td>
<td>180</td>
<td>0.0008</td>
<td>0.15</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>E12. New Distribution and Transmission Line Construction or Relocation</td>
<td>2</td>
<td>0.25</td>
<td>0.49</td>
<td>0.23</td>
<td>0.46</td>
</tr>
<tr>
<td>E13. Electric Tower Line Construction</td>
<td>2</td>
<td>0.26</td>
<td>0.52</td>
<td>0.29</td>
<td>0.57</td>
</tr>
<tr>
<td>E14. Minor Substation Expansion</td>
<td>0.33</td>
<td>—</td>
<td>—</td>
<td>3</td>
<td>1.00</td>
</tr>
<tr>
<td>E15. Electric Underground Line Construction</td>
<td>0.10</td>
<td>0.3</td>
<td>0.03</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

| Subtotal Electric | 261 | 38 |
| Total Gas and Electric | 329 | 68 |

Note: Patrons are performed at either 6-month or 12-month intervals. Patrons may be performed on foot, with aircraft, or with vehicles. The activity size calculation assumes that the entire gas pipeline is patrolled at a minimum of once per year.

### 2.2.1.2 Minor New Construction Activities

Minor new construction activities include installing new or replacement structures to upgrade existing facilities or extend service to new residential or commercial customers. When conducted in natural vegetation or agricultural lands that contain suitable habitat for Covered Species, upgrades to existing facilities and new electric or gas line extensions are limited to 2 miles or less from an existing line. End-to-end extensions exceeding 2 miles would not be a Covered Activity. Multiple 2-mile extensions in different geographic areas would be covered, but each would be treated as a separate activity. The size of a minor new construction project would be calculated as the total footprint,
expressed in acres. New or replacement structures to upgrade existing facilities are limited to 1 acre or less of new gas pressure limiting stations (PLSs) and 3 acres or less per electric substation expansion. Table 2-1 lists typical PG&E minor new construction activities.

2.2.1.3 Community Pipeline Safety Initiative

CPSI activities are activities required by CPUC to enhance the operation and safety of PG&E’s natural gas transmission system and are scheduled to be performed throughout PG&E’s service area. Over the next 30 years, PG&E will be implementing the CPSI through a concerted effort to upgrade key existing gas transmission pipelines in heavily populated and other critical areas. The specific focus of the CPSI effort is to inspect, field-test, and potentially replace pipeline segments to ensure that they meet current standards for the reliable and safe delivery of gas to customers.

Because of the age of some facilities, repairs or upgrades are needed to protect human health and safety. Ongoing operations result in normal wear and tear, which also trigger the need to periodically test and repair facilities. These activities are needed to ensure compliance with CPUC mandates concerning the siting, design, operation, and maintenance of public utilities in California, specifically, General Order 112-E (construction, testing, operation, and maintenance of gas gathering, transmission, and distribution piping systems).

The CPSI activities are considered important activities that PG&E will continue to undertake during the first few years of HCP implementation; for the purposes of the proposed HCP and this EA, they are, however, considered routine O&M activities. The gas pipeline system will be inspected and field tested, and at-risk damaged pipeline segments will be replaced. Although much of PG&E’s work would be in urban areas, some work would be in natural vegetation and in agricultural areas that provide habitat for Covered Species. Pipeline replacement segments are estimated to typically be 4 to 8 miles long; however, some segments may be much shorter. Table 2-4 lists typical PG&E maintenance activities. The letters and numbers in the table (e.g., G1, G2, E1, E2) are keyed to the designations provided in Chapter 3 of the Draft HCP.

Table 2-4. Typical Community Pipeline Safety Initiative Activities

<table>
<thead>
<tr>
<th>Natural Gas System</th>
</tr>
</thead>
<tbody>
<tr>
<td>G16. CPSI—Existing pipeline replacement</td>
</tr>
<tr>
<td>G17. CPSI—Valve replacement or automation</td>
</tr>
<tr>
<td>G18. CPSI—Hydrostatic testing</td>
</tr>
</tbody>
</table>

Other Covered Activities include biological surveys that might be required for Covered Activities, such as biological surveys for Covered Species in Hot Zones [Hot Zones are defined below in section 2.2.2.6] or for large activities. Individuals conducting surveys would have the qualifications specified in Service survey guidelines or as otherwise approved by Service. For surveys that require physical capture and immediate release of Covered Species, such as California tiger salamander, California red-legged frog, and Alameda whipsnake, a qualified and Service-approved biologist will be used and covered under this permit. Biologists may also conduct surveys for Covered Species on lands being
considered for purchase to provide mitigation for effects on Covered Species. Although mitigation surveys may not require handling of individuals, incidental take of Covered Species may result from vehicle strikes. Take resulting from such surveys, consistent with HCP, would be covered by the ITP.

PG&E will have an ongoing obligation to manage mitigation lands when it holds title in fee. In the course of conducting standard maintenance and monitoring under a Service-approved management plan, take of a Covered Species could occur. Covered Activities would include management activities (e.g., fencing, surveying, conducting pre-activity biological surveys, conducting habitat enhancements, and driving on these lands) with the potential for take, including management activities carried out by any independent land manager with whom PG&E has contracted to perform such activities on PG&E’s behalf.

### 2.2.1.4 PG&E’s Existing Environmental Programs and Practices

PG&E implements environmental programs and practices during O&M activities to minimize environmental effects. An overview of these programs is provided in the Draft HCP (Appendix A), and applicable aspects of these programs are described in the resource sections in Chapter 3 of this EA. In addition, a detailed summary of each of these programs is provided in Appendix B of this EA. PG&E staff and contractors participate in environmental awareness trainings and maintain an up-to-date understanding of the requirements of the programs and measures that must be implemented for PG&E activities. PG&E has established regional programs and practices for the following resource areas:

- land use and planning
- visual resources
- biological resources
- geology and soils
- water quality protection
- cultural resources
- transportation and circulation
- noise and vibration
- air quality
- hazardous materials
- environmental justice

### 2.2.2 Conservation Strategy

The conservation strategy consists of the following mechanisms to avoid, minimize, and mitigate the impact of O&M activities that result in take of Covered Species and their habitats:

- annual HCP training for staff and third-party contractors conducting Covered Activities described in the HCP;
- an environmental review, planning, and screening process aimed at tracking and reporting activities;
- biological surveys and monitoring;
implementation of AMMs and vegetation management BMPs;
onsite restoration; and
mitigation for unavoidable effects.

For additional information, see the draft HCP in Appendix A.

Five key principles guide the conservation strategy, as follows:

- avoiding and minimizing effects by a thorough review of Covered Activities via environmental impact review, planning, and screening;
- avoiding effects on habitat (i.e., implementing AMMs and BMPs), which is preferable to mitigating or preserving habitat offsite;
- preserving lands for Covered Species with high-quality habitat or of high conservation value to build on other local and regional conservation efforts;
- preserving large, contiguous areas of habitat rather than a larger number of small areas; and
- protecting and managing habitat mitigation in perpetuity.

The primary objective of the strategy is to avoid, minimize, and mitigate effects on species and habitat in the Plan Area. Other principles of the strategy include acquiring larger, high-value mitigation parcels contiguous to protected areas and other non-protected areas of suitable habitat, and seeking strategic partnerships with local conservation organizations that are actively involved in habitat enhancement and restoration with the goal of species conservation or recovery. PG&E will provide habitat mitigation lands either in advance or at the time of Covered Activity impacts over the permit term.

### 2.2.2.1 Annual HCP Training

PG&E will implement an annual environmental awareness training program for staff who conduct or supervise Covered Activities performed under the HCP. PG&E will provide the training both in person and/or on-line so staff can review it at any time. PG&E will train contractors, provide “train the trainer” seminars to expand delivery of HCP compliance information, and supply all training materials to these contractors. PG&E holds its contractors responsible for complying with all applicable environmental laws and regulations as well as for implementing PG&E’s environmental protection measures. Training will include an overview of the HCP, the importance of compliance with the HCP and all environmental laws, and a summary of all AMMs and BMPs outlined in the HCP. A qualified professional (e.g., land planner, biologist, or HCP administrator) will lead the training on Covered Species and provide specific information regarding sensitive species and their habitats. The trainer will identify measures that apply when working in sensitive habitat, and AMMs and BMPs to avoid and minimize the potential for disturbance of Covered Species and other sensitive biological resources. PG&E will record the names of staff members and contractors who attend the annual training to ensure that they complete training requirements.
2.2.2.2 Environmental Review, Planning, and Screening Process

PG&E conducts early planning and review of activities to avoid or minimize impacts on protected species and habitat. To avoid and minimize the impacts of its activities, PG&E often redesigns or reconfigures construction plans in consultation with PG&E biologists and land planners by taking the following actions:

- adjusting or changing access routes;
- relocating or modifying work areas;
- minimizing the size of work sites;
- modifying work practices; and
- adjusting or changing work schedules.

2.2.2.3 Purpose and Application of Habitat Models

Consistent with other regional habitat conservation plans in the Bay Area, PG&E used a habitat model to develop its HCP as a means of establishing sensitive species occurrence information and habitat suitability. Habitat models use existing commercial data and biological information to assess the likelihood that a Covered Species or its habitat is present at a particular location. PG&E biologists and land planners will review the modeled habitat information in the company’s geographic information system (GIS) to assess whether a Covered Activity falls within or close to modeled habitat, identify the type of modeled habitat that will be affected, and identify the location of Hot Zones and Map Book zones. [Hot Zones and Map Book zones are defined below in sections 2.2.2.6 and 2.2.2.7, respectively] The type of modeled habitat that will be affected and the potential impacts on Map Book zones or Hot Zones help inform the land planner or biologist on how to prescribe the appropriate AMMs or BMPs and PG&E and the Service regarding what type of habitat requires mitigation.

The modeled habitat will be used to determine the amount and type of mitigation required to offset impacts resulting from Covered Activities. PG&E used impact estimates (see Table 4-1, Chapter 4 of the draft HCP in Appendix A of this EA) to develop its conservation strategy for activities generally considered “small” (affecting less than 0.1 acre) and those considered medium or large (affecting more than 0.1 acre). Small activities for which PG&E will use estimated effects are G3a (fencing), G3b, G5, G6, G7, G8, and E5, E6a, E6b, E7, E8b, E9b, E10b, E10c, E11a, E11b, and E15. Temporary or permanent effects from these small activities will not be restored in the field because the effects will be extremely small and compensatory mitigation will be provided for most of these activities. Additionally, PG&E will periodically validate the restoration progress from a subset of these small activities to ensure that average on-the-ground effects occur as estimated and that habitat effects do not exceed estimates (e.g., temporary effects do not become permanent effects).

For Covered Activities affecting more than 0.1 acre, PG&E land planners and biologists will review and use the modeled habitat information to plan and prepare projects that require longer lead times, planning, and coordination. For these activities, PG&E will use actual, on-the-ground effects as measured in the field by biologists and land planners to determine the extent of permanent or temporary effects on habitat. Activities where actual effects will be confirmed are G3a (Ergon mats), G9, G10, G11, G12, G13a, G14, G15, G16, G17, G18, E9a, E10d, E12, E13, and E14. Effects from these activities will then be used to calculate required mitigation. Activities G1, G2, G4, G13b, E1,
E2, E3, E4, E8a, E10a, E10e, and E10f are not expected to result in ground disturbance and are therefore are unlikely to cause loss of Covered Species habitat.

### 2.2.2.4 Exceptions to the Use of Models

PG&E’s environmental review, planning, and screening processes will evaluate potential habitat effects based on the species’ modeled habitat and the site-specific location of the Covered Activity. In the following three cases, PG&E may determine that the habitat models are inaccurate at a fine scale:

1. The area is not habitat (e.g., the area contains urban lands, including landscaped areas that would not be considered habitat).

2. The area is no longer habitat (e.g., completed development projects have removed natural vegetation from a site) as demonstrated through aerial photographs or a site visit (e.g., contains areas adjacent to roads or urban land-cover without burrows, or certain agricultural crops that are removed from adjacent habitat).

3. The area has other site-specific land use changes that make it unsuitable as demonstrated through reports, survey data, or other site-specific information (e.g., the area has been graded or otherwise substantially altered).

In these instances, PG&E will not implement AMMs, BMPs, or provide mitigation. Conversely, PG&E’s land planners and biologists may detect suitable habitat where the habitat models indicate lack of habitat at a fine scale.

### 2.2.2.5 Updates to the Habitat Models

PG&E will review the habitat models for wildlife species once every 10 years or more frequently as habitat model data become available. For example, if the current land cover (modeled habitat) datasets are updated, PG&E, with the concurrence of Service, will update the modeled habitat data layers and provide the data layers to Service. When PG&E receives better wetland data for Santa Rosa Plain and Solano County, it will integrate this dataset into the models. Similarly, Service may recommend integration of additional information into the habitat models. PG&E will continue to subscribe to RareFind/California Natural Diversity Database (CNDDB) and integrate CNDDB updates, or any of the other referenced data, into its MapGuide GIS system twice a year to augment the habitat models.

### 2.2.2.6 Hot Zones

To refine the model-based approach, PG&E developed “hot zones” for select covered wildlife species that occur only within specific and localized habitat types. A Hot Zone is defined as an area containing a known localized population of covered wildlife species with a small and well-defined range where the species would most likely be affected should Covered Activities be implemented there. PG&E created Hot Zones for the following habitats and species. Work in these areas requires implementation of Hot Zone AMMs.
- **Riparian Hot Zone**: California freshwater shrimp (occupied streams identified in the Service recovery plan and based on information provided by discussions with the CDFW);

- **Vernal pool Hot Zone**: Longhorn fairy shrimp (critical habitat), Conservancy fairy shrimp (critical habitat);

- **Butterfly Hot Zone**: Mission blue butterfly and Lange’s metalmark butterfly (Antioch Dunes), and Bay checkerspot butterfly and San Bruno elfin butterfly (Coyote Ridge, Tulare Hill, and San Bruno Mountain);

- **Amphibian Hot Zone**: California tiger salamander (in the Santa Rosa Plain, several key areas in Solano County, and on lands owned by, and in the vicinity of, Stanford University);

- **Reptile Hot Zone**: San Francisco garter snake (near San Francisco International Airport and Crystal Springs Reservoir, and several other locations on the San Francisco Peninsula [generally known as “the Peninsula,” which does not include the city of San Francisco]); and

- **Marsh Hot Zone**: Ridgway’s rail and salt marsh harvest mouse (bay fringe marsh habitats and salt ponds).

### 2.2.2.7 Map Book Zones

A Map Book zone is an area with extant, known, or recently confirmed plant occurrences, as determined by a series of one-time botanical surveys, that warrants implementation of unique AMMs. PG&E conducted these botanical surveys of occupied and potentially occupied areas using CNDDB records of covered plant species. Biologists developed AMMs for each Map Book zone. PG&E biologists reviewed aerial photos of these locations to eliminate sites where the land use has changed, visited reference sites, and conducted seasonally appropriate botanical surveys within PG&E’s ROW. Surveys included suitable habitat within 300 feet of CNDDB occurrences with an accuracy class of 1, 2, or 3, and suitable habitat within 1 mile of CNDDB occurrences with an accuracy class of 4. These maps will help PG&E avoid or minimize ground-disturbing impacts in occupied habitat for covered plant species. Future additional data obtained through surveys conducted for larger activities will be incorporated into the Map Book zones.

### 2.2.2.8 Environmental Review, Planning, and Screening Processes by Line of Business

PG&E’s environmental review, planning, and screening process varies by the specific line of business, with gas and electric distribution activities typically requiring less intensive review and planning than gas or electric transmission projects and activities. Currently, there are five work streams for reviewing and assessing environmental impacts from PG&E projects: automated environmental assessment (AEA); gas transmission; electric transmission; electrical and gas distribution; and vegetation management. The respective environmental screening groups will be responsible for maintaining compliance with the HCP. In general, each of the environmental review groups will do the following for its respective line of business.
- screen covered and noncovered activities (i.e., planners and biologists review all types of projects, including new projects that are not covered under this HCP).

- apply AMMs, Field Protocols, and other environmental protection measures (e.g., conditions from other state or federal permits).

- prepare a release-to-construction memorandum, which describes a quality assurance and environmental compliance process, to confirm that environmental screening is complete and all compliance requirements are documented for the work crews to follow.

- determine whether mitigation of effects will be based on estimates or on results from an on-the-ground assessment of effects.

- track temporary and permanent effects as well as pertinent project information.

- report Covered Activity data to the HCP administrator for inclusion in the HCP annual report.

For most projects, a team of land planners, biologists, cultural resource specialists, and environmental field specialists will first review, plan, and screen Covered Activities. After the completion of surveys, studies, and analyses, the appropriate natural resource protection measures (including AMMs) will be documented in a release-to-construction memorandum. PG&E will also use an AEA screening tool to screen many of the covered small electric (e.g., pole replacements) and small gas activities. Projects undergoing AEA will be automatically screened using a variety of data layers (e.g., waterways, CNDDB, serpentine soils, conservation easements, critical habitat, known or discovered kit fox dens, levees, protected lands, anadromous fish streams, and vernal pools) and then released to construction if no data layers are flagged for manual review. If any AEA data layers are flagged for manual review, the activity will be evaluated further by a land planner or biologist before being released to construction. Modeled habitat, Hot Zones, and Map Book zones will be integrated into the AEA screening process and be flagged for review if a Covered Activity falls within any of these areas. A team of land planners, biologists, foresters, arborists, and tree inspectors will conduct environmental review of covered vegetation management activities before work in the field commences.

### 2.2.2.9 Environmental Review and Screening for Covered Plants

PG&E’s approach to maintaining Act compliance for listed plant species focuses on avoidance and minimization. PG&E strives to avoid the direct loss of individuals of covered plant species, but some loss will occur during O&M activities, which will be subject to mitigation in accordance with the HCP. Map Book zones provide the foundation for the implementation of AMMs for plants.

#### Small Activities within Map Book Zones

For small activities within a Map Book zone, PG&E will implement the AMMs. If the impact is minimized but not avoided, PG&E will assume the activity results in a permanent impact. Similarly, if it is not feasible to implement an AMM, PG&E will assume the activity results in a permanent impact. PG&E will mitigate these effects based on the average area of disturbance for that type of small activity. PG&E will not conduct additional surveys or monitoring of these locations because
the area will have already been surveyed during the correct seasonal window and the cost of additional surveys or monitoring typically exceeds the cost of providing mitigation. However, there may be instances where PG&E performs subsequent surveys to determine if effects are temporary or permanent. Monitoring would only occur for small activities if PG&E finds that these activities result in disturbances that are larger than calculated, or if surveys and monitoring are needed to protect the habitat of the species.

**Large Activities within Map Book Zones**

For large activities within Map Book zones, PG&E will use the Map Book zones data layers to assist in its overall environmental review and screening process. In some instances, additional site-specific review or surveys will be conducted to confirm the location of existing plant populations in relation to work areas. These reviews and surveys will help inform decisions regarding the presence or absence of habitat and if AMMs need to be assigned. Based on the Map Book zone and additional site evaluation, PG&E will implement the appropriate AMM. If the impact cannot be avoided, PG&E will prepare a restoration plan for Service to review and approve. PG&E’s implementation of the restoration plan and subsequent monitoring will reveal if the effect is permanent or temporary. PG&E will provide mitigation for impacts based on the number of plants affected or based on the amount of habitat affected. PG&E will monitor restoration sites to determine the success of the restoration effort. For some activities, such as emergency activities, work may occur in a Map Book zone without additional evaluation or AMMs. In these instances, PG&E will assume that effects are permanent.

**Large Activities Outside Map Book Zones**

For large activities outside of Map Book zones, PG&E will screen and evaluate areas outside of Map Book zone data layers and may discover additional CNDDB occurrences or suitable habitat. If a planner or biologist believes that a Covered Species might be present based on suitable habitat or distance from a known location, the planner or biologist will conduct additional analyses and possibly prescribe a survey. If the site has suitable habitat and the survey cannot be conducted during the correct seasonal window, the work will be conducted consistent with the AMMs to minimize effects; however, PG&E will assume the species is present and mitigate accordingly based on acreage of habitat disturbed. If the survey is conducted in the correct seasonal window, the survey will confirm either the presence or absence of the species. If the species is present, PG&E will select the appropriate AMM. If the impact cannot be avoided or if an annual plant species (for example) does not recover, PG&E will prepare a restoration plan for Service to review and approve. PG&E will implement the restoration plan, and subsequent monitoring will reveal if the restoration is successful and if the impact is permanent or temporary. Mitigation, if any, will be based on the results of the monitoring effort.

2.2.2.10 Biological Surveys and Monitoring

Biological surveys and monitoring will be limited for most, if not all, small Covered Activities because habitat models will drive the assessment of potential effects and the required mitigation. However, for larger gas activities (G9, G10, G11, G12, G13a, G14, G15, G16, G17, and G18) and electric activities (E9a, E10d, E12, E13 and E14), PG&E will follow its existing work streams, in
which a team of planners and biologists will conduct site assessments to position laydown areas, access routes, and exclusion zones. Also for these larger activities, PG&E will employ biologists to evaluate activities in Hot Zones and Map Book zones and determine the need for additional surveys or monitoring.

Biological monitors may prescribe site-specific AMMs and will have the authority to stop work if a Covered Species is observed or if work is conducted in a way that may take a Covered Species. Biological monitors will assist with the identification and implementation of exclusion zones, work zones, and access routes. The biological monitor will ensure that all construction employees adhere to the species- and site-specific AMMs and BMPs.

### 2.2.2.11 Avoidance and Minimization Measures and Vegetation Management Best Management Practices

PG&E will avoid and minimize the effects associated with Covered Activities through the use of Field Protocols and AMMs (Hot Zone AMMs, species-specific AMMs, and covered plant AMMs) (see Table 5-1 in Chapter 5 of the draft HCP in Appendix A of this EA) and vegetation management BMPs (Table 5-2 in Chapter 5 of the draft HCP in Appendix A).

Field Protocols are PG&E’s general measures designed to avoid or minimize potential effects on biological resources and Covered Species. These measures provide clear and consistent guidance to address a broad range of issues, including training, access, worksite management, erosion control, and natural resource protection. PG&E trains crews and contractors in these measures, and they are required to implement the measures during their daily work.

PG&E will employ a suite of AMMs to avoid and minimize the effects on Covered Species and habitat resulting from Covered Activities. These AMMs are specific to Hot Zones and covered wildlife and plant species. Hot Zone AMMs ensure that effects on species are avoided or minimized; each measure focuses on a particular species or suite of species and will be applied when PG&E undertakes Covered Activities in a specific area.

### 2.2.2.12 Onsite Restoration

Site restoration is contingent on whether Covered Activities would affect less than 0.1 acre or more than 0.1 acre. For the majority of small Covered Activities that are implemented on a routine, daily basis and that affect less than 0.1 acre, PG&E would provide no site restoration. For larger Covered Activities affecting more than 0.1 acre, site restoration could include soil compaction, recontouring excavated areas to follow natural contours, reseeding areas cleared of plant cover, and planting trees or other vegetation. While the majority of areas that are affected by small Covered Activities would not undergo any site restoration, compensatory mitigation for both temporary and permanent effects will be provided by PG&E.

With a few exceptions, Covered Activities affecting more than 0.1 acre will have some level of restoration to return a site to pre-project conditions. These areas will be restored within 12 months of the completion of construction. Site restoration will not require any plans or approvals unless
covered plants have been affected. If covered plants are affected, PG&E will be required to prepare a site-specific restoration plan that typically includes a monitoring component.

PG&E will infrequently directly affect a vernal pool and will need a permit under Section 404 or 401 of the CWA. PG&E will restore the vernal pool wetlands, which typically includes both restoration and creation of habitat as well as preservation of habitat. Habitat restoration and creation plans typically include specific detailed information on the restoration and creation design, procedures and implementation approach, performance criteria and monitoring, maintenance, contingency, and long-term management obligations. Restoration or creation of wetland habitat will be reviewed and approved by Service, as described later in the chapter. PG&E will restore wetlands it directly affects as well as provide mitigation for these effects.

2.2.2.13 Vegetation Management Best Management Practices to Reduce Environmental Impacts

In concert with PG&E’s obligations under CPUC General Order 95, environmental screening practices for vegetation management activities near electric facilities are designed to protect wildlife, groundwater, surface water, and soils while facilitating safe and reliable electric transmission operations.

2.2.2.14 Hot Zone and Map Book Zone Screening

Vegetation management activities will be screened against Hot Zones and Map Book zones. Hot Zone- or Map Book zone-specific AMMs (see Table 5-1 in Chapter 5 of the Draft HCP in Appendix A of this EA) will be implemented when a covered vegetation management activity is performed in a Hot Zone or Map Book zone, with the exception of emergency work.

2.2.2.15 Nesting Bird Management Guidance

In addition to the vegetation management BMPs (see Table 5-2 in Chapter 5 of the HCP in Appendix A), the vegetation management program follows the process and procedures outlined in PG&E’s Avian Protection Plan and associated Nesting Bird Management Plan to protect birds that nest in areas that could be affected by vegetation management activities. The process involves a systematic evaluation of nest occurrence during pre-activity biological surveys and during vegetation management work. If a vegetation management specialist identifies an active nest near a proposed work area, the specialist will prescribe measures to avoid disturbing the nest, including working the line at another time of year, maintaining a setback or buffer consistent with PG&E’s policy for managing work activities near nesting birds, or—if vegetation near the line requires emergency pruning—contacting the Avian Protection Program manager for specific guidance.

2.2.2.16 Riparian Review Standard

When reviewing riparian work, PG&E employs a vegetation management program that begins with pre-inspectors. If pre-inspectors identify the need for vegetation management within riparian vegetation or close to a creek or stream (approximately 25 feet), the pre-inspector documents the site
for riparian review. If riparian vegetation requires pruning or removal, the riparian review form includes the following information.

- location (address or latitude/longitude) of the work site
- tree work prescribed for the location (pruning or removal)
- tree species and count to be pruned or removed
- a description of the location after work is complete
- tree work history at the location
- percent slope of the location (if on a hill, bank, levee)
- surrounding vegetation type
- description of watercourse (including general information on width and speed, if applicable) and streambed composition
- understory tree shade (if the tree shades the water)

A forester or inspector will review the form for accuracy and completeness and forward it to a biologist or land planner for further review. The biologist or land planner will conduct a complete environmental review of the scheduled work. Depending on the results of the review, the work location will be (1) released for work as described with site-specific BMPs, (2) the work prescription will be modified and released for work with site-specific BMPs, or (3) the work will be rescheduled if other notifications or permits are required. Vegetation management staff will prescribe BMPs based on the site needs prior to beginning work. Proposed BMPs are described in Table 5-2 of the Draft HCP in Appendix A of this EA.

- BMPs 1–23 are general BMPs implemented for all covered vegetation management activities.
- BMPs 24–30 are implemented for covered vegetation management activities within a wetland, ditch, pond, or stream with a defined stream channel or banks.
- BMPs 31–49 pertain to the use of herbicides (not a Covered Activity).
- BMPs 50–53 are implemented during electric distribution vegetation removal and transmission ROW-clearing activities (activities E10a and E10d, respectively).
- BMPs 54–62 are implemented during electric transmission ROW mechanical clearing operations (activity E10d).

### 2.2.2.17 Habitat Mitigation

PG&E will fund the acquisition, enhancement, management, and restoration of habitat by qualified third parties to mitigate impacts to Covered Species in the Bay Area. Proposed mitigation is subject to Service review and approval. Habitat preservation will be considered complete when Service approves a conservation easement, a management plan, the endowment, and the easement holder. Habitat enhancement and restoration efforts may be implemented in partnership with local or regional land trusts where land is already protected but funding or management is lacking to promote species conservation and recovery.
PG&E will provide habitat mitigation in advance of impacts on Covered Species. PG&E will base its mitigation on acreages of estimated and actual habitat losses and will adjust the timing of acquisitions based on forecasting impacts and the amount of mitigation that has previously been implemented. The majority of impacts will be temporary disturbances. PG&E will provide mitigation for both permanent and temporary impacts based upon the type of modeled habitat.

For many Covered Species, particularly broadly distributed species, most mitigation will be provided early in the permit term, with most mitigation provided 5 years, 10 years, or even 20 years in advance of impacts. For the California tiger salamander (Central California DPS), California red-legged frog, and non-core Alameda whipsnake habitat, PG&E will provide mitigation in 5-year increments in advance of impacts. For some narrowly distributed species, PG&E will provide mitigation closer to the time of anticipated impacts. However, the potential effects on certain species, such as California freshwater shrimp, may be limited when a mitigation opportunity becomes available that meets the entire mitigation obligation for the species many years in advance of potential effects.

Effects on habitat will be mitigated with equivalent or higher-value habitat, consistent with the landcover and habitat data developed for the species, as described in Chapter 2 of the Draft HCP in Appendix A of this EA. PG&E may provide habitat mitigation by selecting one or more of the following mechanisms:

- purchase of high-quality habitat;
- purchase or placement of conservation easements on land appropriate for maintaining Covered Species corridors;
- purchase of credits from approved mitigation or conservation banks;
- partnerships with and/or contributions to existing conservation planning and recovery efforts;
- placement of conservation easements on existing PG&E lands;
- implementation of and contributions to recovery plan strategies; and
- habitat enhancement and restoration on lands already protected.

### 2.2.2.18 Permanent Effects

PG&E will mitigate for permanent effects on modeled habitat for Covered Species at a 3:1 ratio (3 acres of mitigation for every 1 acre permanently affected). Permanent effects typically result from the construction of new facilities. As previously described, O&M activities will result in fewer permanent effects than temporary effects. PG&E will provide mitigation for permanent effects on a specific location only once during the duration of the HCP even if subsequent effects occur in the same location.

### 2.2.2.19 Temporary Effects

The majority of effects from O&M activities result from disturbances that are temporary. PG&E will offset temporary effects on Covered Species by mitigating at the following ratios:

- For effects on all covered invertebrates as well as on California tiger salamander (Sonoma County DPS), San Francisco garter snake, Ridgway’s rail, and salt marsh harvest mouse, a mitigation ratio of 1:1 will be used to mitigate for temporary effects on modeled habitat for these species.
Temporary effects on breeding habitat for California tiger salamander (both Central California and Sonoma County DPSs) and California red-legged frog will be mitigated at a 1:1 ratio.

Temporary effects within all critical habitat units for all Covered Species will be mitigated at a 1:1 ratio.

Temporary effects on modeled upland habitat for California tiger salamander (Central California DPS) will be mitigated at a ratio of 0.5:1 when mitigation is provided in 5-year increments in advance of effects. For the first 5 years, mitigation that is not in place prior to any impact will be at a 1:1 ratio.

Temporary effects on modeled upland (dispersal) habitat for California red-legged frog will be mitigated at a ratio of 0.5:1 when mitigation is provided in 5-year increments in advance of effects. For the first 5 years, mitigation that is not in place prior to any impact will be at a 1:1 ratio.

Temporary effects on non-core (movement or dispersal) habitat for Alameda whipsnake will be mitigated at a ratio of 0.5:1 when mitigation is provided in advance of effects. For the first 5 years, mitigation that is not in place prior to any impact will be at a 1:1 ratio.

A mitigation ratio of 1:1 will be used to mitigate temporary effects on Alameda whipsnake core or perimeter core habitat.

Temporary effects on low-quality/use modeled habitat for San Joaquin kit fox will be mitigated at a ratio of 0.5:1 when mitigation is provided in advance of the impact. For the first 5 years, mitigation that is not in place prior to any impact will be at a 1:1 ratio.

A mitigation ratio of 1:1 will be used for temporary effects on core modeled habitat for San Joaquin kit fox.

PG&E intends to acquire mitigation in advance of effects to ensure that the biological goals and objectives are met; however, should PG&E be unable to fulfill its mitigation commitments in advance of effects on California tiger salamander (Central California DPS), California red-legged frog, and Alameda whipsnake (non-core habitats), the mitigation ratio for these species will increase to 1:1 until mitigation again becomes provided in advance of effects.

2.2.2.20 Types of Mitigation

PG&E may use a variety of approaches to fulfill its mitigation obligation. These approaches are described below.

Fee Title

PG&E may purchase lands in fee title. Such lands will be protected through a conservation easement or equivalent site protection mechanism approved by Service, and will include a management plan...
and associated endowment. In most cases, PG&E will not own or manage the mitigation sites, but will have qualified land conservation organizations hold title or easement and manage the property.

**Conservation Easements**

PG&E may purchase conservation easements from willing sellers to be used as mitigation. A management plan and associated endowment will also be included. In most cases, PG&E will work with a qualified land conservation organization to secure conservation easements on high-quality habitat. PG&E also owns several parcels of land that have high conservation values and that may be suitable for mitigation.

**Conservation Partnerships**

PG&E may partner with conservation organizations to further regional conservation efforts. In the Bay Area, many local, state, and federal government organizations and nonprofit organizations (including but not limited to land trusts and special districts) have species or habitat conservation as part of their mission. PG&E funds contributed to land acquisitions and management will serve as mitigation. Further, several regional, multiple-species HCPs/Natural Community Conservation Plans (NCCPs) and conservation strategies have been adopted in the Bay Area (see Table 5-6 of the draft HCP in Appendix A of this EA). PG&E could contribute to these efforts by making other financial contributions or in-kind services to these plans that benefit Covered Species. These types of financial contributions have the advantage of building on species-focused conservation efforts that are part of a broad regional conservation planning effort.

**Financial and In-Kind Contribution to Local Land Managers**

Many federal, state, and local land managers, including the Golden Gate National Recreation Area (GGNRA), national wildlife refuges, state parks and wildlife areas, park districts, and nonprofit organizations (e.g., The Nature Conservancy, Mid-Peninsula Open Space District) have missions that include the protection and conservation of endangered species. PG&E could contribute to these efforts by making financial or in-kind service contributions to these organizations if these contributions are shown to have direct benefits to Covered Species. PG&E’s contributions would be subject to Service review and approval. This type of mitigation will have a discrete timeline for implementation of the restoration project, will result in restoration or habitat enhancement for the Covered Species, and will demonstrate that PG&E’s contribution resulted in a measurable benefit to the species that meets PGE’s mitigation needs.

**Financial and In-Kind Contribution to Restoration Efforts**

Extensive restoration activities by various agencies are underway in the North Bay and South Bay. PG&E could make financial or in-kind contributions to restoration efforts to benefit Covered Species; the specific financial contribution and acreage of benefit would need to be identified and agreed to by the Service. PG&E contributed to the first phase of the South Bay Restoration Project by upgrading the footings of facilities in Alviso Pond A-6 in South San Francisco Bay to facilitate the breaching and restoration of the pond. This action was analyzed in the biological opinion for the South Bay Salt Pond Restoration Project, and the project itself was analyzed in the *South Bay Salt Pond Restoration Project Final Environmental Impact Statement/Report* (EDAW et al. 2007). PG&E subsequently executed a mitigation credit agreement with Service that provided 1 acre of credit available initially.
and then PG&E received the additional 4 acres of mitigation credit when the pond was breached in 2010. These credits can be used solely by PG&E and can be used for Covered Activities under the Bay Area O&M HCP.

**Conservation/Mitigation Banks**

PG&E may purchase credits from a conservation or mitigation bank with the approval of Service. Conservation/mitigation bank credits are available to meet some of PG&E’s needs, but currently there are no credits for some species. However, additional conservation/mitigation banks will likely be created and approved over the next 30 years, expanding the number of sensitive species for which credits would be available. Upon Service approval of the bank, PG&E may use these banks to mitigate for its impacts if credits are available.

**Habitat Enhancement and Restoration**

PG&E may consider enhancement or restoration projects to serve as mitigation. This approach will be implemented in instances where other mitigation approaches are infeasible or very difficult to achieve. For example, there may be very limited or no opportunities to purchase fee title lands or easements for some wildlife species, such as Lange’s metalmark butterfly, San Bruno elfin butterfly, Callippe silverspot butterfly, and most covered plants. In these instances, PG&E may fund specific enhancement and restoration projects to benefit those species. Examples of habitat enhancement or restoration efforts to promote recovery include planting host plants for listed butterflies and relocating or transplanting covered plants. In some instances, other restoration enhancement and restoration efforts for more common species may also serve as mitigation; examples include dredging ponds to make them more suitable for California red-legged frog, creating new aquatic habitat, or contributing to bullfrog eradication efforts.

### 2.2.3 Habitat Conservation Plan Implementation

Implementation of the HCP will begin with PG&E’s receipt of the Act Section 10(a)(1)(B) permit. PG&E’s Environmental Management Group will have the following responsibilities:

- serve as the interface between Service and HCP team to resolve program issues;
- supervise staff to ensure successful implementation of the HCP program;
- develop performance metrics and reports to determine the status of HCP implementation;
- work with the HCP team to identify, document, and resolve noncompliance issues; and
- support and lead HCP process improvements with the line of business.

PG&E’s Environmental Management Group will administer the HCP. Table 2-5 summarizes specific responsibilities.
### Table 2-5. Responsibilities for Implementing the HCP

<table>
<thead>
<tr>
<th>Position</th>
<th>Responsibility</th>
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| HCP administrator               | • Point of contact for Service for HCP-Covered Activity issues.  
• Oversee the development and delivery of HCP training materials for PG&E staff and contractors.  
• Track and record data to implement conservation strategy.  
• Track and record incidental take information.  
• Coordinate validation studies for compliance with the HCP.  
• Maintain monitoring and survey data reports.  
• Prepare annual reports.  
• Evaluate the effectiveness of the program, including the effectiveness of the AMMs.  
• Make recommendations on adaptive management of mitigation lands.  
• Make recommendations to ensure that the HCP’s biological goals and objectives are being met. |
| Land planning analysts (HCP analysts) | • Collect data on Covered Activities from land planners, biologists, and automated systems.  
• Collect and compile monitoring reports and survey data from land planners and biologists.  
• Prepare monthly and quarterly reports and survey data from land planners and biologists. |
| Land planners                   | • Coordinate with HCP administrator and HCP analysts to identify and prescribe AMMs and report on specific activities and their locations.  
• Report on activity effects and mitigation needs.  
• Ensure Covered Activities are planned and designed in a way to avoid and minimize effects consistent with the HCP.  
• Consult appropriate resource experts in planning and designing activities.  
• Obtain appropriate permits and authorizations before starting activities.  
• Ensure that activities are compliant with any and all permits and authorizations. |
| Biologists                      | • Report on activity effects.  
• Conduct environmental training and tailboard meetings with crews.  
• Conduct biological surveys outlined in the HCP.  
• Prescribe AMMs.  
• Serve as the biological monitor for Covered Activities.  
• Respond to reports of death or injury of a listed wildlife species.  
• Relocate Covered Species out of harm’s way at construction sites when necessary and under the appropriate authorizations from the Service.  
• Develop site restoration plans to address effects on listed plant species. |
| Field crews                     | • Follow pertinent vegetation management BMPs, field protocols, and AMMs directed by the land planner, biologist, HCP administrator, or HCP analyst.  
• Work closely with biologists to ensure compliance with AMMs during their day-to-day work activities. |
2.3 Alternative 2: No Action

Under Alternative 2: No Action, PG&E would apply for individual take permits for each individual activity as needed to carry out O&M activities that would result in the take of federally listed species. A regional HCP would not be prepared, as described for the Proposed Action, and the need for consultation with the Service would be determined on a project-by-project basis. O&M activities would continue to be implemented as they currently are, following PG&E’s environmental programs and practices and in compliance with any permits that are necessary for implementation. Following is a summary of PG&E’s existing programs (additional details are contained in Appendix B):

- **Land Use and Planning Practices.** PG&E employs land planners to ensure that projects are built in compliance with applicable state and federal laws and regulations.

- **Visual Resources Practices.** As part of the standard environmental review process, PG&E environmental staff evaluates potential visual impacts when changes in heights or appearance of utility infrastructure could affect the aesthetics of a given facility, as well as the local environment where the facility is located.

- **Biological Resources Program.** PG&E has developed and implemented procedures that are designed to conserve biological resources and protect sensitive species in the course of performing work related to generating and delivering energy.

- **Geology and Soils Program.** PG&E evaluates the geology and soils at worksites where new or replacement facilities are constructed.

- **Water Quality Protection Program.** PG&E's water quality protection program consists of promotion and dissemination of water quality educational materials; onsite tailboard briefings for jobs requiring environmental oversight; BMPs to avoid and minimize effects to water quality; and monitoring and reporting of environmental impacts associated with construction or operational activities.

- **Cultural Resources Program.** PG&E has developed standard practices and implemented procedures that are designed to conserve cultural resources that occur throughout PG&E’s service territory.

- **Transportation and Circulation Practices.** PG&E implements a variety of traffic control measures and commitments for all O&M and construction activities to ensure that they do not unduly impede traffic flow or affect emergency response.

- **Noise and Vibration Practices.** For all activities, PG&E makes every feasible effort to comply with local noise and vibration standards.

- **Air Quality Program.** PG&E complies with all applicable federal and state air quality regulations. The company’s air quality program consists of promotion and dissemination of air quality educational materials via training sessions and on job sites as necessary and implementation of BMPs to avoid and minimize air quality effects.
- **Hazardous Materials Program.** PG&E complies with applicable state and federal laws, regulations, and requirements pertaining to hazardous materials and hazardous wastes.

- **Environmental Justice Program.** Environmental justice refers to the concept that adverse impacts of both utility and agency decisions should not disproportionately affect disadvantaged communities. Programs consist of educational training, disseminating educational materials to PG&E staff, identifying concerns, and conducting outreach to affected interest groups.

Minor new activities and pipeline replacement and modernization would be subject to additional evaluations and subsequent permitting, as appropriate to comply with existing laws.

Under the No Action alternative, PG&E would continue to implement activities and complying with the Act for individual O&M activities by preparing individual project-by-project HCPs, or through individual Act Section 7 consultations when there is a nexus (e.g., CWA Section 404). The large volume of activities implemented by PG&E makes project-by-project permitting logistically challenging and difficult to implement. Operations activities typically include inspecting, monitoring, testing, and operating valves, enclosures, switches, and other components at existing facilities and in existing ROWs. Maintenance activities include repairing and replacing facilities, structures, and access roads. This work includes reconductoring electric transmission distribution projects and gas pipeline replacement. This work also includes emergency repair and replacement and vegetation management, including tree pruning and removal. A list of O&M AMMs is included in Tables 5-1 and 5-2 of the draft HCP in Appendix A of this EA.

Moreover, this alternative could result in inconsistent company-wide policies and practices and would not include an overall conservation strategy for all the Covered Species. Individual project-by-project compliance with the Act would likely include a smaller number of federally listed species and would not include a regional or holistic approach to conservation. Mitigation associated with federally listed species and individual project compliance would be expected to result in less conservation and benefit fewer species than a larger conservation strategy under the Proposed Action Alternative. This piecemeal approach could be a potential impediment to the efficient and timely maintenance of PG&E facilities, needed system repairs, minor expansion, and improvements. It also precludes the ability to capture the efficiencies of a programmatic compliance system that provides benefits such as coordinated avoidance and minimization measures and mitigation actions that, in combination, result in enhanced conservation practices.

### 2.4 Alternatives Eliminated from Further Consideration

During the alternatives development process, the Service and PG&E pursued a variety of avenues to meet the identified purpose and need of providing for conservation of potentially affected species while supporting an effective and fiscally responsible O&M program. During the screening process, the Service determined that the alternatives listed below would not be considered and they were eliminated from further analysis because they did not meet the purpose and need of the Proposed Action and would not reduce environmental effects:

- changed O&M practices
- large maintenance projects
2.4.1 Changed Practices

Changed practices considered in this alternative involve changing construction activities, modifying activities, restricting activities seasonally, and conducting pre-activity biological surveys for a majority of activities. PG&E currently modifies its practices on a project-by-project basis through its existing environmental review and screening processes. A total reduction of effects is often difficult to achieve due to the public safety, regulatory, and site-specific requirements that are necessary to complete O&M work. The Service determined that changed practices would likely be ineffective at reducing take and could introduce new and inconsistent work practices into PG&E’s operations.

PG&E’s approach to construction has evolved based on the regulatory requirements for public safety and environmental compliance. PG&E eliminated the prospect of changing its construction practices because it has a legal and public safety obligation to maintain its facilities and because AMMs are already implemented on a project-by-project basis.

The Service determined that modifying activities to completely avoid effects is also impractical because O&M activities are needed to maintain, repair, or upgrade existing facilities to maintain public safety and comply with CPUC regulations. Some activities could result in a small amount of take, but modifying thousands of activities, or even a portion of these activities, might not substantially reduce the overall loss of habitat or take of listed species. Regulatory, legal, and logistical considerations such as North American Electric Reliability Corporation (NERC) standards and requirements to maintain conductor clearances and reliability also limit PG&E’s ability to modify some activities. NERC reliability standards and requirements, as an example, limit PG&E’s ability to restrict some Covered Activities seasonally as some repairs must be corrected within 12 months from the time a deficiency is reported.

Seasonally restricting Covered Activities beyond what is proposed in the AMMs would be logistically and economically prohibitive because it would require that PG&E forego maintenance when the maintenance activity is needed, which would compromise PG&E’s abilities to make necessary inspections, repairs, and upgrades, potentially leading to emergency repairs and unnecessary outages. Restricting Covered Activities beyond what is proposed in the AMMs to a few months per year, typically outside of the rainy/wet and nesting bird times of year, could limit PG&E’s ability to operate and maintain its infrastructure, leading to interruptions in service and potentially reduced public safety.

The Service also evaluated the possibility of conducting pre-activity biological surveys for most O&M Covered Activities. Conducting such surveys for a majority of Covered Activities would be cost-prohibitive and would not appreciably reduce effects on species. Accordingly, the Service determined that this alternative does not meet the purpose and need of the Proposed Action and this alternative was rejected and was eliminated from further consideration.
2.4.2 Large Maintenance Projects

This alternative proposed to include only PG&E’s larger maintenance projects that have historically needed take coverage as well as coordination with multiple stakeholders; these projects are often considered construction projects. These projects consist of most large gas transmission work and large electric transmission work. By covering fewer activities, PG&E’s take request would be reduced, as would PG&E’s potential effects on some species, but, like for small projects, individual permits would still be required to address potential effects. However, there would still be instances when PG&E would need to take coverage for smaller projects. PG&E would continue to screen its work, and if the Service determined that one of the Covered Species could be affected, a project-specific Section 10(a)(1)(B) permit would be needed. This approach would likely result in project delays and would undermine the HCP purpose and need statement, which provides for a regional approach to complying with the Act in a timely manner to support reliable and safe utility infrastructure. Therefore, this alternative was rejected and was eliminated from further consideration.

2.4.3 Participate in Existing HCPs in the Bay Area

Over the past several years, a number of local government entities have been working to develop comprehensive habitat and multi-species habitat conservation plans within the boundaries of their respective jurisdictions. Although these plans provide for the protection and conservation of wildlife habitat and sensitive plant species, they are generally limited to providing coverage for municipal concerns of local land development and permanent loss of habitat. In contrast, PG&E’s facilities span the jurisdictional boundaries of a large number of local governments and result primarily in a temporary loss of habitat. Use of local plans could result in inconsistent company-wide policies and practices. The Service determined that this alternative would not meet the purpose and need of the Proposed Action and it has therefore been rejected and was eliminated from further consideration.
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Chapter 3. Affected Environment and Environmental Consequences

This chapter presents an overview of the affected environment and the potential environmental consequences of the Proposed Action and No Action alternatives. The following resource topics are addressed in the sections listed below:

- Section 3.1 Agricultural Resources
- Section 3.2 Air Quality and Climate Change
- Section 3.3 Biological Resources
- Section 3.4 Cultural Resources
- Section 3.5 Environmental Justice
- Section 3.6 Geology/Soils and Paleontology
- Section 3.7 Hydrology and Water Quality
- Section 3.8 Noise and Vibration
- Section 3.9 Public Health and Environmental Hazards
- Section 3.10 Visual Resources

Table 3-1 provides the rationale for including or dismissing certain resource areas from analysis in this EA. As described in Table 3-1, the following resource areas have been dismissed from analysis:

- Land Use and Planning
- Public Services
- Public Utilities
- Recreation
- Socioeconomics
- Transportation and Circulation

### Table 3-1. Resource Areas Included in or Dismissed from this EA

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<thead>
<tr>
<th>Resource Area</th>
<th>Comments/Notes</th>
<th>Determination</th>
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<tbody>
<tr>
<td>Agricultural Resources</td>
<td>Covered Activities would take place on land where PG&amp;E owns land rights in the right-of-way, has access to the land via easements, or land that is within a public right-of-way (e.g., along roads). The Covered Activities, while including gas and pipeline extensions and appurtenant facilities, would not convert agricultural lands to non-agricultural uses. While no adverse effects on agricultural lands are anticipated, the potential effect of covered actions under the HCP on agricultural resources is addressed in the EA.</td>
<td>Included in the EA.</td>
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<tr>
<td>Air Quality and Climate Change</td>
<td>Air emissions associated with the Covered Activities would be limited to dust associated with ground disturbance and periodic use of work vehicles required for the construction of minor new gas and electric facilities, to facilitate emergency repairs, and to implement compensatory mitigation and monitoring activities. These</td>
<td>Included in the EA.</td>
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Table 3-1. Resource Areas Included in or Dismissed from this EA

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<td>Biological Resources</td>
<td>This section considers the effects of the Covered Activities on various special-status species. Given the size of the covered area and diversity of habitats and species, the Service uses a programmatic approach to consider effects on biological resources.</td>
<td>Included in the EA</td>
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<tr>
<td>Cultural Resources</td>
<td>The EA considers the effects of the Proposed Action on historic and prehistoric resources that are known to occur, or may be encountered, in the covered area. The Service will coordinate with the Regional Historic Preservation Officer (RHPO) to determine if the ground disturbance anticipated under the HCP has the potential to disturb previously unknown cultural resources and how compliance with the National Historic Preservation Act (NHPA) will be documented.</td>
<td>Included in the EA</td>
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<tr>
<td>Environmental Justice</td>
<td>Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was intended to ensure that federal actions and policies do not result in disproportionately high adverse effects on minority or low income populations, where minority individuals constitute a meaningfully greater population than the general population or where the minority population percentage of the affected area exceeds 50 percent, and low-income individuals constitute a meaningful greater population than the general population or the percentage of the population below the poverty level in the affected area is 20 percent or more.</td>
<td>Identified in the EA</td>
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PG&E’s existing infrastructure occurs throughout the 9 Bay Area Counties, with the highest concentration of infrastructure in urban areas. Although PG&E’s existing infrastructure is concentrated in urban areas, it’s relatively evenly distributed within these areas. Approval of the HCP would not be expected to result in disproportionate impacts to minority or low-income communities because these activities would not be concentrated in areas with disproportionately high populations of minority or low income persons (i.e., the Covered Activities would not affect a “meaningfully greater population” of minority or low income persons than the general population).

Further, any potential adverse effects on minority or low income populations would be avoided through continued implementation of PG&E’s existing environmental justice program, which is implemented by PG&E’s Environmental Policy Department. This program includes conducting training regarding environmental justice issues; identifying potentially significant existing and future environmental justice concerns; and coordinating and planning outreach to affected interest groups to evaluate potential...
measures to minimize, avoid, or mitigate environmental justice concerns. Notwithstanding the above statements, the EA includes an analysis of potential environmental justice effects.

Geology and Soils

Existing PG&E infrastructure is built to applicable federal, state, and local standards, and in compliance with PG&E and CPUC guidelines to ensure they are not susceptible to geologic risk. For example, General Order 95, last revised by the CPUC in January 2012, provides detailed requirements for the construction, operation, and maintenance of overhead electric and natural gas lines, including a requirement that systems be sited in accordance with “good practice for the given local condition.” Covered Activities, including grading and vegetation removal, under the HCP could result in unstable geologic conditions or expose PG&E infrastructure to unstable geologic conditions, such as landslides. As a result, the EA includes a discussion of the effects of the Proposed Action on geology and the effects of geologic hazards on PG&E infrastructure.

Potential effects on soils would be limited to local erosion at sites where the ground is disturbed and/or vegetation removed. The Covered Activities, including gas and pipeline extensions and appurtenant facilities, would result in ground disturbance that could be susceptible to erosion. PG&E would continue to implement its Geology and Soils Program and Water Quality Protection Program, which provide for preconstruction evaluations of the geology and soil conditions at a worksite and identification of best management practices to address seismic hazards, slope stability, and erosion potential where necessary. Nonetheless, the EA includes a discussion of the effects of the Proposed Action on soils stability.

Paleontology

Covered Activities of the HCP would not be expected to affect paleontological resources because excavations which could otherwise encounter and disturb paleontological resources would typically be close to the ground surface (i.e., surficial) and in areas previously excavated. The exceptions to this are gas and pipeline extensions and appurtenant facilities that could extend over areas not previously built upon. However, due to the relatively small footprint of the potential ground disturbance of new facilities, the likelihood that paleontological resources would be encountered in the covered area is low. Nonetheless, the Geology/Soils and Paleontology section of the EA includes a discussion of the potential effect of the Proposed Action on paleontological resources.

Land Use and Planning

The Proposed Action would have not have a substantial effect on existing land uses because Covered Activities address existing infrastructure and minor construction of new or replacement facilities to upgrade or extend services to new customers, which would not result in either a change to existing land use or result in

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<td>a substantial conflict with current land uses. Most O&amp;M activities will occur in existing rights-of-way and/or PG&amp;E-owned properties, so there would be no new physical barriers or inconsistencies with existing or planned land uses. Minor new construction activities including installing new or replacement structures to upgrade existing facilities or extend service to new residential or commercial customers may require acquisition of new rights-of-way and disturbance to currently undeveloped areas. When conducted in natural vegetation or agricultural lands that contain suitable habitat for Covered Species, upgrades to existing facilities and new electric or gas line extensions are limited to 2 miles or less from an existing line. End-to-end extensions exceeding 2 miles would not be a Covered Activity. Multiple 2-mile extensions in different geographic areas would be covered, but each would be treated as a separate activity. New or replacement structures to upgrade existing facilities are limited to 1 acre or less of new gas pressure limiting stations (PLSs) and 3 acres or less per electric substation expansion. These activities are not anticipated to result in new physical barriers to established communities, nor would they result in inconsistencies with existing or planned land uses. The effect of the HCP on land use and planning is therefore not included in the EA.</td>
<td>Included in the EA.</td>
</tr>
<tr>
<td>Noise and Vibration</td>
<td>Noise associated with the Covered Activities would be limited to work vehicles and equipment necessary to complete Covered Activities. In general, noise would be short-term (less than 1 day) and limited in scope (adjacent to a single structure), and effects will be minimal on sensitive noise receptors. Although certain routine and emergency activities may require the use of a helicopter in some circumstances, those applications would likely be limited to remote locations that are difficult to access and that are unlikely to be located in proximity to a sensitive noise receptor. Furthermore, activities that could cause groundborne vibration, such as pile driving, are not anticipated. Notwithstanding the above statements, the EA addresses the potential effects of the Proposed Action on noise and vibration levels.</td>
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<tr>
<td>Public Services</td>
<td>The Proposed Action will not increase the demand for any public services, including fire protection services, police services, wastewater and sewage treatment, water supply, or solid waste services. Therefore, an analysis of the effects of Covered Activities under the HCP on public services is not included in the EA.</td>
<td>Not included in the EA.</td>
</tr>
<tr>
<td>Recreation</td>
<td>Covered Activities located in refuges or other recreational areas open to the public would be coordinated with the land owner or manager (when possible) to avoid impacts to recreational users and opportunities. Accordingly, the Proposed Action would not affect recreational access, use, or opportunities in the covered area, and the effect of the HCP on recreation is not included in the EA.</td>
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<td>Socioeconomics</td>
<td>The HCP would have no social or economic effects. In addition, the Covered Activities would not result in new or different staff, jobs, or work locations for PG&amp;E or other members of the public. Therefore, socioeconomic effects of the HCP are not included in the EA.</td>
<td>Not included in the EA.</td>
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<tr>
<td>Transportation and Circulation</td>
<td>The Proposed Action would have no appreciable effect on transportation services or level of service on roadways. PG&amp;E teams tasked with completing Covered Activities would likely use 1 to 3 work vehicles. The duration (typically less than 8 hours) and limited frequency of these activities is such that the level of service on existing roads would not be affected. PG&amp;E would also continue to comply with city ordinances and Caltrans safety measures to further limit traffic impacts where vehicles park on or adjacent to a road or highway. Finally the Proposed Action would not require hiring additional staff and would not result in increased worker traffic near PG&amp;E facilities. Therefore, effects of the HCP on transportation and circulation are not included in the EA.</td>
<td>Not included in the EA.</td>
</tr>
<tr>
<td>Visual Resources</td>
<td>Visual resource effects of Covered Activities could result from ground disturbance and removal of vegetation for required clearances at gas and electric facilities, which would be localized. The EA assesses the potential visual effects of Covered Activities under the HCP.</td>
<td>Included in the EA.</td>
</tr>
<tr>
<td>Public Utilities</td>
<td>The Proposed Action will not increase the demand for any public utilities, such as water, wastewater, and telecommunications facilities, nor will it increase demand for PG&amp;E’s electric or gas facilities. Certain Covered Activities under the HCP have the potential to encounter and damage other utilities during underground and aerial operations and maintenance procedures. However, compliance with standard utility alert procedures and protocols should sufficiently reduce this potential occurrence. Therefore, an analysis of the effects of Covered Activities under the HCP on public utilities is not included in the EA.</td>
<td>Not included in the EA.</td>
</tr>
<tr>
<td>Hydrology and Water Quality</td>
<td>Covered Activities may occur in the vicinity of water resources, including wetlands and streams. The EA programmatically describes measures that are implemented to reduce impacts to water quality and habitats, and notes that work in most waters would trigger additional permitting requirements from other state and federal agencies.</td>
<td>Included in the EA.</td>
</tr>
<tr>
<td>Public Health and Environmental Hazards</td>
<td>The Covered Activities permitted under the HCP could result in potential health effects, including potential spills or releases of hazardous materials and fire hazards. Therefore, the EA addresses potential public health and environmental hazards.</td>
<td>Included in the EA.</td>
</tr>
</tbody>
</table>
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3.1 Agricultural Resources

This section characterizes the agricultural lands of the Plan Area and analyzes the effects of the Proposed Action and No Action alternatives on existing agricultural practices.

3.1.1 Affected Environment

3.1.1.1 Regulatory Setting

Federal Regulations

U.S. Department of Agriculture, Natural Resources Conservation Service

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) maps soils and farmland uses to provide comprehensive information necessary for understanding, managing, conserving and sustaining the nation’s limited soil resources. In addition to many other natural resource conservation programs, the NRCS manages the Farmland Protection Program, which provides funds to help purchase development rights to keep productive farmland in agricultural uses. Working through existing programs, USDA joins with state, tribal, or local governments to acquire conservation easements or other interests from landowners.

Food, Conservation, and Energy Act of 2008 (Federal Farm Bill)

In 2008, the USDA passed the 2008 version of the Federal Farm Bill, which is passed about every five years. The Federal Farm Bill governs federal agriculture and related programs. It includes 15 titles that govern many areas related to food and agriculture production; among them are provisions governing farm credit, agricultural and forest conservation programs, stewardship of land and water resources, and the encouragement of renewable energy sources, among others.

Federal Forest Legacy Program

The Federal Forest Legacy Program was a part of the 1990 Farm Bill. Its purpose is to identify and protect environmentally important forestlands that are threatened by present or future conversion to nonforest uses. The program provides conservation easements and gives priority to lands that can be effectively protected and managed, as well as lands that have significant scenic, recreational, timber, riparian, fish and wildlife, threatened and endangered species, and other cultural or environmental values. Properties that are “working forests,” where the forestland is managed for the production of forest products, are also eligible under this program. Involvement in this program by private landowners is voluntary.

Land and Water Conservation Fund Act, Section 6(f)(3)

Section 6(f)(3) of the Land and Water Conservation Fund Act (LWCFA) of 1965 (16 U.S.C. Section 4601 et seq.) contains provisions to protect federal investments in park and recreation resources and the quality of those assisted resources. The law recognizes the likelihood that changes in land use or development may make park use of some areas purchased with LWCFA funds obsolete over time, particularly in rapidly changing urban areas, and provides for conversion to other use pursuant to certain specific conditions.
Section 6(f)(3) states that no property acquired or developed with assistance under Section 6(f)(3) shall, without the approval of the Secretary, be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he or she finds it to be in accord with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as he or she deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location.

This requirement applies to all parks and other sites that have been the subject of LWCF Act grants of any type, and includes acquisition of park land and development or rehabilitation of park facilities. If a transportation project would have an effect upon a park or site that has received LWCF Act funds, the requirements of Section 6(f)(3) would apply.

**State Regulations**

*Williamson Act and Farmland Security Zone Contracts*

The California Land Conservation Act (Government Code Section 51200 et seq.) of 1965, commonly known as the Williamson Act, provides a tax incentive for the voluntary enrollment of agricultural and open space lands in contracts between local government and landowners. The Act allows local governments to assess agricultural land based on the income-producing value of the property, rather than the “highest and best use” value, which had previously been the rule. The contract enforceably restricts the land to agricultural and open space uses and compatible uses defined in state law and local ordinances. An agricultural preserve, which is established by local government, defines the boundary of an area within which a city or county will enter into contracts with landowners. Local governments calculate the property tax assessment based on the actual use of the land instead of the potential land value assuming full development.

Terms of Williamson Act contracts are 10 years and longer. The contract is automatically renewed each year, maintaining a continuing, 10-year contract, unless the landowner or local government files to initiate nonrenewal. A “notice of nonrenewal” starts the nine-year nonrenewal period. During the nonrenewal process, the annual tax assessment gradually increases. At the end of the nine-year nonrenewal period, the contract is terminated. Only a landowner can petition for a contract cancellation. Tentative contract cancellations can be approved only after a local government makes specific findings and determines the cancellation fee to be paid by the landowner.

The State of California has the following policies regarding public acquisition of, and locating public improvements on lands in, agricultural preserves and on lands under Williamson Act contracts (Government Code Section 51290-51295):

- State policy is to avoid locating federal, state, or local public improvements and improvements of public utilities, and the acquisition of land, in agricultural preserves.

- State policy is to locate public improvements that are in agricultural preserves on land other than land under Williamson Act contract.

- State policy is that any agency or entity proposing to locate such an improvement, in considering the relative costs of parcels of land and the development of improvements, give
consideration to the value to the public of land, particularly prime agricultural land, in an agricultural preserve.

Since 1998, another option in the Williamson Act Program has been established with the creation of Farmland Security Zone contracts. A Farmland Security Zone is an area created within an agricultural preserve by a board of supervisors upon the request of a landowner or group of landowners. Farmland Security Zone contracts offer landowners greater property tax reduction and have a minimum initial term of 20 years. Like Williamson Act contracts, Farmland Security Zone contracts renew annually unless a notice of nonrenewal is filed.

**California Farmland Conservancy Program**

The California Farmland Conservancy Program (Public Resources Code Section 10200 et seq.) supports the voluntary granting of agricultural conservation easements from landowners to qualified nonprofit organizations, such as land trusts, as well as local governments. Conservation easements are voluntarily established restrictions that are permanently attached to property deeds, with the general purpose of retaining land in its natural, open-space, agricultural, or other condition while preventing uses that are deemed inconsistent with the specific conservation purposes expressed in the easements. Agricultural conservation easements define conservation purposes that are tied to keeping land available for continued use as farmland. Such farmlands remain in private ownership, and the landowner retains all farmland use authority, but the farm owner is restricted in its ability to subdivide or use the land for nonagricultural purposes, such as urban uses. Potential impacts on conservation easements would be addressed in subsequent project-level documents.

**Farmland Mapping and Monitoring Program**

The Farmland Mapping and Monitoring Program (FMMP) is the only statewide land use inventory conducted on a regular basis. The California Department of Conservation administers the FMMP, pursuant to which it maintains an automated map and database system to record changes in the use of agricultural lands. Farmland under the FMMP is listed by category: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. The farmland categories listed under the FMMP are described below. The categories are defined pursuant to USDA land inventory and monitoring criteria, as modified for California.

**Prime Farmland.** Prime Farmland is land with the best combination of physical and chemical features to sustain long-term production of agricultural crops. These lands have the soil quality, growing season, and moisture supply necessary to produce sustained high yields. Soil must meet the physical and chemical criteria determined by the NRCS. Prime Farmland must have been used for production of irrigated crops at some time during the four years prior to the mapping date by the FMMP.

**Farmland of Statewide Importance.** Farmland of Statewide Importance is similar to Prime Farmland but with minor differences, such as greater slopes or a lesser ability of the soil to store moisture. Farmland of Statewide Importance must have been used for production of irrigated crops at some time during the four years prior to the mapping date.

**Unique Farmland.** Unique Farmland has lesser quality soils than Prime Farmland or Farmland of Statewide Importance. Unique Farmland is used for the production of the state’s leading agricultural
crops. These lands are usually irrigated but may include nonirrigated orchards or vineyards found in some climatic zones in California. Unique Farmland must have been used for crops at some time during the four years prior to the mapping date.

**Farmland of Local Importance.** Farmland of Local Importance is farmland that is important to the local agricultural community as determined by each county’s board of supervisors and local advisory committees.

### 3.1.1.2 Environmental Setting

#### Current and Historical Agricultural Uses

The Plan Area has a significant amount of land in agricultural uses. Table 3-2 shows the acres of agricultural lands for each county in the region, excluding San Francisco County. In 2012, less than 50 percent of the region’s approximately 4.5 million acres were being farmed. Of these, 379,104 acres were harvested croplands and 320,933 acre were irrigated for crop production.

Over the last 50 years, a large amount of agricultural land has been converted to urban uses in the Plan Area. According to the U.S. Census of Agriculture, the region had over 3 million acres of land in farms in 1954. By 2014, land in farms had decreased by approximately 65 percent from 1954.

#### Table 3-2. Plan Area Agricultural Lands, 2012

<table>
<thead>
<tr>
<th>County</th>
<th>Alameda</th>
<th>Contra Costa</th>
<th>Marin</th>
<th>Napa</th>
<th>San Mateo</th>
<th>Santa Clara</th>
<th>Solano</th>
<th>Sonoma</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land in Farms (ac)</td>
<td>177,798</td>
<td>127,670</td>
<td>170,876</td>
<td>253,370</td>
<td>48,160</td>
<td>229,927</td>
<td>407,101</td>
<td>589,771</td>
<td>2,004,673</td>
</tr>
<tr>
<td>Harvested Cropland (ac)</td>
<td>9,901</td>
<td>46,531</td>
<td>14,409</td>
<td>52,180</td>
<td>8,477</td>
<td>23,128</td>
<td>133,171</td>
<td>91,307</td>
<td>379,104</td>
</tr>
<tr>
<td>Irrigated Land (ac)</td>
<td>8,893</td>
<td>27,272</td>
<td>3,732</td>
<td>54,580</td>
<td>2,822</td>
<td>17,756</td>
<td>130,909</td>
<td>74,969</td>
<td>320,933</td>
</tr>
</tbody>
</table>

Notes: San Francisco County not shown due to negligible acreages.  

#### Williamson Act Lands

Agricultural land under Williamson Act contract includes both “prime” and “nonprime” lands. The California Land Conservation Acts defines prime agricultural land as: 1) USDA Class I or II soils; 2) Storie Index soil rating 80 to 100; 3) land that has returned a predetermined annual gross value for three of the past five years; 4) livestock-supporting land with a carrying capacity of at least 1 animal unit per acre; or 5) land planted with fruit or nut trees, vines, bushes or crops that have a non-bearing period of less than five years and that will normally return a predetermined annual gross value per acre per year during the commercial bearing period (Government Code Section 51200-51207). Nonprime lands include pasture and grazing lands and other non-irrigated agricultural land with lesser quality soils. Prime agricultural lands under the Williamson Act are defined differently from Prime Farmland under the Department of Conservation FMMP, as outlined above.
In 2014, about 1.2 million acres of land were under Williamson Act contract in the Bay Area. Of this, about 204,080 acres were prime farmland and 969,497 acres were nonprime. Lands under Williamson Act contract, therefore, are primarily used for pasture and grazing and not for the cultivation of crops. Nearly 72 percent of prime and nonprime lands under contract are in Santa Clara, Solano, and Sonoma counties. Table 3-3 shows the number of acres of land under Williamson Act contracts in the Bay Area as of 2014.

<table>
<thead>
<tr>
<th>Region</th>
<th>Prime</th>
<th>Nonprime</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alameda</td>
<td>2,510</td>
<td>133,137</td>
<td>135,647</td>
<td>11.5%</td>
</tr>
<tr>
<td>Contra Costa</td>
<td>9,306</td>
<td>34,231</td>
<td>43,537</td>
<td>3.7%</td>
</tr>
<tr>
<td>Marin</td>
<td>0</td>
<td>80,853</td>
<td>80,853</td>
<td>6.9%</td>
</tr>
<tr>
<td>Napa</td>
<td>19,059</td>
<td>52,522</td>
<td>71,580</td>
<td>6.1%</td>
</tr>
<tr>
<td>San Mateo</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>9,668</td>
<td>295,546</td>
<td>305,214</td>
<td>26.0%</td>
</tr>
<tr>
<td>Solano</td>
<td>119,799</td>
<td>145,335</td>
<td>265,134</td>
<td>22.6%</td>
</tr>
<tr>
<td>Sonoma</td>
<td>43,738</td>
<td>227,873</td>
<td>271,611</td>
<td>23.1%</td>
</tr>
<tr>
<td>Region</td>
<td>204,080</td>
<td>969,497</td>
<td>1,173,576</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Source: California Department of Conservation, 2014.

**Forests**

The Plan Area is home to a variety of forest types spread throughout the nine-county region. Forests are generally located at higher elevations of the Coastal Range in areas with sufficient moisture. Forest land is a valuable environmental and aesthetic resource and a defining feature in many parts of the landscape in the Plan Area. Forest habitats include a wide range of woodland and forest species. Forests in California are protected by the California Department of Forestry and Fire Protection.

### 3.1.2 Environmental Consequences

#### 3.1.2.1 Methodology for Impact Analysis

The impact analysis in this section focuses on evaluating the potential of the Proposed Action and No Action alternative to result in the conversion of FMMP-designated agricultural lands to nonagricultural uses and to generate conflict with existing Williamson Act contracts in the Plan Area. Potential effects were evaluated qualitatively, based on professional judgment in light of the activities, methods, and techniques proposed by PG&E’s Bay Area O&M program, and the additional AMMs that would be enacted under the proposed HCP.
3.1.2.2 Environmental Programs and Avoidance and Minimization Measures

There are no specific Avoidance and Minimization Measures in the HCP that would reduce potential impacts on agricultural resources. However, the Land Use Planning Practices in PG&E’s Environmental Programs (Appendix B) ensures that PG&E will carry forward all of its standard business practices, which reflect the company’s obligations under CPUC regulations, in implementing activities.

3.1.2.3 Proposed Action

Impact Analysis

The following discussions correspond to the checklist included at the beginning of this subsection.

Impact 3.1-1: Conversion of Agricultural Lands to Non-agricultural Use

O&M and minor new construction activities have varying potential to affect agricultural lands. O&M tasks such as vegetation management and maintenance and patrol activities would be temporary and short-term and would be restricted to existing PG&E ROWs and immediately adjacent areas, and thus, would not result in the permanent conversion of farmland to nonagricultural uses. Most other activities associated with O&M of existing facilities and infrastructure would also occur within existing PG&E-owned properties or ROWs and adjacent areas; therefore, no conversion of farmland would occur as a result of these activities. In addition, PG&E policy requires that any affected lands not owned by PG&E be restored to landowner specifications following completion of O&M tasks.

The principal potential for temporary conversion of farmland to nonagricultural uses relates to facilities upgrades and expansions, and construction of new facilities. Some new or expanded facilities such as pipelines, and transmission and distribution lines would be underground once construction is complete and would not result in the permanent conversion of farmland.

Aboveground upgrades and expansions, and new aboveground facilities, could require footprints of less than three acres. Any such upgrades and expansions occurring on designated agricultural land would result in the permanent conversion of small areas of farmland to nonagricultural use. According to PG&E, permanent conversion of agricultural land will occur at a rate that averages approximately 1 acre per year throughout the Plan Area over the 30-year term of the HCP. However, the majority of agricultural land conversions are temporary. Such levels of land conversion are exceptionally minor compared to the total acreage of farmlands in the project area.

As described in Chapter 2, PG&E will carry forward all of its standard business practices (reflecting the company’s obligations under CPUC regulations) in implementing the proposed HCP activities. In siting new facilities, the company routinely consults with local jurisdictions to avoid or minimize conflicts with existing and planned land uses, and may modify the proposed siting or design of new facilities based on such consultation.

In light of the small acres involved, effects related to conversion of important farmland to nonagricultural uses are expected to be minimal.
Impact 3.1-2: Conflict with Williamson Act Preserves

Although gas and electric facilities are considered a compatible use in agricultural preserves under Section 51238 of the California Government Code, construction of minor new facilities could require cancellation of Williamson Act contracts for small acreages, if new land acquisition is required. In addition, although it is unlikely, it is possible that compensation lands could be identified on lands under Williamson Act contract, such that either the *Purchase of Habitat Compensation Lands* option or the *Enhancement as Compensation* option could result in withdrawal of lands from Williamson Act protection. This would also constitute a conflict with Williamson Act contracts. However, the total area likely to be affected under either of these scenarios would be very small and the inventory of lands available that could provide mitigation for the Covered Activities are not generally limited in the 9 Bay Area counties, so the need to acquire an individual parcel with a Williamson Act contract is expected to be low. Cancellations are unlikely because of the tax benefits to PG&E in maintaining these properties under the Williamson Act; therefore, no adverse effect is anticipated.

3.1.2.4 No Action Alternative

Under the No Action Alternative, the Service would not issue an incidental take permit related to the Bay Area HCP. PG&E would continue its existing program of O&M activities and minor new construction activities and implement current environmental programs and practices, including BMPs. A regional HCP would not be implemented, and individual activities would be subject to project-by-project evaluations, and incidental take authorizations and mitigation if they would affect federally listed species. Because compensation requirements would be assessed on a project-by-project basis, smaller parcels of land would likely be identified for enhancement or preservation for the individual projects instead of as part of a regional conservation effort. The creation of numerous small habitat mitigation lands would increase the need for management activities on more lands.

PG&E would be expected to use similar criteria for identifying suitable compensation lands as defined in the proposed HCP and to coordinate with appropriate agencies and landowners to establish habitat mitigation lands and minimize the potential for agricultural-related conflicts. Impacts on agricultural resources under the No Action Alternative would be the same for O&M activities as described for the Proposed Action, but a slight increase in agricultural land effects would be expected on the additional habitat mitigation lands, which would be relatively minor and distributed throughout the Plan Area.
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3.2 Air Quality and Climate Change

This section characterizes the ambient air quality of the Plan Area and analyzes the potential for the Proposed Action and No Action alternatives to generate air or greenhouse gas (GHG) emissions that could affect local and regional air quality. The analysis focuses on issues associated with Covered Activities described in Chapter 2.

3.2.1 Affected Environment

3.2.1.1 Regulatory Setting

The agencies of direct importance to Proposed Action are the U.S. Environmental Protection Agency (EPA), California Air Resources Board (CARB), Bay Area Air Quality Management District (BAAQMD), and Yolo-Solano Air Quality Management District (YSAQMD). The EPA has established federal air quality standards for which CARB, BAAQMD, and YSAQMD have primary implementation responsibility. CARB has established state air quality standards, and CARB, BAAQMD, and YSAQMD are responsible for ensuring that state air quality standards are met.

This section summarizes federal, state, regional, and local regulations related to air quality and applicable to the Proposed Action.

Federal Regulations

Federal Clean Air Act and Amendments

The federal Clean Air Act (CAA), originally passed in 1970 and amended twice thereafter, established the framework for modern air pollution control. The CAA mandates that the EPA develop rules and regulations to preserve and improve air quality and delegates specific responsibilities to state and local agencies. Specifically, the CAA directs the EPA to establish National Ambient Air Quality Standards (NAAQS) for the following “criteria pollutants”: ozone (O₃), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM₂.₅), and sulfur dioxide (SO₂). The standards are divided into primary and secondary standards; the former are set to protect human health within an adequate margin of safety and the latter to protect environmental values, such as plant and animal life. Table 3-4 shows EPA’s NAAQS for the six criteria pollutants.

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>Averaging Time</th>
<th>California Standards</th>
<th>National Standards¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>1-hour</td>
<td>0.09 ppm</td>
<td>None²</td>
</tr>
<tr>
<td></td>
<td>8-hour</td>
<td>0.07 ppm</td>
<td>0.07 ppm</td>
</tr>
<tr>
<td>Particulate Matter (PM₁₀)</td>
<td>24-hour</td>
<td>50 µg/m³</td>
<td>150 µg/m³</td>
</tr>
<tr>
<td></td>
<td>Annual mean</td>
<td>20 µg/m³</td>
<td>None</td>
</tr>
</tbody>
</table>

¹ Standards vary by monitoring time period.
² None indicates no standard is in place.

Table 3-4. National Ambient Air Quality Standards and California Ambient Air Quality Standards
<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>Averaging Time</th>
<th>California Standards</th>
<th>National Standards(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Primary</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM(_{2.5}))</td>
<td>24-hour</td>
<td>None</td>
<td>35 µg/m(^3)</td>
</tr>
<tr>
<td></td>
<td>Annual mean</td>
<td>12 µg/m(^3)</td>
<td>12.0 µg/m(^3)</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>8-hour</td>
<td>9.0 ppm</td>
<td>9 ppm</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>20 ppm</td>
<td>35 ppm</td>
</tr>
<tr>
<td></td>
<td>8-hour (Lake Tahoe)</td>
<td>6 ppm</td>
<td>None</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>Annual mean</td>
<td>0.030 ppm</td>
<td>0.053 ppm</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>0.18 ppm</td>
<td>0.100 ppm</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>Annual mean</td>
<td>None</td>
<td>0.030 ppm(^3)</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>0.04 ppm</td>
<td>0.14 ppm(^3)</td>
</tr>
<tr>
<td></td>
<td>3-hour</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>0.25 ppm</td>
<td>0.075 ppm</td>
</tr>
<tr>
<td>Lead</td>
<td>30-day Average</td>
<td>1.5 µg/m(^3)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Calendar quarter</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>3-month average</td>
<td>None</td>
<td>1.5 µg/m(^3)</td>
</tr>
<tr>
<td>Sulfates</td>
<td>24-hour</td>
<td>25 µg/m(^3)</td>
<td>None</td>
</tr>
<tr>
<td>Visibility Reducing Particles</td>
<td>8-hour</td>
<td>– (^4)</td>
<td>None</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>1-hour</td>
<td>0.03 ppm</td>
<td>None</td>
</tr>
<tr>
<td>Vinyl Chloride</td>
<td>24-hour</td>
<td>0.01 ppm</td>
<td>None</td>
</tr>
</tbody>
</table>

Source: California Air Resources Board 2016a.

\(\mu g/m^3\) = micrograms per cubic meter.

\(ppm\) = parts per million.

\(^1\) National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

\(^2\) The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was employed for such a long period and is a benchmark for State Implementation Plans.

\(^3\) The annual and 24-hour NAAQS for SO\(_2\) only apply for one year after designation of the new 1-hour standard to those areas that were previously nonattainment for 24-hour and annual NAAQS.

\(^4\) CAAQS for visibility-reducing particles is defined by an extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70%.

The CAA requires states to submit a state implementation plan (SIP) for areas in nonattainment of federal air quality standards. SIPs must be submitted to the EPA for review and cannot be adopted until approved by the EPA. SIPs demonstrate how the federal air quality standards will be achieved, and may contain narrative objectives, rules, and future commitments associated with attaining federal air quality standards.

The 1990 amendments to the CAA included a provision to address air toxics. Under Title III of the CAA, EPA establishes and enforces National Emission Standards for Hazardous Air Pollutants.
(NESHAPs), which are nationally uniform standards oriented towards controlling particular hazardous air pollutants (HAPs). Section 112(b) of the CAA identifies 189 “Air Toxics” (hazardous air pollutants), directs EPA to identify sources of the 189 pollutants, and establishes a 10-year time period for EPA to issue technology-based emissions standards for each source category. Title III of the CAA provides for a second phase under which EPA is to assess residual risk after the implementation of the first phase of standards and impose new standards, when appropriate, to protect public health.

**Federal Conformity Requirements**

Federal projects are subject to either the Transportation Conformity Rule (40 CFR 51[T]), which applies to federal highway or transit projects, or the General Conformity Rule (40 CFR 51[W]), which applies to all other federal projects. Because issuance of the ITP is not a federal highway or transit project, it is not subject to the General Conformity Rule.

The purpose of the General Conformity Rule is to ensure that federal projects conform to applicable SIPs so that they do not interfere with strategies employed to attain the NAAQS. The rule applies to federal projects in areas designated as nonattainment areas for any of the six criteria pollutants and in some areas designated as maintenance areas. The rule applies to all federal projects except the following:

- programs specifically included in a transportation plan or program that is found to conform under the federal Transportation Conformity Rule.
- projects with associated emissions below specified *de minimis* threshold levels, and certain other projects that are exempt or presumed to conform.

If a proposed project would result in total direct and indirect emissions in excess of the *de minimis* emission rates, it must be demonstrated that the emissions conform to the applicable SIP for each affected pollutant.\(^1\) If emissions would not exceed the *de minimis* levels and are not regionally significant, then the project is presumed to conform, and no further analysis or determination is required.

**Federal GHG Action**

On April 2, 2007, in Massachusetts v. EPA, 549 U.S. 497 (2007), the Supreme Court found that GHG are air pollutants covered by the CAA. The Court held that the EPA Administrator must determine whether or not emissions of GHG from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the EPA Administrator signed a final action, under Section 202(a) of the Clean Air Act, finding that six key well-mixed GHG constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to the climate change problem.

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\(^1\) Note that the conformity regulations state that: "For purposes of this definition [of indirect emissions], even if a Federal licensing, rulemaking or other approving action is a required initial step for a subsequent activity that causes emissions, such initial steps do not mean that a Federal agency can practically control any resulting emissions. 40 Code of Federal Regulations [CFR] 93.152"
This action was a prerequisite for implementing GHG emissions standards. EPA is developing regulations under the CAA that may be adopted pursuant to the EPA’s authority under the CAA. EPA has also issued a final rulemaking on the Clean Power Plan. Under the Clean Power Plan, EPA issued regulations to control CO₂ emissions from new and existing coal-fired power plants. However, on February 9, 2016 the Supreme Court issued a stay of these regulations pending litigation.

On February 18, 2010, the White House Council on Environmental Quality (CEQ) released draft guidance regarding the consideration of GHG in NEPA documents for federal actions. CEQ issued revised draft guidance in December 2014 and final guidance in August 2016 (CEQ 2016). The 2016 guidance encourages agencies to draw from their experience and expertise to determine the appropriate level (broad, programmatic, or project- or site-specific) and type (quantitative or qualitative) of analysis required to comply with NEPA. The guidance also discusses methods to appropriately analyze reasonably foreseeable direct, indirect, and cumulative GHG emissions and climate effects. It also recommends that agencies use projected GHG emissions (to include, where applicable, carbon sequestration implications associated with the proposed agency action) as a proxy for assessing potential climate change effects when preparing a NEPA analysis for a proposed agency action.

State Regulations

California Clean Air Act

The California Clean Air Act (CCAA) of 1988 requires nonattainment areas to achieve and maintain the state ambient air quality standards by the earliest practicable date and local air districts to develop plans for attaining the state ozone, CO, SO₂, and NO₂ standards. The CARB sets the state ambient air quality standards. Under the CCAA, areas not in compliance with the standard must prepare plans to reduce ozone. Non-compliance with the state ozone standard does not affect the ability to proceed with any transportation plan, program, or project.

Senate Bill 1656 (Chapter 738, Statutes of 2003)

In 2003, the Legislature enacted SB 656 (Chapter 738, Statutes of 2003), codified as Health and Safety Code Section 39614, to reduce public exposure to PM₁₀ and PM₂.₅. SB 656 requires CARB, in consultation with local air pollution control and air quality management districts (air districts), to develop and adopt, by January 1, 2005, a list of the most readily available, feasible, and cost-effective control measures that could be employed by CARB and the air districts to reduce PM₁₀ and PM₂.₅ (particulate matter less than 10 and 2.5 micrometers in diameter, respectively; collectively referred to in this EA as PM). The legislation establishes a process for achieving near-term reductions in PM throughout California ahead of federally required deadlines for PM₂.₅, and provides new direction on PM reductions in those areas not subject to federal requirements for PM. Measures adopted as part of SB 656 will complement and support those required for federal PM₂.₅ attainment plans, as well as for state ozone plans. This will ensure continuing focus on PM reduction and progress towards attaining California’s more health-protective standards. This list of air district control measures was adopted by the CARB on November 18, 2004. CARB also developed a list of state PM control measures for mobile and stationary sources, including measures planned for adoption as part of CARB’s Diesel Risk Reduction Plan. The lists are at the following web site: http://www.arb.ca.gov/pm/pmmeasures/pmmeasures.htm.
To comply with SB 656, the BAAQMD reviewed the list of 103 potential PM control measures prepared by CARB and developed a Particulate Matter Implementation Schedule which was adopted by BAAQMD in November 2005. As a result, the BAAQMD adopted or amended existing rules to reduce particulate matter from internal combustion engines, chain driven commercial broiling, and residential woodburning and expanded its public awareness program.

**Toxic Air Contaminant Identification and Control Act of 1983**

Under the Toxic Air Contaminant Identification and Control Act of 1983 (AB 1807, Chapter 1047, Statutes of 1983), the California Legislature created a two-step identification and risk management program to reduce the risk of health effects from toxic air substances. During the first step (identification), the CARB and the Office of Environmental Health Hazard Assessment (OEHHA) determine if a substance should be formally identified as a toxic air contaminant (TAC) in California. During the second step (risk management), the CARB reviews the emission sources of an identified TAC to determine if any regulatory action is necessary to reduce the risk. The analysis includes a review of controls already in place, the available technologies and associated costs for reducing emissions, and the associated risk. Conducting public outreach is essential during the development of a control plan and any control measure to ensure that the CARB efforts are cost-effective and appropriately balance public health protection and economic growth.

In 1993, Assembly Bill (AB) 1807 was amended to include the identification and control of additional TACs. Specifically, AB 2728 required the CARB to identify the 189 federal hazardous air pollutants as TACs. For substances that had not previously been identified under AB 1807, but were subsequently identified under AB 2728, health effects values must be developed.

**Diesel Risk Reduction Plan**

In August 1998, the CARB identified particulate emissions from diesel-fueled engines (diesel PM) as toxic air contaminants, based on data linking diesel PM emissions to increased risks of lung cancer and respiratory disease. Following the identification process, the CARB was required by law to determine if there is a need for further control, which led to creation of the Diesel Advisory Committee to assist in the development of a risk management guidance document and risk reduction plan. In September 2000, the CARB adopted the Diesel Risk Reduction Plan, which recommends control measures to reduce the risks associated with diesel PM and achieve a goal of 75 percent diesel PM reduction by 2010 and 85 percent by 2020. Specific statewide regulations designed to further reduce diesel PM emissions from diesel-fueled engines and vehicles will be evaluated and developed. The goal of these regulations is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions.

**California GHG Legislation and Polices**

California has adopted statewide legislation addressing various aspects of climate change and GHG emissions reduction. The legislation establishes a broad framework for the state’s long-term GHG reduction and climate change adaptation program. The Governor of California has also issued several executive orders related to the state’s evolving climate change policy. Summaries of key policies, regulations, and legislation at the state levels that are relevant to Plan are provided below.

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2 [http://www.baaqmd.gov/-/media/Files/Planning%20and%20Research/Particulate%20Matter/sb656_staff_report.ashx](http://www.baaqmd.gov/-/media/Files/Planning%20and%20Research/Particulate%20Matter/sb656_staff_report.ashx)
Executive Order S-3-05 (2005). California Executive Order (EO) S-3-05 sets forth a series of target dates by which statewide emissions of GHGs need to be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels (approximately 457 million metric tons of carbon dioxide equivalent [CO2e]); by 2020, reduce emissions to 1990 levels (approximately 427 million metric tons CO2e); and by 2050, reduce emissions to 80 percent below 1990 levels (approximately 85 million metric tons CO2e). Executive orders are binding only on state agencies. Accordingly, California EO S-03-05 will guide state agencies’ efforts to control and regulate GHG emissions, but will have no direct binding effect on local government or private actions. The Secretary of the California Environmental Protection Agency (Cal/EPA) is required to report to the Governor and state legislature biannually on the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions to meet the targets established in this executive order.

Assembly Bill 1493, Pavley Rules (2002, amendments 2009)/Advanced Clean Cars (2011). Known as “Pavley I,” AB 1493 outlines the nation’s first GHG standards for automobiles. Additional strengthening of the Pavley standards (referred to previously as “Pavley II,” and now referred to as the “Advanced Clean Cars” measure) has been proposed for vehicle model years 2017–2020. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 and reduce GHG emissions from the transportation sector in California by approximately 14 percent. EPA and CARB have also adopted joint rulemaking to establish GHG emissions standards for 2017-2025 model year passenger vehicles.

Assembly Bill 32 (2006) and California Climate Change Scoping Plan (2008/2014). In 2006, the California legislature passed AB 32 (California Health and Safety Code Division 25.5, Sections 38500 et seq., or AB 32), also known as the California Global Warming Solutions Act. AB 32 requires ARB to implement emission limits, regulations, and other feasible and cost-effective measures such that statewide GHG emissions are reduced to 1990 levels by 2020.

Pursuant to AB 32, CARB adopted the Climate Change Scoping Plan (Scoping Plan) in December 2008, which outlines measures for meeting the 2020 GHG emissions reduction limits. The Scoping Plan must be updated every 5 years to evaluate AB 32 policies and ensure that California is on track to achieve the 2020 GHG emissions reduction goal. In 2014, CARB released the First Update to the Climate Change Scoping Plan (First Update), which builds upon the initial scoping plan with new strategies and recommendations. The First Update identifies opportunities to leverage existing and new funds and drive GHG emissions reductions through strategic planning and targeted low-carbon investments. This update defines CARB’s climate change priorities for the next 5 years and sets the groundwork for reaching the long-term goals set forth in California EO S-3-05. The First Update highlights California’s progress toward meeting the near-term 2020 GHG emissions reduction goals in the initial scoping plan. It also evaluates actions to align the state's longer-term GHG emissions reduction strategies with other state policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

The CARB is currently working on the Second Update to the AB 32 Scoping Plan, which will outline policies and actions for the state’s 2030 GHG emission target, as outlined under SB 32 (discussed below). Release of the 2030 Scoping Plan is scheduled for early 2017.
**Senate Bill 1368 (Chapter 598, Statutes of 2006).** SB 1368, signed in September 2006, required the CPUC to establish a GHG emissions performance standard for “baseload” generation from investor owned utilities by February 1, 2007. The CPUC was required to establish a similar standard for local publicly owned utilities by June 30, 2007. The legislation further required that all electricity provided to California, including imported electricity, must be generated from plants that meet or exceed the standards set by the CPUC and the California Energy Commission (CEC). In January 2007, the CPUC adopted an interim performance standard for new long-term commitments (1,100 pounds of CO2 per megawatt-hour), and in May 2007, the CEC approved regulations that match the CPUC standard.

**Executive Order S-01-07, Low Carbon Fuel Standard (2007).** California EO S-01-07 mandates (1) that a statewide goal be established to reduce the carbon intensity of California’s transportation fuels by at least 10 percent by 2020, and (2) that a low-carbon fuel standard for transportation fuels be established in California. The executive order initiates a research and regulatory process at CARB.

**Senate Bill 350—De Leon (Clean Energy and Pollution Reduction Act of 2015) (2015).** SB 350 was approved by the California legislature in September 2015 and signed by Governor Brown in October 2015. Its key provisions are to require the following by 2030: (1) a renewables portfolio standard of 50% and (2) a doubling of energy efficiency (electrical and natural gas) by 2030, including improvements to the efficiency of existing buildings. These mandates will be implemented by future actions of the CPUC and CEC.

**Local Regulations**

At the local level, air quality is managed through air quality management districts, which typically consist of several counties located within a particular air basin. Like the CARB, local air quality management districts were established before the 1988 CAA was enacted. The responsibilities of the local air districts consisted primarily of implementing non-discretionary duties, including overseeing stationary source emissions, approving air quality permits, maintaining emission inventories, maintaining air quality monitoring stations, and overseeing agricultural burn permits. Other duties included reviewing the air quality sections of CEQA documents.

In 1988, the CCAA substantially added to the authority and responsibilities of local air quality management districts. The Act designated local air districts as the lead agencies for air quality planning, required air districts to prepare air quality plans, and granted authority to regulate indirect sources of air pollution and implement transportation control measures (TCM). Additionally, the authority to prepare SIPs, originally delegated to CARB by the EPA, was delegated to the local air quality management districts.

The BAAQMD is responsible for enforcing air quality standards within the San Francisco Bay Air Basin (SFBAB), which covers the majority of the Plan Area. The portion of the Plan Area in the Sacramento Valley Air Basin (SVAB) is managed by the YSAQMD.

Counties also address air quality hazards by implementing land use, planning, and development standards. County mechanisms to minimize air quality hazards include general plan policies, zoning ordinance standards, and development criteria.
The BAAQMD and YSAQMD published CEQA guidelines. These documents include a section listing policies and mitigation measures recommended for plans prepared for the SFBAAB and YSAQMD and, in particular, for local general plans. Recommended policies and mitigation measures are incorporated in the identification of mitigation measures in the impact analysis as needed. In addition, several Plan Area counties and cities have completed community emissions inventories and climate action plans.

Through Article VII, Paragraph 5 of the California Constitution, the state legislature, vests the CPUC with exclusive jurisdiction over the siting and design of gas and electric facilities. California Public Utilities Code Section 1007.5 and other California statutes and case law detail the nature and extent of this sole discretionary permitting authority. Because state law has preempted the field, PG&E is not subject to local land use planning or zoning requirements.

While PG&E’s utility related activities are solely regulated by CPUC and are thus not subject to local zoning ordinances, PG&E consults with local cities and counties to ensure that local concerns and issues are considered during the project planning process; construction and O&M activities are developed and implemented in such a way as to comply with existing local zoning ordinances, when feasible.

### 3.2.1.2 Environmental Setting

#### Regional Climate and Meteorological Conditions

California is divided into 15 air basins based on geographic features that create distinctive regional climates. Ambient air quality in each air basin is affected by these climatological conditions as well as topography and the types and amounts of pollutants emitted. The Plan Area is located within the SFBAAB and SVAB. The following sections discuss climate and meteorological information specific to these air basins.

**San Francisco Bay Air Basin**

During the summer months, the northwest winds in the SFBAAB originate at the coastline and are drawn into the interior through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately to the south of Mount Tamalpais, the northwesterly winds accelerate considerably. The combination of topography and meteorological conditions result in the channeling of air flow through the Golden Gate and produce a jet of air that moves eastward. This airstream widens downstream to produce southwest winds at Berkeley and northwest winds at San Jose. Wind speeds can be locally strong in regions where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or San Bruno Gap. It is unusual for the summer breeze to flow over terrain exceeding 2,000 feet in elevation (Bay Area Air Quality Management District 2011). In winter, the SFBAAB experiences periods of moderate-to-strong winds and periods of stagnation with very light winds. Wind patterns contribute to the buildup of high concentrations of emitted pollutants in the SFBAAB (Bay Area Air Quality Management District 2011).

Pollution sources are plentiful and complex throughout the SFBAAB, particularly in the Santa Clara Valley, which is located in the southern portion of the SFBAAB. The Santa Clara Valley has a high concentration of industry in the Silicon Valley at the northern end of the valley. Some of these industries are sources of air toxics as well as criteria pollutants. In addition, the valley’s large
population and number of employers generate the highest mobile source emissions of any portion of the Plan Area.

**Sacramento Valley Air Basin**

The eastern portion of Solano County is located in the SVAB. The general climate is similar to that in the inland areas of the SFBAB and varies based on elevation and proximity to Mt. Diablo. The Carquinez Strait allows air to pass in and out of the Central Valley. Prevailing winds are from the west, particularly during the summer. During the summer and fall months, high pressure offshore coupled with thermal low pressure in the Central Valley sets up a pressure pattern that draws marine air eastward through the Carquinez Strait almost every day. The effect of this pressure pattern is high inland temperatures and strong afternoon winds (Bay Area Air Quality Management District 2011).

**Existing Air Quality Conditions**

Air quality in the Plan Area has improved over the past several decades, despite the increasing urbanization of the region. Ambient concentrations of harmful air pollutants, such as ozone, PM, and air toxics have been greatly reduced (Bay Area Air Quality Management District 2010). The improvement in air quality has greatly reduced health effects related to air pollution, but fine particulate matter (PM$_{2.5}$) continues to be a leading public health risk. Increases in GHGs affects the climate of the region and can increase the number of hot days throughout the year and result in more wildfires. These changes can exacerbate air pollution, particularly from ozone and PM.

If a measured pollutant concentration in an area is lower than the state or federal standard, the area is classified as being in attainment for that pollutant. If a pollutant exceeds the standard, the area is considered a nonattainment area. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated as unclassified. Table 3-5 summarizes the attainment status for the SFBAAB and portion of the Plan Area in the SVAB.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>SFBAAB State</th>
<th>SFBAAB Federal</th>
<th>Solano County State</th>
<th>Solano County Federal</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-hour ozone</td>
<td>Nonattainment</td>
<td>Marginal Nonattainment</td>
<td>Nonattainment</td>
<td>Serve-15 Nonattainment</td>
</tr>
<tr>
<td>1-hour ozone</td>
<td>Nonattainment</td>
<td>N/A</td>
<td>Nonattainment</td>
<td>N/A</td>
</tr>
<tr>
<td>PM$_{10}$</td>
<td>Nonattainment</td>
<td>Attainment</td>
<td>Nonattainment</td>
<td>Attainment</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>Nonattainment</td>
<td>Nonattainment</td>
<td>Unclassified</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>CO</td>
<td>Attainment</td>
<td>Maintenance (P)</td>
<td>Attainment</td>
<td>Maintenance (P)</td>
</tr>
</tbody>
</table>

Notes: N/A = Data not available. (P) = Designation applies to a portion of the Plan Area. Sources: California Air Resources Board 2016b; U.S. Environmental Protection Agency 2016
Greenhouse Gas Emissions Inventories

A GHG inventory is a quantification of all GHG emissions and sinks\(^3\) within a selected physical and/or economic boundary. GHG inventories can be performed on a large scale (e.g., for global and national entities) or on a small scale (e.g., for a particular building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources. Table 3-6 outlines the most recent global, national, statewide, and local GHG inventories to help contextualize the magnitude of potential project-related emissions.

<table>
<thead>
<tr>
<th>Emissions Inventory</th>
<th>CO(_2)e (metric tons per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 IPCC Global GHG Emissions Inventory</td>
<td>52,000,000,000</td>
</tr>
<tr>
<td>2014 EPA National GHG Emissions Inventory</td>
<td>6,870,000,000</td>
</tr>
<tr>
<td>2014 ARB State GHG Emissions Inventory</td>
<td>441,500,000</td>
</tr>
<tr>
<td>2011 SFBAAB GHG Emissions Inventory(^a)</td>
<td>86,600,000</td>
</tr>
</tbody>
</table>

Sources: Intergovernmental Panel on Climate Change 2014, U.S. Environmental Protection Agency 2016b, California Air Resources Board 2016c, Bay Area Air Quality Management District 2015

\(\text{ARB} = \) Air Resources Board  
\(\text{CO}_2\text{e} = \) carbon dioxide equivalent  
\(\text{EPA} = \) U.S. Environmental Protection Agency  
\(\text{GHG} = \) greenhouse gas  
\(\text{IPCC} = \) Intergovernmental Panel on Climate Change  
\(\text{SFBAAB} = \) San Francisco Bay Area Air Basin  

\(^a\) According to the BAAQMD, the 2011 GHG inventory is the most recent inventory available, although several updates are currently underway. A separate inventory for Sonoma County is not available.

Fossil fuel consumption in the transportation sector was the largest source of GHG emissions in the SFBAAB, accounting for 39.7 percent of the GHG emissions (Bay Area Air Quality Management District 2015). Industrial and commercial sources were the second largest contributors of GHG emissions in the SFBAAB, accounting for 35.7 percent of the total BAAQMD GHG emissions (excluding electricity/co-generation and agriculture/farming, which were reported separately). Energy production activities were the third largest GHG source at 14.0 percent.

GHG emissions for the Bay Area counties under BAAQMD jurisdiction are summarized in Table 3-7 below.

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\(^3\) A GHG sink is a process, activity, or mechanism that removes a GHG from the atmosphere.
### Overview of Criteria Pollutants

The following sections describe the criteria pollutants of greatest concern in the Plan Area: ozone, CO, and inhalable PM.

**Ozone**

Ozone is a severe eye, nose, and throat irritant and increases susceptibility to respiratory infections. It is an oxidant that can cause substantial damage to synthetic rubber, textiles, and other materials. Ozone also produces leaf discoloration and cell damage in plants.

Ozone is not emitted directly, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and oxides of nitrogen (NOx), react in the presence of sunlight to form ozone. Because photochemical reaction rates depend on air temperature and the intensity of ultraviolet light, ozone is primarily a summer air pollution problem. The ozone precursors ROG and NOx are emitted by mobile sources as well as by stationary combustion equipment. In the Plan Area, specific sources include vehicle traffic on area roads and highways, as well as agricultural equipment (California Air Resources Board 2009).

**Carbon Monoxide**

CO has little effect on plants and materials, but it can have significant effects on human health. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. Effects on humans range from slight headaches to nausea to death (California Air Resources Board 2009).

Motor vehicles are the primary source of CO emissions in the Plan Area (Bay Area Air Quality Management District 2011). High CO levels are of greatest concern during the fall and winter months, when periods of light winds combine with the formation of ground-level temperature inversions from evening through early morning. These conditions trap pollutants near the ground, reducing the dispersion of vehicle emissions. The inversion layer is typically based about 1,500 feet above sea level; the relatively low minimum temperatures in the inland valleys of the Bay Area attest to its formation.
to the high frequency of radiation inversions due to surface cooling (Bay Area Air Quality Management District 2006). Moreover, motor vehicles exhibit increased CO emission rates at low air temperatures.

**Inhalable Particulate Matter**
Particulates can damage human health and retard plant growth. They also reduce visibility, soil buildings and materials, and cause corrosion. Health concerns associated with suspended particulate matter focus on particles small enough to be drawn into the lungs when inhaled: those with a diameter of 10 microns or less (PM10) and those with a diameter of 2.5 microns or less (fine particulate matter) (Bay Area Air Quality Management District 2011; California Air Resources Board 2009).

Particulate emissions are generated by a wide variety of sources in the Plan Area, including agricultural and industrial activities. In addition, dust is suspended by vehicular traffic, and secondary aerosols are formed by reactions in the atmosphere (California Air Resources Board 2009).

**Climate Change and Greenhouse Gases**
Climate change refers to a significant change in measures of climate, such as average temperatures, precipitation, and wind patterns over a period of time. Significant changes in global climate patterns have recently been associated with global warming (an average increase in the temperature of the atmosphere near the earth’s surface), which is attributed to the accumulation of GHG emissions in the atmosphere (California Office of Planning and Research 2008). Generally speaking, these gases trap heat in the atmosphere, which in turn heats the surface of the earth. As the earth’s surface heats up, snow melts, sea levels rise, hot temperatures become more frequent, wildfires increase, and droughts become more prominent, among other effects that can change climate patterns across the earth. Human activities that contribute GHGs include combustion of fossil fuels (i.e., fuels containing carbon such as wood, coal, gasoline, and diesel) (California Office of Planning and Research 2008). The most common GHG that results from human activity is carbon dioxide (CO2), followed by methane (CH4), and nitrous oxide (N2O).

**Sensitive Land Uses**
Populations that are sensitive to poor air quality are referred to as sensitive receptors and include residents, school children, hospital patients, and the elderly. For the purposes of this analysis, sensitive land uses are defined as locations where people, particularly sensitive receptors, are concentrated or where the presence of pollutant emissions could adversely affect the use of the land. Sensitive land uses are found throughout the Plan Area. Sensitive land uses such as residential areas, schools, and hospitals are typically most concentrated in developed areas, but residences and other sensitive land uses also occur in sparser distribution in rural/agricultural areas.

### 3.2.2 Environmental Consequences

#### 3.2.2.1 Methodology for Impact Analysis

O&M and minor construction activities would be the principal source of pollutant emissions associated with the Proposed Action, so analysis of the effects on air quality is focused on O&M and
minor construction activities. Because the O&M and minor construction program would be the same under both alternatives, this analysis assumed that air pollutant emissions would be the same for both alternatives.

The Proposed Action and No Action alternatives would each result in a slightly different balance of impact avoidance versus compensation for unavoidable impacts, so there could be some in-practice difference in long-term pollutant generation related to variation in the extent of compensation lands and the equipment and ground disturbance needed to manage them. However, it is impossible to predict the extent and type of management activities needed under each alternative, or the exact equipment required, because the location and condition of compensation lands cannot be identified at this time. Consequently, analysis of the—probably minor—differences in air pollutant emissions among the Proposed Action and No Action alternatives would be speculative at this time.

The impact analysis in this section focuses on the potential for the HCP and Covered Activities to generate air or GHG emissions that could contribute to existing violations of federal or state standards or adversely affect sensitive receptors in the Plan Area. Impacts on air quality were evaluated qualitatively based on professional judgment in light of the Covered Activities and conservation strategy of the Bay Area O&M HCP. Impacts were not assessed quantitatively because localized air quality impacts would vary, depending on site-specific conditions and the work being conducted, details of which are not known at this time. Moreover, there would likely be no difference in air pollutant emissions between the Proposed Action and No Action alternative.

The federal General Conformity Rule applies to the portions of the Plan Area that are classified as being in nonattainment for the federal ozone and PM$_{2.5}$ standards and maintenance for the federal CO standard (Table 3-5).

**Environmental Programs and Avoidance and Minimization Measures**

Applicable PG&E environmental programs include:

- promotion and dissemination of air quality educational materials via training sessions, and on job sites as necessary; and
- BMPs to avoid and minimize air quality effects.

As part of its general environmental awareness program, PG&E includes information on air quality, such as legal requirements, vehicle operation restrictions, and BMPs to minimize fugitive dust. Fugitive dust BMPs are typically designed and implemented to meet the requirements of local air quality and could include the following measures:

- The crew shall not allow visible dust to pass beyond the project boundary. The crew shall abate dust by:
  - applying dust suppressants (e.g. water) to area being disturbed and/or have the potential to be disturbed and to storage stockpiles;
  - limiting vehicle speed to and post speed limits (no greater than 15 mph);
− loading haul trucks with a freeboard (space between top of truck and load) of six inches or greater;
− covering or applying water to the top of the haul truck load;
− cleaning-up carryout and trackout at least daily; and
− washing down vehicles and equipment as necessary and permitted.

- The crew shall not generate dust in amounts that create a nuisance to wildlife or people, particularly where sensitive receptors such as schools and hospitals are located nearby or downwind:

In addition, BMPs are implemented to minimize air pollutant emissions during construction and O&M activities such as the following:

- Encourage construction workers to carpool to the job site to the extent feasible. The ability to develop an effective carpool program for the project will depend upon the proximity of carpool facilities to the area, the geographical commute departure points of construction workers, and the extent to which carpooling will not adversely affect worker arrival time and the project’s construction schedule.

- Minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time will depend on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for use following start-up. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a “common sense” approach to vehicle use, so that idling is reduced as far as possible below the maximum of 5 consecutive minutes allowed by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a “common sense” approach to vehicle use.

- Maintain construction equipment in proper working conditions in accordance with PG&E standards.

- Minimize construction equipment exhaust by using low-emission or electric construction equipment where feasible. Portable diesel fueled construction equipment with engines 50 hp or larger and manufactured in 2000 or later will be registered under the CARB Statewide Portable Equipment Registration Program.

- Minimize welding and cutting by using compression of mechanical applications where practical and within standards.
Encourage use of natural gas powered vehicles for passenger cars and light-duty trucks where feasible and available.

Encourage the recycling of construction waste where feasible.

In addition PG&E specifically targets reduction of GHG gases, specifically sulfur hexafluoride (SF₆) emissions, at electric substations. PG&E implements a system-wide SF₆ emission reduction program. CARB has adopted the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear sections 95350 to 95359, title 17, California Code of Regulations, which requires that company-wide SF₆ emission rate not exceed 1 percent by 2020. Since 1998, PG&E has implemented a programmatic plan to inventory, track, and recycle SF₆ inputs, and inventory and monitor system-wide SF₆ leakage rates to facilitate timely replacement of leaking breakers. PG&E has improved its leak detection procedures and increased awareness of SF₆ issues within the company. X-ray technology is now used to inspect internal circuit breaker components to eliminate dismantling of breakers, reducing SF₆ handling and accidental releases. As an active member of EPA’s SF₆ Emission Reduction Partnership for Electrical Power Systems, PG&E has focused on reducing SF₆ emissions from its transmission and distribution operations and has reduced the SF₆ leak rate by 89 percent and absolute SF₆ emissions by 83 percent.

Applicable HCP Avoidance and Minimization Measures (AMMs) include:

- **FP-02/BMP-9** – Park vehicles and equipment on pavement, existing roads, or other disturbed or designated areas (barren, gravel, compacted dirt).
- **FP-03** – Use existing access and ROW roads. Minimize the development of new access and ROW roads, including clearing and blading for temporary vehicle access in areas of natural vegetation.
- **FP-07** – Vehicle speeds on unpaved roads will not exceed 15 miles per hour.
- **BMP-7** – To avoid hitting or crushing wildlife in the roadway and to avoid generating dust, vehicles will not exceed a speed limit of 15 miles per hour on low-use unpaved roads such as agricultural field roads, transmission right-of-way roads, and non-system numbered USFS roads with locked gates. Travel on high-use unpaved roads such as USFS logging roads shall be as slow as local traffic conditions allow.
- **BMP-12** – After vegetation management activities, if the amount of bare soil exposed in one location exceeds 0.1 acre, erosion control measures shall be implemented. These measures may include straw mulching, seeding, and use of straw waddles. (No rice straw will be used around wetlands containing vernal pools.)
- **BMP-20** – All equipment shall be permitted by the ARB as required, including portable equipment or new stationary equipment with internal combustion engines greater than 50 Brake HP (e.g., tow-behind generators, chippers, and truck- or trailer-mounted air compressors and pumps).
BMP-21 – When working within 50 feet of residences or government or commercial buildings, engine idling, noise, and odor should be minimized to the extent practicable. Also adhere to the restrictions noted in the Commercial Vehicle Idling Tailboard when working on school grounds or within 100 feet of a school (K-12 and below, including play areas and sports fields, and day care facilities).

3.2.2.2 Proposed Action

The potential effects described below pertain to both construction and operations.

Impact 3.2-1: Generation of Substantial Air or GHG Emissions

Covered Activities, as well as management activities on habitat mitigation lands, would generate air and GHG emissions, which could result in degraded air quality and contribute to climate change. Covered Activities would require the use of vehicles for worker commutes and inspections, and some activities would require the use of construction equipment and result in varying levels of ground disturbance. The use of vehicles and equipment would generate air pollutants, including CO, ozone precursors, and TACs, from exhaust and fuel combustion. Ground-disturbing activities and vehicle travel on unpaved roads would generate fugitive dust (particulate matter) as soil is disturbed. Painting and asphalt paving would generate ROG emissions. Covered Activities will generate varying levels of vehicle- and equipment-related pollutants and fugitive dust depending on the type and duration of the activity, as summarized below.

- Vehicles (e.g., trucks, helicopters and fixed-wing light aircraft, and all-terrain vehicles) used for employee access to sites and for inspection patrols would generate criteria pollutant and GHG emissions.
- Heavy machinery (e.g., cranes, excavators, and scrapers) for construction and maintenance of PG&E facilities and infrastructure would generate criteria pollutant and GHG emissions.
- Smaller equipment (e.g., chainsaws and generators) would generate criteria pollutant and GHG emissions.
- Painting and asphalt paving would generate evaporative ROG emissions.
- Ground-disturbing activities (e.g., grading, excavation, and construction of roadways) would generate emissions of fugitive dust (PM$_{10}$ and PM$_{2.5}$).
- Vehicles and equipment traveling on unpaved roads and offroad would generate emissions of fugitive dust (PM$_{10}$ and PM$_{2.5}$).

Some, but not all, of the Covered Activities would not require heavy earthmoving equipment (such as backhoes or bulldozers); and most Covered Activities would require use of a motorized vehicle to access the specific work site. Minor new construction would include installing new or replacement structures to upgrade existing facilities or to extend service to new customers. Pipeline upgrades could be minor or major, and would be limited to replacement of existing pipelines. Management
activities on habitat mitigation lands would be minimal, but would require the use of vehicles and possibly equipment for maintenance and monitoring purposes.

Specifics regarding the types and number of vehicles/equipment, duration of use, and frequency of use are impossible to predict at this time, but it is anticipated that PG&E’s activities would continue in their current manner. These activities are temporary and sporadic; although some, such as patrols, are regularly scheduled in compliance with CPUC requirements, others occur on an as-needed basis.

The majority of the Covered Activities would be similar to existing activities conducted by PG&E. Specifically, the type and number of vehicles and equipment, duration of use, and frequency of use are anticipated to be similar to PG&E’s current O&M and minor new construction operations. Emissions from these Covered Activities are expected to decline over the 30-year life of the HCP as PG&E replaces its vehicles and construction equipment with more efficient, less polluting models in order to comply with BAAQMD and YSAQMD rules and regulations. No new permanent emission-generating facilities are anticipated under the Proposed Action and any replacement would be in-kind, except that emissions would likely be less due to improvements in technology. O&M activities associated with emergency response are the same (i.e., the amount and extent) as the other Covered Activities, except with respect to timing and urgency of completing the work. However, actual emergency responses are generally infrequent and temporary (generally lasting less than 30 days). Maintenance patrols occur on a regularly scheduled basis in compliance with CPUC requirements and on an as-needed basis.

For all Covered Activities and activities on habitat mitigation lands, PG&E would implement BMPs identified in the Bay Area O&M HCP, comply with its land use and air quality environmental practices, as summarized above, and implement the following AMMs: FP-02, FP-03, FP-07, BMP-7, BMP-12, BMP-20, and BMP-21. Although air and GHG emissions would still be generated from Covered Activities, emissions from individual activities would be minimized with implementation of the measures and practices, and long-term emissions of all Covered Activities would also be minimized. Moreover, since Covered Activities and O&M activities would be similar to existing conditions and implemented under the No Project Alternative, there would be no net increase in construction or operational emissions. Accordingly, neither construction nor operation of the project would generate net criteria pollutant or GHG emissions, relative to the No Project Alternative, in excess of BAAQMD or YSAQMD thresholds. There would be no adverse effect on air quality or climate change.

The following AMMs will ensure minimal effects: FP-02, FP-03, FP-07, BMP-7, BMP-12, BMP-20, and BMP-21.

**Impact 3.2-2: Exceedance of Federal General Conformity Thresholds**

While the Plan Area is located in a nonattainment and maintenance area for the NAAQS (see above), the federal action addressed in this EA is the issuance of an incidental take permit. This federal action would not directly result in emissions of criteria pollutants, nor would it result in indirect emissions because the Service does not exercise continuing control over any development activities

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4 The PG&E Covered Activities and O&M activities are an independent action and do not require the Service permit to proceed.
that would result in emissions after issuance of the permit.\(^5\) In this case, the federal action associated with the Service Permit is a necessary first step to any development activity (and associated emissions) that will ultimately occur independent of Service control.\(^6\) Thus, a conformity determination is not required for this federal action undertaken by the Service and there would be no adverse effect on air quality.

**Impact 3.2-3: Air Quality and GHG Benefits from Habitat Mitigation Lands**

The designation of habitat mitigation lands could enhance air quality in the Plan Area by preserving large areas of open space and protecting the lands from development and other activities. The mitigation lands would consist of high-quality open space that provides habitat for the Covered Species. PG&E would designate these lands in accordance with the conservation strategy in the Bay Area O&M HCP, which would ensure the highest quality land is preserved in perpetuity. Protecting the land from development ensures stored carbon in soil and plant biomass is not released and that the lands will continuing serving as a natural GHG sink. The preservation of large expanses of vegetated lands would therefore help enhance air quality in the region and provide an overall benefit to air quality and GHG emissions.

**Impact 3.2-4: Exposure to Sensitive Receptors to TAC Emissions from Covered Activities**

Diesel-powered construction equipment and heavy-duty trucks would create diesel exhaust emissions that could expose receptors to increase health risks. However, most of the Covered Activities are not expected to occur within close proximity (i.e., 1,000 feet) to sensitive receptors. These activities would also be limited in duration and occur relatively infrequently. While the locations of specific activities may differ under the No Project Alternative, many would be the same as under the Proposed Action, and such, there would be no net change in TAC emissions and associated health risks. PG&E would also implement BMP-20 and BMP-21 to further reduce TACs. Accordingly, none of the Covered Activities are expected to expose sensitive receptors to TAC emissions.

The following AMMs will ensure minimal effects: BMP-20 and BMP-21.

**Impact 3.2-5: Odor Generation from Covered Activities**

Some of the Covered Activities would involve the use of gasoline- and diesel-powered equipment that emits exhaust fumes and involve painting or asphalt paving, which have a distinctive odor during application. These activities would take place intermittently throughout the work period, and the associated odors are expected to dissipate within the immediate vicinity of the work area. Persons near the work area may find these odors objectionable. Because of the infrequency of the emissions, rapid dissipation of the exhaust into the air, and short-term nature of the activities in a single work

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\(^5\) As the regulatory definition of indirect emissions states, a federal approval that is a necessary first step for a later activity that will result in emissions does not mean that the federal agency can practically control any of these emissions.

\(^6\) That a conformity analysis is not required is also supported by EPA's guidance document, *General Conformity Guidance: Questions and Answers*, which states: "Direct and indirect emissions must be reasonably foreseeable and the Federal agency must be able to practically control them as part of its continuing program responsibility." Question 6 (emphasis added) (U.S. Environmental Protection Agency 1994).
area, none of the Covered Activities are expected to result in objectionable odors that affect a large number of people.

The following AMMs will ensure minimal effects: BMP-20 and BMP-21.

### 3.2.2.3 No Action Alternative

Under the No Action Alternative, the Service would not issue an incidental take permit related to the Bay Area HCP. PG&E would continue its existing program of O&M activities and minor new construction activities and implement current environmental programs and practices, including BMPs. A regional HCP would not be implemented, and individual activities would be subject to project-by-project evaluations, and incidental take authorizations and mitigation if they would affect federally listed species. Because compensation requirements would be assessed on a project-by-project basis, smaller parcels of land would likely be identified for enhancement or preservation for the individual projects instead of as part of a regional conservation effort. The creation of numerous small habitat mitigation lands would increase the need for management activities on more lands.

PG&E would be expected to use similar criteria for identifying suitable compensation lands as defined in the proposed HCP and to coordinate with appropriate agencies and landowners to establish habitat mitigation lands and minimize the potential for air quality-related conflicts. Impacts on air quality under the No Action Alternative would be the same for O&M activities as described for the Proposed Action, but a slight increase in air emissions would be expected on the additional habitat mitigation lands, which would be relatively minor and distributed throughout the Plan Area.
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3.3 Biological Resources

This section characterizes the biological setting of the Plan Area and analyzes the effects of the Proposed Action and No Action alternatives on special-status species and their habitats, including the species covered in the proposed Bay Area O&M HCP and other federally listed species that may occur in the Plan Area. The biological resources data from the HCP were used in this section and were subjected to an independent analysis, as further explained in Section 3.3.2.1.

3.3.1 Affected Environment

3.3.1.1 Regulatory Setting

The regulations and policies of various federal and state agencies (e.g., Corps, EPA, and Service) mandate protection of wetlands, special-status plant and wildlife species, and aquatic and terrestrial communities in the region. The Corps has primary federal responsibility for administering regulations that concern waters and wetlands, while the Service, NMFS, and CDFW have responsibility for administering regulations that concern listed species and other species of concern.

Federal Regulations

**Federal Endangered Species Act**

Under Section 4 of the Act, the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). Section 9 of the Act prohibits the “take”7 of any fish or wildlife species listed under the Act as endangered or threatened. The Act includes mechanisms that provide exceptions to the Section 9 take prohibitions. These exceptions are addressed in Section 7 of the Act for federal agency actions and Section 10 for nonfederal actions. Section 7 of the Act requires federal agencies to consult with the Service and/or NMFS for actions that may affect a federally listed species. Formal consultation under Section 7 of the Act occurs if an action is likely to adversely affect a federally listed species and concludes with the Service and/or NMFS issuing a biological opinion. A biological opinion would also conclude whether the project is likely to jeopardize the continued existence of any species listed, or proposed to be listed, under the Act, or result in the destruction or adverse modification of critical habitat (16 USC 1536[3][4]). As described in Chapter 1, PG&E has prepared an HCP to address potential effects of the Bay Area O&M activities on listed species, pursuant to Section 10 of the Act. This EA has been prepared to evaluate the environmental effects of issuing a Section 10 ITP, which constitute a federal action requiring NEPA. Because issuance of an ITP under Section 10 is a federal action, the Service will conduct an internal formal Section 7 consultation on issuance of the proposed HCP.

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7 “Take” is broadly defined in Section 9 of the Act to include intentional or accidental “harassment” or “harm” to wildlife. “Harass” is further defined by the U.S. Fish and Wildlife Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, and sheltering. “Harm” is defined as an act which actually kills or injures wildlife. This may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.
Migratory Bird Treaty Act

The Service is responsible for overseeing compliance with the federal Migratory Bird Treaty Act (MBTA) (16 USC, Section 703, Supplement I, 1989) that protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 CFR 21, 50 CFR 10). This act encompasses whole birds, parts of birds, and bird nests and eggs. Most actions that result in taking of or the permanent or temporary possession of a protected species constitute violations of the MBTA. Most bird species and their occupied nests that occur in the Plan Area would be protected under the MBTA.

Bald and Golden Eagle Protection Act

The Service is responsible for overseeing compliance with the Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668-668c) that makes it illegal to “take [which includes molest or disturb], possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or in any manner, any bald eagle (Haliaeetus leucocephalus), or golden eagle (Aquila chrysaetos), alive or dead, or any part, nest, or egg, thereof.” The 1978 amendment authorizes the U.S. Secretary of the Interior to permit the taking of golden eagle nests that interfere with resource development or recovery operations.

In January 2011, the Service issued the Draft Eagle Conservation Plan Guidance (Guidance) intended to assist parties to avoid, minimize, and mitigate adverse effects on bald and golden eagles. USFWS issued revised Eagle Conservation Plan (ECP) Guidance in 2013. The Guidance calls for scientifically rigorous surveys, monitoring, assessment, and research designs proportionate to the risk to eagles. Guidance describes a process by which wind energy developers and others seeking programmatic eagle take authorization can collect and analyze information that could lead to a programmatic permit to authorize unintentional take of eagles. The Service recommends that ECPs be developed in five stages. Each stage builds on the prior stage, such that together the process is a progressive, increasingly intensive look at likely effects of the development and operation of a particular site and configuration on eagles.

In May 2016, the Service issued a new rule on the Federal Register with a 26-day comment period ending in July 2016. The rule proposes revisions to the eagle nonpurposeful take permit regulations and eagle nest take regulations that the Service promulgated in 2009. Proposed revisions include the following: changes to permit issuance criteria and duration; definitions; compensatory mitigation standards; criteria for eagle nest removal permits; permit application requirements; and fees. The revisions are intended to add clarity to the eagle permit regulations, improve their implementation, and increase compliance, while providing strong protection for eagles.

Clean Water Act

The Clean Water Act (CWA) is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to waters of the United States. Although the purpose of the act is primarily to maintain water quality for both human and environmental benefits, regulations developed pursuant to this act deal extensively with permitting of actions in wetlands. These regulations provide more specific protection for wetland habitats—most of which are important ecologically—than any other laws. The EPA has primary authority under the CWA to set standards for water quality and for effluents, but the Corps has responsibility for permitting dredge and fill in wetlands under Section 404 of the CWA.
To comply with Section 404 of the CWA, project proponents must obtain a permit from the Corps for all discharges of fill material into waters of the United States, including wetlands, before proceeding with a proposed activity. **Waters** are broadly defined in 33 CFR 328(a) to include navigable waters, perennial and intermittent streams, lakes, rivers, and ponds, as well as wetlands, marshes, and wet meadows. **Wetlands** are defined for regulatory purposes in the CFR as areas “inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3, 40 CFR 230.3). To be considered subject to federal jurisdiction, a wetland must normally exhibit positive indicators for three distinct features: hydrophytic vegetation, hydric soil, and wetland hydrology.

**Rivers and Harbors Act of 1899**

Section 10 of the Rivers and Harbors Act prohibits the obstruction or alteration of any navigable water of the United States. Under this act, the Corps must authorize any excavation or deposition of materials into such waters, or for any work that could affect the course, location, condition, or capacity of such waters.

**Coastal Zone Management Act of 1972**

This act established the authority for creating coastal zone management areas and the California Coastal Commission. Coastal zone management criteria are established by the Commission and must be followed by federal, other government, or private entities performing any activities within the coastal zone.

**State Regulations**

**California Fish and Game Code**

The California Endangered Species Act (CESA) (California Fish and Game Code [Fish and Game Code] 2050 et seq.) is intended to conserve, protect, restore, and enhance any state-protected endangered or threatened species and its habitat and is implemented by the CDFW. The Fish and Game Code authorizes the take of endangered, threatened or candidate species either through a state permit under Section 2081, or through a federal consistency determination under Section 2080.1, when an applicant has obtained an ITP or biological opinion pursuant to the federal Act and is found to be consistent with CESA. The Fish and Game Code also lists fully protected species (Sections 3511, 4700, 5056, and 5515). Presently, take of fully protected species incidental to otherwise lawful development can only be permitted under the Natural Community Conservation Plan Act (Fish and Game Code 2800). Take under state law is defined as actions to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill” (Fish and Game Code 86). This definition does not include harm or harass as included in the federal definition. PG&E has applied for a 2081 permit with CDFW. However, in accordance with Section 1913(b) of the Fish and Game Code, removal of rare or endangered plants by a public utility shall not be restricted by provisions of the CESA. Section 1913(c) provides for salvage of rare or endangered native plants by the CDFW, where notification has been provided to the land owner.

**California Endangered Species Act**

Under the CESA, the CDFW has the responsibility for maintaining a list of threatened and endangered species (California Fish and Game Code 2070). The CDFW also maintains a list of
“candidate species,” which are species formally noticed as being under review for addition to either the list of endangered species or the list of threatened species. In addition, CDFW maintains lists of “species of special concern,” which serve as “watch lists.” Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present on the project site and determine whether the proposed project could have a potentially significant impact on such species. In addition, the CDFW encourages informal consultation on any proposed project that may impact a candidate species. Project-related impacts on species on the CESA endangered or threatened lists would be considered significant in this EA.

**California Native Plant Protection Act**

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed the CDFW to carry out the legislature’s intent to “preserve, protect, and enhance endangered plants in this state.” The NPPA gave the California Fish and Wildlife Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. The CESA expanded upon the original NPPA and enhanced legal protection for plants. CESA established threatened and endangered species categories, and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, there are three listing categories for plants in California: rare, threatened, and endangered.

**California Coastal Act**

The California Legislature enacted the California Coastal Act in 1976 in order to regulate coastal development throughout the state. The Act created a “coastal management zone” that generally extends 3 miles seaward and up to 5 miles inland from the mean high tide line. In particularly important and generally undeveloped areas where there can be considerable impact on the coastline from inland development, the coastal zone may extend to a maximum allowable limit. In developed urban areas, the coastal zone generally extends inland for a much shorter distance. Each city or county government whose jurisdiction includes land in the coastal zone must develop a Local Coastal Program (LCP) for the area, which guides planning, conservation, and use of coastal resources, must be consistent with the Coastal Act, and must be certified by the California Coastal Commission (CCC). Any person wishing to develop land within the coastal zone must obtain a permit from the relevant city or county, and the development plan must be consistent with the policies of the Act.

**Local Plans and Strategies**

Through Article VII, Paragraph 5 of the California Constitution, the state legislature, vests the CPUC with exclusive jurisdiction over the siting and design of gas and electric facilities. California Public Utilities Code Section 1007.5 and other California statutes and case law detail the nature and extent of this sole discretionary permitting authority. Because state law has preempted the field, PG&E is not subject to local land use planning or zoning requirements.

While PG&E’s utility related activities are solely regulated by CPUC and are thus not subject to local zoning ordinances, PG&E consults with local cities and counties to ensure that local concerns and issues are considered during the project planning process; construction and O&M activities are developed and implemented in such a way as to comply with existing local zoning ordinances, when feasible.
The following information is provided to describe the context of the proposed Bay Area O&M HCP relative to other adopted habitat conservation plans and similar conservation strategies in the Bay Area region.

**Habitat Conservation Plans**

**East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (2006).** The East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (ECC HCP/NCCP), which is overseen by the East Contra Costa County Habitat Conservancy, covers the eastern one-third of Contra Costa County (174,018 acres). It allows Contra Costa County, the Contra Costa County Flood Control and Water District, the East Bay Regional Park District, and the cities of Brentwood, Clayton, Oakley, and Pittsburg (collectively “Permittees”) to streamline environmental permitting for activities and projects in the region that are covered by the ECC HCP/NCCP. The ECC HCP/NCCP also provides for comprehensive species, wetlands, and ecosystem conservation, and contributes to the recovery of endangered species in California, while allowing for limited take of 28 listed and non-listed (“covered”) species. By implementing the ECC HCP/NCCP, the above-mentioned Permittees have 30-year permits from the Service and CDFW that authorize incidental take of covered species, and will avoid project-by-project permitting that is generally costly and time consuming.

**Santa Clara Valley Habitat Conservation Plan/Natural Communities Conservation Plan Administrative Draft (2012).** The Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (SCV HCP/NCCP), which is overseen by the Santa Clara Valley Habitat Agency, covers approximately 508,699 acres. It allows the City of San Jose, Santa Clara County, Santa Clara Valley Transportation Authority, Santa Clara Valley Water District, City of Gilroy, and City of Morgan Hill (collectively “Permittees”) to streamline environmental permitting for activities and projects in the region that are covered by the SCV HCP/NCCP. The SCV HCP/NCCP also provides for comprehensive species, wetlands, and ecosystem conservation, and contributes to the recovery of threatened and endangered species in California, while allowing for limited take of 18 listed and non-listed (“covered”) species. By implementing the SCV HCP/NCCP, the above-mentioned Permittees have 50-year permits from the Service and CDFW that authorize incidental take of covered species, and will avoid project-by-project permitting that is generally costly and time consuming.

**East Alameda County Conservation Strategy (2012).** The East Alameda County Conservation Strategy (EACCS) is a collaborative effort to preserve endangered species by developing and adopting a guide to their long-term protection. The inventory area for this conservation strategy includes the cities of Dublin, Pleasanton, and Livermore, as well as unincorporated areas of eastern Alameda County. Annual grassland, seasonal and permanent wetlands, riparian woodland, oak woodland, and scrub communities within the inventory area are known to support several listed or sensitive wildlife species, including California tiger salamander, San Joaquin kit fox, Alameda whipsnake, and California red-legged frog. The EACCS describes current biological conditions in the region, which present a baseline for species habitat with which to compare future development.

The EACCS streamlines and simplifies the issuance of CWA Section 404 permits for future projects and standardizes avoidance, minimization, mitigation, and compensation requirements to comply with federal, state, and local laws and regulations relating to biological and natural resources in the study area.
area. The EACCS also provides a long-term regional conservation strategy to protect species by prioritizing habitats that should be protected or restored. In May 2012, the Service issued a Programmatic Biological Opinion (Programmatic BO) for Corps-permitted projects using the EACCS for projects that may affect one or more of the species covered in the EACCS and Programmatic BO.

**Santa Rosa Plain Conservation Strategy (2005).** The Santa Rosa Plain Conservation Strategy (SRPCS) seeks to create a long-term program to mitigate potential adverse effects on listed species due to future development on the Santa Rosa Plain, which is located in central Sonoma County, bordered on the south and west by the Laguna de Santa Rosa, on the east by the foothills, and on the north by the Russian River. The Plain and adjacent areas are characterized by vernal pools, seasonal wetlands, and associated grassland habitat, which supports several species of flora and fauna that are listed by the Act as threatened or endangered, including the threatened California tiger salamander (CTS) and four endangered plant species: Burke’s goldfields, Sonoma sunshine, Sebastopol meadowfoam, and many-flowered navarretia.

The SRPCS was created to (1) provide a plan for local agencies, developers, and community groups that would preserve and enhance populations and habitat of the listed species; (2) support the issuance of a Service authorization for incidental take of CTS and listed plants that may occur in the course of carrying out a broad range of activities on the Plain; and (3) protect stakeholders’ (public and private) interests. It is based in part on the Santa Rosa Plain Vernal Pool Ecosystem Preservation Plan (1995).

In November 2007, the Service issued a Programmatic Biological Opinion for Corps-permitted projects using the SRPCS for projects that may affect one or more of the species covered in the SRPCS and Programmatic Biological Opinion.

**Bay Conservation and Development Commission Acts and Plans.**

*Suisun Marsh Preservation Act of 1977 and Suisun Marsh Protection Plan.* The Nejedly-Bagley-Z’berg Suisun Marsh Act was enacted in 1974 to require the Bay Conservation and Development Commission (BCDC) and the CDFW to prepare a plan (later called the Suisun Marsh Protection Plan) to preserve the integrity and ensure continued wildlife use of the Suisun Marsh, approximately 85,000 acres of tidal marsh, managed wetlands, and waterways in southern Solano County. Suisun Marsh is the largest remaining brackish wetland complex in San Francisco Bay; it constitutes more than 10 percent of California’s remaining wetland area and is a wildlife habitat of international importance. The Suisun Marsh Preservation Act (Cal. Pub. Res. Code Sections 29000-29612) was enacted in 1977 to incorporate the findings and policies contained in the Suisun Marsh Protection Plan of 1976 into state law and to empower BCDC to implement the plan through its regulatory authority. The Suisun Marsh Protection Plan, in brief, proposes (1) a primary management area encompassing 89,000 acres of tidal marsh, managed wetlands, adjacent grasslands, and waterways, over most of which BCDC now has jurisdiction, and (2) a secondary management area of approximately 22,500 acres of significant buffer lands. Under specific guidelines in each area, Solano County would be responsible for preparing and administering a local protection program. BCDC would represent the state’s interest, serving as the land use permitting agency for major projects in the primary management area and as an appellate body with limited functions in the secondary management area.
The San Francisco Bay Plan. The San Francisco Bay Plan (Bay Plan) was developed by the BCDC in 1968, and its provisions are currently maintained and carried out by the BCDC. Since the adoption of the Bay Plan, implementing legislation has been amended several times, but the general character, scope of authority, and area of jurisdiction are largely unchanged. The Bay Plan provides the findings and policies to guide future uses of the Bay and shoreline, certain waterways, salt ponds and managed wetlands, and the maps that apply these policies to the BCDC’s jurisdiction.

3.3.1.2 Environmental Setting

Land Cover Types in the Plan Area

Land cover types (habitat types) in the Plan Area were mapped during development of the Bay Area O&M HCP using available data sources and the classification system of the California Wildlife Habitat Relationships System. Additional information on the land cover mapping process is provided in the Bay Area O&M HCP (included as Appendix A of this EA).

The Plan Area contains seven types of natural communities, which include 54 land cover types, and two non-natural communities, which include two land cover types (Table 3-8). The majority of the Plan Area is mapped as urban, a non-natural community, and about 30 percent of the Plan Area is mapped as natural communities, with grasslands and forests covering the most area. A detailed breakdown of acreages of each land cover type is presented in Table 2-2 of the Bay Area O&M HCP (Appendix A).

Table 3-8. Natural and Non-Natural Communities in the Plan Area

<table>
<thead>
<tr>
<th>Community</th>
<th>Land Cover</th>
<th>Acres</th>
<th>Percent of Plan Area</th>
</tr>
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<tbody>
<tr>
<td>Forest</td>
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<td>16</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>Barren/Ruderal</td>
<td>Natural</td>
<td>4,646</td>
<td>1.2</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Non-Natural</td>
<td>25,825</td>
<td>6.4</td>
</tr>
<tr>
<td>Urban</td>
<td>Non-Natural</td>
<td>233,485</td>
<td>58</td>
</tr>
<tr>
<td>Unmapped Natural Communities*</td>
<td>Natural</td>
<td>11,253</td>
<td>2.8</td>
</tr>
<tr>
<td>Unmapped Non-Natural Communities*</td>
<td>Non-Natural</td>
<td>14,395</td>
<td>3.6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>402,440</td>
<td>100</td>
</tr>
</tbody>
</table>

*Unmapped communities reflect unmapped facilities, new facilities, or mitigation lands that were not part of the land cover mapping process for the Bay Area O&M HCP. Refer to Chapter 2 of the Bay Area O&M HCP for details of this process.
Covered Federally Listed Species

The proposed Bay Area O&M HCP covers 13 plant species (Table 3-9) and 18 wildlife species (Table 3-10). All 31 species are listed under the Act as threatened or endangered and meet the criteria for coverage outlined in Chapter 1 (Section 1.5.2) of the Bay Area O&M HCP. Tables 3-9 and 3-10 present an overview of the covered species. Additional details on each species, such as life history and habitat information, can be found in the HCP.

Table 3-9. Plants Covered by Proposed Habitat Conservation Plan

<table>
<thead>
<tr>
<th>Species</th>
<th>Status Fed/State</th>
<th>Description and Habitat</th>
<th>Distribution in Plan Area*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallid manzanita Arctostaphylos pallida</td>
<td>T/E</td>
<td>Upright shrub in the Heath family (Ericaceae). Grows on east- or south-facing slopes in pure stands on somewhat sterile mineral soils at elevations ranging from 605–1,525 feet.</td>
<td>Found primarily at Sobrante Ridge Preserve and Huckleberry Preserve in Contra Costa and Alameda counties. About 2 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td>Sonoma sunshine Blennosperma bakeri</td>
<td>E/E</td>
<td>Annual herb in the sunflower family (Asteraceae). Flowers from February to April. Grows in vernal pools in mesic grasslands at elevations up to 360 feet.</td>
<td>Restricted to Sonoma County, which has 25 documented occurrences. About 2.5 acres of mapped habitat in the Plan Area.</td>
</tr>
<tr>
<td>Coyote ceanothus Ceanothus ferrisiae</td>
<td>E/-</td>
<td>Evergreen shrub in the buckthorn family (Rhamnaceae). Flowers from January to May. Grows in serpentine slopes, chaparral, coastal scrub, and valley and foothill grasslands at elevations up to 1,500 feet.</td>
<td>Restricted to the southeastern portion of the Plan Area, including portions of Santa Clara County, which has four documented occurrences. About 7 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td>Fountain thistle Cirsium fontinale var. fontinale</td>
<td>E/E</td>
<td>Perennial herb in the sunflower family (Asteraceae). Flowers from May to August. Grows in serpentine seeps and streams at elevations up to 590 feet.</td>
<td>Restricted to portions of San Mateo County, which has five documented occurrences. Less than 1 acre of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td>Santa Clara Valley dudleya Dudleya abramsii ssp. setchellii</td>
<td>E/-</td>
<td>Perennial herb in the stonecrop family (Crassulaceae). Flowers from April to June. Grows on rocky outcrops in serpentine grasslands and oak woodlands at elevations ranging from 195–1,495 feet.</td>
<td>Restricted to the southeastern portion of the Plan Area, including portions of Santa Clara County, which has 55 documented occurrences. About 3 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td>Species</td>
<td>Status Fed/State</td>
<td>Description and Habitat</td>
<td>Distribution in Plan Area</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Contra Costa wallflower</td>
<td>E/E Critical</td>
<td>Perennial herb in the mustard family (<em>Brassicaceae</em>). Flowers in March and April. Grows on inland dunes at elevations up to 65 feet.</td>
<td>Restricted to the eastern portion of the Plan Area in Contra Costa County, which has four documented occurrences. Less than 1 acre of mapped habitat in Plan Area. About 40 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td>Erysimum capitatum var. angustatum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marin dwarf-flax</td>
<td>T/T</td>
<td>Annual herb in the flax family. Flowers from April to July. Grows in serpentine areas of grasslands at elevations up to 1,215 feet.</td>
<td>Restricted to the northwestern portion of the Plan Area, including portions of Marin, San Francisco, and San Mateo counties, which have 26 documented occurrences. About 2 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td>Hesperolinon congestum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burke's goldfields</td>
<td>E/E</td>
<td>Annual herb in the sunflower family (<em>Asteraceae</em>). Flowers from April to June. Grows in vernal pools and wet meadows at elevations up to 1,970 feet.</td>
<td>Restricted to the Inner North Coast Ranges, including portions of Sonoma and Napa counties, which have 28 documented occurrences, with most in Sonoma County. About 1 acre of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td>Lasthenia burkei</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contra Costa goldfields</td>
<td>E, CH−</td>
<td>Annual herb in the sunflower family (<em>Asteraceae</em>). Grows in seasonal wetlands, particularly vernal pools and swales, in valley and foothill grasslands at elevations up to 350 feet.</td>
<td>Restricted to coastal California, including portions of Alameda, Contra Costa, Napa, Santa Clara, and Solano counties, with 28 documented occurrences in these counties. About 5 acres of mapped habitat in Plan Area. About 1,140 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td>Lasthenia conjugens</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sebastopol meadowfoam</td>
<td>E/E</td>
<td>Annual herb in the meadowfoam family (<em>Limnanthaceae</em>). Flowers from April to May. Grows in seasonal wetlands and vernal pools at elevations up to 1,000 feet.</td>
<td>Restricted to southern Sonoma County and possibly Napa County, with 45 documented occurrences in these counties, most in Sonoma County. Less than 0.1 acre of mapped habitat in the Plan Area.</td>
</tr>
<tr>
<td>Limnanthes vinculans</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3-9. Plants Covered by Proposed Habitat Conservation Plan

<table>
<thead>
<tr>
<th>Species</th>
<th>Status Fed/State</th>
<th>Description and Habitat</th>
<th>Distribution in Plan Area&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antioch Dunes evening primrose <em>Oenothera</em></td>
<td>E, CH/E</td>
<td>Perennial herb in the evening primrose family (<em>Onagraceae</em>). Flowers from March to September. Grows in sandy bluffs and dunes at elevations up to 100 feet.</td>
<td>Restricted to the northeastern portion of the Plan Area, including portions of Contra Costa County, which has nine documented occurrences. Less than 1 acre of mapped habitat in Plan Area. About 40 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td>deltoides ssp. <em>howellii</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White-rayed pentachaeta <em>Pentachaeta</em></td>
<td>E/E</td>
<td>Annual herb in the sunflower family (<em>Asteraceae</em>). Flowers from March to May. Grows in grassy or rocky areas of grasslands and chaparral at elevations up to 2,035 feet.</td>
<td>Restricted to the Plan Area, including portions of Marin and San Mateo counties, which have 10 documented occurrences. Less than 0.1 acre of mapped habitat in the Plan Area.</td>
</tr>
<tr>
<td><em>bellidiflora</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metcalf Canyon jewelflower <em>Streptanthus</em></td>
<td>E/−</td>
<td>Annual herb in the mustard family (<em>Brassicaceae</em>). Flowers from April to July. Grows in serpentine areas of grasslands at elevations up to 1,200 feet.</td>
<td>Restricted to the southeastern portion of the Plan Area, including a portion of Santa Clara County, which has 12 documented occurrences. About 8 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td>glandulosus ssp. <em>albidus</em></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: PG&E Bay Area O&M HCP

Status Codes:

Federal (Fed) and State: E = Endangered, T = Threatened, − = No listing status, CH = Species has federally designated critical habitat

<sup>a</sup> Mapped habitat is based on site specific data in the California Natural Diversity Database, and in some instances, PG&E’s field surveys of the habitat.
### Table 3-10. Wildlife Covered by Proposed Habitat Conservation Plan

<table>
<thead>
<tr>
<th>Species</th>
<th>Status Fed/State</th>
<th>Habitat Requirements</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lange’s metalmark butterfly</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apodemia mormo langei</td>
<td>E/–</td>
<td>Dune habitat with naked stemmed buckwheat.</td>
<td>Restricted to Antioch Dunes in Contra Costa County, with one documented occurrence. About 10 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td><strong>Conservancy fairy shrimp</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Branchinecta conservatio</td>
<td>E, CH/–</td>
<td>Vernal pools in depressions in grasslands. Requires hydrologic connectivity between pools for dispersal.</td>
<td>Range encompasses the Central Valley and southern coastal California, with 12 documented occurrences in Solano County. About 300 acres of mapped habitat in Plan Area. About 320 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td><strong>Longhorn fairy shrimp</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Branchinecta longiantenna</td>
<td>E, CH/–</td>
<td>Vernal pools, seasonally ponded areas, and other ephemeral freshwater habitats. Disperse through animal transport, hydrologic connections between pools, and wind.</td>
<td>Known from five separate populations in San Luis Obispo, Merced, Alameda, Contra Costa, and Fresno counties, with three documented occurrences in Alameda and Contra Costa counties. About 10 acres of mapped habitat in Plan Area. About 10 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td><strong>Vernal pool fairy shrimp</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Branchinecta lynchi</td>
<td>T, CH/–</td>
<td>Vernal pools and other ephemeral habitats in grasslands or basalt flow depressions. Dispersal is through predator consumption and between pools during flood events.</td>
<td>Range extends from southern Oregon to southern California. Documented in Napa and Solano counties and eastern portions of Alameda and Contra Costa counties, with 56 documented occurrences in these counties. About 5,000 acres of mapped habitat in Plan Area. About 1,130 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td><strong>Delta green ground beetle</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elaphrus viridis</td>
<td>T, CH/–</td>
<td>Vernal pool complexes and other seasonal wetlands in grasslands. Requires high clay-content soils.</td>
<td>Restricted to greater Jepson Prairie in Solano County, with seven documented occurrences. About 120 acres of mapped habitat in Plan Area. About 30 acres of designated critical habitat in Plan Area.</td>
</tr>
</tbody>
</table>
## Table 3-10. Wildlife Covered by Proposed Habitat Conservation Plan

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat Requirements</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay checkerspot butterfly</td>
<td>T, CH/–</td>
<td>Serpentine grasslands with dwarf plantain, purple owl’s clover, and exerted Indian paintbrush.</td>
<td>Range encompasses southern and eastern portions of San Francisco Bay Area, including San Francisco, San Mateo, Santa Clara, Alameda, and Contra Costa counties, with 21 documented occurrences. About 900 acres of mapped habitat in Plan Area. About 1,730 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td>Mission blue butterfly</td>
<td>E/–</td>
<td>Coastal chaparral and grasslands that support host plants: silver lupine, summer lupine, and varied lupine. Requires protection from wind, such as on leeward sides of slopes and in protected road cut areas.</td>
<td>Range includes southern Marin, San Francisco, and San Mateo counties, with 14 documented occurrences in these counties. About 650 acres of mapped habitat in the Plan Area.</td>
</tr>
<tr>
<td>Vernal pool tadpole shrimp</td>
<td>E, CH/–</td>
<td>Ephemeral freshwater pools, swales, and similar features. Disperse through flood events and transport by birds.</td>
<td>Range extends from Shasta County to Tulare County in the Central Valley, with isolated occurrences in Alameda and Contra Costa counties. 29 documented occurrences in Alameda, Contra Costa, and Solano counties. About 4,400 acres of mapped habitat in Plan Area. About 610 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td>Callippe silverspot butterfly</td>
<td>E/–</td>
<td>Native grasslands and adjacent habitats with hilltops and flowering plants for nectar. Requires johnny jump-up or violet for larval development.</td>
<td>Endemic to San Francisco Bay Area, with populations in San Mateo, Solano, and San Francisco (historically) counties. Seven documented occurrences in these counties. About 6,800 acres of mapped habitat in Plan Area.</td>
</tr>
</tbody>
</table>

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*Draft Environmental Assessment*

*December 2016*
Table 3-10. Wildlife Covered by Proposed Habitat Conservation Plan

<table>
<thead>
<tr>
<th>Species</th>
<th>Status Fed/State</th>
<th>Habitat Requirements</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>California freshwater shrimp</td>
<td>E/E</td>
<td>Low elevation (below 380 feet), low gradient (less than 1 percent) streams with submerged undercut banks and overhanging plants. Optimal stream depth is 1 to 3 feet.</td>
<td>Known from 17 stream segments in four drainage units in Napa, Marin, and Sonoma counties, with 18 documented occurrences in these counties. About 70 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td>Syncaris pacifica</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California tiger salamander</td>
<td>T, CH/T E, CH/T</td>
<td>Restricted to grasslands and low foothill regions that provide breeding habitat, including temporary ponds or pools, slower portions of streams, and some permanent waters. Unlikely to use permanent waters unless fish predators are absent. Requires dry-season refugia such as ground squirrel burrows within 1.3 miles of pools used for breeding.</td>
<td>Known from six populations across the Central Valley, San Francisco Bay Area, and Central Coast Range. Isolated populations in Butte and Siskiyou counties. More than 600 documented occurrences in the Plan Area. About 42,000 acres of mapped habitat in Plan Area. About 869 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td>Ambystoma californiense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central California Distinct Population Segment (DPS)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sonoma County DPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California red-legged frog</td>
<td>T, CH/SSC</td>
<td>Requires cool-water habitat (pools, streams, and ponds) with emergent and submergent vegetation. Most abundant in habitats with pools at least 2 feet deep, dense stands of overhanging willows, and a fringe of tules or cattails. Upland habitat within 2 miles of aquatic habitat used for dispersal.</td>
<td>Range encompasses San Francisco Bay Area, Sierra Nevada, northern Coast Ranges, northern Transverse Ranges, and Baja California. Known from all counties in Bay Area, with more than 800 documented occurrences in Plan Area. About 33,200 acres of mapped habitat in Plan Area. About 10,350 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td>Rana draytonii</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alameda whipsnake</td>
<td>T, CH/T</td>
<td>Coastal scrub, chaparral, and adjacent habitats with rock outcrops or abundant rodent burrows.</td>
<td>Known from five populations in Alameda, Contra Costa, small portions of northern Santa Clara, and western San Joaquin counties, with 143 documented occurrences in Alameda, Contra Costa, and Santa Clara counties. About 10,800 acres of mapped habitat in Plan Area. About 4,240 acres of designated critical habitat in Plan Area.</td>
</tr>
<tr>
<td>Masticophis lateralis euryxanthus</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3-10. Wildlife Covered by Proposed Habitat Conservation Plan

<table>
<thead>
<tr>
<th>Species</th>
<th>Status Fed/State</th>
<th>Habitat Requirements</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Francisco garter snake</td>
<td>E/E, FP</td>
<td>Densely vegetated ponds near open hillsides or seasonal ponds with emergent and bankside vegetation. May use rodent burrows for aestivation.</td>
<td>Range encompasses the San Francisco Peninsula from approximately the San Francisco County line south into San Mateo and Santa Cruz counties, with 66 documented occurrences in San Mateo County. About 570 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td><em>Thamnophis sirtalis tetrataenia</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ridgway rail</td>
<td>E/E, FP</td>
<td>Salt and brackish marshes with direct tidal circulation and areas of shallow water and mudflats.</td>
<td>Restricted to tidal marshes of San Francisco estuary, including San Francisco, San Pablo, and Suisun bays and associated tidal marshes, with 99 documented occurrences. About 2,600 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td><em>Rallus obsoletus</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salt marsh harvest mouse</td>
<td>E/E, FP</td>
<td>Requires dense cover of native salt-tolerant plants, particularly pickleweed. Found in saline emergent wetlands and adjacent grasslands.</td>
<td>Restricted to San Francisco Bay and its tributaries, including San Pablo, Suisun, Corte Madera, Richmond, and South San Francisco bays. More than 100 documented occurrences. About 2,100 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td><em>Reithrodontomys raviventris</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Joaquin kit fox</td>
<td>E/T</td>
<td>Native plant communities and agricultural fields or grasslands with loose-textured soils suitable for den excavation or with rodent burrows. May also use structures such as culverts, abandoned pipelines, and well casings as den sites.</td>
<td>Range extends from Contra Costa, Alameda, and San Joaquin counties to southern Kern County, with 44 documented occurrences in Alameda, Contra Costa, and Santa Clara counties. About 8,300 acres of mapped habitat in Plan Area.</td>
</tr>
<tr>
<td><em>Vulpes macrotis mutica</em></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: PG&E Bay Area O&M HCP  
Status Codes:  
Federal (Fed) and State: E = Endangered, T = Threatened, CH = Species has federally designated critical habitat, FP = Fully Protected, SSC = Species of Special Concern, − = No listing status

### Other Federally Listed Species

Several federally listed plant species and three fish species under NMFS’ jurisdiction are not covered by the proposed HCP because they did not meet the criteria for coverage outlined in the HCP. These species are identified in this section as part of the Service’s independent assessment of covered species because they are known to occur within the Plan Area; however, implementation of avoidance measures identified in the HCP are expected to avoid all adverse effects to non-covered federally listed plant species and these species are not evaluated further in this EA. Although rare, some individual PG&E activities could result in adverse effects to federally listed fish species under
NMFS’s jurisdiction; however, the precise locations that could be affected by individual Covered Activities cannot be identified at this time because O&M and minor construction activities that adversely affect NMFS species are rare and implemented on an as-needed basis over a broad geographic region. Thus it would be speculative to identify the location, nature, or amount of potential affects to species under NMFS’ jurisdiction. Further, PG&E activities that affect NMFS species typically also require a CWA permit from the Corps. The issuance of a CWA permit is subject to NEPA and Section 7 of the Act. These individual activities would be evaluated on a case-by-case basis. If adverse effects to species under NMFS’ jurisdiction were likely, formal consultation between the Corps and NMFS under Section 7 of the Act would be required. Therefore potential effects to species listed under NMFS’ jurisdiction are not evaluated further in this EA. No other federally listed or candidate species could be affected based on the Covered Activities described in the Bay Area O&M HCP (see Appendix A). Table 3-11 presents an overview of the non-covered federally listed species that occur in the Plan Area, based on information on these species contained in the HCP.

Table 3-11. Other Federally Listed Plants and Fish

<table>
<thead>
<tr>
<th>Species’ Scientific Name</th>
<th>Common Name</th>
<th>Status Fed/State</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Castilleja affinis</em> ssp. <em>neglecta</em></td>
<td>Tiburon paintbrush</td>
<td>E/T</td>
</tr>
<tr>
<td><em>Cordylanthus tenius</em> ssp. <em>capillaris</em></td>
<td>Pennell’s bird’s-beak</td>
<td>E/R</td>
</tr>
<tr>
<td><em>Eriophyllum latilobum</em></td>
<td>San Mateo woolly sunflower</td>
<td>E/E</td>
</tr>
<tr>
<td><em>Lessingia germanorum</em></td>
<td>San Francisco lessingia</td>
<td>E/E</td>
</tr>
<tr>
<td><em>Navarretia leucocephala</em> ssp. <em>plieantha</em></td>
<td>Many-flowered navarretia</td>
<td>E/E</td>
</tr>
<tr>
<td><em>Plagiobothrys strictus</em></td>
<td>Calistoga popcornflower</td>
<td>E/T</td>
</tr>
<tr>
<td><em>Poa napensis</em></td>
<td>Napa bluegrass</td>
<td>E/E</td>
</tr>
<tr>
<td><em>Potentilla hickmanii</em></td>
<td>Hickman’s cinquefoil</td>
<td>E/E</td>
</tr>
<tr>
<td><em>Sidalcea oregana</em> ssp. <em>valida</em></td>
<td>Kenwood Marsh checker-mallow</td>
<td>E/E</td>
</tr>
</tbody>
</table>

### Plants

- *Castilleja affinis* ssp. *neglecta*
- *Cordylanthus tenius* ssp. *capillaris*
- *Eriophyllum latilobum*
- *Lessingia germanorum*
- *Navarretia leucocephala* ssp. *plieantha*
- *Plagiobothrys strictus*
- *Poa napensis*
- *Potentilla hickmanii*
- *Sidalcea oregana* ssp. *valida*

### Fish

- *Oncorhynchus kisutch*
- *Oncorhynchus mykiss*
- *Oncorhynchus tshawytscha*

Note: List of species to evaluate derived from Bay Area O&M HCP (species evaluations contained in Appendix A to the HCP).

Sources: Bay Area O&M HCP, California Natural Diversity Database, RareFind 5 (Nov. 2015) and iPac Trust Resource Report generated through the USFWS website (November 20, 2015).

Status Codes:  E = Endangered, T = Threatened, CH = Critical Habitat, R = Rare; SSC = Species of Special Concern
3.3.2 Environmental Consequences

3.3.2.1 Methodology for Impact Analysis

Impacts on species covered by the proposed HCP were analyzed based on an independent review and evaluation of the estimates of habitat impacts and discussions of species impacts presented in the HCP. The analysis of impacts on biological resources is based on professional standards and information (such as land cover data, descriptions and locations of Covered Activities) contained in the HCP and discussed in this section. The key effects were identified and evaluated based on the biological resources known to occur in the Plan Area and on the expected magnitude, intensity, and duration of Covered Activities. Permanent impacts on biological resources were quantified using the estimated amount of land cover that would be converted as a result of construction of new facilities. Temporary effects on biological resources were quantified using the estimated amount of land cover that would be temporarily disturbed during construction or O&M activities, but would be restored to pre-disturbance conditions within 1 year after disturbance. Impacts on other federally listed species not covered in the HCP were evaluated based on available information on the species’ habitat requirements and ranges and the potential for Covered Activities to affect the species or their habitats.

Environmental Programs and Avoidance and Minimization Measures

The proposed Bay Area O&M HCP is intended to be a program for identifying activity-specific impacts as well as implementing an overarching conservation strategy designed to implement applicable AMMs, and includes compensating for impacts to covered species. In light of this purpose, the discussion of impacts on biological resources focuses on the anticipated impacts from implementation of Covered Activities across the Plan Area and evaluates how the HCP’s conservation strategy will be implemented to address adverse impacts on biological resources including federally listed species and their habitat. Provided below are discussions of PG&E’s Environmental Programs and proposed AMMs from the HCP to address impacts to listed species and an evaluation of the effectiveness of these measures. Many of these measures may also apply to species not covered under the HCP, as well as other sensitive biological resources such as jurisdictional waters. Applicable PG&E environmental programs include:

Biology Program

PG&E employs terrestrial and aquatic biologists to meet PG&E’s regulatory requirements. The biologists have special expertise in botany, vernal pools, fisheries, wetland delineations, herpetology, ornithology, mammalogy, and marine biology. Biologists work directly with project managers, land planners, construction crews, and engineers in the operation, maintenance, and construction of PG&E infrastructure. The biologists also work directly with O&M staff from electric and gas operations throughout the service territory.

Biologists ensure regulatory compliance and protection of biological resources. Biologists screen, review, and carry out complex analyses that can have differing levels of scope and oversight, depending on the type of activity, the extent of ground disturbance, the location of utility facilities, and the proximity to known or suspected biological resources. Typical responsibilities include:

- evaluating and reporting activity impacts;
- conducting environmental training and tailboard meetings with crews;
conducted biological surveys;
- prescribing AMMs and protection measures and overseeing their implementation;
- serving as the biological monitor during construction;
- relocating special-status species out of harm’s way at construction sites when necessary and under the appropriate authorizations;
- developing appropriate site restoration plans; and
- developing management plans and determining compensatory mitigation needs for projects.

**Methods and Process for Screening.** PG&E’s environmental review, planning, and screening process varies by the specific line of business (LOB), with gas and electric distribution activities typically requiring less intensive review and planning than gas or electric transmission activities as these activities are often located in areas of urban and residential uses. Figure 5-2 of the HCP illustrates the existing environmental review process for various types of Covered Activities. There are five general work processes for reviewing and assessing environmental impacts from PG&E projects. The respective environmental screening groups are responsible for maintaining compliance for their respective LOB.

In general, each of the environmental review groups will follow specific procedures for its respective LOB, as described in the HCP. For most projects presented in Figure 5-2 of the HCP, a team of land planners, biologists, cultural resource specialists, and environmental field specialists will first review, plan, and screen Covered Activities. PG&E’s biologists review Covered Activities to evaluate their potential to impact sensitive or protected habitats, wetlands, and waterways. Biological review typically includes reviewing results from the CNDDB, mapping locations known to be occupied by special-status plants and wildlife, and reviewing company files, where available, for past biological survey results and reports. In addition, biologists often conduct pre-activity biological surveys, before, during, and sometimes after activities are completed. To support the biological review process, PG&E maintains an extensive internal GIS system called MapGuide that contains an array of land ownership, aerial imagery, facility, and jurisdictional information and data.

For all projects that may involve ground disturbance activities, PG&E uses an automated environmental screening tool called an automated environmental assessment (AEA) to screen for the presence of environmental constraints. Projects undergoing automated review are automatically screened using a variety of data layers (e.g., waterways, CNDDB, serpentine soils, conservation easements, critical habitat, kit fox dens, levees, protected lands, anadromous fish streams, and vernal pools) and then released to construction if no data layers are flagged for manual review. If any automated data layers are flagged for manual review, the flagged activity will be evaluated further by a land planner or biologist and BMPs will be applied before being released to construction.

Environmental review of vegetation management activities includes a team of land planners, qualified biologists, foresters, arborists, and tree inspectors, who will review, plan, and screen their respective work before work in the field commences.

**Development of Protection Measures.** After the completion of surveys, studies, and analyses, the biologist determines whether a biological resource is known to exist within the area of potential impact. The biologist then develops environmental protection measures to minimize impacts to sensitive resources, including the following list commonly used during construction:
• using the smallest possible construction footprint;
• minimizing ground disturbance in all areas and particularly in sensitive areas such as riparian habitats;
• keeping vehicles on existing roads as much as possible;
• maintaining clean worksites;
• implementing measures to control and minimize the spread of noxious weeds by using weed-free materials and washing all equipment to remove invasive plants or seeds prior to working in a project site;
• using exclusion fencing or flagging to alert crews to the presence of sensitive habitats and to serve as protection;
• maintaining appropriate exclusion buffers for nesting birds in accordance with PG&E’s Avian Protection Plan and Nesting Bird Management Plan;
• requiring crews to stay within a designated work area; and/or
• keeping the removal of vegetation to the minimum required.

Training. The biologists provide training to PG&E employees and contractors using three approaches—general biological resources awareness training, Nesting Bird Management Plan training, and project-specific biological resource trainings. Systematic education of employees and contractors advance the following objectives:
• to aid in the identification of biological resources;
• best practices for working in proximity to biological resources, including nesting birds; and
• steps to take in the event of an inadvertent discovery of a sensitive species.

Trainings related to specific projects are detailed below under construction compliance.

Construction Compliance. Prior to construction, all natural resource protection measures are detailed in a project’s Environmental Release to Construction (ERTC) memorandum, indicating that environmental review is complete and that all protection measures are required to be implemented as prescribed.

Construction crews are educated about biological resources that may be present in the project area. Such trainings are tailored to address the unique circumstances of a given project and, at a minimum, cover the following:
• summary of the requirements in the ERTC or other applicable documents;
• verification that the project manager or job foreman is in possession of the ERTC or other applicable document that provides important contact information for the biologists;
• review of the sensitive species discovery protocols;
summary of the types of sensitive species or natural resources that may be encountered in the field; and

delineation of all work exclusion zones.

In addition, the biologist or their consulting expert will work closely with the crews in the field to confirm the location and protection of exclusion zones and to coordinate any required biological construction monitoring.

**HCP Avoidance and Minimization Measures**

Applicable HCP Avoidance and Minimization Measures include:

- **FP-04** – Locate off-road access routes and work sites to minimize impacts on plants, shrubs, and trees, small mammal burrows, and unique natural features (e.g., rock outcrops).

- **FP-05** – Notify CDFW, Service, and the property owner at least 2 business days prior to conducting Covered Activities on protected lands (state and federally owned wildlife areas, ecological reserves, or conservation areas); more notice will be provided if possible or if required by other permits. If the work is an emergency, as defined in PG&E’s Utility Procedure ENV-8003P-01, PG&E will notify CDFW, Service, and the property owner within 48 hours after initiating emergency work.

- **FP-06** – Inspect pipes and culverts for wildlife species prior to moving pipes and culverts. Immediately contact a biologist if a Covered Species is suspected or discovered.

- **FP-10** – Minimize the activity footprint and minimize the amount of time spent at a work location to reduce the potential for take of species.

- **FP-13** – Fit open trenches or steep-walled holes with escape ramps of plywood boards or sloped earthen ramps at each end if left open overnight. Field crews will search open trenches or steep-walled holes the following morning prior to initiating daily activities to ensure wildlife are not trapped. If any wildlife are found, a biologist will be notified and will relocate the species to adjacent habitat or the species will be allowed to naturally disperse, as determined by a biologist.

- **FP-15** – Prohibit vehicular and equipment refueling 250 feet from the edge of vernal pools, and 100 feet from the edge of other wetlands, streams, or waterways. If refueling must be conducted closer to wetlands, construct a secondary containment area subject to review by an environmental field specialist and/or biologist. Maintain spill prevention and cleanup equipment in refueling areas.

- **FP-16** – Maintain a buffer of 250 feet from the edge of vernal pools and 50 feet from the edge of wetlands, ponds, or riparian areas. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew will implement other measures as prescribed by the land planner, biologist, or HCP administrator to minimize impacts by flagging access, requiring foot access, restricting work until dry season, or requiring a biological monitor during the activity.
- FP-18 – Nests with eggs and/or chicks will be avoided: contact a biologist, land planner or the Avian Protection Program manager for further guidance.

- Hot Zone 1 – Work will avoid pools and streams. Field crew will prevent any damage to the bank and streamside vegetation during placement or movement of materials on the stream banks. Streamside vegetation overhanging into pools or runs will, to the maximum extent practical, not be removed, trimmed, or otherwise modified.

- Hot Zone 2 – Ground-disturbing activities will not occur from the first significant rain (1 inch) during the wet season, October 15–April 15, within 250 feet of the edge of vernal pools unless the field crews conduct the work from an established roadway. Access rock outcrops only on foot during all times of year. Ground-disturbing activities may occur during this period if a biologist implements measures to avoid the habitat and the impacts and mitigation are consistent with the HCP.

- Hot Zone 3 – A biologist will survey for host and nectar plants (lupine, thistles, viola) prior to activity commencement and flag off-road access for vehicles, or identify if foot access or ATVs are necessary. In cases where plants cannot be avoided activities will only be allowed during flight period, May 15–July 31, to reduce the risk of butterfly mortality.

- Hot Zone 4 – A biologist will survey for host and nectar plants (naked-stem buckwheat) prior to activity commencement and flag off-road access for vehicles, or identify if foot access or ATVs are necessary. In cases where plants cannot be avoided activities will only be allowed during flight period, August 1–September 30, to reduce the risk of butterfly mortality. Service refuge biologist will be contacted if work is to occur on Service-owned refuge lands.

- Hot Zone 5 – A biologist will survey for host and nectar plants (dwarf plantain, purple owl’s clover, or paintbrush) prior to activity commencement and flag off-road access for vehicles, or identify if foot access or ATVs are necessary. In cases where plants cannot be avoided activities will be allowed during flight period, March 1–April 30. PG&E will avoid and minimize the introduction or spread of noxious weeds from vehicular traffic through employee education, minimizing off-road travel, and inspecting vehicles to be sure they are not transporting observable noxious weeds.

- Hot Zone 6 – Limit activities to foot access only when working off of established roadways unless a biological monitor flags off-road access routes for equipment that minimize impacts on habitat and species. This includes the identification and avoidance of vernal pools and stock ponds. Covered Activities that cannot avoid vernal pool impacts will be completed when pools are clearly dry.

- Hot Zone 7 – Activities that result in ground disturbance will occur May 1–October 30 (active season). Vegetation will be cut using hand tools to 3 inches in height. Once the ground is visible, a visual survey for San Francisco garter snake will be conducted by the biologist prior to additional ground disturbance. Field crews will install solid exclusion fencing if the work is in areas of known species presence. If work needs to occur during the inactive period (November 1–April 30) and is located in an area of known occupancy, flag and avoid any burrows.
- **Hot Zone 8** – For activities that will result in ground disturbance in tidal marsh or coastal wetland habitat, including the removal of marsh vegetation, a biologist will flag access routes for crews when working in pickleweed (*Salicornia*) or smooth cordgrass (*Spartina alterniflora*) dominated habitats. Crews will hand carry equipment and use protection mats (landing pads, pallets) to minimize ground disturbance. Small areas of healthy vegetation will be cleared by hand prior to placement of protective mats.

To avoid take of salt marsh harvest mouse, the biologist will assess the site to determine if: vegetation protection mats are appropriate, use of helicopters is needed, vegetation removal by hand is needed, and an onsite biological monitor is needed. Prior to placement of mats or removal of vegetation, the vegetation will be disturbed (i.e., flushed) to force movement of salt marsh harvest mouse into adjacent tidal marsh areas. Immediately following flushing, the field crew will place a mat or manually remove vegetation with non-motorized tools (e.g., hoe, rake, trowel, or shovel) to the bare ground. Conduct work within 700 feet of wetlands suitable for the Ridgway’s rail September 1–January 15.

- **SJKF- 1** – A biologist will inspect the work site no more than 30 days prior to construction to determine if potential San Joaquin kit fox dens are present. If potential dens are located within the proposed construction footprint and cannot be avoided during construction, a biologist will determine if the dens are occupied. All potential dens within the construction footprint will be dusted with appropriate tracking substrate or monitored with a motion-sensor camera for a minimum of 3 days to determine occupancy unless scat, discarded bones, and tracks are observed and then the den is presumed occupied. Exit ramps will also be installed in these areas at both ends of the excavated areas. If potential San Joaquin kit fox dens are present within the construction footprint or within 200 feet of the construction boundary, disturbance and destruction will be avoided where possible. However, if the potential dens cannot be avoided, no further action is needed. If an occupied or natal/pupping den is discovered within the construction area or within 200 feet of the project boundary, Service shall be immediately notified and under no circumstances should the den be disturbed or destroyed.

- **Wetland - 1** – Identify vernal pools and establish buffers. Maintain a buffer of 250 feet around vernal pools and vernal pool complexes. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew will implement other measures as prescribed by the land planner, biologist, or HCP administrator to minimize impacts. These measures include flagging access, requiring foot access, restricting work until the dry season, requiring a biological monitor during the activity, or excavating burrows in ROWs where trenching will occur. Activities must maintain the downstream hydrology to the vernal pool or complex.

- **Wetland - 2** – Identify wetlands, ponds, and riparian areas and establish buffers. Maintain a buffer of 50 feet around wetlands, ponds, and riparian areas. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew will implement other measures as prescribed by the land planner, biologist, or HCP administrator to minimize impacts. These measures include flagging access, requiring foot access, restricting work until the dry season, requiring a biological monitor during the activity, or excavating burrows in
ROWs where trenching will occur. Activities must maintain the downstream hydrology to the wetland, pond, or riparian area.

- **Plant-04** – When Covered Activities greater than 0.1 acre in size within a MBZ will have direct impacts on Covered Species, work with the crew to place flagging, fencing, or other physical exclusion barriers to minimize disturbances. If the work will directly impact covered plant species, implement Plant-05, -06, -07, and -08 AMMs.

- **Plant-05** – If a covered plant species is present and it cannot be avoided, PG&E will salvage plant material (i.e., seeds, cuttings, whole plants) and prepare a restoration plan that details the handling, storage, propagation, or reintroduction to suitable and appropriate habitat subject to Service review and approval.

- **Plant-06** – If a covered annual plant species is present and it cannot be avoided, conduct Covered Activities after seeds have matured to the extent possible.

- **Plant-07** – If a covered perennial plant species is present and it cannot be avoided, conduct Covered Activities after seeds have matured to the extent possible. Minimize disturbance to the below-ground portions of the plants (e.g., roots, bulbs, tubers).

- **Plant-08** – PG&E will prune shrubs in a manner that promotes re-sprouting. If permanent impacts are unavoidable, establish new individuals by planting seedlings or from cuttings in adjacent suitable habitat. PG&E will implement best management practices including vehicle, equipment, and personnel hygiene protocols; procedures for conducting activities in infected areas; and timing restrictions that avoid working when soils are moist and the likelihood of spreading *P. cinnamomi* is greatest.

- **BMP-01** - PG&E employees and vegetation management contractors performing vegetation management activities shall receive ongoing environmental orientation. Orientation shall include review of environmental laws and guidelines that must be followed by all PG&E employees and contract vegetation management personnel to reduce or avoid impacts on Covered Species during vegetation management activities.

- **BMP-07** – To avoid hitting or crushing wildlife in the roadway and to avoid generating dust, vehicles will not exceed a speed limit of 15 miles per hour on low-use unpaved roads such as agricultural field roads, transmission right-of-way roads, and non-system numbered USFS roads with locked gates. Travel on high-use unpaved roads such as USFS logging roads shall be as slow as local traffic conditions allow.

- **BMP-13** – Avoid operating vehicles and equipment within 250 feet (or the maximum distance practicable) of the edge of a vernal pool and, to the extent practicable, avoid walking through a vernal pool.

- **BMP-14** – When routine vegetation management activities are conducted in an area of potential valley elderberry longhorn beetle habitat, a qualified individual will survey for the presence of elderberry plants within a minimum of 20 feet from the work site within the utility easement, ROW, franchise, or license, and shall note in vegetation management work
request documents to avoid or minimize potential impacts on elderberry plants. If elderberry plants have one or more stems 1 inch or more in diameter at ground level, additional measures identified in the Valley Elderberry Longhorn Beetle Conservation Plan shall be implemented. Otherwise, no additional minimization, avoidance, or protective measures are required.

- **BMP-15** – When vegetation management staff is aware of known active northern spotted owl nests through either the CNDDB viewer or property owner information, PG&E will implement the following. If the work is within 0.25 mile of a known active nest(s), the work will be performed either during a limited operating period of August 1 to January 31, or, if the work falls within the breeding period and is within 300 feet of the nest, the PG&E Avian Protection Program manager will be contacted for guidance and work will be performed as directed by the Avian Protection Program manager. If the work is scheduled during breeding season and if the work is 300 feet to 1/4-mile from the nest, work will be performed using hand tools (not chainsaws) or hydraulic pruners if the work is accessible from a regularly trafficked roadway. If the work cannot be performed with hand tools or hydraulic tools, then vegetation management staff will contact the Bird Program manager for guidance. In locations where known active nests occur, vegetation management staff will increase pruning distances from the conductors or pursue tree/brush removals in order to minimize the number of return visits to the area.

- **BMP-16** – All PG&E employees and contractors shall follow the Vegetation Management Migratory Bird Process, when applicable to vegetation management activities, to comply with the MBTA.

- **BMP-50** – Prior to any ROW clearing project or any enhancement project, the CNDDB shall be checked for any records of threatened, endangered, or sensitive species.

- **BMP-51** – Any locations identified through the CNDDB search shall be flagged and appropriate avoidance measures shall be put in place. Tailboards shall be held before work begins.

- **BMP-52** – Sensitive habitats such as meadows, riparian areas, wetlands, vernal pools, and serpentine outcrops shall be flagged and appropriate avoidance measures shall be put in place. Tailboards shall be held before work begins.

**Conservation Strategy Overview.** The purpose of the Bay Area O&M HCP is to avoid and minimize impacts on covered species and mitigate for any impacts on covered species and their habitats that cannot be avoided in compliance with the Act while enabling PG&E to continue to conduct Covered Activities throughout the Plan Area.

In addition to the Environmental Programs and the AMMs described above, the HCP includes a Conservation Strategy. The following five key principles guide the Conservation Strategy:

1. The avoidance and minimization of impacts is ensured by a thorough review of covered activities via environmental impact review, planning, and screening.
2. Avoiding impacts on habitat (i.e., implementing AMMs and BMPs) is preferable to mitigating or preserving habitat offsite.

3. Preserving lands for covered species with high-quality habitat or of high conservation value helps to build on other local and regional conservation efforts.

4. Preserving large, contiguous areas of habitat is preferable to preserving a larger number of small areas.

5. Habitat mitigation lands will be protected and managed in perpetuity

3.3.2.2 Proposed Action

The potential effects described below pertain to both construction and operations.

Impact 3.3-1: Impacts on Covered Plants and Their Habitats

Covered Activities could damage populations or individuals of federally listed plants in the Plan Area as a result of equipment access, staging, and ground-disturbing activities. In addition, Covered Activities that involve ground disturbance could degrade, disturb, or otherwise affect habitat for the plants, including designated critical habitat for three plants. The extent of adverse effects on covered plants and their habitats would vary based on the type of Covered Activity being implemented and proximity of the activity to the plant population. The Bay Area O&M HCP includes a detailed discussion of potentially adverse effects on 13 covered plants (refer to the GIS mapping in Chapter 4 of the HCP, included as Appendix A to this EA).

Vegetation removal and ground-disturbing activities for pipeline replacements, maintenance or replacement of electric line poles and towers, and facility improvements or installations in undeveloped areas have the greatest potential to affect covered plants. Other activities, such as equipment or truck access to facilities, could disturb the plants, but are not expected to result in long-term impacts. Covered Activities could also introduce invasive plants or plant-based diseases (e.g., sudden oak death) to the Plan Area, which could degrade habitat for covered plants and decrease populations of the plants where invasive plants outcompete them. Table 3-12 presents the projected level of impacts on known occurrences of covered plants and their habitats. In addition, Covered Activities in designated critical habitat for Contra Costa wallflower, Contra Costa goldfields, and Antioch Dunes evening primrose could affect up to 6 total acres of critical habitat over the 30-year plan implementation period. This includes 0.2 acre of permanent impacts on Contra Costa wallflower critical habitat (an approximately 0.48 percent loss), 5.5 acres of permanent impacts on Contra Costa goldfields critical habitat (an approximately 0.037 percent loss), and 0.2 acre of permanent impacts on Antioch Dunes evening-primrose critical habitat (an approximately 0.48 percent loss). Minimal effects are anticipated.

In combination with existing Environmental Programs, the AMMs described below will minimize adverse effects on covered plants and their habitats. Prior to and during Covered Activities, PG&E and its construction crews would implement a number of AMMs to protect covered plants. These measures include standard construction practices for all Covered Species (FP-1 through FP-18, to the extent they apply to covered plants), specific measures to protect vernal pools and other wetlands (Wetland-1 and Wetland-2), several plant-specific measures (Plant-01 through Plant-08), and best management practices for vegetation management (BMP-1 through BMP-62, to the extent they apply
to covered plants). For Covered Activities that affect covered plants or their habitats, the proposed HCP conservation strategy would protect the plants or offset impacts through site restoration; plant salvage or new plantings; protection of populations or individual plants (i.e., avoidance); and habitat enhancement, restoration, or protection. The AMMs would ensure minimal effects on covered plants occur with implementation of each Covered Activity.

Implementation of the proposed HCP conservation strategy would include habitat enhancement and restoration, which could result in temporary impacts on covered plants during ground-disturbing activities, similar to those impacts discussed above for the Covered Activities. The purpose of these activities, however, is to improve habitat conditions for covered species, and the long-term benefits of the conservation strategy would offset any temporary minor effects on the species.

Table 3-12. Summary of Estimated Impacts on Plants Covered by Proposed Habitat Conservation Plan

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat Estimate Near Facilities (acres)</th>
<th>Temporary Impacts on Habitat (acres)</th>
<th>Number of Individuals Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallid manzanita</td>
<td>130.2</td>
<td>2.27</td>
<td>15</td>
</tr>
<tr>
<td>Sonoma sunshine</td>
<td>2.5</td>
<td>2.5</td>
<td>&lt;250,000</td>
</tr>
<tr>
<td>Coyote ceanothus</td>
<td>295.0</td>
<td>3.5</td>
<td>2,516</td>
</tr>
<tr>
<td>Fountain thistle</td>
<td>8.0</td>
<td>0.8</td>
<td>100</td>
</tr>
<tr>
<td>Santa Clara Valley dudleya</td>
<td>593.3</td>
<td>3.84</td>
<td>800</td>
</tr>
<tr>
<td>Contra Costa wallflower</td>
<td>24.0</td>
<td>0.17</td>
<td>35</td>
</tr>
<tr>
<td>Marin dwarf-flax</td>
<td>252.7</td>
<td>1.95</td>
<td>1,700</td>
</tr>
<tr>
<td>Burke’s goldfields</td>
<td>198.6</td>
<td>1.51</td>
<td>211,000</td>
</tr>
<tr>
<td>Contra Costa goldfields</td>
<td>236</td>
<td>5.48</td>
<td>14,539</td>
</tr>
<tr>
<td>Sebastopol meadowfoam</td>
<td>65</td>
<td>0.04</td>
<td>500</td>
</tr>
<tr>
<td>Antioch Dunes evening primrose</td>
<td>31.1</td>
<td>0.17</td>
<td>10</td>
</tr>
<tr>
<td>White-rayed pentachaeta</td>
<td>41.1</td>
<td>0.11</td>
<td>500</td>
</tr>
<tr>
<td>Metcalf Canyon jewelflower</td>
<td>760.7</td>
<td>0.96</td>
<td>210</td>
</tr>
</tbody>
</table>

Impact 3.2-2: Impacts on Other Federally Listed Plants and Their Habitats

The Covered Activities have a very low potential of affecting the nine federally listed plants identified in Table 3-11 that would not be covered in the HCP. The plants are not likely to be found where Covered Activities would be implemented, and the implementation of avoidance measures identified in the HCP would avoid all potential effects on the federally listed non-covered plant species. Although the HCP conservation strategy is targeted at the 13 covered plants, many of the measures would benefit the other nine non-covered federally listed plants. Habitat protection efforts for the covered plants would also protect habitat for the non-covered plants that have similar habitat requirements. Avoidance of sensitive habitats during Covered Activities (Wetland-1 and Wetland-2), general plant protection measures (Plant-01 through Plant-03), best management practices that apply
to plants, and site restoration after ground-disturbing activities would also help protect and restore habitat for the non-covered plants. Based on these factors and after reviewing PG&E’s MapBook surveys of non-covered plants, and the Covered Activities and other activities associated with the HCP implementation, it is expected that implementation of the HCP would not result in adverse effects on the nine non-covered federally listed plant species.

**Impact 3.3-3: Impacts on Vernal Pool Invertebrates and Their Habitat**

Most Covered Activities would not take place in or near vernal pool habitat and would not affect vernal pool invertebrates. For Covered Activities that involve ground disturbance where vernal pools are found, vernal pool habitat and federally listed invertebrates (conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Delta green ground beetle) could be affected. Direct impacts could result from pipeline trenches through vernal pools, equipment access across vernal pools, or other activities that disturb soil and vegetation in areas that contain vernal pools. Indirect impacts could result from upslope disturbances that affect drainage patterns or result in discharge of pollutants into the soil or water bodies that connect to vernal pools and other ground disturbance within 250 feet of vernal pools. Covered Activities could also spread invasive plants that could degrade vernal pool habitat by outcompeting with native plants.

Table 3-13 presents the projected level of impacts on habitat for vernal pool invertebrates. In addition, Covered Activities in designated critical habitat for the five vernal pool invertebrates could affect up to 17 total acres of critical habitat over the 30-year plan implementation period. This includes 0.5 acre of permanent impacts (an approximately 0.09 percent loss) and 2 acres of temporary impacts on conservancy fairy shrimp critical habitat, 0.1 acre of permanent impacts (an approximately 0.90 percent loss) and 1 acre of temporary impacts on longhorn fairy shrimp critical habitat, 5 acres of permanent impacts (an approximately 0.02 percent loss) and 25 acres of temporary impacts on vernal pool fairy shrimp critical habitat, and 5 acres of permanent impacts (an approximately 0.11 percent loss) and 25 acres of temporary impacts on vernal pool tadpole shrimp critical habitat. Temporary effects to vernal pool species’ critical habitat are not expected to result in the loss of any primary constituent elements (PCEs); minimal effects are anticipated. There are instances where some of PG&E’s individual project impacts could be larger than those identified here given the size of some activities. However, PG&E would be limited to the total take authorization provided by the permit and would be required to seek a permit amendment if take were projected exceed these impacts.

**Table 3-13. Summary of Estimated Impacts on Vernal Pool Invertebrates Covered by Proposed Habitat Conservation Plan**

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat Estimate in Plan Area (acres)</th>
<th>Temporary Impacts on Habitat (acres)</th>
<th>Permanent Impacts on Habitat (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservancy fairy shrimp</td>
<td>292</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>Longhorn fairy shrimp</td>
<td>11</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Vernal pool fairy shrimp</td>
<td>4,963</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Vernal pool tadpole shrimp</td>
<td>4,382</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Delta green ground beetle</td>
<td>122</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>
In combination with existing Environmental Programs, the AMMs described below will minimize potential adverse effects to vernal pool invertebrates and their habitats. Prior to and during Covered Activities, PG&E and its construction crews would implement a number of AMMs to protect the vernal pool invertebrates. These measures include standard construction practices for all Covered Species (FP-1 through FP-18, to the extent they apply to vernal pool species), specific measures to protect vernal pools and other wetlands (Hot Zone-2, Wetland-1, and Wetland-2), and best management practices for vegetation management (BMP-1 through BMP-62, to the extent they apply to vernal pool species). For Covered Activities that affect vernal pool habitat, the proposed HCP conservation strategy would offset habitat impacts through avoidance of vernal pools; site restoration; and habitat protection or restoration through acquisition of lands or purchasing mitigation credits. The AMMs would ensure that most activities would avoid impacts on covered vernal pool invertebrate species, but where effects are unavoidable, only minimal effects on covered vernal pool invertebrates occur. The conservation strategy would ensure preservation of habitat over the long term for any residual impacts.

Implementation of the proposed HCP conservation strategy would include habitat restoration, which could result in temporary impacts on covered vernal pool invertebrates during ground-disturbing activities, similar to those impacts discussed above for the Covered Activities. The purpose of these activities, however, is to improve habitat conditions for covered species, and the long-term benefits of the conservation strategy would offset any temporary minor effects on the species.

**Impact 3.3-4: Impacts on Federally Listed Butterflies and Their Habitat**

For Covered Activities that take place in grasslands, dunes, or coastal chaparral that support host plants of the covered butterflies (Lange’s metalmark butterfly, Bay checkerspot butterfly, Mission blue butterfly, San Bruno elfin butterfly, Callippe silverspot butterfly), adult butterflies and their eggs, larvae, or pupae could be affected. Direct impacts could result from vehicle and equipment access through habitat, ground disturbance near host plants, or other activities that disturb soil and vegetation in areas that contain host plants. Indirect impacts could result from increased dust, displacement of host plants, and introduction of invasive plants. Most of these impacts are not expected to result in long-term impacts to listed butterflies or their habitats, with the potential exception of introduction of invasive plants and displacement of host plants.

Table 3-14 presents the projected level of impacts on habitat for butterflies. All of the impacts from Covered Activities on habitat for Bay checkerspot butterfly would take place in designated critical habitat. The Service concurs that impacts on these butterfly species would occur and that impacts would occur on the magnitude described. There are instances where some of PG&E’s individual project impacts could be larger than those identified here given the size of some activities. However, PG&E would be limited to the total take authorization provided by the permit and would be required to seek a permit amendment if take were projected exceed these impacts.

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat Estimate in Plan Area (acres)</th>
<th>Temporary Impacts on Habitat (acres)</th>
<th>Permanent Impacts on Habitat (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay checkerspot butterfly</td>
<td>912</td>
<td>62</td>
<td>4</td>
</tr>
</tbody>
</table>
Table 3-14. Summary of Estimated Impacts on Butterflies Covered by Proposed Habitat Conservation Plan

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat Estimate in Plan Area (acres)</th>
<th>Temporary Impacts on Habitat (acres)</th>
<th>Permanent Impacts on Habitat (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Callippe silverspot butterfly</td>
<td>6,807</td>
<td>55</td>
<td>30</td>
</tr>
<tr>
<td>Lange’s metalmark butterfly</td>
<td>13</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Mission blue butterfly</td>
<td>652</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>San Bruno elfin butterfly</td>
<td>372</td>
<td>20</td>
<td>2</td>
</tr>
</tbody>
</table>

The Service also considered potential impacts on other butterfly species such as the Berhan’s silverspot butterfly and Myrtle’s silverspot butterfly. However, because of the very small number of recently identified individuals, unique habitat preferences (coastal prairie and specific nectar plants), limited number of facilities in these species’ habitat, and infrequent work in this habitat, and the avoidance and minimization measures (see below) in the HCP adverse effects to these species are not anticipated.

In combination with existing Environmental Programs, the AMMs described below will reduce potential effects. Prior to and during Covered Activities, PG&E and its construction crews would implement a number of AMMs to protect the butterflies. These measures include standard construction practices for all Covered Species (FP-1 through FP-18, to the extent they apply to butterfly species), specific measures to protect butterflies and their habitats (Hot Zone-3, Hot Zone-4, and Hot Zone-5), and best management practices for vegetation management (BMP-1 through BMP-62, to the extent they apply to butterfly species). For Covered Activities that affect butterfly habitat, the proposed HCP conservation strategy would offset habitat impacts through avoidance of habitat containing host plants of butterflies; site restoration; and habitat protection or restoration through acquisition of lands or purchasing mitigation credits. The AMMs would ensure that minimal effects on covered butterflies occur with implementation of each Covered Activity, and the conservation strategy would ensure preservation of habitat over the long term for any residual impacts.

Critical habitat has not been designated for the Callippe silverspot butterfly, Mission blue butterfly or the San Bruno elfin butterfly; therefore, none will be affected. Critical habitat for Lang’s metalmark butterfly was proposed but not finalized; therefore, none will be affected. A total of 18,293 acres of critical habitat for the Bay checkerspot butterfly was revised and finalized in 2008. Covered Activities in designated critical habitat could result in up to 4 acres of permanent impacts (an approximately 0.02 percent loss) and 62 acres of temporary impacts to Bay checkerspot butterfly critical habitat. Temporary effects to Bay checkerspot butterfly critical habitat are not expected to result in the permanent loss of any primary constituent elements; therefore, minimal effects are anticipated.

Implementation of the proposed HCP conservation strategy would include habitat restoration, which could result in temporary impacts on covered butterflies during ground-disturbing or other associated activities, similar to those impacts discussed above for the Covered Activities. The purpose of these activities, however, is to improve habitat conditions for covered species, and the long-term benefits of the conservation strategy would offset any temporary minimal effects on the species.
Impact 3.3-5: Impacts on Federally Listed Aquatic and Wetland-Dependent Wildlife and Their Habitat

Most Covered Activities would not take place in or near wetland or other aquatic habitats and would not affect wildlife dependent on these habitats. However, species that use both aquatic and upland habitats are more likely to be affected in upland areas. For Covered Activities that involve ground disturbance in or near seasonal wetlands, marshes, ponds, or streams, six federally listed wildlife species (California freshwater shrimp, California tiger salamander, California red-legged frog, San Francisco garter snake, Ridgway rail, and salt marsh harvest mouse) could be affected. Direct impacts could result from facility replacements or modifications and vegetation management activities in or near wetlands or aquatic habitats, equipment access across or near these habitats, or other activities that disturb soil and vegetation in areas that contain wetland or aquatic habitats. Indirect impacts could result from upslope disturbances that affect drainage patterns or increase sedimentation, stream banks collapsing from construction equipment or other activities, or the discharge of pollutants into the soil or water bodies that connect to wetlands. Covered Activities are more likely to affect aquatic-dependent wildlife when the species are more active during the wet season. Covered Activities could also spread invasive plants that could degrade wetland and aquatic habitat by outcompeting with native plants.

Covered Activities that take place in upland areas near aquatic habitats could also affect California tiger salamander, California red-legged frog, San Francisco garter snake, or salt marsh harvest mouse. For the California tiger salamander, burrows in upland habitat within about 2,600 feet of aquatic sites that could support breeding activities could be disturbed or damaged during equipment access and large-scale ground-disturbing activities. However, the majority of potential effects are expected to occur within 1,600 feet of aquatic breeding sites because approximately 90 percent of individual California tiger salamanders do not disperse more than 1,607 feet from breeding sites (Trenham and Shaffer 2005). Individual salamanders could be injured or killed if present in the burrows during these activities. Similarly, dispersing California red-legged frogs could be injured or killed in upland habitats within about 1.7 miles of streams and ponds (their known dispersal distance (Bulger et. al 2003), particularly during the summer months and late in the year. San Francisco garter snake and its young could be injured or killed in burrows or while the snake is traveling through upland habitats adjacent to wetlands and open water. Salt marsh harvest mouse could be similarly affected by activities in grasslands adjacent to salt marshes.

Table 3-15 presents the projected level of impacts on habitat for aquatic and wetland-dependent wildlife species. In addition, Covered Activities in designated critical habitat for California tiger salamander and California red-legged frog could affect approximately 1,220 total acres of critical habitat for these species over the 30-year plan implementation period. This includes 39 acres of permanent impacts (0.08 percent) and 507 acres of temporary impacts on California tiger salamander (Central CA DPS) critical habitat, 5 acres of permanent impacts (0.01 percent) and 29 acres of temporary impacts on California tiger salamander (Sonoma County DPS) critical habitat, and 55 acres of permanent impacts (0.01 percent) and 584 acres of temporary impacts on California red-legged frog critical habitat. There are some instances where PG&E’s individual project impacts could be larger than those identified here given the size of some activities. However, PG&E would be limited to the total take authorization provided by the permit and would be required to seek a permit amendment if take were projected exceed these impacts.
In combination with existing Environmental Programs, the AMMs described below will minimize adverse effects. Prior to and during Covered Activities, PG&E and its construction crews would implement a number of AMMs to protect the aquatic and wetland-dependent wildlife. These measures include standard construction practices for all Covered Species (FP-1 through FP-18, to the extent they apply to aquatic and wetland wildlife); specific measures to protect streams, wetlands, and adjacent areas (Hot Zone-1, Hot Zone-6, Hot Zone-7, Hot Zone-8, Wetland-1, and Wetland-2); and best management practices for vegetation management (BMP-1 through BMP-62, to the extent they apply to aquatic and wetland wildlife). For Covered Activities that affect wetland or aquatic habitat for the covered wildlife species, the proposed HCP conservation strategy would offset habitat impacts through avoidance of wetlands and streams; site restoration; and habitat protection or restoration through acquisition of lands or purchasing mitigation credits. The AMMs would ensure that minimal to no effects on covered wildlife species occur with implementation of each Covered Activity.

### Table 3-15. Summary of Estimated Impacts on Aquatic and Wetland-Dependent Wildlife Covered by Proposed Habitat Conservation Plan

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat Estimate in Plan Area (acres)</th>
<th>Temporary Impacts on Habitat (acres)</th>
<th>Permanent Impacts on Habitat (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>California freshwater shrimp</td>
<td>72</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>California tiger salamander (Central CA DPS)</td>
<td>41,152</td>
<td>507</td>
<td>39</td>
</tr>
<tr>
<td>California tiger salamander (Sonoma County DPS)</td>
<td>2,404</td>
<td>29</td>
<td>5</td>
</tr>
<tr>
<td>California red-legged frog</td>
<td>33,242</td>
<td>584</td>
<td>55</td>
</tr>
<tr>
<td>San Francisco garter snake</td>
<td>573</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Ridgway rail</td>
<td>2,622</td>
<td>34</td>
<td>3.4</td>
</tr>
<tr>
<td>Salt marsh harvest mouse</td>
<td>2,138</td>
<td>35</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Implementation of the proposed HCP conservation strategy would include habitat restoration, which could result in temporary impacts on covered aquatic and wetland-dependent wildlife species during ground-disturbing or other associated activities, similar to those impacts discussed above for the Covered Activities. The purpose of these activities, however, is to improve habitat conditions for covered species, and the long-term benefits of the conservation strategy would offset any temporary minimal effects on the species.

### Impact 3.3-6: Impacts on Alameda Whipsnake and Its Habitat

Small-scale Covered Activities are not likely to affect Alameda whipsnake and its habitat (chaparral and scrub communities and rock outcrops in these communities). Whipsnakes would likely move away from the source of disturbance where small areas are affected and few personnel and vehicles are present, and these small activities (such as inspections) typically do result in ground disturbing activities. If ground-disturbing activities take place, they do not typically permanently affect whipsnake habitat. Covered Activities that require vegetation removal, off-road access, or ground
disturbance in chaparral and scrub habitats have the greatest potential to affect Alameda whipsnakes, particularly in areas modeled as habitat in the proposed HCP. The potential for impacts on individual Alameda whipsnakes is influenced by the duration of the activities, time of year, time of day, and amount of ground disturbance in the species’ habitat. The highest potential for impacts on individuals is during the day from April to November, when snakes are above ground and active. Indirect impacts could result from removal of vegetation that provides cover, which could expose whipsnakes to increased predation, or changes in microclimates around rock outcrops, which could reduce reproductive success.

Based on estimates provided in the HCP, Covered Activities could result in temporary and permanent impacts on an estimated 412 acres and 86 acres, respectively, of chaparral and scrub habitats that could support Alameda whipsnake as core/perimeter core habitat and annual grassland habitat used for movement corridors. In addition, Covered Activities in designated critical habitat could result in a permanent loss of up to 33 acres and temporary loss of up to 162 acres of critical habitat. There are some instances where PG&E’s individual project impacts could be larger than those identified here given the size of some activities. However, PG&E would be limited to the total take authorization provided by the permit and would be required to seek a permit amendment if take were projected exceed these impacts.

In combination with existing Environmental Programs, the AMMs described below will minimize potential adverse effects. Prior to and during Covered Activities, PG&E and its construction crews would implement a number of AMMs to protect Alameda whipsnake and other wildlife species. These measures include standard construction practices for all Covered Species (FP-1 through FP-18, to the extent they apply to the whipsnake and its habitat) and best management practices for vegetation management (BMP-1 through BMP-62, to the extent they apply to the whipsnake and its habitat). For Covered Activities that affect chaparral or scrub habitat that could support Alameda whipsnake, the proposed HCP conservation strategy would offset habitat effects through site restoration and habitat protection or restoration through acquisition of lands or purchasing mitigation credits. The AMMs would ensure minimal to no effects on Alameda whipsnake occur with implementation of each Covered Activity.

Implementation of the proposed HCP conservation strategy would include habitat restoration, which could result in temporary impacts on Alameda whipsnake during ground-disturbing or other associated activities, similar to those impacts discussed above for the Covered Activities. The purpose of these activities, however, is to improve habitat conditions for covered species, and the long-term benefits of the conservation strategy would offset any temporary minor effects on the species.

**Impact 3.3-7: Impacts on San Joaquin Kit Fox and Its Habitat**

Covered Activities that take place in grassland habitats that could support San Joaquin kit fox could disturb kit fox activities, kill or injure individuals, destroy den sites, reduce prey populations, or degrade habitat. The potential for impacts on individual kit foxes is influenced by the duration of the activities, time of year, time of day, and amount of ground disturbance in the species’ habitat. The highest potential for impacts on individuals is from March to August, when adults are hunting and young are exploring around natal sites. Indirect impacts could result from human presence and activity near den or natal sites, which could reduce reproductive success.
Covered Activities could result in temporary and permanent impacts on an estimated 690 acres and 50 acres, respectively, of grassland habitats that could support San Joaquin kit fox. Covered Activities that destroy burrows and potential dens could alter the suitability of habitat for the kit fox, especially if the habitat components and prey base do not recover.

Given the low numbers of individual kit foxes in this area, including lack of recent sightings in eastern Alameda and Contra Costa County, and in combination with existing Environmental Programs, the AMMs described below will minimize potential adverse effects and avoid direct injury or mortality of individual kit foxes. Prior to and during Covered Activities, PG&E and its construction crews would implement a number of AMMs to protect San Joaquin kit fox and other wildlife species. These measures include standard construction practices for all Covered Species (FP-1 through FP-18, to the extent they apply to the kit fox and its habitat), species-specific measures for the kit fox (SJKF-1), and best management practices for vegetation management (BMP-1 through BMP-62, to the extent they apply to the kit fox and its habitat). For Covered Activities that affect grassland habitat that could support San Joaquin kit fox, the proposed HCP conservation strategy would offset habitat impacts through site restoration and habitat protection or restoration through acquisition of lands or purchasing mitigation credits. The AMMs would ensure minimal to no effects on individual San Joaquin kit fox and only minor effects to San Joaquin kit fox habitat with implementation of each Covered Activity.

Implementation of the proposed HCP conservation strategy would include habitat restoration, which could result in temporary impacts on San Joaquin kit fox during ground-disturbing or other associated activities, similar to those impacts discussed above for the Covered Activities. The purpose of these activities, however, is to improve habitat conditions for covered species, and the long-term benefits of the conservation strategy would offset any temporary minor effects on the species.

Impact 3.3-8: Impacts on Migratory Birds and Their Habitat

Covered Activities could disturb nesting activity of migratory birds or result in nest destruction or abandonment and injury or mortality of breeding birds or young. Any of the native habitats, as well as structures, such as poles or bridges, in the Plan Area could support nesting birds. Removal of understory vegetation during site preparation for Covered Activities could affect ground-nesting birds, such as California quail, killdeer, and burrowing owl, and removal of trees and structures could affect other nesting birds, such as sparrows, western scrub jay, mourning dove, wrens, woodpeckers, and red-tailed hawk. Noise generated by heavy equipment and general human presence and activities near active nests could result in nest abandonment or disturb nesting activities. Adverse effects would be most pronounced during the nesting/breeding season for birds because of the potential effects on reproductive success and young. Permanent vegetation removal could result in a loss of nesting habitat for migratory birds, but the overall permanent loss of habitat would be minor compared to available habitat and the extent of remaining habitat in the Plan Area. Overall, PG&E’s Nesting Bird Management Plan helps ensure that direct effects to nests are avoided and minimized by providing guidance on buffer distances and what to do when nests are found.

In combination with existing Environmental Programs (including PG&E’s Avian Protection Plan and associated Nesting Bird Management Plan), the AMMs described below will ensure a minimal effect. Prior to and during Covered Activities, PG&E and its construction crews would implement a number of AMMs to protect migratory birds. These measures include standard construction practices for all
Covered Species, particularly FP-18, which is specific to nesting birds, and best management practices for vegetation management, particularly BMP-16, which ensures compliance with the MBTA. PG&E’s HCP conservation strategy and proposed AMMs would offset habitat impacts for Covered Species, but would also benefit migratory birds, through habitat enhancement, restoration, and protection.

Implementation of the proposed HCP conservation strategy would include habitat restoration, which could result in temporary impacts on migratory birds during ground-disturbing or other associated activities, similar to those impacts discussed above for the Covered Activities. The purpose of these activities, however, is to improve habitat conditions for covered species, and the long-term benefits of the conservation strategy would offset any temporary minor effects on the species.

**Impact 3.3-9: Impacts on Federally Listed Fish and Their Habitat**

Several streams in the Plan Area provide habitat for Central California coast coho salmon, Northern California steelhead, and California coastal Chinook salmon, such as the Russian River and its tributaries. Covered Activities would generally avoid impacts to federally-listed aquatic species and their habitats. However, some in-channel work associated with stream crossings could result in the entrapment, direct injury, or death of federally listed fish species if present at the time of the work. These specific projects could also require the placement of fill, recontouring of streams, or other modifications to the banks or bed of streams. In-channel activities could temporarily or permanently reduce habitat values by altering the geomorphology, hydraulics, and/or hydrology of streams. Construction activities in and near streams could also degrade water quality by mobilizing sediment from the channel bed and banks or discharging pollutants, such as fuel, lubricants, paving media, or other substances used in construction, into the streams, which could degrade water quality and reduce aquatic habitat values. Individual projects that have effects to non-covered federally listed species or those that require the placement of fill in Waters of the United States would trigger the need for other federal permits (including coordination with the Corps and/or NMFS) and those effects would be addressed through those processes.

In combination with existing Environmental Programs, the AMMs described below will minimize potential adverse effects. During Covered Activities, PG&E and its construction crews would implement a number of AMMs to protect aquatic species to the extent practicable. These measures include standard construction practices for all Covered Species (FP-1 through FP-18), particularly FP-11, which is specific to aquatic species; measures specific to covered aquatic species (e.g., Hot Zone-1 and Wetland-2); and best management practices for vegetation management (BMP-1 through BMP-62), particularly BMP-30, -61, and -62 for work near streams. Implementation of the Covered Activities in conjunction with the above AMMs are expected to avoid adverse effects on federally listed fish. However as noted above, if any effects were identified as a result of an individual project, additional consultations (such as Informal or Formal consultation under section 7 of the Act) would likely be required and effects to those species would be analyzed on a case by case basis at that time.

**3.3.2.3 No Action Alternative**

Under the No Action Alternative, the Service would not issue an incidental take permit related to the Bay Area HCP. PG&E would continue its existing program of O&M and minor new construction
activities for its Bay Area gas and electric facilities without implementing a program-wide HCP. The general types of O&M impacts on biological resources expected under the No Action Alternative would be the same as those identified above for the Proposed Action. The key difference is potential impacts to federally listed species would be addressed on a case-by-case basis rather than through a coordinated conservation program. Consequently, conservation efforts under the No Action Alternative would be less integrated; in particular, the purchase of conservation lands would probably be more fragmented. While case-by-case compensation might be effective at targeting and preserving localized high-value habitat, the creation of a large number of smaller mitigation sites could result in less effective species conservation across the Plan Area as a whole. Conservation lands would be less likely to offer preferred conditions such as larger contiguous areas of habitat or connectivity with other open space or conservation areas.
3.4 Cultural Resources

This section describes the prehistoric, ethnographic, and historic settings of the Plan Area and analyzes the potential effects of the Proposed Action and No Action alternatives on cultural resources. Cultural resources include prehistoric and historic archaeological sites, historic buildings and structures, historic districts with multiple buildings or structures, districts of archaeological sites, cultural landscapes, traditional cultural properties, and resources of interest to Native American groups.

3.4.1 Affected Environment

3.4.1.1 Regulatory Setting

Federal Regulations

National Historic Preservation Act
The National Historic Preservation Act (NHPA) is the most prominent federal law dealing with historic preservation. The NHPA established guidelines to “preserve important historic, cultural, and natural aspects of our national heritage, and to maintain, wherever possible, an environment that supports diversity and a variety of individual choice.” The NHPA includes regulations specifically for federal land-holding agencies, but also includes regulations (Section 106) that pertain to all projects that are funded, permitted, or approved by any federal agency and that have the potential to affect cultural resources. All projects that are subject to NEPA are also subject to compliance with Section 106 of the NHPA. At the federal level, the Office of Historic Preservation (OHP) carries out reviews under Section 106 of the NHPA.

National Register of Historic Places
Additionally, the NHPA authorizes the Secretary of the Interior to establish a National Register of Historic Places (National Register), an inventory of districts, sites, buildings, structures, and objects significant on a national, state, or local level in American history, architecture, archeology, engineering, and culture. The National Register is maintained by the National Park Service, the Advisory Council on Historic Preservation, State Historic Preservation Office, and grants-in-aid programs.

American Antiquities Act
The American Antiquities Act of 1906 (16 United States Code (USC) 431-433) was enacted with the primary goal of protecting cultural resources in the United States. It explicitly prohibits appropriation, excavation, injury, and destruction of “any historic or prehistoric ruin or monument, or any object of antiquity” located on lands owned or controlled by the federal government, without permission of the secretary of the federal department having jurisdiction. It also establishes criminal penalties, including fines and/or imprisonment, for such acts. The American Antiquities Act represents the foundation of modern regulatory protection for cultural resources.

Archaeological Resources Protection Act
The Archaeological Resources Protection Act of 1979 as amended (Public Law 96-95; 93 Stat. 721; 16 USC 470 et seq.) attaches felony-level penalties for excavating, removing, damaging, altering, or
defacing any archaeological resource more than 100 years of age on public or Indian lands, unless authorized by a permit. This act prohibits the sale, purchase, exchange, transportation, receipt, or offering of any archaeological resource obtained in violation of any regulation or permit under the act or under any federal, state, or local law. Its definitions, permit requirements, and criminal and civil penalties augment the American Antiquities Act, which it partially supersedes.

**State Regulations**

**Office of Historic Preservation**

The mission of the OHP and the State Historical Resources Commission (SHRC) is to preserve and enhance California’s irreplaceable historic heritage as a matter of public interest so that its vital legacy of cultural, educational, recreational, aesthetic, economic, social, and environmental benefits will be maintained and enriched for present and future generations. California Public Resources Code 5024 requires consultation with the State Historic Preservation Officer (SHPO) when a project may affect historical resources located on state-owned land.

**California Register of Historic Resources**

The SHPO also maintains the California Register of Historic Resources (California Register). Historic properties listed, or formally designated for eligibility to be listed, on the National Register are automatically listed on the California Register (PRC Section 5024.1). State Landmarks and Points of Interest are also automatically listed. The California Register can also include properties designated under local preservation ordinances or identified through local historic resource surveys.

For a historic resource to be eligible for listing on the California Register, it must be significant at the local, state, or national level under one or more of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;

2. It is associated with the lives of persons important to local, California, or national history;

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or

4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation (California Public Resources Code).

**California Historical Resources Information System**

The California Historical Resources Information System (CHRIS) is a statewide system for managing information on the full range of historical resources identified in California. CHRIS is a cooperative partnership between the citizens of California, historic preservation professionals, 12 Information Centers, and various agencies. This system bears the following responsibilities: integrate newly recorded sites and information on known resources into the CHRIS; furnish information on known resources and surveys to governments, institutions, and individuals who have a justifiable need to know; and supply a list of consultants who are qualified to do work within their area.
Native American Heritage Act

The Native American Heritage Act (NAHA) of 1976 established the Native American Heritage Commission (NAHC) and protects Native American religious values on state property (see California Public Resources Code 5097.9).

Public Notice to California Native American Indian Tribes

Government Code, Section 65092, includes California Native American tribes that are on the contact list maintained by the Native American Heritage Commission in the definition of “person” to whom notice of public hearings shall be sent by local governments.

Disposition of Human Remains

Health and Safety Code Section 7050.5 states that when an initial study identifies the existence, or the probable likelihood, of Native American human remains within the project area, a lead agency shall work with the appropriate Native Americans as identified by the NAHC as provided in Public Resources Code 5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials. Furthermore, Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the NAHC.

Native American Graves Protection and Repatriation Act

Health and Safety Code Section 8010-8011 establishes a state repatriation policy intent that is consistent with and facilitates implementation of the federal Native American Graves Protection and Repatriation Act. The Act strives to ensure that all California Indian human remains and cultural items are treated with dignity and respect. It encourages voluntary disclosure and return of remains and cultural items by publicly funded agencies and museums in California. It also states the intent for the state to provide mechanisms for aiding California Indian tribes, including non-federally recognized tribes, in filing repatriation claims and getting responses to those claims.

Local Regulations

In addition to national and state historic preservation legislation, many Bay Area counties and cities have adopted optional historic preservation general plan elements or enacted local ordinances that recognize and preserve historic sites. At least 19 Plan Area cities participate in the Certified Local Government Program (CLG) through the OHP. The CLG program is a partnership among local governments, the OHP, and the National Park Service (NPS), which is responsible for administering the National Historic Preservation Program. Participating cities include Alameda, Benicia, Berkeley, Campbell, Danville, Los Altos, Los Gatos, Napa, Oakland, Palo Alto, Redwood City, Richmond, San Francisco, San Jose, Santa Clara, Saratoga, Sausalito, Sunnyvale, and Vallejo.

Through Article VII, Paragraph 5 of the California Constitution, the state legislature, vests the CPUC with exclusive jurisdiction over the siting and design of gas and electric facilities. California Public Utilities Code Section 1007.5 and other California statutes and case law detail the nature and extent of this sole discretionary permitting authority. Because state law has preempted the field, PG&E is not subject to local land use planning or zoning requirements.
While PG&E’s utility related activities are solely regulated by CPUC and are thus not subject to local zoning ordinances, PG&E consults with local cities and counties to ensure that local concerns and issues are considered during the project planning process; construction and O&M activities are developed and implemented in such a way as to comply with existing local zoning ordinances, when feasible.

**3.4.1.2 Environmental Setting**

**Prehistoric Context**

Archaeological investigations demonstrate evidence of human occupation of the San Francisco Bay Area during the early Holocene period; older archaeological traces may exist on the submerged continental shelf or below the waters and sediments of San Francisco Bay (Moratto 1984). Anthropologists recorded that the first native Californians lived on the Sonoma County coast (Duncan’s Landing), in the Los Vaqueros area of Alameda County, and at sites in Santa Clara County (Ainsworth 2002). As the San Francisco, San Pablo, and Suisun bays emerged, denser human settlements followed; the chronology of the archaeological sites follows the establishment of tidal wetlands around the bay (Ainsworth 2002). The Plan Area was once occupied by dense Native American settlements consisting of Miwok, Ohlone (formerly known as Costanoan), Northern Valley Yokuts, Coast Miwok, Southern Patwin, Wappo, and Pomo tribal groups.

N.C. Nelson (1907) conducted the first intensive survey of archaeological sites in the Bay region between 1906 and 1908 (Moratto 1984). Nelson explored the San Francisco Bay shoreline and adjacent coast from the Russian River to Half Moon Bay, and documented 425 earthmounds and shell heaps (Nelson 1907). The most important archaeological sites documented in the San Francisco Bay region through the work of N.C. Nelson are along the bayshore of Alameda and Contra Costa counties, including the Emeryville Shellmound (Ala-309), the Ellis Landing Site (CCo-295), and the Fernandez Site (CCo-259). These sites provided the basis for the first model of cultural succession in central California. Abundant shellmounds were recorded in this littoral zone, and archaeologists have since recovered non-obsidian lithics, bay oyster and mussel shells, human burial remains, charmstones, incised bone tubes, red ochre, cobble mortars, and *Olivella* saucer and saddle beads, among others (Moratto 1984). An important feature of the bayshore shellmounds is their great volume, which implies either recurrent settlement over long spans of time or sedentism (a term applied to the transition from *nomadic* to permanent, year-round settlement) by large populations (Moratto 1984).

An aboriginal cultural sequence was devised for Marin County in 1954 by Beardsley based on sixteenth-century exotic artifacts in shellmounds located at Point Reyes (Beardsley 1948, Moratto 1984). It is composed of three distinct horizons: the Windmiller Facies, representing the Early Horizon; the McClure Facies, representing the Middle Horizon in the Coastal Province and linked to the Ellis Landing Facies on the Bay; and the Mendoza, and the Estero Facies, representing the Late Horizon. Middle Horizon coastal deposits have been found to extend below present ground and water levels; antecedent Early Horizon components underlying these may still lie undisturbed for ultimate discovery and excavation (Beardsley 1948). Urban growth in the Bay Area has unfortunately damaged or destroyed more than 50 percent of the estimated 9,675 archaeological sites formerly present (Moratto 1984).
Early Horizon
The Early Horizon consists of sites that lie on subsurface clay knolls that barely protrude through silts accumulated on the flat valley floor. The deposit mass is extremely indurated where stones and bones alike are encrusted with mineral deposits, and chemical alteration has occurred (Beardsley 1948). Associated artifacts include Olivella and Haliotis shells, red ocher, bone splinter awls, bird-bone tubes, and various ceremonial implements. The most striking cultural trait is the burial position and orientation; over 90 percent of the remains discovered are buried face down in extended positions, arms at the sides and legs together as though tied, and the head always oriented to the west (Beardsley 1948). Excavations at Borax Lake, by archaeologists Chester Post and M.R. Harrington, resulted in the discovery of fifteen fluted points on the surface and five subsurface points being recovered during excavation; all are dated to the Early Horizon (Wallace 1978). Subsurface investigations also revealed stone crescents, square-stemmed and leaf shaped projectile points, manos, milling slabs, and single-edged blades.

Middle Horizon
The Middle Horizon is characterized by infrequent round-bottom mortars, shaped pestles, numerous crude stone sinkers, net mesh gauges, long, heavy projectile points, finely chipped stone drills, quartz crystals with pitch, abundant bone artifacts, and baked-earth steaming ovens. Depth of deposit in Coastal Province components has a range of 2 to 24 feet; much of this variation is due to a more permanent habitation, greater percentage of thick-shelled mollusks in the diet of certain localities, or similar factors related to length of occupation (Beardsley 1948).

Late Horizon
The Late Horizon (Phase I) settlements are found in all parts of the San Francisco Bay Area. This horizon is characterized by Olivella beads, new Haliotis ornament shapes, and domestic utensils rather than ceremonial or ornamental objects. Burials associated with this horizon are found to include charred basketry, fibers, acorns, and other remains below the skeleton, indicating pre-internment burnings of offerings in the grave pit.

Ethnographic Setting
At the time of European contact, the San Francisco Bay Area was inhabited by six groups—the Ohlone, Coast Miwok, Northern Valley Yokuts, Wappo, Pomo, and Southern Patwin.

Ohlone
The prehistoric inhabitants of the San Francisco Bay Area were collectively known as the Costanoans, which is a linguistic designation that covered approximately 50 separate and politically autonomous nations or tribelets (U.S. Army Corps of Engineers 2001). Modern descendants of the Costanoan prefer to be known as Ohlone and formed a corporate entity in 1971, the Ohlone Indian Tribe. The two terms are used interchangeably in much of the ethnographic literature.

The San Francisco Bay Area was one of the first regions to attract a heavy influx of white settlers. At the time of initial contact between European explorers and Native Californians, the Ohlone occupied the southern edge of the Carquinez Strait in the north, the San Francisco peninsula on the west, the Livermore Valley on the east, and the Sur and Salinas rivers in the south (U. S. Army Corps of Engineers 2001; Four Directions Institute 2007).
Northern Valley Yokuts
Ethnographic work with the Northern Valley Yokuts is lacking. Because of the early decline of the aboriginal populations, most information regarding this group is gleaned from translated accounts by Spanish military men and missionaries. Northern Valley Yokuts territory is defined roughly by the crest of the Diablo Range on the west and the foothills of the Sierra Nevada on the east, and includes portions of Contra Costa and Alameda counties; however, populations were concentrated along waterways and on the more hospitable east side of the San Joaquin River.

Coast Miwok
The Coast Miwok tribal group inhabited the Plan Area from present-day Sausalito north to Duncan’s Point, including Bodega Bay, Tomales Bay, and San Pablo Bay eastward to Sonoma. The Coast Miwoks most likely inhabited the area for 5,000 years until the arrival of white settlers (Holzman 2006). At the time of European contact, the Coastal Miwok population was estimated around 1,500 (Kroeber 1925). The term “Miwok” refers to an ethnographic grouping of people who shared similar cultural and linguistic traits, and does not refer to a politically unified entity.

Southern and Kashaya Pomo
The Pomo tribal group consisted of seven distinct languages and cultures. Two of these language and culture groups, the Kashaya and Southern Pomo, have territories almost exclusively in modern Sonoma County.

The Kashaya occupied a region of about 30 miles along the coastline and roughly 5 to 13 miles inland. This area covers the mouth of the Russian River, the Austin Creek watershed, and the southern headwaters of the Gualala River (McLendon and Oswalt 1978).

The Southern Pomo occupied a region that extended south of the current city of Santa Rosa north about 40 miles to the Sonoma County border, and from an area just near Geyersville bordering the Wappo on the east to the border with the Kashaya along Austin Creek watershed. They held a roughly 15-mile length of the coastline to the immediate north of the Kashaya around Stewart’s Point to the mouth of the Gualala River (McLendon and Oswalt 1978).

Wappo
The Wappo occupied two discontiguous areas in modern day Napa, Sonoma, and Lake counties. The larger area extends directly north of the current cities of Napa and Sonoma and to the north of Middletown and Cloverdale (Sawyer 1978). This area included most of the Napa River watershed, the upper portions of Pope Creek, the southern headwaters of Putah Creek, Elk Creek, and a stretch of the Russian River (Heizer 1953). The smaller area lies to the north along Cole Creek and a length of the south shore of Clear Lake (Kroeber 1925).

Southern Patwin
The term “Patwin” refers to the people belonging to the many small contiguous independent political entities in this area that shared linguistic and cultural similarities. Distinction is made between the River Patwin, who resided in large villages near the Sacramento River, and the Hill Patwin, whose villages were situated in the small valleys along the lower hills of the Vaca Mountains and the Coast Ranges, with concentrations in Long, Indian, Bear, Capay, Cortina, and Napa valleys. The Patwin group occupied the lower western half of the Sacramento Valley west of the Sacramento River from
the small town of Princeton west to Stonyford in the foothills and south to San Pablo and Suisun bays (Kroeber 1932). Patwin territory extended approximately 90 miles north to south and 40 miles east to west. The Southern Patwins lived between what are now Suisun, Vacaville, and Putah creeks.

**Historic Context**

**Settlement**

The Bay Area was discovered by members of the Portola expedition in 1769, which had traveled up the coast overland (Beeler 1972). A few years later, the viceroy of Mexico, Antonio Bucareli, sent a Spanish naval vessel, the *San Carlos*, to explore and survey the area. In 1775, this ship was the first recorded entry into the San Francisco Bay.

Generations of Native Americans inhabited the San Francisco Bay Area long before Spanish explorers and missionaries started traveling through the region in the late 1700s. Spanish military and civilian settlers established military garrisons (presidios), Franciscan missions, and civil settlements (pueblos) throughout the Bay Area (National Park Service 2008b). The mission and presidio at San Francisco were established in 1776 and the missions in San Rafael and Sonoma were established in 1817 and 1823, respectively, partly in response to the Russian settlement in the area north of the San Francisco Bay. In 1834, when Mexico achieved independence from Spain, the Mexican government secularized the missions and divided the land holdings into individual land grants. The region experienced an influx of overland trappers around this time, leading up to the Gold Rush. After the discovery of gold, the city of San Francisco became known as a gambling hub, and opportunities grew to purchase personal estates within the area. In 1848, the San Francisco school census showed a population of 575 males, 177 females, and 60 children, with a population of 812 (Virtual Museum of the City of San Francisco 2006). The buildings at this time numbered 200; there were two hotels, boarding houses, saloons, and ten-pin alleys. In the last half of 1849, immigrants arrived in San Francisco at the rate of one thousand per week by sea alone (Virtual Museum of the City of San Francisco 2006). Other areas surrounding San Francisco experienced similar patterns of settlement; many small towns were founded as a result of railroad development.

**County Establishment**

Contra Costa County, located in the East Bay, was one of the first counties established after California was admitted to the Union in 1850. The city of Martinez, which is in the northern portion of Contra Costa County, was designated the county seat of government in 1851. South of Contra Costa County lies Alameda County, which was created in 1853 from southern portions of Contra Costa County and northern portions of Santa Clara County. The city of Oakland has been the Alameda County seat since 1873. Solano County was one of the original counties in California; the county seat is Fairfield.

San Mateo County covers the San Francisco Peninsula and was formed from parts of San Francisco County and Santa Cruz County in 1856; the county seat is Redwood City. East of San Mateo County lies Santa Clara County, which was one of the original 27 counties formed during statehood. The city of San Jose, located in Santa Clara County, was originally the first capital of the State of California and the first California Legislature convened there on December 15, 1849 (National Park Service 2008c). The location of the capital was moved several more times before officially being established in Sacramento.
Marin County was formed in 1850, and the county seat is San Rafael. Sonoma County is located east of Marin County and was formed in 1850. The county seat is Santa Rosa, which was established in 1868. The city of Sonoma was the first town to be planned and settled before statehood under Mexican rule (Sonoma County Genealogical Society 2000). The District of Sonoma originally included all of the land from the Sacramento River to the Pacific Ocean; at the first session of the legislature, the boundaries changed, and the present boundary lines were eventually formed in 1856 (Thompson 1877).

**Agriculture and Irrigation**

Following the Gold Rush, many miners returned to the Bay Area to settle on fertile lands and start producing crops. Initially, wheat was the major crop. Orchards were planted on the valley hills, producing peaches, cherries, pears, figs, apricots, and walnuts. As the city of San Francisco grew, it became a major market for area farm products. Dr. John T. Strentzel (father-in-law of John Muir) pioneered the planting of fruit and nut orchards and vineyards. As early as 1869, Dr. Strentzel devised a method of shipping pears and other fruits in containers packed with carbonized bran, which allowed fruits to retain freshness when being transported long distances (Martinez Historical Society 2009). Eventually, farmers were no longer dependent on local markets to sell their produce. Starting in the 1870s, fishing also became profitable, particularly in the Carquinez Strait area.

The railroad played a significant role in the development of the Bay Area region by providing an efficient and reliable method of shipping freight and farm products throughout the state. Agricultural success, in particular, was fostered by access to distant markets that the railroad made possible. The Central Pacific Railroad pushed through the Bay Area in the 1870s and led to the formal establishment of several railroad towns, which in turn attracted more settlers to the region. During the Gold Rush, the price of cattle in the state rose drastically, and ranching became an important part of the region’s economy. Many migrants who initially came to California in search of gold found they had better luck making a living in cattle ranching. In addition, technological advances in agricultural machinery such as combines and threshers allowed farmers to increase harvests with less effort. By 1874, the United States Geological Survey commenced the partitioning of the nation into 640-acre sections, and subsequently opened the public domain for private ownership. A fence law was adopted that same year forcing ranchers to enclose their lands and keep livestock from roaming free. Cattle-raising rancheros dominated the landscape at the start of the Gold Rush and gradually gave way to smaller ranches, many of which still exist today. As settlement accelerated, farmland was often converted to residential and commercial use. By the 1950s, commercial farming in much of the Bay Area had practically ceased. Fishing continued to provide a viable opportunity for many families until Bay waters were closed to commercial fishing in 1957.

As gold became more difficult to find and miners turned to farming, they used aquifers to irrigate their crops. Local water systems were built in the early part of the 20th century to bring water to cities (Department of Water Resources 2009). Beginning in 1858, the privately owned Spring-Valley Water Company provided all of San Francisco’s water. The water system began to fail due to increases in population and the 1906 earthquake fire, which prompted the use of other methods to provide municipal water for the region. The Raker Act was passed in 1914 and subsequently allowed the creation of a dam and reservoir in Yosemite National Park’s Hetch Hetchy Valley, with a gravity-flow aqueduct to the Bay Area. The early 1960s was the first time that wholesale customers first signed long-term contracts (mostly 20 years) with the San Francisco Public Utilities Commission and
chose to rely on the utilities commission instead of the State Water Project for their long term water future (Bay Area Water Supply and Conservation Agency 2007).

3.4.2 Environmental Consequences

3.4.2.1 Methodology for Impact Analysis

Contact with Tribal Authorities

Secretarial Order 3206, American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act, seeks to strengthen government-to-government relations, streamline the Act consultation process, and ensure full Tribal representation. As required by the Secretarial Order, Service contacted the tribes that may have information on cultural resources in the Bay Area to solicit input on the Proposed Action during preparation of this EA. Fifteen tribal authorities were contacted:

- Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- The Ohlone Indian Tribe
- The Trina Marine Ruano Family
- Suscol Intertribal Council
- Indian Canyon Mutsun Band of Costanoan
- Amah/Mutsun Tribal Band
- The Federated Indians of Graton Rancheria
- Stewarts Point Rancheria
- Cortina Band of Indians
- Yocha Dehe Wintun Nation (formerly known as the Rumsey Indian Rancheria of Wintun)
- Wintun Environmental Protection Agency
- Cloverdale Rancheria of Pomo Indians
- Dry Creek Rancheria of Pomo Indians
- Lytton Band of Pomo Indians
- Mishewal-Wappo Tribe of Alexander Valley

The Notice of Intent (NOI) and Notice of Preparation (NOP), describing the Proposed Action and summarizing the kinds of activities it would enable and their potential effects on cultural resources, were provided to each of these tribal authorities on November 8, 2006. To date, no comments have been received. A representative from the Federated Indians of Graton Rancheria attended the November 14, 2006, scoping meeting in Petaluma and requested to be included on the mailing list for distribution of the draft HCP and EA.

On April 21, 2015 the Service contacted the NAHC to request a search of the Sacred Lands File. The NAHC replied on June 14, 2015, stating that a records search of the Sacred Lands File failed to indicate the presence of Native American cultural resources in the Plan Area. The absence of specific site information in the Sacred Lands File does not indicate the absence of cultural resources. In fact, sites and resources are likely to occur in various locations throughout the Plan Area. Site identification will occur on a project-by-project basis by a PG&E resource specialist and an AEA will be used to determine the need for more detailed on-site analyses. In June 2015, the Service sent an early coordination letter to 26 tribal representatives, but received no replies.
Analysis Methods

Impacts on cultural resources were assessed based on the prehistory, ethnography, and history of the Bay Area and potential for resources to be discovered or affected by Covered Activities or during implementation of the Bay Area O&M HCP. In general, prehistoric habitation sites are more likely to be located near streams or other water sources and in sheltered, flat areas. However, prehistoric campsites or special use sites may be located anywhere on the landscape. Historic habitation sites can be predicted to some extent based on historic maps, but some habitations and many special use sites (mines, refuse deposits, etc.) were never mapped.

Although most of the Covered Activities would occur within or immediately adjacent to existing PG&E ROWs, specific work sites within PG&E’s infrastructure network are not reasonably foreseeable at this time, so it is not feasible to survey individual work sites for the purpose of this analysis. Consequently, this analysis focuses on (1) assessing and minimizing the potential for damage to significant cultural resources as a result of various types of Covered Activities that would occur under the Proposed Action, should any such resources be present on work sites; and (2) developing strategies to ensure appropriate avoidance or mitigation of potential impacts.

3.4.2.2 Environmental Programs and Avoidance and Minimization Measures

Provided below are discussions that describe PG&E’s Environmental Programs that protect cultural resources. Additionally, some of the proposed AMMs from the HCP to address impacts to listed species may also apply to protection of cultural resources.

Applicable PG&E Environmental Programs include:

PG&E has developed standard practices and implemented procedures that are designed to conserve cultural resources that occur throughout PG&E’s service territory. Cultural resources, whether known or unknown, could be encountered at any time during normal O&M activities associated with generating and delivering energy. PG&E’s standard practices and procedures promote preservation and comply with all federal and state regulations protecting cultural resources.

Cultural Resource Specialists

PG&E employs cultural resource specialists (CRS), all of whom meet the Secretary of the Interior’s Professional Qualification Standards for archaeology or architectural history. The CRS team has extensive experience identifying, evaluating, and treating a wide variety of historic and prehistoric resources using National Register and California Register criteria. CRS work directly with internal project managers, land planners, construction crews, and engineers in the operation, maintenance, and construction of PG&E infrastructure. CRS also work directly with operations and maintenance staff from electric and gas operations and energy supply throughout the service territory.

CRS ensure regulatory compliance and protection of cultural resources. CRS are also active stewards of the cultural resources that exist within PG&E’s properties and rights of ways. CRS screen, review, and carry out studies that can have differing levels of scope and oversight depending on the type of activity, the extent of ground disturbance, the location of utility facilities, and the proximity to known
or suspected cultural or archaeological resources. Typical responsibilities include scoping and oversight of resource investigations (e.g. resource inventories, evaluations, studies), reviewing and preparing technical reports, and managing consultations with the State Historic Preservation Office (SHPO) and other agency stakeholders. CRS staff are the primary staff responsible for developing and maintaining close working relationships with Native American communities throughout PG&E’s service territory.

PG&E is also supported by a team of external experts in the fields of archaeology, architectural history, ethnography, geology and history.

**Methods and Process for Screening**

PG&E complies with all applicable cultural resource laws and regulations and PG&E has developed standards for providing for stewardship of cultural resources. For example, most ground disturbing activities under PG&E’s O&M program are screened by CRS for potential impacts to cultural resources. Project screening also includes consulting PG&E’s confidential geospatial cultural resources database and linked document library, published literature (archaeology, ethnography and history), historic topographic and plat maps, recent listings for the California and National Registers, and publically-available documents such as Environmental Impact Reports and Environmental Impact Statements. For all projects that may involve ground disturbance activities, PG&E uses their AEA to screen for the presence of environmental constraints. Projects undergoing automated review are automatically screened using a variety of data layers (e.g., CHRIS) and then released to construction if no data layers are flagged for manual review. If any automated data layers are flagged for manual review, the flagged activity will be evaluated further by a land planner or cultural resource specialist and BMPs will be applied before being released to construction.

Projects with larger ground disturbance that have a greater potential to affect cultural resources are given greater scrutiny and typically require additional study or analysis. Such consideration may include:

- field studies;
- more in-depth research (e.g., records searches through the California Historical Resources Information System or CHRIS);
- queries using confidential cultural resources geospatial database as part of both automated and manual environmental screening and reviews;
- application of advanced analytical tools (such as buried site sensitivity modeling);
- consultation with the NAHC; and
- outreach to affected communities.
Development of Protection Measures

Where a significant intact resource is known and could be affected, measures are developed and implemented to minimize impacts to sensitive resources. Site protection measures that are routinely implemented include:

- establishing work exclusion zones;
- finding alternate work locations or access routes;
- prohibiting vehicles, staging, or construction within site boundaries;
- erecting temporary construction fencing or hanging flagging to facilitate resource avoidance;
- hand digging holes (as opposed to auguring) or setting poles, for example, by helicopter to minimize ground disturbance;
- replacing facilities in the same location to minimize ground disturbance;
- assigning an archaeological and/or Native American construction monitor within known or suspected archaeological sites;
- developing an in-field training for presentation to the crews; and
- performing archaeological recovery and interpretation when impacts cannot be avoided.

Training

CRS provide training to PG&E employees and contractors using two approaches—a general cultural resources awareness training and project-specific cultural resource trainings. Systematic education of employees and contractors advance the following objectives:

- to provide an understanding of the ethnographic and archaeological setting of PG&E’s facilities, properties, and rights-of-ways;
- to aid in the identification of cultural resources that could be uncovered during ground-disturbing activities;
- to identify best practices for working in proximity to cultural resources; and
- to identify steps to take in the event of an inadvertent discovery of cultural resources or human remains.

Trainings related to specific projects are detailed below under construction compliance.

Construction Compliance

The methods, results, and recommendations generated from the screening and development of protection measures are typically presented in PG&E’s Cultural Resources Constraints Report (CRCR) or standard Archaeological Survey Report. Prior to construction, environmental and natural
resource protection measures, including those for cultural resource protection, are detailed in a project’s ERTC memorandum, indicating that environmental review is complete and that all protection measures are required to be implemented as prescribed.

Construction crews will be educated about cultural resources that may be present in the project area. Such trainings are tailored to address the unique circumstances of a given project and, at a minimum, cover the following:

- summary of the requirements in the ERTC or other applicable documents;
- verification that the job foreman is in possession of a CRCR, ERTC or other applicable document, such as PG&E’s Cultural Resources Awareness and Response brochure that provides the discovery protocol, including the phone number for the responsible CRS;
- review of the discovery protocols;
- summary of the types of prehistoric and/or historic artifacts/features that may be encountered in the field or at the job site;
- description of the context(s) within which such material may be found. For example, it may be appropriate to note the potential depth of suspected deposits, expectation for changes in soil color/texture, etc.; and
- delineation of all work exclusion zones.

In addition, the CRS or their contractor will work closely with the crews in the field to confirm the location and protection of exclusion zones and to coordinate any archaeological or Native American construction monitoring that may be required.

General cultural resources BMPs required for all PG&E efforts include: minimizing ground disturbance, keeping vehicles on existing roads, leaving artifacts where they are found, reporting potential cultural resources and any accidental damage to resources to the CRS, removing only materials brought onsite, and promoting individual accountability for the avoidance and protection of resources.

If cultural material, such as chipped or ground stone, historic debris, or building foundations is discovered during ground-disturbing activities (other than emergency activities that cannot feasibly be interrupted), all activities will cease within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with PG&E, other appropriate agencies, and tribal representatives. Treatment may include measures such as limiting work, avoiding the site, capping the site, or conducting data recovery excavation.

In the rare event that human remains are discovered, PG&E complies with the requirements of Section 5097.98 of the California Public Resources Code, which stipulates halting further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains.
until the County Coroner has been contacted to determine that no investigation of the cause of death is required. If the Coroner determines that the remains are Native American:

1. the Coroner will contact the NAHC;

2. the NAHC will identify the person or persons it believes to be the most likely descendant from the deceased Native American; and

3. the most likely descendant will make recommendations to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods, unless the NAHC was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission.

While emergency repairs are not specifically covered under the HCP, emergency actions that occur within the scope of the Covered Activities and the impact analysis and do not result in effects greater than what has been described, can be addressed through the HCP. When emergency repairs are needed, PG&E is required to conduct them as rapidly as possible to ensure continuity of service and protect public safety. As a result, it is typically infeasible to incorporate cultural resources studies, avoidance measures, or treatment into the emergency repairs process. However, if PG&E emergency O&M work discovers or disturbs cultural resources, PG&E follows up with appropriate treatment measures to address impacts and avoid additional damage in the future. These may involve conducting recovery excavations, capping the site to avoid further disturbance of artifacts, or other procedures. If a find is determined to be significant, the qualified archaeologist will determine the appropriate parties to contact, and will meet with those parties to determine the appropriate course of action. Significant cultural resource materials recovered are subject to scientific analysis and professional museum curation, and are documented in a report prepared by the qualified archaeologist according to current professional standards.

Applicable HCP Avoidance and Minimization Measures include:

- FP-02/BMP-9 – Park vehicles and equipment on pavement, existing roads, or other disturbed or designated areas (barren, gravel, compacted dirt).

- FP-03 – Use existing access and ROW roads. Minimize the development of new access and ROW roads, including clearing and blading for temporary vehicle access in areas of natural vegetation.

- BMP-8 – All roads, fences, and structures damaged as a result of vegetation management operations shall be repaired and reported to the work group supervisor and the PG&E representative. All gates shall be left open if found open or locked if found locked.

- BMP-19 – If cultural resources are found (i.e., old bottles, cans, buildings), they shall be left in place and undisturbed. If it is necessary to move or disturb them to complete the work, or if human remains are found, stop work and contact the PG&E vegetation management representative.
3.4.2.3 Proposed Action

The potential effects described below pertain to both construction and operations.

**Impact 3.4-1: Disturbance or Destruction of Cultural Resources from Covered Activities**

Many of the Covered Activities would result in ground disturbance and could disturb or damage cultural resources or human remains on or below the surface at work sites. Also, many PG&E facilities and structures have been or may be eligible for designation as historic resources. O&M activities would take place primarily within existing ROWs and immediately adjacent areas, which have already experienced some degree of ground disturbance. Future activities are unlikely to affect cultural resources on the surface and have a low potential to disturb or damage buried cultural resources or human remains. Minor new construction activities, including limited expansion of electric substations and extension of natural gas pipelines and electric transmission and distribution lines, and upgrades to existing pipelines would require varying levels of excavation and ground disturbance. Larger ground-disturbing activities have a higher potential to disturb or damage cultural resources or human remains, particularly in previously undisturbed or less disturbed areas.

For all Covered Activities, PG&E would comply with applicable laws for protecting cultural resources and human remains and would implement environmental practices under its Cultural Resources Program. In addition, AMMs and BMPs identified in the Bay Area O&M HCP that minimize ground disturbance and require work to stop if resources are discovered would also help protect cultural resources and reduce the potential for disturbance or damage. With these measures in place, impacts on cultural resources and human remains would be avoided and minimized.

The combination of existing Environmental Programs and the following AMMs will ensure minimal to no effects on cultural resources: FP-02/BMP-9 FP-03, BMP-8, BMP-19.

**Impact 3.4-2: Impacts on Cultural Resources from Habitat Mitigation Lands and Enhancement**

Habitat mitigation lands would be selected based on their ability to provide adequate habitat for Covered Species and based on their location in proximity to other native habitats and existing conservation areas, as well as being near the habitat that is affected. The HCP identifies key principles that guide the conservation strategy and key factors to consider when selecting the mitigation lands. The habitat mitigation lands would preserve land in perpetuity to provide habitat for Covered Species, and with this preservation, any cultural resources or human remains on the lands would also be protected. Habitat enhancement or restoration activities on these or other lands in the Plan Area, however, could involve ground-disturbing activities that could disturb or damage cultural resources or human remains.

The combination of existing Environmental Programs and the following AMMs will ensure minimal to no effects on cultural resources: FP-02/BMP-9 FP-03, BMP-8, BMP-19.
3.4.2.4 No Action Alternative

Under the No Action Alternative, the Service would not issue an incidental take permit associated with the Bay Area HCP. PG&E would continue its existing program of O&M activities, minor new construction, and current environmental programs and practices. A regional HCP would not be implemented, and individual activities would be subject to project-by-project evaluations and incidental take authorizations if they would affect listed species. Similar types of O&M and minor new construction activities would be implemented under the No Action Alternative, and impacts on cultural resources would be the same as those described for the Proposed Action. The project-by-project approach for protecting special-status species would not result in differences in impacts on cultural resources, but could result in a reduced benefit if less habitat mitigation lands are preserved, resulting in a lower potential to protect cultural resources on those types of lands.
3.5 Environmental Justice

This section describes the potential effects of the Proposed Action and No Action alternatives on environmental justice. *Environmental justice* embodies the concept that disadvantaged populations must not experience disproportionate adverse impacts as a result of any federal action. Disproportionate adverse impacts on minority and/or low-income populations are generally referred to as environmental justice impacts in this EA.

3.5.1 Affected Environment

3.5.1.1 Regulatory Setting

**Federal Regulations**

The concept of environmental justice is rooted in the Civil Rights Act of 1964, which prohibited discrimination in federally assisted programs, and in Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), issued February 11, 1994. Executive Order 12898 was intended to ensure that federal actions and policies do not result in disproportionately high adverse effects on minority or low-income populations. It requires each federal agency to take “appropriate and necessary” steps to identify and address any such disproportionate effects resulting from its programs, policies, or activities, including those it implements directly and those for which it provides permitting or funding. Additional guidance from the President’s Council on Environmental Quality (1997) clarifies that environmental justice concerns may arise from effects on the natural or physical environment that produce human health or ecological outcomes or from adverse social or economic changes.

Environmental justice issues are mandated and regulated at the federal level, and compliance with NEPA requires analysis of environmental justice effects.

3.5.1.2 Environmental Setting

The EPA’s guidelines for incorporating environmental justice concerns into NEPA analyses identify an area with a *minority population* as one where the minority population constitutes more than 50 percent of the area’s total population, or is “meaningfully greater” than the percentage in the surrounding region (e.g., census tract compared to city, city compared to county). A *minority* is defined as referring to the following population groups: American Indian/Alaskan Native, Asian or Pacific Islander, Black (non-Hispanic), and Hispanic (U.S. Environmental Protection Agency 1998). The federal government considers race and Hispanic or Latino origin to be separate, distinct concepts (Grieco and Cassidy 2001).

As shown in Tables 3-16 and 3-17, an individual minority group does not make up more than 50 percent of the population in any of the nine counties. However, Alameda, San Francisco, San Mateo, and Santa Clara counties have Asian percentages that are considerably higher, ranging from 24.8 to 33.3 percent, than that of the state (13.5 percent). Alameda, Contra Costa, and Solano counties also have higher Black or African-African percentages, ranging from 9.3 to 14.7 percent, than the state (6.7 percent), and Alameda, San Mateo, and Solano counties have higher Native Hawaiian and Other
Pacific Islander percentages than the state (0.5 percent). All of the counties have a lower Hispanic or Latino percentage than the state (38.5 percent), particularly Marin (15.5 percent) and San Francisco (15.1 percent). All of the counties have a lower percentage of American Indians or Alaska Natives than the state (1.7 percent).

Table 3-16. **2010 Census Data on Race in Plan Area**

<table>
<thead>
<tr>
<th>County</th>
<th>Total Population</th>
<th>White</th>
<th>Black or African American</th>
<th>American Indian and Alaska Native</th>
<th>Asian</th>
<th>Native Hawaiian and Other Pacific Islander</th>
<th>Hispanic or Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>37,253,956</td>
<td>27,636,403</td>
<td>2,486,549</td>
<td>622,107</td>
<td>5,038,123</td>
<td>181,431</td>
<td>14,358,000</td>
</tr>
<tr>
<td>Alameda</td>
<td>1,510,271</td>
<td>649,122</td>
<td>190,451</td>
<td>9,799</td>
<td>394,560</td>
<td>12,802</td>
<td>339,889</td>
</tr>
<tr>
<td>Contra Costa</td>
<td>1,049,025</td>
<td>614,512</td>
<td>97,161</td>
<td>6,122</td>
<td>151,469</td>
<td>4,845</td>
<td>255,560</td>
</tr>
<tr>
<td>Marin</td>
<td>252,409</td>
<td>201,963</td>
<td>6,987</td>
<td>1,523</td>
<td>13,761</td>
<td>509</td>
<td>39,069</td>
</tr>
<tr>
<td>Napa</td>
<td>136,484</td>
<td>97,525</td>
<td>2,668</td>
<td>1,058</td>
<td>9,223</td>
<td>372</td>
<td>44,010</td>
</tr>
<tr>
<td>San Francisco</td>
<td>789,172</td>
<td>390,387</td>
<td>48,870</td>
<td>4,024</td>
<td>267,915</td>
<td>3,359</td>
<td>121,774</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>1,739,396</td>
<td>836,616</td>
<td>46,428</td>
<td>12,960</td>
<td>570,524</td>
<td>7,060</td>
<td>479,210</td>
</tr>
<tr>
<td>Solano</td>
<td>413,344</td>
<td>210,751</td>
<td>60,750</td>
<td>3,212</td>
<td>58,870</td>
<td>3,564</td>
<td>99,356</td>
</tr>
<tr>
<td>Sonoma</td>
<td>474,047</td>
<td>371,412</td>
<td>7,610</td>
<td>6,489</td>
<td>18,341</td>
<td>1,558</td>
<td>120,430</td>
</tr>
</tbody>
</table>

Note: Individuals that are more than one race are counted in each racial category that applies. Therefore, the total number of individuals in the racial categories is greater than the “Total Population” for each county.
Source: Bay Area Census, 2010

Table 3-17. **2010 Census Data on Race in Plan Area (Percentage)**

<table>
<thead>
<tr>
<th>County</th>
<th>White</th>
<th>Black or African-American</th>
<th>American Indian and Alaska Native</th>
<th>Asian</th>
<th>Native Hawaiian and Other Pacific Islander</th>
<th>Hispanic or Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>74.2</td>
<td>6.7</td>
<td>1.7</td>
<td>13.5</td>
<td>0.5</td>
<td>38.5</td>
</tr>
<tr>
<td>Alameda</td>
<td>43.0</td>
<td>12.6</td>
<td>0.6</td>
<td>26.1</td>
<td>0.8</td>
<td>22.5</td>
</tr>
<tr>
<td>Contra Costa</td>
<td>58.6</td>
<td>9.3</td>
<td>0.6</td>
<td>14.4</td>
<td>0.5</td>
<td>24.4</td>
</tr>
<tr>
<td>Marin</td>
<td>80.0</td>
<td>2.8</td>
<td>0.6</td>
<td>5.5</td>
<td>0.2</td>
<td>15.5</td>
</tr>
<tr>
<td>Napa</td>
<td>71.5</td>
<td>2.0</td>
<td>0.8</td>
<td>6.8</td>
<td>0.3</td>
<td>32.2</td>
</tr>
<tr>
<td>San Francisco</td>
<td>48.5</td>
<td>6.1</td>
<td>0.5</td>
<td>33.3</td>
<td>0.4</td>
<td>15.1</td>
</tr>
<tr>
<td>San Mateo</td>
<td>53.4</td>
<td>2.8</td>
<td>0.5</td>
<td>24.8</td>
<td>1.4</td>
<td>25.4</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>47.0</td>
<td>2.6</td>
<td>0.7</td>
<td>32.0</td>
<td>0.4</td>
<td>26.9</td>
</tr>
<tr>
<td>Solano</td>
<td>51.0</td>
<td>14.7</td>
<td>0.8</td>
<td>14.3</td>
<td>0.9</td>
<td>24.0</td>
</tr>
<tr>
<td>Sonoma</td>
<td>76.8</td>
<td>1.6</td>
<td>1.3</td>
<td>3.8</td>
<td>0.3</td>
<td>24.9</td>
</tr>
</tbody>
</table>

Note: Individuals that are more than one race are counted in each racial category that applies. Therefore, the total percent of individuals in the racial categories is greater than the “Total Population” for each county.
Source: Bay Area Census, 2010

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December 2016
The EPA identifies an area as *low-income* if the low-income population is more than 50 percent of the area’s total population, or is “meaningfully greater” than the percentage of low-income residents in the surrounding region. *Low-income* refers to households with an income below the federal poverty level (U.S. Environmental Protection Agency 1998).

As shown in Table 3-18, the nine counties all have higher median household incomes, ranging from $63,274 to $89,268, than the state as a whole ($54,343); and all counties except Solano have higher incomes per capita, ranging from $28,649 to $53,940, than the state as a whole ($30,441). All counties also have lower percentages of persons below the poverty level, ranging from 7.0 to 11.9 percent, than the state as a whole (15.8 percent).

### Table 3-18. 2010 Census Data on Income and Poverty Status in Plan Area

<table>
<thead>
<tr>
<th>County</th>
<th>Median Household Income, 2010 (Dollars)</th>
<th>Income Per Capita, 2010 (Dollars)</th>
<th>Persons Below Poverty Level, 2010 (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>54,343</td>
<td>30,441</td>
<td>15.8</td>
</tr>
<tr>
<td>Alameda</td>
<td>69,384</td>
<td>33,961</td>
<td>11.4</td>
</tr>
<tr>
<td>Contra Costa</td>
<td>78,385</td>
<td>37,818</td>
<td>9.0</td>
</tr>
<tr>
<td>Marin</td>
<td>89,268</td>
<td>53,940</td>
<td>7.0</td>
</tr>
<tr>
<td>Napa</td>
<td>67,389</td>
<td>34,310</td>
<td>10.0</td>
</tr>
<tr>
<td>San Francisco</td>
<td>71,304</td>
<td>45,478</td>
<td>11.9</td>
</tr>
<tr>
<td>San Mateo</td>
<td>85,648</td>
<td>43,958</td>
<td>7.0</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>86,850</td>
<td>39,804</td>
<td>8.9</td>
</tr>
<tr>
<td>Solano</td>
<td>68,409</td>
<td>28,649</td>
<td>10.4</td>
</tr>
<tr>
<td>Sonoma</td>
<td>63,274</td>
<td>32,597</td>
<td>10.3</td>
</tr>
</tbody>
</table>

Source: Bay Area Census 2010.

### 3.5.2 Environmental Consequences

#### 3.5.2.1 Methodology for Impact Analysis

Assessing whether the effects of resource impacts would be disproportionately high and adverse for minority or low-income populations involves:

- evaluating populations in the affected area to identify loci where minority and/or low income populations are concentrated, and then
- assessing whether impacts on biological, physical, or social resources would affect these areas to a greater degree than neighboring regions.

Consistent with EPA guidance (1998), this analysis addresses only adverse effects. For the purposes of this analysis, an environmental change was considered to represent an environmental justice concern if it would:
predominantly result in an adverse effect on a minority or low-income area as defined by the EPA; or

result in an adverse effect on a minority or low-income area that is appreciably more severe or of greater magnitude than the adverse effect experienced by nonminority and/or non-low-income areas.

3.5.2.2 Environmental Programs and Avoidance and Minimization Measures

PG&E’s environmental justice program includes the following measures to prevent environmental injustice:

- Conduct educational training regarding environmental justice issues.
- Promote and disseminate environmental justice educational materials throughout the company.
- Identify potentially significant existing and future environmental justice concerns.
- Coordinate and plan outreach to affected interest groups to evaluate potential measures to minimize, avoid, or mitigate environmental justice concerns.

PG&E’s environmental justice program applies to most Covered Activities that require a routing or facility placement decision, even in instances where facilities currently exist. Under its environmental justice program, PG&E may decide to relocate or reroute facilities in instances where a disproportionate number of facilities already exist in a particular neighborhood. All projects that require approval by the California Public Utility Commission or other state agency require an environmental justice evaluation prior to project approval.

3.5.2.3 Proposed Action

Impact 3.5-1: Potential Effects on Minority or Low Income Residents

O&M and minor new construction activities have potential to result in environmental justice effects on minorities or low-income residents in the Plan Area. Based on PG&E’s existing environmental justice program that would be applied to the Proposed Action, impacts associated with environmental justice would be less than significant. The following paragraphs explain the basis of this conclusion.

As discussed in Environmental Setting above, the populations of several counties have higher percentages of Black or African-American, Asian, and Native Hawaiian and Other Pacific Islander residents than the state as a whole; Alameda, Contra Costa, and Solano counties have substantially greater percentages of African-American residents than the state; Alameda, San Francisco, San Mateo, and Santa Clara have substantially greater percentages of Asian residents than the state. Most of these differences are small enough that they are unlikely to meet EPA’s subjective criterion describing a population that is “meaningfully greater” than that of the surrounding region. Thus, none
of the nine counties is considered to qualify as a minority area on a countywide scale. However, portions of seven Plan Area counties are considered to meet the EPA criteria.

While several of the Plan Area counties have larger percentages of minority populations than the state, only one (Solano County) has a median household income below statewide figures. While the median income of Solano County is less than the state median income, the county has a lower percentage of people below the poverty level than the state. The percentage of people living below poverty is 15.8 percent statewide; however, in Solano County, this number is 10.4 percent. While individual poverty levels have generally increased throughout California in the past several years, all of the Plan Area counties remain below state poverty levels. Thus, none of the nine Plan Area counties qualify as low-income areas as defined by the EPA.

Because of the demographic factors, almost any adverse effect associated with the Proposed Action alternative has the potential to represent an environmental justice concern in seven of the Plan Area counties (Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma). The precise locations that would be affected by activities enabled under the Proposed Action alternative cannot be identified at this time because O&M and minor construction are implemented on an as-needed basis over a broad geographic region. Thus, it would be speculative to identify the location, nature, or severity of specific environmental justice concerns. However, significant effects would be avoided or effectively mitigated by PG&E’s existing environmental commitments described above. Any residual effects, and hence any environmental justice concerns, are expected to be minor, and would be addressed through PG&E’s environmental justice program.

As described in above, PG&E has an established companywide policy in place that requires the company to identify and address potential environmental justice concerns. This program would carry forward for all activities implemented under the Proposed Action. PG&E’s existing Environmental Justice Program will ensure minimal environmental justice effects.

3.5.2.4 No Action Alternative

Under the No Action Alternative, the Service would not issue an incidental take permit related to the Bay Area HCP. PG&E would continue its existing program of O&M activities and minor new construction activities and implement current environmental programs and practices, including BMPs. A regional HCP would not be implemented, and individual activities would be subject to project-by-project evaluations, and incidental take authorizations and mitigation if they would affect federally listed species. Because compensation requirements would be assessed on a project-by-project basis, smaller parcels of land would likely be identified for enhancement or preservation for the individual projects instead of as part of a regional conservation effort. The creation of numerous small habitat mitigation lands would increase the need for management activities on more lands.

As identified in the preceding section, none of the nine Plan Area counties qualify as low-income areas under EPA criteria, none of the counties as a whole qualify as a minority area, and portions of seven Plan Area counties qualify as minority areas. Consequently, as with the Proposed Action, any adverse effect incurred under the No Action alternative has the potential to represent an environmental justice concern. However, PG&E’s existing environmental justice program would
remain in force under the No Action alternative. Environmental justice impacts under the No Action alternative, if any, are thus expected to be minimal and would not require mitigation.
3.6 Geology/Soils and Paleontology

This section characterizes the geologic, soils, and paleontological setting of the Plan Area and analyzes the effects of the Proposed Action and No Action alternatives on geologic, soil, and paleontological conditions and effects that could result from geologic and soil hazards. For the purposes of this analysis, paleontological resources are defined as including fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. Because of the size and geologic diversity of the Plan Area, detailed investigation of paleontological resources is beyond the scope of this EA.

3.6.1 Affected Environment

3.6.1.1 Regulatory Setting

Federal Regulations

Clean Water Act Section 402[p]
The CWA regulates stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) program (Section 402[p]). A 1987 amendment to the CWA required that municipal and industrial stormwater discharges be addressed in two phases under the NPDES program. The U.S. EPA implemented the NPDES Phase II program in 2003. Phase II requires construction projects disturbing 1 acre or more to obtain a General Permit for Storm Water Discharges Associated with Construction Activity. The purpose of the Phase II rule is to avoid or mitigate for the impacts of construction activities, including earthwork, on surface waters. The state of California is authorized by the U.S. EPA to implement the NPDES program.

Additional information on other aspects of the federal CWA is provided in Section 3.3, Biological Resources, and 3.7, Hydrology and Water Quality.

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act was enacted in 1977 to “reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program.” To accomplish this, the Act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990 by NEHRP, which refined the description of agency responsibilities, program goals, and objectives.

NEHRP’s mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Programs under NEHRP help inform and guide planning and building code requirements such as emergency evacuation responsibilities and seismic code standards.
Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 (DMA2K) (Public Law 106-390) amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 to establish a Pre-Disaster Mitigation (PDM) program and new requirements for the federal post-disaster Hazard Mitigation Grant Program (HMGP). DMA2K encourages and rewards local and state pre-disaster planning. It promotes sustainability and seeks to integrate state and local planning with an overall goal of strengthening statewide hazard mitigation. This enhanced planning approach enables local, tribal, and state governments to identify specific strategies for reducing probable impacts of natural hazards such as floods, fire, and earthquakes. In order to be eligible for hazard mitigation funding after November 1, 2004, local governments are required to develop a Hazard Mitigation Plan that incorporates specific program elements of the DMA2K law. In the Bay Area, the ABAG has adopted a multi-jurisdictional FEMA-approved 2010 Local Hazard Mitigation Plan Update, which cities and counties can adopt and use, in full or in part, in lieu of preparing all or part of a Local Hazard Mitigation Plan themselves.

American Antiquities Act

As discussed in Section 3.4 Cultural Resources, the federal Antiquities Act of 1906 was enacted with the primary goal of protecting cultural resources in the United States. As such, it explicitly prohibits appropriation, excavation, injury, and destruction of “any historic or prehistoric ruin or monument, or any object of antiquity” located on lands owned or controlled by the federal government, without permission of the secretary of the federal department with jurisdiction. It also establishes criminal penalties, including fines and/or imprisonment, for these acts. Neither the Antiquities Act itself nor its implementing regulations (Title 43, CFR, Part 3) specifically mentions paleontological resources. However, several federal agencies—including the NPS, the Bureau of Land Management (BLM), and the U.S. Forest Service (USFS)—have interpreted objects of antiquity as including fossils. Consequently, the Antiquities Act represents an early cornerstone of efforts to protect the nation’s paleontological resources.

National Environmental Policy Act

NEPA does not provide specific guidance regarding paleontological resources, but the NEPA requirement that federal agencies take all practicable measures to “preserve important historic, cultural, and natural aspects of our national heritage” (NEPA Sec. 101[b][4]) is interpreted as applying to paleontological materials. Under NEPA, paleontological resources are typically treated in a manner similar to that used for cultural resources.

Paleontological Resources Preservation Act

The federal PRPA of 2002 was specifically intended to codify the generally accepted practice of limiting collection of vertebrate fossils and other rare and scientifically significant fossils to qualified researchers who obtain a permit from the appropriate state or federal agency and agree to donate any materials recovered to recognized public institutions where they will remain accessible to the public and to other researchers. The PRPA incorporates the following key findings of a recent report issued by the Secretary of the Interior with input from staff of the Smithsonian Institution, the U.S. Geological Survey, various federal land management agencies, paleontological experts, and the public (Society of Vertebrate Paleontology 2006).

- Most vertebrate fossils and some fossils of other types (invertebrates, plants) represent a rare resource.
Illegal collection and theft of fossil materials from public lands is a serious problem; penalties for fossil theft should be strengthened.

Effective stewardship requires accurate information; federal fossil collections should be preserved and made available for research and educational use.

Federal management of fossil resources should emphasize opportunities for public involvement.

National Natural Landmarks Program
The NNL Program was established in 1962 under authority of the Historic Sites Act of 1935. Following are the goals of the NNL Program.

- To encourage the preservation of sites that illustrate the nation’s geological and ecological character.
- To enhance the scientific and educational value of the sites preserved.
- To strengthen public appreciation of natural history and foster increased concern for the conservation of the nation’s natural heritage.

Under the NNL Program, sites that represent the nation’s “best” examples of various types of biological communities or geologic features (meaning that they are in good condition and effectively illustrate the specific character of a certain type of resource) are listed on the National Registry of Natural Landmarks (NRNL). At present, the NRNL includes 587 sites (National Park Service 2004), ranging in size from 7 acres to almost 1 million acres. Examples of sites with paleontological value include Mount Diablo State Park in Contra Costa County, Ano Nuevo State Reserve in San Mateo County, and the San Andreas Fault.

The NNL Program is administered by the NPS. However, most sites listed on the NRNL are not transferred to federal ownership and most do not become units in the National Parks system; most continue to be managed by their current owners following listing. At present, about half of the nation’s NNLs are managed by public agencies, nearly one-third are privately owned and managed, and the remainder are managed through collaboration between agencies and private entities (64 FR 25708).

The NPS is responsible for maintaining relationships with NNL landowners and monitoring the condition of all NNLs. Based on its monitoring, NPS prepares an annual report for transmission via the Secretary of the Interior to Congress, identifying NNLs at risk of damage or degradation.

State Regulations
Alquist-Priolo Earthquake Fault Zoning Act
California’s Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code Sec. 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy
across the traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as active, and establishes a process for reviewing building proposals in and adjacent to Earthquake Fault Zones.

Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are “sufficiently active” and “well-defined.” A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the Act as referring to approximately the last 11,000 years). A fault is considered well defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Hart and Bryant 1997).

**Seismic Hazards Mapping Act**

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong groundshaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the State is charged with identifying and mapping areas at risk of strong groundshaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development in mapped Seismic Hazard Zones.

Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites in Seismic Hazard Zones until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

**California Building Code**

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The 2010 CBC is based on the 2009 International Building Code (IBC) published by the International Code Conference. In addition, the CBC contains necessary California amendments, which are based on reference standards obtained from various technical committees and organizations such as the American Society of Civil Engineers (ASCE), the American Institute of Steel Construction (AISC), and the American Concrete Institute (ACI). ASCE Minimum Design Standards 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.
The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients which are used to determine a Seismic Design Category (SDC) for a project, as described in Chapter 16 of the CBC. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault) as well as SDC F (Hospitals, Police Stations, emergency control centers, etc., in areas near major active faults). Design specifications are then determined according to the SDC in accordance with Chapter 16 of the CBC. Chapter 16, Section 1613, provides earthquake loading specifications for every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, which shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7-05. Chapter 18 of the CBC covers the requirements of geotechnical investigations (Section 1803), excavation, grading, and fills (Section 1804), load-bearing of soils (1805), as well as foundations (Section 1808), shallow foundations (Section 1809), and deep foundations (Section 1810). Chapter 18 also describes analysis of expansive soils and the determination of the depth to groundwater table. For SDC D, E, and F, Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also addresses mitigation measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions.

CCR Title 24 also includes the California Residential Code and the California Green Building Code, which have been adopted as separate documents (CCR Title 24, Part 2.5 and 11, respectively). The California Residential Code includes structural design standards for residential one- and two-family dwellings and covers all structural requirements for conventional construction. This part incorporates by adoption the 2009 International Residential Code of the International Code Council with necessary California amendments for seismic design. All other structures including multi-family residential projects are found in the other parts of the CBC as discussed above.

**California Public Resources Code**

Several sections of the California Public Resources Code protect paleontological resources. Section 5097.5 prohibits “knowing and willful” excavation, removal, destruction, injury, and defacement of any paleontologic feature on public lands (lands under state, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands. The sections of the California Administrative Code relating to the State Division of Beaches and Parks afford protection to geologic features and “paleontological materials” but grant the director of the state park system authority to issue permits for specific activities that may result in damage to such resources, if the activities are in the interest of the state park system and for state park purposes (California Administrative Code Sec. 4307–4309).
Local Regulations

City and county governments develop, as part of a general plan, safety elements that identify goals, objectives, and implementing actions to minimize the loss of life, property damage, and disruption of goods and services from disasters, including floods, fires, non-seismic geologic hazards, and earthquakes. General plans can provide policies and establish the basis for ordinances to ensure acceptable protection of people and structures from risks associated with these hazards. Ordinances can include those addressing unreinforced masonry construction, erosion, or grading.

Through Article VII, Paragraph 5 of the California Constitution, the state legislature, vests the CPUC with exclusive jurisdiction over the siting and design of gas and electric facilities. California Public Utilities Code Section 1007.5 and other California statutes and case law detail the nature and extent of this sole discretionary permitting authority. Because state law has preempted the field, PG&E is not subject to local land use planning or zoning requirements.

While PG&E’s utility related activities are solely regulated by CPUC and are thus not subject to local zoning ordinances, PG&E consults with local cities and counties to ensure that local concerns and issues are considered during the project planning process; construction and O&M activities are developed and implemented in such a way as to comply with existing local zoning ordinances, when feasible.

3.6.1.2 Environmental Setting

Physiography

The nine counties in the Bay Area are located almost entirely within the California Coast Ranges Section of the Pacific Border Province of the Pacific Mountain System (Natural Resources Conservation Service 2006). Adjacent portions of the Great Valley geomorphic province also overlap some of the counties.

The Coast Ranges are northwest-trending mountain ranges and valleys that are located along the Pacific Coast and span almost the entire length of the state. The Coast Ranges are the largest of the state’s geomorphic provinces, rising abruptly from the shore in Humboldt County and extending 400 miles south to the Santa Ynez River in Santa Barbara County. The northern and southern ranges are separated by a depression or “gap” containing San Francisco Bay (California Department of Conservation 2002). San Francisco Bay also separates the mountains into western and eastern ranges and is the only major sea level pass through the Coast Ranges; the gap in the western coast range is known as the Golden Gate, and the gap in the eastern coast range is the Carquinez Strait. These gaps were originally cut by rivers that are part of the drainage system for Sierra Nevada runoff and they allow air to pass into and out of the Central Valley.

The elevation of the Coast Ranges in the Bay Area varies from 500 to 3,500 feet above mean sea level. The Russian River flows through the northern portion of the Bay Area, and the Napa and Petaluma Rivers empty into San Pablo Bay. The Hetch Hetchy Aqueduct brings Sierra Nevada water from the Yosemite area to the Bay Area for municipal, public, and industrial uses. The aqueduct empties into the Upper Crystal Springs Reservoir, which is in the San Andreas Fault zone directly south of San Francisco (Natural Resources Conservation Service 2006). Alameda Creek drains the
Livermore Valley via Niles Canyon, a narrow gorge across the Diablo Range, and empties into southern San Francisco Bay (Norris and Webb 1990). The San Joaquin River and Sacramento River drain the Central Valley to the Sacramento-San Joaquin Delta (Delta) in the eastern portion of the Bay Area, which empties into San Francisco Bay and ultimately the Pacific Ocean.

**Geologic Setting**

The Coast Ranges Geomorphic Province is characterized by northwest-trending mountain ranges formed over the past 10 million years or less by active uplift related to the complex tectonics of the San Andreas fault/plate boundary system (Norris and Webb 1990, Harden 1998). The majority of the Bay Area is coastal valleys that are partly filled with unconsolidated and semiconsolidated marine sedimentary rocks and older, more consolidated eolian, lacustrine, and terrace deposits. The elongated shape and northwest-southeast orientation of the valleys are strongly controlled by right-lateral strike-slip movement along a regional set of faults (Natural Resources Conservation Service 2006).

The principal bedrock formation of the Coast Ranges is the Franciscan Formation, which is composed of ancient fault zones. The dominant characteristic of the Coast Ranges is its division into elongate topographic and lithologic strips underlain by discrete basement rocks that are separated by profound structural discontinuities (Norris and Webb 1990). The San Joaquin and Sacramento Delta region is underlain by interbedded marine, estuarine, and fine-grained nonmarine sediments transported to the delta by the Sacramento and San Joaquin rivers as they flow into San Pablo Bay (Natural Resources Conservation Service 2006).

The Central Belt of the Franciscan Formation is located in the Bay Area and is composed of isolated blocks of exotic greenstone, blueschist, eclogite, chert, or greywacke “float” in a matrix of highly sheared mudstone, or mélange (Norris and Webb 1990).

The Coast Ranges and Great Valley geomorphic provinces are dissimilar in crustal structure; the boundary is referred to as the Coast Ranges-Sierran block boundary (Wong et al. 1988, Norris and Webb 1990). Much of the Franciscan Complex was accreted under the Great Valley complex, which contains the Coast Range ophiolite. The contact between the two Mesozoic complexes is extensively faulted, and the Franciscan Complex presumably underlies the entire San Francisco Bay area east of the San Andreas fault (Graymer et al. 2002).

The eastern Coast Range is flanked by a sequence of Cretaceous through Quaternary clastic sedimentary strata. Most of the boundary between the Coast Ranges and the Sierran basements lies beneath thousands of meters of late Mesozoic and Cenozoic sedimentary rocks in the San Joaquin and southern Sacramento valleys. The next major boundary is the San Andreas fault, followed by the Salinian block, which is composed of granitic and continental crust (Norris and Webb 1990).

The Great Valley is floored by a thick sequence of sedimentary deposits that range in age from Jurassic through Quaternary. Under the eastern and central portions of the valley, the base of the sequence likely rests on Mesozoic crystalline rock allied to the plutons of the Sierra Nevada. To the west, basement rocks are believed to be Franciscan metasediments and/or mélange. Mesozoic sedimentary rocks now in the subsurface record marine deposition. They are overlain by Tertiary strata reflecting marine, estuarine, and terrestrial conditions, which are in turn overlain by Quaternary
fluvial and alluvial strata recording uplift and erosion of the Sierra Nevada and Coast Ranges to approximately their present shape (Norris and Webb 1990).

Paleontological Setting

A number of geologic units in the Plan Area have the potential to contain significant paleontological resources. These include the Franciscan Formation, which underlies the majority of the Plan Area, and the Moreno Formation along the eastern margin of the Plan Area; various other marine units of Cretaceous and Paleogene age are primarily exposed at the surface along the east margin of the Plan Area and in some areas along the coast (Jennings 2000). The following sections provide additional information on the Franciscan Formation, Moreno Formation, and Pleistocene alluvium, which are considered particularly sensitive on a regional basis. Other units are also locally sensitive.

Franciscan Formation

The Franciscan Formation, which comprises the majority of the Plan Area, is more than 50,000 feet thick and is a heterogeneous assemblage consisting largely of dismembered sequences of graywacke, shale, and lesser amounts of mafic volcanic rocks, thin bedded chert, and rare limestone. The Coastal Belt of the Franciscan Formation contains the youngest Franciscan rocks, with the entire Franciscan spanning a period of about 150 million years of accretion from middle Mesozoic (late Jurassic) to early Tertiary (mainly Eocene) time (Norris and Webb 1990). The sedimentary and volcanic Franciscan rocks were formed in a marine environment; the Franciscan sediments were deposited in a deep oceanic trench directly on mantle material or on a thin oceanic crust overlying the mantle (Norris and Webb 1990). The Franciscan Formation subducted beneath the Coast Range ophiolite during Late Cretaceous or Early Tertiary time, as shown by the presence of Campanian (Late Cretaceous) fossils in Franciscan sandstone in Marin County (Brabb, Graymer, and Jones 1998, California Division of Mines and Geology 1973a).

Most abundant in the Franciscan Formation are sequences of sandstone and shale, which accumulated as marine sediments in relatively deep water. Franciscan sedimentary rocks contain very few fossils, but widely scattered localities have yielded specimens ranging from late Jurassic to Eocene and possibly even younger (Norris and Webb 1990). Chert is a type of sedimentary rock found in the Franciscan Assemblage, which originates as radiolarians; microscopic fossils of radiolarians have proved to be the most useful Mesozoic fossils for California geologists (Harden 1998, Norris and Webb 1990).

The age of the Franciscan Assemblage was originally determined from the presence of Jurassic and Cretaceous ammonites, and excellent Cretaceous specimens have been found in the western Great Valley (Harden 1998). Mesozoic rocks contain a wide variety of mostly marine fossils, because most of California’s Mesozoic sedimentary and metasedimentary rocks were deposited in marine environments. Three specimens of Mesozoic reptile remains have been found in the Franciscan Formation, and the only Jurassic plesiosaur found in the Plan Area came from a limestone concretion weathered out of Franciscan-Knoxville shales (Hilton 2003).

Moreno Formation

The Moreno Formation consists of shale deposited in a deep-marine environment. It is highly fossiliferous, yielding a variety of marine reptiles; fish skeletons; various marine invertebrates; plant
remains, including wood, leaves, and needles; and the remains of dinosaurs (Hilton 2003). Fossils have been recovered and documented from the Cretaceous Period and the Oligocene and Miocene Epochs of the Tertiary Period. These fossils include mollusks, sharks, bony fish, turtles, sea lions, coral, deer, oysters, horses, weasels, whales, rhinoceros, camels, bears, and dinosaurs (Bureau of Reclamation 2006). The Moreno geologic formation in the Panoche Hills (also in the Diablo Range) contains very unique fossil forms known as mosasaurs and plesiosaurs (Bureau of Land Management 2016).

Modern cold seeps were discovered relatively recently (in the late 1980s) just south of the Plan Area, and paleontologists are just beginning to recognize them in the fossil record (Campbell, Carlson, and Bottjer 1993, Schwartz and Moore 2004). Fossil cold seep faunas are thus unusual and potentially important fossils that can add to our understanding of evolutionary processes and ancient geochemistry.

Because it contains abundant vertebrate fossils as well as potentially important invertebrate faunas, the Moreno Formation is evaluated as having a high potential to contain significant paleontological resources. Its paleontological sensitivity is considered high.

**Pleistocene Alluvial Units**

The Quaternary alluvial and fluvial strata flooring the Central Valley record erosional dissection of the Sierran and Coast Ranges uplifts. Fossil remains of vertebrates are common in Pleistocene units throughout California, and Pleistocene alluvial units in particular can contain diverse vertebrate faunas representing various evolutionarily important taxa. Numerous fossil localities contain marine mollusks of Pliocene age and the fossils are typically found in cemented interbeds (California Division of Mines and Geology 1973b).

**Soils**

The NRCS characterizes soils at the regional level according to the major land resource area (MLRA) classification system. An MLRA is a planning unit identified or defined on the basis of similar elevation and topography, climate, water resources, soils, natural vegetation communities, and land uses. An MLRA is typically made up of several geographically associated land resource units. A land resource unit, the basic unit used in the state’s land resource mapping, is a geographic area characterized by a particular pattern of soils, climate, water resources, and land uses (Natural Resources Conservation Service 2006).

The Bay Area contains six MLRAs (Table 3-19). The dominant MRLAs are the Central California Coastal Valleys and Central California Coast Range. Coastal areas in the northwest and southwest portions of the Bay Area are classified as the Coastal Redwood Belt. The California Delta and Sacramento and San Joaquin Valleys are in the eastern portion of the Bay Area. A portion of the Siskiyou-Trinity Area is between the Coastal Redwood Belt and Central California Coastal Valleys in the northwest portion of the Plan Area.
### Table 3.19. Soil Characteristics by Major Land Resource Area

<table>
<thead>
<tr>
<th>MLRA</th>
<th>Geographic Extent</th>
<th>Soil Texture</th>
<th>Erosion Hazard</th>
<th>Runoff</th>
<th>Shrink-Swell Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>4B—Coastal Redwood Belt</td>
<td>Coastal areas of Sonoma, San Mateo, and Santa Clara counties</td>
<td>The dominant soil orders are Alfisols, Entisols, Inceptisols, and Ultisols.</td>
<td>Severe</td>
<td>Moderate to rapid</td>
<td>Moderate to high</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The soils dominantly have an isomesic or mesic soil temperature regime; a udic, xeric, or ustic soil moisture regime; and mixed mineralogy. They generally are deep or very deep, well drained, and loamy or clayey and occur on mountain slopes and hills.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5—Siskiyou-Trinity Area</td>
<td>Central portion of Sonoma County</td>
<td>The dominant soil orders in this MLRA are Alfisols, Inceptisols, and Ultisols. Xerolls are of minor extent on the grasslands. The soils in the area dominantly have a mesic soil temperature regime, a xeric soil moisture regime, and mixed mineralogy. They generally are moderately deep or deep, well drained, and loamy and occur on mountain slopes and hills.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14—Central California Coastal Valleys</td>
<td>Main valley through central part of Plan Area</td>
<td>The dominant soil orders are Alfisols, Entisols, Mollisols, and Vertisols. The soils in this area have a thermic soil temperature regime, a xeric soil moisture regime, and mixed or smectitic mineralogy. They generally are very deep, somewhat excessively drained to somewhat poorly drained, and loamy or clayey.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15—Central California Coast Range</td>
<td>Coast Ranges in western and eastern parts of Plan Area</td>
<td>Soils are nearly level to moderately sloping. Most soils are alluvial, although some are residual. Soil textures are generally loamy to clayey; bedrock outcrops and gravelly units are locally present, particularly at higher elevations. Soils range from shallow to moderately deep, and are typically deeper at lower elevations.</td>
<td>Moderate</td>
<td>Moderate to rapid</td>
<td>Moderate to high</td>
</tr>
</tbody>
</table>
### Geologic Hazards

**Primary Seismic Hazards—Surface Fault Rupture and Groundshaking**

Faults in the Bay Area that are recognized as active by the State of California and zoned pursuant to the Alquist-Priolo Act include, from north to south, the San Andreas, Maacama, Rodgers Creek, Hayward, Calaveras, Concord, West Napa, Greenville, Sargent, and San Gregorio faults. All of these faults pose some risk of surface rupture related to seismic activity.

In addition to possible surface rupture, the Plan Area is likely to experience strong groundshaking as a result of earthquakes on any of the region’s principal active faults. Recent studies estimate a 62 percent probability of at least one earthquake with a magnitude of 6.7 or greater occurring on one of the faults of the greater San Francisco Bay Area in the next 30 years, and a 10 percent probability of a magnitude 7.0 or greater event during the same timeframe (U.S. Geological Survey Working Group on California Earthquake Probabilities 2003). Table 3-20 summarizes current information on earthquake recurrence intervals and the maximum credible earthquake for key structures in and near the Plan Area.

The intensity of groundshaking at any given location is a function of earthquake magnitude, distance from the earthquake epicenter, and the nature of the substrate. Based on a probabilistic seismic hazard map that depicts the peak horizontal ground acceleration values exceeded at a 10 percent probability in 50 years (Cao et al. 2003), the peak horizontal ground acceleration values for the Plan Area range from 0.2g up to 0.9g (where 1g is equal to 1 gravity or an acceleration of 9.8 meters per second per second). This suggests that the groundshaking hazard in the Plan Area ranges from
moderate to high, with lower risks in the eastern portion and higher risks in the central and western portions, closer to potential seismic sources.

### Table 3-20. Maximum Credible Earthquake and Recurrence Interval for Active Faults

<table>
<thead>
<tr>
<th>Fault</th>
<th>Magnitude of Maximum Credible Earthquake</th>
<th>Approximate Recurrence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenville</td>
<td>6.6&lt;sup&gt;a&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td>Hayward</td>
<td>Northern segment: 6.4&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Northern segment: 270 to 710 years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Southern segment: 6.7&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Southern segment: 150 to 250 years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Calaveras</td>
<td>Northern segment: 6.8&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Northern segment: 125 to 850 years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Central segment: 6.2&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Southern segment: 5.8&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Maacama</td>
<td>Southern segment: 6.9&lt;sup&gt;a&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td>San Andreas</td>
<td>North Coast Section: 7.4&lt;sup&gt;a&lt;/sup&gt;</td>
<td>North Coast Segment: 200 to 400 years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Peninsula Section: 7.1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Peninsula Section: 225 years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Rodgers Creek</td>
<td>7.0&lt;sup&gt;a&lt;/sup&gt;</td>
<td>230 years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Concord</td>
<td>6.2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td>West Napa</td>
<td>6.5&lt;sup&gt;a&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td>Sargent</td>
<td>6.8&lt;sup&gt;a&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td>San Gregorio</td>
<td>7.2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>400 to 1,000 years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

N/A = Not available  
<sup>a</sup> Source: Cao et al. 2003.  
<sup>b</sup> Source: U.S. Geological Survey 2006

### Secondary Seismic Hazards—Liquefaction and Ground Failure

*Secondary seismic hazards* refer to liquefaction and related types of ground failure, as well as seismically induced landsliding. Seismic Hazard Maps have been issued by the state for parts of Alameda, San Francisco, San Mateo, and Santa Clara counties (California Geological Survey 2009). Liquefaction is likely to be a substantial concern in parts of the Plan Area where soils and sediments are sandy and groundwater is shallow.

Land surrounding the San Joaquin–Sacramento Delta, San Pablo Bay, and the San Francisco Bay region are highly susceptible to liquefaction in the event of an earthquake (Association of Bay Area Governments 2001, Holzer et al. 2005). Lateral spreading has historically occurred in the western and central portions of the Plan Area, and both liquefaction and differential settling are important hazards (Association of Bay Area Governments 2001).

### Landslide and Other Slope Stability Hazards

The Plan Area includes gently sloping to steep, low mountains where the potential for slope failure varies depending on the localized conditions. Urban areas tend to be on gentler slopes with less
topographic relief and are less likely to be subject to landslides or have slope stability hazards. The steep slopes of the Coast Ranges have moderate to high potential for landslides. The central and east portions of the Plan Area have greater landslide risks compared with the coastal areas and low-lying areas around the Delta (Wentworth et al. 2006). Landslides are a particular concern in the Coast Ranges foothills, where rugged topography underlain by Franciscan rocks is commonly prone to landsliding and debris flows.

3.6.2 Environmental Consequences

3.6.2.1 Methodology for Impact Analysis

Effects related to geology, soils, and associated hazards were analyzed qualitatively, based on a review of soils and geologic information for the Plan Area and on professional judgment. The analysis focuses on the potential for increased risk of personal injury, loss of life, and damage to property, including new or upgraded facilities, as a result of existing geologic or soil conditions in the Plan Area. Analyses in Section 3.7, Hydrology and Water Quality, provide additional discussion of related impacts.

Effects on paleontological resources were analyzed qualitatively, based on professional judgment. As discussed above, some of the Plan Area’s geologic units are known to be highly sensitive paleontologically. However, because of the Plan Area’s size and geologic diversity, detailed investigation of paleontological resources, which would typically result in site-specific assessments of paleontological sensitivity followed by development of corresponding site-specific avoidance and/or treatment protocols, was not feasible. Instead, this analysis focuses on (1) identifying activities with the potential to disturb, damage, or destroy paleontological resources if any are present on the work site; and (2) developing a strategy to ensure that mitigation requiring paleontological sensitivity assessment and appropriate treatment developed on a site-specific basis is in place for those activities identified as likely to result in damage.

3.6.2.2 Environmental Programs and Avoidance and Minimization Measures

Provided below are discussions that describe applicable PG&E’s Environmental Programs that address potential geological, paleontological, and soils impacts. Additionally, some of the proposed AMMs from the HCP to address impacts to listed species may also apply to geology, paleontology, and soils.

Applicable PG&E Environmental Programs include:

PG&E evaluates the geology, paleontology, and soils at worksites where new or replacement facilities are constructed. The purpose of the investigation is to provide a geologic basis for the development of appropriate project design. Investigations typically consider geologic structure, including primary and secondary seismic hazards as defined by the State of California; soils; slope stability; previous history of excavation and fill placement; earthwork recommendations; and any other topics identified by PG&E’s design engineer(s), the geotechnical engineer, or the project engineering geologist.
Applicable HCP AMMs include:

- FP-02 – Park vehicles and equipment on pavement, existing roads, or other disturbed or designated areas (barren, gravel, compacted dirt).

- FP-03 – Use existing access and ROW roads. Minimize the development of new access and ROW roads, including clearing and blading for temporary vehicle access in areas of natural vegetation.

- FP-11 – Utilize standard erosion and sediment control BMPs (pursuant to the most current version of PG&E’s *Stormwater Field Manual for Construction Best Management Practices*) to prevent construction site runoff into waterways.

- FP-12 – Stockpile soil within established work area boundaries and locate stockpiles so as not to enter water bodies, stormwater inlets, other standing bodies of water. Cover stockpiled soil prior to precipitation events.

- FP-14 – If the covered activity disturbs 0.1 acre or more of habitat for a covered species in grasslands, the field crew will revegetate the area with a commercial seed mix.

- Plant-02 – Heavy equipment shall remain on access roads or other previously disturbed areas unless otherwise prescribed by a land planner, biologist, or HCP administrator.

- BMP-9 – Vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas to the extent practicable. In environmentally sensitive areas, vehicle access to work sites shall be restricted to existing roadways.

- BMP-12 – After vegetation management activities, if the amount of bare soil exposed in one location exceeds 0.1 acre, then erosion control measures shall be implemented. These measures may include straw mulching, seeding, and use of straw waddles. (No rice straw will be used around wetlands containing vernal pools.)

- BMP-53 – All existing roads shall be kept open and erosion control measures re-installed after the project is completed or during inclement weather.

- BMP-62 – The following protection measures are designed to prevent adverse impacts on water quality, help protect soil resources, and minimize the loss of riparian vegetation.

  1. Plants in watercourse protection zones that do not pose an imminent or clearly foreseeable future threat to conductors shall not be removed.

  2. To help prevent erosion and soil displacement, exclusion zones may be increased in areas with steep slopes or highly erodible soils.

  3. Leave at least 50 percent soil cover (i.e., mulch or vegetative ground cover) for erosion control in watercourse protection zones.
3.6.2.3 Proposed Action

The potential effects described below pertain to both construction and operations.

Impact 3.6-1: Increased Potential Surface Fault Rupture, Ground Failure, or Seismic Groundshaking

Portions of the Plan Area could be subject to surface fault rupture or seismic-induced landslides or other ground failure in the event of an earthquake, and all of the Plan Area could be subject to groundshaking as a result of seismic activity at nearby faults. Maximum ground accelerations are estimated at 0.9g (Cao et al. 2003), and could be sufficient to damage facilities in the Plan Area. The primary concerns associated with surface rupture, seismic-induced ground failure, and groundshaking are the safety risks to personnel working in or around structures and the potential damage to the structures. Indirect impacts include service disruption and fires that could be caused by damage to electric or gas facilities.

Any of the Covered Activities would involve risks from seismic activity, but the potential for workers being injured or killed or facilities being damaged due to seismic activity is considered low. PG&E designs its facilities to comply with the applicable CPUC and California Building Code, which minimize the risk of damage resulting from seismic activity as well as the resulting safety risks and cost of repairs. Substations are designed and constructed in conformance with Institute of Electrical and Electronics Engineers (IEEE) 693 standards. These codes include a wide variety of stipulations relevant to reducing earthquake-related risk, including foundation and structural design and structural tolerances.

In addition, most new facilities would require site-specific geotechnical studies performed by qualified personnel with appropriate expertise (per CPUC). Facility design and construction would conform to the appropriate expert recommendations associated with geotechnical investigations. Expert recommendations may include specific siting criteria and could expand upon, modify, or increase the stringency of code requirements, depending on the proximity of known surface faults. Compliance with code requirements for facility design and geotechnical recommendations would ensure the risks to personnel and facilities is low.

No facilities would be constructed on habitat mitigation lands that could be damaged from seismic activity. Periodic monitoring of the lands could expose people to safety risks from seismic activity, but such risk would be considered low. PG&E’s Environmental Programs will ensure minimal effects on rupture, ground failure, and seismic groundshaking.

Impact 3.6-2: Increased Potential for Slope Failure

Concerns related to slope failure are similar to those identified for seismic activity: safety risks to personnel and damage to facilities. PG&E construction activities could also result in indirect impacts that increase the risk of slope failure. Steep slopes throughout the Plan Area have risk of slope failure, and many landslides have been mapped in the region (Wentworth et al. 2006). As with seismic risks, adherence to relevant CPUC, IEEE 693, and building codes earthwork standards and implementation of PG&E’s existing environmental programs would reduce the potential for facility damage from slope failure and minimize the safety risks to personnel. Site-specific geotechnical
studies would also provide recommendations on localized landslide risks and design criteria to minimize such risks.

Some habitat mitigation lands may contain steep slopes or areas susceptible to landslides, but no facilities would be constructed on the lands that could be damaged by slope failure, and the safety risk to monitoring personnel is considered low.

The combination of existing Environmental Programs and the following AMMs will ensure minimal effects: FP-02, FP-03, FP-11, FP-14, Plant-02, BMP-9, BMP-12, BMP-53, BMP-62.

**Impact 3.6-3: Increased Potential for Exposure of Structures to Expansive Soils**

Soils in the Plan Area with high clay content pose a risk to facilities and personnel from shrink-swell behavior. Facilities could be damaged from expansive soils if they are not properly designed or installed to account for shrink-swell. For example, concrete could crack, towers and poles could fall over, and pipelines could leak. Facility damage could also expose personnel to safety risks and result in indirect effects from fire or other hazards.

PG&E would require geotechnical studies for Covered Activities that involve facility construction in areas with expansive soil conditions.

Some habitat mitigation lands may contain expansive soils, but no facilities would be constructed on lands that could be damaged by shrink-swell, and the safety risk to monitoring personnel is considered low. PG&E’s Environmental Programs will ensure minimal effects in response to expansive soils.

**Impact 3.6-4: Increased Potential for Accelerated Soil Erosion and Loss of Topsoil**

Covered Activities that involve vegetation removal, excavation, grading, fill placement, and other ground disturbance could accelerate soil erosion and result in the loss of topsoil. The potential for accelerated soil erosion is particularly high where native soils are exposed (i.e., low vegetative cover) and in areas that have soils with moderate to high erosion potential, such as on steep terrain. New or expanded facilities are more likely to be located in previously undisturbed areas and would be more likely to result in accelerated erosion and the loss of topsoil. Maintenance or upgrades to existing facilities would primarily disturb soils in previously disturbed areas, such as along existing ROWs and around existing facilities where the soils have become compacted from use. Vehicle and equipment access for Covered Activities could disturb soils along existing roads and in undisturbed areas between facilities where roads have not been designated. Activities in previously disturbed areas would have minimal effects on soil, but activities in undisturbed areas could accelerate erosion and result in a loss of topsoil. The overall extent of ground disturbance from Covered Activities in natural vegetation is estimated at less than 35 acres annually, including temporary and permanent disturbance, which is relatively minor.

Some habitat mitigation lands may contain soils susceptible to erosion, but no facilities would be constructed on the lands that could accelerate erosion, and the safety risk to monitoring personnel is considered low. No activities would be implemented on habitat mitigation lands that could result in topsoil loss.
PG&E’s Environmental Programs, in combination with the following AMMs will ensure minimal effects: FP-02, FP-03, FP-11, FP-14, Plant-02, BMP-9, BMP-12, BMP-53, BMP-62.

**Impact 3.6-5: Adverse Effects on Paleontological Resources**

As discussed under Environmental Setting above, some of the Plan Area’s geologic units have the potential to contain significant paleontological resources. Many of the Covered Activities that would be enabled by the proposed action would result in some degree of ground disturbance and thus could damage paleontological resources if any are present at the work site. This is most likely to occur where ground disturbance is greater and the work site has not experienced substantial prior disturbance. Thus, the greatest concern focuses on new minor construction, habitat enhancement, restoration, and creation activities that are likely to occur on previously undisturbed or largely undisturbed parcels.

Substantial damage to or destruction of significant paleontological resources as defined by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995) would represent a significant effect. In most cases, new minor construction would require preparation of a site-specific geotechnical investigation. The potential for significant impacts on paleontological resources as a result of routine O&M activities is lower, because ground disturbance associated with these activities is typically confined to existing ROWs and immediately adjacent areas, which have already undergone some level of disturbance associated with installation and maintenance of existing infrastructure. PG&E’s *Soils and Geology Program* includes a requirement for notification of a staff geologist or contract paleontologist in the event a discovery is made. This current PG&E program entails implementing any prescribed protective measures at a job site where a paleontological discovery is made.

As discussed in Chapters 2, when emergency repairs are needed, PG&E is required to conduct them as rapidly as possible to ensure continuity of service and protect public safety. As a result, it is typically infeasible to implement a stop work order during emergency repairs. By their nature, emergency repairs affect existing infrastructure and thus would take place in ROWs and immediately adjacent areas that have already undergone some level of disturbance associated with installation and maintenance of existing utilities infrastructure. Consequently, the potential for significant effects because of emergency repairs is considered low, but some potential nonetheless remains.

Habitat enhancement, restoration, and creation can involve ground-disturbing activities and would be likely to disturb previously undisturbed ground, so there is some potential for significant effects on paleontological resources. While there is a potential for Covered Activities to affect paleontological resources, PG&E’s Environmental Programs will ensure minimal effects on paleontological resources.

**3.6.2.4 No Action Alternative**

Under the No Action Alternative, the Service would not issue an incidental take permit related to the Bay Area HCP. PG&E would continue its existing program of O&M activities and minor new construction activities and implement current environmental programs and practices, including BMPs. A regional HCP would not be implemented, and individual activities would be subject to project-by-project evaluations, and incidental take authorizations and mitigation if they would affect...
federally listed species. Similar types of O&M and minor new construction activities would be implemented under the No Action Alternative, and impacts related to geology and soils would be the same as those described for the Proposed Action. The project-by-project approach for protecting special-status species would not result in differences in impacts on soil and paleontological resources or resulting from geologic or soil hazards. Effects are expected to be minimal.
3.7 Hydrology and Water Quality

This section characterizes the hydrology and water quality setting of the Plan Area and analyzes the effects of the Proposed Action and No Action alternatives on surface and groundwater hydrology, water quality, and flood hazard. The Covered Activities would not affect water supply because the amount and duration of water needed would be minimal and within the capacity of available supplies.

3.7.1 Affected Environment

3.7.1.1 Regulatory Setting

Federal Regulations

Clean Water Act
The CWA establishes the basic structure for regulating discharges of pollutants into “waters of the United States.” The Act specifies a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. Some of these tools include:

- Section 303(d) -Total Maximum Daily Loads (TMDLs)
- Section 401 – Water Quality Certification
- Section 402 –NPDES Program
- Section 404 -Discharge of Dredge or Fill Material

Section 303(d) requires states, territories, and authorized tribes to develop a list of water-quality limited segments of rivers and other water bodies under their jurisdiction. Waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for waters on the list and develop action plans, called Total Maximum Daily Loads, to improve water quality. As part of the TMDL process, municipalities must examine water quality problems and identify sources of pollutants in order to create specific actions designed to improve water quality.

Section 401 requires every applicant for a federal permit or license for any activity that may result in a discharge to a water body to obtain a water quality certification that the proposed activity will comply with applicable water quality standards.

Section 402 regulates point-source discharges to surface waters through the NPDES program. In California, the State Water Resources Control Board (State Water Board or SWRCB) oversees the NPDES program, which is administered by the Regional Water Quality Control Boards (RWQCBs). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. The NPDES program covers municipalities, industrial activities, and construction activities. The NPDES program includes an industrial stormwater permitting component that covers 10 categories of industrial activity that require authorization under an NPDES industrial stormwater permit for stormwater discharges. Construction activities, also administered by the State Water Board, are discussed below. Section 402(p) of the CWA, as
amended by the Water Quality Act of 1987, requires NPDES permits for stormwater discharges from municipalities separate storm sewer systems (MS4s), stormwater discharges associated with industrial activity (including construction activities), and designated stormwater discharges, which are considered significant contributors of pollutants to waters of the United States. On November 16, 1990, the EPA published regulations (40 CFR Part 122) that prescribe permit application requirements for MS4s pursuant to the CWA. 402(p). On May 17, 1996, the EPA published an Interpretive Policy Memorandum on Reapplication Requirements for Municipal Separate Storm Sewer Systems, which provided guidance on permit application requirements for regulated MS4s. MS4 permits include requirements for post-construction control of stormwater runoff in what is known as Provision C.3. The goal of Provision C.3 is for the Permittees to use their planning authorities to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows from new development and redevelopment projects. This goal is to be accomplished primarily through the implementation of low impact development techniques.

Section 404 requires that a Department of the Army permit be issued prior to the discharge of any dredged or fill material into waters of the United States, including wetlands. The Corps implements this program, with oversight from the U. S. EPA. Waters of the United States include all navigable waters; interstate waters and wetlands; all intrastate waters and wetlands that could affect interstate or foreign commerce; impoundments of the above; tributaries of the above; territorial seas; and wetlands adjacent to the above. Typically, the Corps does not recognize as jurisdictional waters of the U.S. areas that are “[…] water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel, unless or until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States.” (33CFR Part 328, preamble.)

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) encourages states and tribes to preserve, protect, develop, and, where possible, restore or enhance valuable natural coastal resources such as wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife using those habitats. The CZMA applies to lands within the Plan Area that are located along the coast, and covers inland areas at varying distances from the coast. While participation by states and tribes is voluntary, the CZMA makes federal financial assistance available to coastal states or tribes that are willing to develop and implement a comprehensive coastal management program.

In its reauthorization of the CZMA in 1990, Congress identified nonpoint source pollution as a major factor in the continuing degradation of coastal waters. Congress also recognized that effective solutions to nonpoint source pollution could be implemented at the state/tribe and local levels. Therefore, in the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), Congress added Section 6217, which calls upon states and tribes with federally approved coastal zone management programs to develop and implement coastal nonpoint pollution control programs. The Section 6217 program is administered at the federal level jointly by the EPA and the National Oceanic and Atmospheric Agency (NOAA).
Under Section 6217 of the CZARA, EPA is responsible for developing technical guidance to assist states and tribes in designing coastal nonpoint pollution control programs. In 1993, EPA issued Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, which addresses five major source categories of nonpoint pollution: (1) urban runoff, (2) agriculture runoff, (3) forestry runoff, (4) marinas and recreational boating, and (5) hydromodification.

State Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act established the State Water Resources Control Board and divided the state into nine regions, each overseen by a RWQCB. The nine regional boards have the primary responsibility for the coordination and control of water quality within their respective jurisdictional boundaries. Under the Porter-Cologne Water Quality Control Act, water quality objectives are limits or levels of water quality constituents or characteristics established for the purpose of protecting beneficial uses. The Act requires the RWQCBs to establish water quality objectives while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Designated beneficial uses, together with the corresponding water quality objectives, also constitute water quality standards under the federal Clean Water Act. Therefore, the water quality objectives form the regulatory references for meeting state and federal requirements for water quality control.

Each RWQCB is required to prepare and update a Basin Plan for their jurisdictional area. Pursuant to the CWA NPDES program, the RWQCB also issues permits for point source discharges that must meet the water quality objectives and must protect the beneficial uses defined in the Basin Plan.

Construction General Permit

The California Construction Stormwater Permit (Construction General Permit)\(^8\), adopted by the State Water Resources Control Board, regulates construction activities that include clearing, grading, and excavation resulting in soil disturbance of at least one acre of total land area. The Construction General Permit authorizes the discharge of stormwater to surface waters from construction activities. It prohibits the discharge of materials other than stormwater and authorized non-stormwater discharges and all discharges that contain a hazardous substance in excess of reportable quantities established at 40 Code of Federal Regulations 117.3 or 40 Code of Federal Regulations 302.4, unless a separate NPDES Permit has been issued to regulate those discharges. The Construction General Permit requires that all developers of land where construction activities will occur over more than one acre do the following:

- Complete a Risk Assessment to determine pollution prevention requirements pursuant to the three Risk Levels established in the General Permit;

- Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the Nation;

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\(^8\) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ, National Pollutant Discharge Elimination System No. CAS000002.
- Develop and implement a Stormwater Pollution Prevention Plan (SWPPP), which specifies Best Management Practices that will reduce pollution in stormwater discharges to the Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology standards; and

- Perform inspections and maintenance of all BMPs.

In order to obtain coverage under the NPDES Construction General Permit, the Legally Responsible Person must electronically file all Permit Registration Documents with the SWRCB prior to the start of construction. Permit Registration Documents must include:

- Notice of Intent;
- Risk Assessment;
- Site Map;
- SWPPP;
- Annual Fee; and
- Signed Certification Statement.

Typical BMPs contained in Stormwater Pollution Prevention Plans are designed to minimize erosion during construction, stabilize construction areas, control sediment, control pollutants from construction materials, and address post construction runoff quantity (volume) and quality (treatment). The Stormwater Pollution Prevention Plan must also include a discussion of the program to inspect and maintain all B1-fPs.

**Cobey-Alquist Floodplain Management Act**

The Cobey-Alquist Floodplain Management Act (California Water Code 8400-8415) and Executive Order B-39-77 give support to the National Flood Insurance Program. The Act encourages local governments to plan, adopt, and enforce land use regulations for floodplain management, in order to protect people and property from flooding hazards. The Act also identifies requirements that jurisdictions must meet in order to receive state financial assistance for flood control. In 2002, the California Floodplain Management Task Force created and recommended a proposed revised Executive Order for the State’s consideration.

**California Department of Fish and Wildlife**

CDFW is responsible for conserving, protecting, and managing California’s fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify the Department of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- Substantially divert or obstruct the natural flow of any river, stream or lake;

- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or

- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.
The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

**Local Regulations**

Through Article VII, Paragraph 5 of the California Constitution, the state legislature, vests the CPUC with exclusive jurisdiction over the siting and design of gas and electric facilities. California Public Utilities Code Section 1007.5 and other California statutes and case law detail the nature and extent of this sole discretionary permitting authority. Because state law has preempted the field, PG&E is not subject to local land use planning or zoning requirements.

While PG&E’s utility related activities are solely regulated by CPUC and are thus not subject to local zoning ordinances, PG&E consults with local cities and counties to ensure that local concerns and issues are considered during the project planning process; construction and O&M activities are developed and implemented in such a way as to comply with existing local zoning ordinances, when feasible.

The following information is provided to describe the local regulatory context.

**McAteer-Petris Act/San Francisco Bay Conservation and Development Commission**

The McAteer-Petris Act is a provision under California law that preserves San Francisco Bay from indiscriminate filling. The Act established the San Francisco BCDC as the agency charged with preparing a plan for the long-term use of the Bay and regulating development in and around the Bay while the plan was being prepared. The San Francisco Bay Plan, completed in January 1969, includes policies on 18 issues critical to the wise use of the Bay, ranging from ports and public access to design considerations and weather. The Act authorizes BCDC to incorporate the policies of the Bay Plan into state law. The Bay Plan has two features: policies to guide future uses of the bay and shoreline, and maps that apply these policies to the bay and shoreline. BCDC conducts the regulatory process in accordance with the Bay Plan policies and maps, which guide the protection and development of the bay and its tributary waterways, marshes, managed wetlands, salt ponds, and shoreline.

**General Plan Safety Elements**

Government Code Section 65302, as amended (2007 Cal. Stat. 369) requires that on or after January 1, 2009, the updated safety elements of general plans must incorporate significantly enhanced geographic data, goals, and policies related to flood hazards. This enhanced assessment of flood hazards will include, but is not limited to: flood mapping information from multiple agencies including FEMA, the Corps, the Office of Emergency Services (OES), the DWR, and any applicable regional dam, levee, or flood protection agencies; historical data on flooding; an inventory of existing and planned development (including transportation infrastructure) in flood zones; and new policies that comprehensively address existing and future flood risk in the planning area.
3.7.1.2 Environmental Setting

Climate and Precipitation

The climate in the San Francisco Bay region is influenced by local topography and air circulation patterns. Along the western side of the Coast Ranges, the climate is influenced by the Pacific Ocean, with warm winters, cool summers, small daily and seasonal temperature ranges, and high relative humidity. Maritime influences decrease farther away from the coast. Inland counties experience a more continental type of climate, with warmer summers, colder winters, greater daily and seasonal temperature ranges, and generally lower relative humidity (National Oceanic and Atmospheric Administration 1985). Seaward of the mountains, temperature is moderated by the ocean, and the range between daily high and low temperatures is usually less than 20 degrees Fahrenheit (Planert and Williams 1995).

Precipitation in the Plan Area is highly variable from year to year and is characterized by moderately wet winters and dry summers. Winter rains (December through March) account for about 75 percent of the average annual rainfall; about 90 percent of the annual total rainfall is received in the November to April period (Bay Area Air Quality Management District 2006).

Precipitation in the Coast Ranges is typically higher than precipitation farther inland. Average precipitation varies from 45 to 55 inches per year along the coast and in the northern portion of the Plan Area to from 20 to 30 inches per year in the central portion of the Plan Area. Further inland, average precipitation rates generally range from 15 to 25 inches per year (National Oceanic and Atmospheric Administration 1985). Additional information regarding climate change in the Plan Area is contained in Section 3.2.

Surface Water Hydrology

The majority of the Plan Area drains into the San Francisco Bay, which is the centerpiece of the Bay Area metropolitan region and covers an area of about 2.88 million acres (4,500 square miles). It encompasses portions of Marin, Sonoma, Napa, Solano, Contra Costa, San Mateo, Alameda, and Santa Clara counties and all of San Francisco County. The northern portion of Sonoma County and the extreme northern portion of Marin County are in the Northern California Coastal Basin, which drains into the Pacific Ocean north of San Francisco Bay. The northern portion of Napa County and eastern portion of Solano County are in the Lower Sacramento Basin, which ultimately drains into San Francisco Bay. The eastern portion of Contra Costa County and extreme eastern portion of Alameda County are in the San Joaquin Basin, which also drains into San Francisco Bay. The southern portion of Santa Clara County and extreme southern portion of San Mateo County are in the Central California Coastal Basin, which drains into the Pacific Ocean south of San Francisco Bay. An overview of the surface hydrology of these basins is presented below.

San Francisco Bay Basin

San Francisco Bay functions as the only drainage outlet for the waters of the Central Valley and naturally divides the northern and southern Coast Ranges (San Francisco Regional Water Quality Control Board 2011). San Francisco Bay is divided into six subbasins: Suisun Bay, North Bay/San Pablo Bay, San Francisco Bay, San Francisco Coastal South, Coyote, and Tomales-Drake Bays. Surface waters consist of freshwater rivers, streams, wetlands, and lakes; estuarine waters and
wetlands; and coastal waters. The majority (more than 90 percent) of the annual runoff in the basin comes from precipitation between October and April, and many streams are ephemeral or intermittent, becoming dry in summer.

The San Francisco Bay Basin is bounded by the Coast Ranges to the north and south and the Pacific Ocean to the west. The Sacramento and San Joaquin rivers enter the basin on the east through the Delta, a complex system of natural and modified tributary channels, and contribute almost all of the freshwater inflow to the Bay (San Francisco Regional Water Quality Control Board 2011). A key component of the basin is the San Francisco Bay Estuary, where freshwater from the Sacramento and San Joaquin rivers mixes with saline waters from the Pacific Ocean. The estuary encompasses an estimated 1,600 square miles, which makes it the largest estuary on the west coast. Other major water bodies in the basin include the Napa, Guadalupe, and Petaluma rivers; Alameda, Coyote, Orestimba, Pescadero, San Gregorio, and Sonoma creeks; and various lakes and reservoirs.

Although the general pattern of natural drainage in the San Francisco Bay Basin is still intact, the hydrologic system has been substantially modified as a result of regional and local water supply efforts in support of agriculture and urban/suburban development. The State Water Project and federal Central Valley Project convey Delta water to users throughout central and southern California, including the San Joaquin Valley, the Tulare Basin, and the greater Los Angeles area. Several of the reservoirs in the basin were established to support these water supply projects. In addition, most of the low-lying lands in the western Delta have been reclaimed by protective dikes and converted to agricultural uses.

**Northern California Coastal Basin**

The Northern California Coastal Basin encompasses two natural drainage basins, Klamath River and North Coastal (North Coast Regional Water Quality Control Board 2011). Portions of Sonoma and Marin counties are in the North Coastal Basin, which encompasses approximately 8,560 square miles. Major water bodies in this basin include the Gualala and Russian rivers; Estero Americano; Estero San Antonio; and Dry, Big Sulphur, Mark West, and Santa Rosa creeks. The basin is dominated by forested mountains with relatively little development, and little water development has taken place. Lake Sonoma on Dry Creek is a water supply reservoir in northern Sonoma County. Due to the minimal development, the natural hydrology of the basin remains intact in most areas.

**Sacramento-San Joaquin River Basins**

The Sacramento and San Joaquin River basins encompass about 43,000 square miles from the Oregon border to the San Joaquin River and its headwaters in the Central Valley (Central Valley Regional Water Quality Control Board 2011). These basins supply an estimated 51 percent of California’s water supply. The northeastern portion of Napa County and eastern portion of Solano County are in the Sacramento River Basin. Lake Berryessa and Putah Creek are the major water bodies in northeastern Napa County. Ulatis Creek and Cache Slough are the primary streams in eastern Solano County; the Sacramento River follows the southern county border. The eastern portion of Contra Costa County and northeastern portion of Alameda County are in the San Joaquin River Basin. Contra Costa Canal and various sloughs are the primary water bodies in eastern Contra Costa County; the San Joaquin River follows the northern county border. The California Aqueduct and Delta-Mendota Canal cross through Alameda County and convey water from the Delta to other areas of California. The natural hydrology of the basins has been modified through the creation of reservoirs.
along the major rivers and streams and development in major urban areas, such as the eastern Bay Area and Sacramento region. Putah Creek in Napa County was modified to create Lake Berryessa, and construction of the canals in Alameda County altered the natural hydrology of the county.

Central California Coastal Basin
The Central California Coastal Basin extends along 300 miles of the California Coast from Santa Cruz to Santa Barbara County and includes a small portion of San Mateo County and the southern extent of Santa Clara County (Central Coast Regional Water Quality Control Board 2011). The basin encompasses more than 11,000 square miles and receives an average of more than 12 million acre-feet of precipitation annually. Primary surface waters in Santa Clara and San Mateo counties include Gazos and Cascade creeks along the coast, Uvas and Llagas creeks in the Santa Clara Valley, Pacheco Creek in southeastern Santa Clara County, and other tributaries to the Pajaro River. Urban development and water development in the basin have modified the natural hydrology of surface waters. Two reservoirs used for water supply are located on the Uvas and Llagas creeks in Santa Clara County.

Surface Water Quality
Urbanization of the Bay Area has reduced the quality of surface water as a result of wastewater and industrial discharges, loss of wetlands, widespread stream modification for flood control projects and urban development, sedimentation from construction activities, and contamination from pollutants (San Francisco Regional Water Quality Control Board 2011). Modifications to the natural hydrology can affect water quality as a result of increased impervious surfaces, which leads to higher levels of pollutants in surface runoff and a reduction in wetlands and riparian areas, which help filter pollutants and improve water quality. Agricultural activities in rural areas can also degrade water quality from pollutants in agricultural discharges, onsite sewage systems, and land conversions. Sedimentation and habitat degradation have impaired water quality in coastal watersheds from excess fine sediments, lack of large woody debris, and lack of spawning gravels.

Each Regional Water Board has developed a basin plan, or water quality control plan, to provide overall guidance for state agencies to regulate and protect water quality in the basin. For the Plan Area, four basin plans have been developed, corresponding to the four major drainage basins described in Section 3.7.1.2, Surface Water Hydrology. These basin plans identify beneficial uses of surface waters and present water quality objectives to protect those uses. Example beneficial uses are agricultural supply, cold and warm freshwater habitat, municipal and domestic supply, recreation, and wildlife habitat. Existing and potential beneficial uses have been identified for major water bodies in the basin plans; the designated uses also apply to tributaries of the identified water bodies. In order to protect the beneficial uses of surface waters, the basin plans also describe water quality objectives to monitor and control pollutant concentrations, physical and chemical conditions of the water, and the toxicity of the water to aquatic organisms. The Plan Area contains numerous water bodies that have a range of beneficial uses and applicable water quality objectives; information on individual water bodies can be found in the applicable basin plan.

For water bodies that do not meet the water quality standards identified in the basin plans, the State classifies these waters as impaired waters and requires the development of TMDLs for the water bodies. The TMDLs establish pollutant limits to reduce the amount of pollutants entering the water body and enable the water body to meet water quality standards. The state reviews and updates the
list of impaired water bodies (referred to as the 303(d) list) as needed; the current 303(d) list is from 2010. The state has listed several water bodies in the Bay Area as impaired for various pollutants, such as sedimentation, mercury, temperature, turbidity, pesticides, and nutrients (State Water Resources Control Board 2016).

**Groundwater**

Numerous groundwater basins underlie the Bay Area, according to a groundwater assessment conducted by the California Department of Water Resources (2007). The San Francisco Bay Basin contains 28 identified groundwater basins that underlie approximately 1,400 square miles. The Northern California Coastal Basin contains 63 groundwater basins or subbasins that underlie approximately 1,600 square miles; 11 of these basins are in Sonoma and Marin counties. The Sacramento River Basin contains 88 groundwater basins or subbasins that underlie approximately 7,900 square miles; three of these basins are in eastern Napa and Solano counties. The San Joaquin River Basin contains three groundwater basins and nine subbasins that underlie approximately 5,830 square miles; one subbasin is in eastern Contra Costa and Alameda counties. The Central California Coastal Basin contains 50 groundwater basins and 12 subbasins that underlie approximately 3,740 square miles. These groundwater basins supply water for agricultural and urban purposes throughout the Bay Area. Groundwater is also an important supplement to surface water supplies during drought conditions.

Groundwater recharge typically occurs from runoff infiltrating permeable sediments of a valley floor, either at the basin margins or through streambeds where the water table is lower than the water level in the stream. In some of the basins that are hydraulically connected to other basins, water enters as lateral subsurface flow from an adjacent basin (Planert and Williams 1995). The bulk of recharge occurs in the western portion of the Bay Area where precipitation rates are highest. Depth to groundwater varies across the Bay Area and depends on subsurface conditions, sources of groundwater recharge, and other factors. In the Santa Clara, Napa-Sonoma, and Petaluma valleys, for example, groundwater wells extend 200 to 500 feet below the ground surface to supply groundwater for municipal and irrigation purposes (Department of Water Resources 2003). Shallow water tables may be encountered in small basins and near perennial or intermittent water bodies.

Groundwater quality in the Bay Area is generally suitable for most urban and agricultural uses, with only local impairments. The primary constituents of concern are high total dissolved solids, nitrate, boron, and organic compounds (Department Water Resources 2003). Numerous reports of groundwater contamination have resulted from contamination from leaking underground storage tanks, the release of fuel hydrocarbons, and spills or persistent leaks of organic solvents at industrial sites.

**Flood Hazards**

Flooding has been one of the most common disasters in the Bay Area since 1950 (Association of Bay Area Governments 2013). Most flooding is associated with severe storms and heavy rainfall and affects low-lying areas. Less than 15 percent of the land in the Bay Area falls within the 100- or 500-year flood zone. Marin, Napa, and Solano counties have the highest percentages of urban land in the 100-year flood zone (10.9, 10.7, and 11.5 percent, respectively), and Santa Clara County has the highest percentage of urban land in the 500-year flood zone (38.1 percent). Most of the Bay Area is
not mapped as a special flood hazard zone, but localized flooding may occur during storm events. Tsunami waves generated by earthquakes could flood coastal areas and inland areas with connectivity to San Francisco Bay. Flooding, regardless of the source, can damage infrastructure and buildings and cause power outages, loss of resources, evacuation delays, and other problems that can affect public health and safety.

### 3.7.2 Environmental Consequences

#### 3.7.2.1 Methodology for Impact Analysis

Impacts on surface water drainage, groundwater hydrology, water quality, and flood hazards were evaluated qualitatively, based on a review of the hydrology and water quality of the Plan Area and professional judgment. The analysis focuses on the potential for Covered Activities to modify drainage patterns, degrade water quality, or affect groundwater recharge or quality in the Plan Area, with consideration for the conservation strategy of the Bay Area O&M HCP and PG&E’s environmental programs and practices.

#### 3.7.2.2 Environmental Programs and Avoidance and Minimization Measures

Provided below are discussions that describe applicable PG&E’s Environmental Programs that address potential hydrology and water quality impacts. Additionally, some of the proposed AMMs from the HCP to address impacts to listed species may also apply hydrology and water quality.

Applicable PG&E Environmental Programs include:

- promotion and dissemination of water quality educational materials via training sessions, internal websites, and on job sites as necessary;
- onsite tailboard briefings for jobs requiring environmental oversight;
- BMPs to avoid and minimize effects to water quality; and
- monitoring and reporting of environmental impacts associated with construction or operational activities.

As part of its environmental awareness training program, PG&E includes specific information on protecting water quality, such as legal requirements to protect water quality, work practices that could adversely affect water quality, water quality permitting requirements and thresholds, and BMPs to minimize the potential for water quality effects. A Water Quality Pollution Prevention training program is given to employees who regularly implement water quality BMPs.

BMPs for the protection of surface waters (including water bodies with defined bed/banks as well as vernal pools and swales) are described in PG&E’s *Good Housekeeping Activity Specific Erosion and Sediment Control Plan*. The manual includes a wide variety of measures that are implemented based on site conditions and the nature of the activity. Commonly used measures include the following:
- Use effective BMPs to reduce or prevent pollutants in all water discharges.

- When possible, conduct activities near streams, wetlands, or on saturated soils during the dry season. If work is necessary during the rainy season, it should be conducted during dry spells between rain events.

- Do not refuel vehicles within 100 feet of wetlands, streams, or other waterways. Vehicles operating adjacent to wetlands and waterways must be inspected and maintained daily to prevent leaks.

- If overland access routes are required or excavation and/or other ground disturbing work are within 250 feet of a vernal pool, contact the PG&E Project Biologist for guidance.

- Minimize the amount of hazardous materials at the site and store hazardous liquids, wastes, and all chemicals in watertight containers with appropriate secondary containment to prevent any spillage or leakage, or store in a completely enclosed storage shed.

- Cover liquid pollutant containment BMPs prior to rain, at the end of each day, and during non-work days.

- Install, monitor, and maintain a stabilized entrance/exit, ensure that traffic uses the stabilized entrance/exit and monitor adjacent roadways for tracking.

- Do not allow rinse or wash water (concrete rinse, paint wash, etc.) to contact the ground and/or paved surfaces nor allow rinse or wash water to be directed or dumped into any drain inlet or surface water and properly dispose of all rinse and/or wash water.

- Monitor, maintain, and prevent discharges from waste disposal containers to the storm drain system or surface waters.

- Contain and protect stockpiled waste materials.

- Keep spill cleanup kits on-site, with fueling and maintenance vehicles, and accessible at all times and

- Train all personnel with regard to the location, use, and contents of the spill kit(s). If safe, stop and clean spills (with absorbents) immediately, notify the Environmental Field Supervisor (EFS), dispose of materials properly, and cover the spill or contaminated area prior to precipitation.

- Properly maintain vehicles, clean leaks immediately, and dispose of materials properly. Fuel and maintain vehicles and equipment in a proper, designated area and monitor the area regularly.

- Monitor BMPs daily during construction activity and repair, replace, and/or maintain BMPs to correct any deficiencies.
Upon completion, remove temporary, non-biodegradable BMPs and equipment from the site. Clear debris, construction materials, and contaminants and return drainage ways to their pre-construction line and grade, and cover disturbed soil areas with a combination of temporary and permanent vegetative stabilization measures.

Where appropriate, reseed disturbed areas following the completion of work.

**Use and Disposal of Water**

All activities requiring the use or disposal of water are conducted in compliance with current regulatory requirements. These include the federal Clean Water Act; California’s Porter-Cologne Water Quality Control Act and requirements of the SWRCB and RWQCBs; and local (county and/or city) regulations and policies.

**Storm Water Pollution Prevention Plans**

Under Section 402 of the federal CWA, the NPDES permitting process requires all construction projects that disturb more than 1 acre of land to prepare and implement a SWPPP. A copy of the SWPPP must be posted at the project site, and a notice of intent to discharge stormwater must be filed with the RWQCB with jurisdiction over the work site.

A SWPPP includes the following information:

- A description of site characteristics, including runoff and drainage characteristics and soil erosion hazard.

- A description of proposed construction procedures and construction-site housekeeping practices, including prohibitions on discharging or washing any of the following materials into streets, shoulder areas, inlets, catch basins, gutters, natural or modified drainages, or agricultural drainages: concrete; solvents and adhesives; thinners; paints; fuels; sawdust; dirt; gasoline; asphalt and concrete saw slurry; and chlorinated water.

- A description of measures that will be implemented for erosion and sediment control, including requirements to:
  - conduct major construction activities involving excavation and spoils haulage during the dry season, to the extent possible;
  - conduct all construction work in accordance with site-specific construction plans that minimize the potential for increased sediment inputs to storm drains and surface waters;
  - grade and stabilize spoils sites to minimize erosion and sediment input to surface waters and generation of airborne particulate matter (see discussions under the Air Quality Program below); and
  - implement erosion control measures as appropriate to prevent sediment from entering storm drains and surface waters to the extent feasible, including the use of silt fencing or fiber rolls to trap sediments and erosion control blankets on exposed slopes. Note that
monofilament materials will not be used in areas known to support covered amphibian or reptile species.

Note that some of these measures overlap with PG&E’s routine water quality BMPs, as described above.

- A Spill Prevention and Response Plan that identifies the hazardous materials to be used during construction; describes measures to prevent, control, and minimize the spillage of hazardous substances; describes transport, storage, and disposal procedures for these substances; and outlines procedures to be followed in case of a spill of a hazardous material.

**Drainage Plans and Restoration of Surface Drainage**

PG&E’s typical practice for O&M and minor construction is to implement erosion control during ground-disturbing activities (see discussion of water quality BMPs in Overview above), and to return the site as close as possible to its pre-existing grade once work is completed. Facilities are generally designed to minimize drainage disruption, although in some cases, regulations and the company’s SPCC manual (see above) require that a site be graded to provide interior drainage and/or passive water treatment to prevent spills from contaminating surface waters.

For some of its new facilities, PG&E develops a drainage and/or runoff quality control plan. For example, if a grading permit is required from a local jurisdiction (county or city), the terms of the permit may require a drainage plan. The drainage plan goal is to achieve consistency with accepted engineering standards of care, and to ensure that

- construction earthwork does not adversely modify existing surface drainage patterns; and that

- where surface drainage must be altered to accommodate construction, measures are implemented to:
  - maintain flow in natural, modified, and constructed channels; and
  - ensure that post-construction runoff and groundwater infiltration at the site are not substantially altered.

The plan may also provide for design measures and/or BMPs as appropriate to maintain the quality of runoff waters and waters that infiltrate into the subsurface. Such measures may include passive treatment such as grassy swales or other site-appropriate provisions.

Applicable HCP AMMs include:

- FP-02/BMP-9 – Park vehicles and equipment on pavement, existing roads, or other disturbed or designated areas (barren, gravel, compacted dirt).

- FP-03 – Use existing access and ROW roads. Minimize the development of new access and ROW roads, including clearing and blading for temporary vehicle access in areas of natural vegetation.
- FP-11 – Utilize standard erosion and sediment control BMPs (pursuant to the most current version of PG&E’s *Stormwater Field Manual for Construction Best Management Practices*) to prevent construction site runoff into waterways.

- FP-12 – Stockpile soil within established work area boundaries and locate stockpiles so as not to enter water bodies, stormwater inlets, and other standing bodies of water. Cover stockpiled soil prior to precipitation events.

- FP-15 – Prohibit vehicular and equipment refueling 250 feet from the edge of vernal pools, and 100 feet from the edge of other wetlands, streams, or waterways. If refueling must be conducted closer to wetlands, construct a secondary containment area subject to review by an environmental field specialist and/or biologist. Maintain spill prevention and cleanup equipment in refueling areas.

- FP-16 – Maintain a buffer of 250 feet from the edge of vernal pools and 50 feet from the edge of wetlands, ponds, or riparian areas. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew will implement other measures as prescribed by the land planner, biologist, or HCP administrator to minimize impacts by flagging access, requiring foot access, restricting work until dry season, or requiring a biological monitor during the activity.

- BMP-10 – When practical, fuel vehicles and equipment offsite. If it is necessary to fuel onsite, the following precautions shall be taken: No vehicles or equipment shall be refueled within 250 feet of vernal pools, and 100 feet of a watercourse, ditch, wetland, or a pond, unless a bermed and lined refueling area is constructed. The fueling operator must stay with the fueling operation at all times. Do not top off tanks. Spill containment and cleanup materials must be available. Spills must be immediately cleaned up and contaminated materials disposed of properly. Fueling trucks and operators must have all necessary permits, licenses and training. Any spills must be reported immediately to supervisor and PG&E vegetation management representative.

- BMP-12 – After vegetation management activities, if the amount of bare soil exposed in one location exceeds 0.1 acre, then erosion control measures shall be implemented. These measures may include straw mulching, seeding, and use of straw waddles. (No rice straw will be used around wetlands containing vernal pools.)

- BMP-13 – Avoid operating vehicles and equipment within 250 feet (or the maximum distance practicable) of the edge of a vernal pool and to the extent practicable, avoid walking through a vernal pool.

- BMP-23 – If an environmental protection incident occurs, such as accidental introduction of substances into waterways or wetlands, accidental taking of an endangered species, or hazardous material spills, etc., call your supervisor and the PG&E vegetation management representative immediately.

- BMP-26 – Cleared or trimmed vegetation, grass clippings and woody debris (including chips) shall be disposed of in a legal manner. All cleared vegetation and debris, grass clippings and
woody debris (including chips) shall be removed from any wetland, ditch, pond or stream and placed or secured where they cannot re-enter the watercourse.

- **BMP-28** – Any vehicles driven and/or operated within or adjacent to streams shall be checked and maintained daily to prevent leaks of materials that, if introduced to the water, could be harmful to aquatic life.

- **BMP-29 (Plant-02)** – Vehicle access to streams and wetlands shall be limited to existing roads and crossings.

- **BMP-30** – When possible, activities near streams, wetlands, or on saturated soils shall be conducted during the dry season (generally May 15–October 15) or during periods of minimum flow. If it is not possible to perform the work in the dry season, perform rainy season work during dry spells between rain events.

- **BMP-41** – Mixing and loading of herbicides is prohibited in watercourse protection zones (see BMPs 60 and 61 for watercourse protection zones).

- **BMP-52 (Wetland-01, 02)** – Sensitive habitats such as meadows, riparian areas, and serpentine outcrops shall be flagged and appropriate avoidance measures shall be put in place. Tailboards shall be held before work begins.

- **BMP-53** – All existing roads shall be kept open and erosion control measures re-installed after the project is completed or during inclement weather.

- **BMP-61** – Watercourse protection zones shall be marked by the PG&E representative in charge with brightly colored flagging prior to the start of any mowing/timber operation. Water classes are defined by the California Forest Practice Rules: 14 CCR 916.5. The following watercourse protection zone clearances must be maintained at all times:
  - Class 1 & 2 watercourses with a slope < 30%: no heavy equipment within 50 feet
  - Class 1 & 2 watercourses with a slope > 30%: no heavy equipment within 75 feet
  - Class 3 watercourse: no heavy equipment within 25 feet
  - Unclassified watercourses with a defined channel: no heavy equipment within 25 feet
  - No mowing shall be allowed within the above distances. Trees within the above distances shall be removed manually. Brush and other small vegetation shall be left for a shade canopy on the watercourse. The actual width of the watercourse protection zone may vary based on a PG&E representative’s judgment in the field. All impaired watercourses and their protection zone clearances shall be identified before the project begins.

- **BMP-62** – The following protection measures are designed to prevent adverse impacts on water quality, help protect soil resources, and minimize the loss of riparian vegetation.
1. Plants in watercourse protection zones that do not pose an imminent or clearly foreseeable future threat to conductors shall not be removed.

2. To help prevent erosion and soil displacement, exclusion zones may be increased in areas with steep slopes or highly erodible soils.

3. Leave at least 50 percent soil cover (i.e., mulch or vegetative ground cover) for erosion control in watercourse protection zones.

3.7.2.3 Proposed Action

The potential effects described below pertain to both construction and operations. Note that activities that could potentially have effects on waters of the State and waters of the United States would require additional permits, as described in the Regulatory Setting section above.

Impact 3.7-1: Potential to Impact Surface Water by Increasing the Rate or Amount of Runoff or Degrading Water Quality

Covered Activities could require temporary drainage crossings; placement of fill or other material into drainages or wetlands; or other activities that result in the diversion, obstruction, or alteration of water bodies. These activities could affect drainage patterns in the Plan Area, alter flow regimes, degrade water quality, and have indirect effects on fish and wildlife (see Section 3.3 for a discussion of biological impacts). Access to existing facilities or locations of new facilities could require the installation of a temporary crossing across streams and wetlands; the crossing may, for example, consist of a bridge constructed of culverts placed in a stream or the use of geotextile mats across wetlands. Construction of new or expanded facilities across drainages or wetlands may require the placement of fill material into the feature or excavation of material from the feature to install the facility. Pipeline installation would be expected to take place at a deeper elevation than drainages and wetlands and may be accomplished with the use of trenchless techniques, but in the event that excavation in the feature is necessary, temporary diversions or other obstructions to flow may be necessary during the construction period. Overhead utility lines span drainages and wetlands, but poles or other structures may need to be placed in or near the features. These activities could result in temporary or permanent alterations to the bed or banks of affected features and could alter drainage patterns across the affected area.

Activities that disturb soil or require the use of fuel or other hazardous materials at work sites could introduce pollutants to the environment that could be carried in stormwater runoff to surface waters. Ground disturbance in particular can result in accelerated soil erosion, which can increase sediment delivery to surface waters and degrade water quality. Activities in or near streams and other water features could loosen and mobilize bed and bank materials, which could result in suspended sediment in the receiving waters. Facilities inspections would require fuels, lubricants, and hydraulic fluid for the vehicles used to patrol PG&E infrastructure. Maintenance and repair activities would require vehicle fuels, lubricants, adhesives, waterproofing compounds, and hydraulic fluid for vehicles and equipment and could also require concrete, epoxy, paints, and/or asphalt paving. Minor new construction activities would use similar hazardous substances. Specific hazardous material use at each site would vary and would depend on the facility need. The discharge of pollutants into water bodies could degrade water quality and affect beneficial uses of the downstream water bodies.
Covered Activities that affect the bed or bank of waters of the state or waters of the United States could be subject to compliance with Fish and Game Code Section 1602 and the permitting requirements of Sections 401 and 404 of the CWA. Compliance with applicable federal and State laws, the Environmental Programs described above, and the following AMMs will ensure minimal impacts on surface waters in the Plan Area: FP-11, BMP-10, BMP-23, BMP-26, BMP-30, BMP-61.

Impact 3.7-2: Potential to Affect Groundwater Due to Reduced Infiltration

Some Covered Activities would result in the conversion of permeable surfaces (e.g., grasslands, bare soil) to impermeable surfaces (e.g., pavement, concrete), which could locally increase stormwater runoff and reduce groundwater infiltration. Localized decreases in infiltration could result in long-term effects, such as increased runoff, elevated flood hazard, and/or accelerated erosion. Groundwater infiltration is important for recharging groundwater aquifers and maintaining groundwater supply.

When taken together, Covered Activities may produce a large total area of impermeable surfaces, but the majority of each affected area would be small (i.e., a single power pole replacement) and the affected areas would be distributed over multiple counties, thus reducing the individual effects associated with each activity. The largest areas of impermeable surface would result from new or expanded substation facilities, which would typically amount to less than 3 acres, but would also be distributed over a large geographic area. Overall, the increase in runoff and reduction in groundwater recharge associated with all Covered Activities would therefore be relatively small locally. Compliance with applicable federal and State laws, the Environmental Programs described above, and the following AMMs will ensure minimal impacts on ground waters in the Plan Area: FP-10, FP-11, FP-12, BMP-49, BMP-62.

Impact 3.7-3: Potential for Increased Risk of Flood Hazards

Some existing facilities are located in or near floodplains, and new or expanded facilities, such as pipelines, tower footings, or power poles, may need to be located in floodplains or within the 100-year flood zone of drainages. Maintenance of existing facilities could require access through the floodplain or minor work in the floodplain. Construction of new or expanded facilities, such as excavation activities and installation of the facilities, could take place in the floodplain. These activities could expose workers to safety risks from flood hazards and expose facilities to flooding, which could damage the facilities or result in obstructions to drainages in the event of a flood. In general, new or expanded facilities likely to be located in floodplains would either be placed underground (e.g., pipelines) or would be small and would not obstruct flood flows.

New or expanded facilities that must be located in floodplains would be designed and constructed to meet or exceed flood-resistant construction standards established by the CPUC in its General Orders 95, 128, and 112E. These standards ensure that flood conveyance capacities are maintained and that the facilities do not result in additional safety hazards or increased risk through impedance or redirection of flood flows.

Compliance with applicable federal and State laws, the Environmental Programs described above, and the following AMMs will ensure minimal flood plain effects in the Plan Area: FP-12, BMP-61.
3.7.2.4 No Action Alternative

Under the No Action Alternative, the Service would not issue an incidental take permit related to the Bay Area HCP. PG&E would continue its existing program of O&M activities and minor new construction activities and implement current environmental programs and practices, including BMPs. A regional HCP would not be implemented, and individual activities would be subject to project-by-project evaluations, and incidental take authorizations and mitigation if they would affect federally listed species. Because compensation requirements would be assessed on a project-by-project basis, smaller parcels of land would likely be identified for enhancement or preservation for the individual projects instead of as part of a regional conservation effort. The creation of numerous small habitat mitigation lands would increase the need for management activities on more lands.

PG&E would be expected to use similar criteria for identifying suitable compensation lands as defined in the proposed HCP and to coordinate with appropriate agencies and landowners to establish habitat mitigation lands and minimize the potential for water quality-related conflicts. Effects on water quality under the No Action Alternative would be the same for O&M activities as described for the Proposed Action.
3.8 Noise and Vibration

This section characterizes the noise and vibratory setting of the Plan Area and provides an analysis of the effects of the Proposed Action and No Action alternatives relative to potential noise and vibration effects.

3.8.1 Affected Environment

3.8.1.1 Regulatory Setting

Federal Regulations

United State Department of Transportation

The United States Department of Transportation (USDOT) is composed of several agencies that have the primary responsibilities of keeping the traveling public safe, increasing their mobility, and having our transportation systems contribute to the economic growth of the nation. The USDOT agencies with established acoustical criteria appropriate for this study include the FHWA, the Federal Transit Administration (FTA), the Federal Aviation Administration (FAA), and the Federal Rail Administration (FRA).

Title 23, Part 772 of the Code of Federal Regulation (23 CFR 772)

Title 23, Part 772 of the Code of Federal Regulation (23 CFR 772) is the federal regulation governing traffic noise impact. A federal or federally-funded project would have a traffic noise impact if it involves the construction of a new highway, or includes substantial modification of an existing highway, where the project would result in a substantial operational noise increase, or where the predicted operational noise level approaches or exceeds the Federal Highway Administration (FHWA) Noise Abatement Criteria (NAC). In this case, a “substantial increase” is not defined by the FHWA, but is generally defined by the state and/or local governing agencies. The noise level is defined as “approaching” the NAC if it is within 1 dB of the applicable criterion.

Title 14, Part 36 of the Code of Federal Regulation (14 CFR 36) (FAA)

Aircraft operated in the United States are subject to federal requirements for noise emissions levels. The requirements are set forth in Title 14, Part 36 of the Code of Federal Regulation (14 CFR 36), which establishes maximum acceptable noise levels for specific aircraft types, considering model year, aircraft weight, and number of engines. The FAA Part 150 program encourages airports to prepare noise exposure maps that show land uses that are incompatible with high noise levels (FICON, 1992). The program proposes measures to reduce any incompatibility. With an FAA Part 150 program approved, airport projects such as land acquisition, residential/school sound insulation, etc. become eligible for federal Airport Improvement Program (AIP) funding.

Construction Noise. In addition to transit operations noise, the FTA offers guidance with respect to the evaluation of transit construction noise exposure. Like the operational noise criteria, construction noise criteria should consider the existing (ambient) noise environment. Additionally, construction noise exposure should consider the duration of construction activities and the receiving land use (i.e., sensitivity of receiver).
**Construction Vibration.** The FTA has published guidance relative to impacts from vibration exposure. The FTA has established a general impact criterion of 0.5 in/sec peak particle velocity (PPV). Structural damage to buildings would not be expected below this value. It is expected that regularly experienced vibration levels of 80 VdB (0.01 in/sec PPV) or higher may create an annoyance response from human receivers, and may be considered a nuisance.

**State Regulations**

*California Department of Transportation*

**Traffic Operations Noise.** The California Department of Transportation (Caltrans) Traffic Noise Analysis Protocol (Protocol) establishes the policies and procedures to be used in the assessment of traffic noise exposure and impact for new construction and reconstruction projects. The NAC in the Protocol are the same as those presented in 23 CFR 772 (see USDOT/FHWA information above). The Protocol defines a substantial project-related traffic noise level increase when the project’s worst-case hour exceeds the ambient worst-case hour by 12 dB or more.

**Rail Operations Noise.** Caltrans endorses the use of the FTA noise criteria and methodologies for assessing project-related rail noise and vibration impacts.

**Construction Noise.** As presented in the Protocol, Section 14-8.2, Noise Control, Caltrans standard specifications establishes a construction noise exposure/production limit of 86 dB (Lmax) at a distance of 50 feet. Additionally, this specification establishes that all internal combustion engines should be equipped with manufacturer recommended mufflers, and that no internal combustion engines may be operated without mufflers.

*California Code of Regulations*

**Aircraft Operations.** The California Airport Noise Standards, Title 21, Section 5000 et seq. of the CCR apply to any airport that is deemed to have a “noise problem” as established by local County Board of Supervisors in accordance with the provisions in the regulation. Currently, within the Bay Area, Norman Y. Mineta-San José International Airport and San Francisco International Airport have been given this designation. The Standards establish a noise exposure limit “acceptable to a reasonable person residing in the vicinity of an airport” of 65 dB CNEL.

**Noise Insulation Standard.** The California Noise Insulation Standards found in CCR, Title 24 establish requirements for new multifamily residential units, hotels, and motels that may be subject to relatively high levels of transportation noise. In this case, the noise insulation criterion is 45 dB Ldn/CNEL inside noise-sensitive spaces. For developments with exterior transportation noise exposure exceeding 60 dB Ldn/CNEL, an acoustical analysis and mitigation (if required) must be provided showing compliance with the 45 dB Ldn/CNEL interior noise exposure limit.

**Local Regulations**

Through Article VII, Paragraph 5 of the California Constitution, the state legislature, vests the CPUC with exclusive jurisdiction over the siting and design of gas and electric facilities. California Public Utilities Code Section 1007.5 and other California statutes and case law detail the nature and extent of this sole discretionary permitting authority. Because state law has preempted the field, PG&E is not subject to local land use planning or zoning requirements.
While PG&E’s utility related activities are solely regulated by CPUC and are thus not subject to local zoning ordinances, PG&E consults with local cities and counties to ensure that local concerns and issues are considered during the project planning process; construction and O&M activities are developed and implemented in such a way as to comply with existing local zoning ordinances, when feasible.

The following information is provided to describe the local regulatory context.

**General Plan Noise Elements**

Cities and counties within the Bay Area adopt a noise element as part of their general plans to identify, assess, and provide mitigation for noise problems within their communities. The noise element typically assesses current and projected future noise levels associated with local noise sources, including, but not limited to, traffic, trains, aircraft, and industrial operations. Local jurisdictions may adopt their own noise exposure goals and policies, which may or may not be the same or similar to those recommended by the State.

In general, noise-sensitive land uses are compatible with exterior transportation-related noise exposure not exceeding 65 dB Ldn/CNEL. Additionally, interior noise exposure (from transportation sources) should not exceed 45 dB Ldn/CNEL within noise-sensitive spaces. As implied by the name, the standards within the noise element of locally adopted general plans are for planning purposes, and are not generally intended to address noise complaints or other code compliance issues. Cities and counties often provide noise level performance standards for non-transportation noise sources (e.g., commercial/industrial facilities, mechanical equipment). These standards are used to address intermittent noise exposure, and are often in terms of the hourly average noise level (Leq) or maximum noise level (Lmax). These criteria are generally tied directly to the standards presented in the city/county municipal code (i.e., noise ordinance).

**Municipal Codes**

In addition to general plan noise element goals and policies, local jurisdictions often regulate noise exposure through enforcement of a noise ordinance. The noise code is generally applied to address noise complaints associated with non-transportation sources (e.g., public address systems, mechanical equipment), and may also address construction noise exposure/production limits. Noise exposure criteria presented within municipal codes should match performance criteria presented in the noise element of the general plan for the given jurisdiction.

### 3.8.1.2 Environmental Setting

The existing noise environment in the Plan Area is comprised of two primary categories of noise sources: transportation and non-transportation. Transportation sources include surface vehicle traffic; railroad train operations, including light rail and commuter trains; and aircraft operations. Non-transportation, or stationary/fixed sources include commercial/industrial equipment, construction equipment, and any other sources not associated with the transportation of people or goods. Existing noise exposure in the Plan Area associated with these primary noise sources is presented below.
**Traffic Noise Sources**

The ambient noise environment in the Plan Area is defined by a wide variety of noise sources, none more pervasive than traffic. Traffic noise exposure is primarily a function of the volume of vehicles per day, the speed of those vehicles, the number of those vehicles represented by medium and heavy trucks, the distribution of those vehicles during daytime and nighttime hours, and the proximity of noise-sensitive receivers to the roadway. Existing traffic noise exposure is expected to be as low as 50 dB Ldn in the most isolated and less frequented locations of the Plan Area, while receivers in areas near interstates are likely to experience levels as high as 75 dB Ldn (FTA Guidance Manual, 2006). Bus transit can also make a meaningful contribution to roadway noise levels. In San Francisco, a large portion of the transit bus fleet is electrified and, consequently, the contribution of bus transit to localized roadway noise levels is decreased. Traffic noise assessment in this analysis is inclusive of bus transit, as buses are an assumed percentage of overall roadway volumes used in the calculation of roadside noise levels.

**Rail Noise Sources**

The Plan Area is also presently affected by noise from freight and passenger rail operations. While these operations generate significant noise levels in the immediate vicinity of the railways, train operations are intermittent and area railways are widely dispersed. The contribution of rail noise to the overall ambient noise environment in the Plan Area is relatively minor compared to other sources such as traffic. Train operations may be a source of significant groundborne vibration near the tracks. Vibration sensitive receivers within 100 feet of rail operations may be adversely affected by vibration exposure during train events.

**Aircraft Noise Sources**

The Plan Area is home to many airports—including public use, private use, and military facilities. Major airports include San Francisco International, Oakland International, and Norman Y. Mineta San José International. In addition to the numerous daily aircraft operations originating and terminating at these facilities, aircraft not utilizing these airports frequently fly over the Bay Area. All of these operations contribute to the overall ambient noise environment. In general, like rail noise, the proximity of the receiver to the airport and aircraft flight path determines the noise exposure. Other contributing factors include the type of aircraft operated, altitude of the aircraft, and atmospheric conditions. Atmospheric conditions may contribute to the direction of aircraft operations (flow) and affect aircraft noise propagation.

**Construction Noise Sources**

New development and implementation of transportation improvements will necessarily include construction activities that create relatively short-term noise exposure. Noise production from construction equipment varies greatly depending on factors such as operation being performed and equipment type, model, age, and condition. Noise associated with heavy equipment diesel engine operations often dominates the noise environment in the vicinity of construction sites. Stationary sources such as generators, pumps, and compressors may also produce a significant contribution. However, if present, operations from impact equipment (e.g., pile driving, pavement breaking) will generally produce the highest noise levels, and may also produce significant vibration in the vicinity. Maximum noise exposure from typical construction equipment operations is approximately 75-100
dB (Lmax at 50 feet) with noise from heavy demolition and pile driving operations having the highest noise production.

**Industry and Other Non-Transportation Noise Sources**

A wide variety of industrial and other non-transportation noise sources are located within the Bay Area. These include manufacturing plants, landfills, treatment plants (e.g., water), power generation facilities, food packaging plants, lumber mills, and aggregate mining facilities, just to name a few. Noise generated by these sources varies widely, but in many cases may be a significant if not dominant contributor to the noise environment.

### 3.8.2 Environmental Consequences

#### 3.8.2.1 Methodology for Impact Analysis

The analysis focuses on generation of noise created by Covered Activities and assumes a continuing commitment on PG&E’s part to satisfy the CPUC requirement to conform to local standards where feasible, while still meeting the company’s legal responsibility to provide safe, reliable electric and natural gas service. Because O&M and minor new construction activities—as well as CPUC requirements for noise control—would be the same under the Proposed Action and the No Project alternative, the analysis assumes that noise generation would be similar in both cases. Actual noise generation would vary, depending on site-specific constraints, so potential noise impacts are of necessity discussed at a qualitative level of detail.

The Proposed Action and No Project alternative would each result in a slightly different balance of impact avoidance versus compensation for unavoidable impacts, so there could be some in-practice difference in long-term noise generation related to increases/decreases in the extent of compensation lands and the noise-generating activities (notably, earthwork) needed to manage them. However, it is impossible to predict the extent and type of management- or restoration-related earthwork needed under each alternative because the location and condition of compensation lands cannot be identified at this time. Consequently, although differences in noise generation among the Proposed Action and the alternative are expected to be minor, detailed analysis of potential differences would be speculative at this time. As such, the analysis is qualitative.

#### 3.8.2.2 Environmental Programs and Avoidance and Minimization Measures

PG&E attempts to comply with local noise and vibration standards. If local standards cannot be met, the company makes every effort to work out a mutually satisfactory compromise for noise abatement/mitigation.

During O&M and construction activities, PG&E project managers and construction leads are responsible for implementing a variety of BMPs as needed, depending on the nature of the activity. Typical measures include:

- conducting work during daytime hours;
- using standard equipment with noise control devices (e.g., mufflers) that meet manufacturers’ specifications;
- using “quiet” equipment (i.e., equipment designed with noise control elements);
- installing portable barriers to shield compressors and other small stationary equipment where necessary;
- installing sound barriers for pile-driving activity, where practicable, by using an acoustic curtain or blanket around the point of impact;
- directing equipment exhaust stacks and vents away from buildings, when feasible;
- routing truck traffic away from noise-sensitive areas, where feasible;
- following a common-sense approach to vehicle use, and encouraging workers to shut off vehicle engines whenever possible;
- limiting pick-up trucks and other small equipment to an idling time of 5 minutes;
- identifying “sensitive receptors” who might be disturbed by construction noise and notifying them in advance of upcoming work; and
- responding promptly to complaints raised by adjacent residents.

Applicable HCP AMMs include:

- BMP-21 - When working within 50 feet of residences or government or commercial buildings, engine idling, noise, and odor should be minimized to the extent practicable. Also adhere to the restrictions noted in the Commercial Vehicle Idling Tailboard when working on school grounds or within 100 feet of a school (K–12 and below, including play areas and sports fields, and day care facilities).

### 3.8.2.3 Proposed Action

The following discussions correspond to the checklist included at the beginning of this subsection.

**Impact 3.8-1: Construction and Operations Noise**

Noise associated with O&M and minor new construction would be generated primarily by the following sources.

- Vehicles (e.g., trucks, helicopters and fixed-wing light aircraft, and all-terrain vehicles (ATV)) used for inspection patrols and employee access trips.
- Heavy machinery (e.g., cranes, excavators, and scrapers) used for maintenance and construction of PG&E facilities and infrastructure.
- Smaller equipment (e.g., chainsaws and generators) used for a variety of O&M activities.
Table 3-21 presents typical noise levels generated by equipment that may be used in O&M and minor new construction activities.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Typical Noise Level (dBA) 50 Feet from</th>
<th>Equipment</th>
<th>Typical Noise Level (dBA) 50 Feet from</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Compressor</td>
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<td>Jackhammer</td>
<td>88</td>
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<tr>
<td>Backhoe</td>
<td>80</td>
<td>Loader</td>
<td>85</td>
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<td>Bulldozer</td>
<td>85</td>
<td>Paver</td>
<td>89</td>
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<tr>
<td>Chainsaw</td>
<td>86</td>
<td>Pile driver (impact)</td>
<td>101</td>
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<tr>
<td>Compactor</td>
<td>82</td>
<td>Pile driver (sonic)</td>
<td>96</td>
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<td>Concrete mixer</td>
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<td>Pneumatic tool</td>
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<tr>
<td>Concrete pump</td>
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<td>Pump</td>
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<td>Concrete vibrator</td>
<td>76</td>
<td>Rock drill</td>
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<td>Roller, sheep’s foot</td>
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<td>Saw</td>
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<td>Grader</td>
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<td>Wood chipper</td>
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<td>Helicopter (single rotor)</td>
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</tr>
</tbody>
</table>

1 At 500 feet under level flight conditions.
Sources: USDA Forest Service 1980; Cowan 1984; Nelson 1987; Federal Transit Administration 2006

The noise impacts associated with a specific activity would depend on the type of activity, the types and number of pieces of equipment in use, the noise level generated by the various pieces of equipment, the duration of the activity, the distance between the activity and any noise-sensitive receivers, and possible shielding effects that might result from local topography, vegetation, or buildings. Because the proposed HCP is a 30-year operating conservation program, information regarding the range of Covered Activities is known, but site-specific information is not. For individual O&M and minor new construction activities that may occur during the 30-year permit term, the specific types and number of vehicles and equipment at a given site, and their duration and frequency of use, are not available. The same is true for activity-specific noise levels. Noise levels for these activities are expected to be similar, however, to levels for existing O&M and minor new construction currently implemented by PG&E. In most instances, existing O&M activities are temporary and sporadic; although some, such as patrols, are regularly scheduled, others, such as emergency maintenance, occur on an “as-needed” basis. With the exception of larger maintenance activities and minor new construction projects, O&M and construction noise generation would thus be intermittent and very short-term in nature. PG&E would continue to employ its current slate of BMPs under all alternatives. If local standards cannot be met, the company will make every effort to work out a mutually satisfactory compromise for noise abatement/mitigation.

In light of the CPUC requirement to conform to local standards where feasible, and with PG&E’s existing noise BMPs in place, most activities that would be enabled under the proposed HCP are not expected to substantially expose persons to generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards; result in a substantial permanent
increase in ambient noise levels in the work vicinity; or result in a substantial temporary or periodic increase in ambient noise levels in the work vicinity.

Some O&M and minor new construction activities (in particular, those that require multiple pieces of heavy equipment and those that occur in close proximity to sensitive residential, school, hospital, or recreational land uses) would have the potential to generate noise in excess of local general plan or noise ordinance standards. For example, a bulldozer (85 dB at 50 feet) and grader (85 dB at 50 feet) operating concurrently would result in a combined noise level of 88 dB at 50 feet, exceeding the noise standards of many jurisdictions. This is a potentially adverse effect. The significance of that effect would be reduced through implementation of PG&E’s standard business practices and BMPs, which will be incorporated into all O&M and minor new construction activities that would be enabled under the proposed HCP. The business practices and BMPs PG&E brings forward as part of the proposed HCP reflect PG&E’s obligations under CPUC regulations. PG&E’s obligations under these regulations, including its commitment to implement regular business practices and the BMPs described in Chapter 2, would substantially lessen the potential for significant intermittent occurrences of higher levels of construction noise.

Once constructed, new minor facilities would generate noise related to the operation of power transformers, switchyards, and other equipment. Additional, albeit fairly minor, noise would be generated by vehicles used for inspection and maintenance visits to new facilities. In most instances, the types of facilities that would be constructed under the proposed HCP operate well within local standards. Likewise, in designing, constructing, and operating new minor facilities, PG&E carries forward its obligations under the CPUC, including its regular business practices and BMPs. Typical practices include consulting and coordinating with local jurisdictions to minimize and lessen noise effects; implementing a range of noise reduction BMPs, as appropriate; and responding quickly to public complaints or concerns about noise effects. Compliance with the Environmental Programs and BMP-21 described above will ensure minimal noise and vibration effects as a result of construction and operations.

3.8.2.4 No Action Alternative

Under the No Action Alternative, the Service would not issue an incidental take permit related to the Bay Area HCP. PG&E would continue its existing program of O&M activities and minor new construction activities and implement current environmental programs and practices, including BMPs. A regional HCP would not be implemented, and individual activities would be subject to project-by-project evaluations, and incidental take authorizations and mitigation if they would affect federally listed species. Because compensation requirements would be assessed on a project-by-project basis, smaller parcels of land would likely be identified for enhancement or preservation for the individual projects instead of as part of a regional conservation effort. The creation of numerous small habitat mitigation lands would increase the need for management activities on more lands.

PG&E would be expected to use similar criteria for identifying suitable compensation lands as defined in the proposed HCP and to coordinate with appropriate agencies and landowners to establish habitat mitigation lands and minimize the potential for noise and vibration conflicts. Noise and vibration effects under the No Action Alternative would be the same for O&M activities as described for the Proposed Action.
3.9 Public Health and Environmental Hazards

This section describes environmental and health hazards in the Plan Area and evaluates the potential for the Proposed Action and the No Action alternative to affect public health and safety and contribute to environmental hazards. The analysis focuses on issues related to the handling and use of hazardous materials; the potential for inadvertent spills, releases of hazardous materials, or fire hazards; and emergency access. Effects related to flood hazards are discussed in Section 3.7, Hydrology and Water Quality, and effects related to seismic hazards are discussed in Section 3.6, Geology/Soils and Paleontology.

3.9.1 Affected Environment

3.9.1.1 Regulatory Setting

Federal Regulations

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also called the “Superfund Act” (42 U.S. Government Code [USC] Sec. 9601 et seq.), is intended to protect the public and the environment from the impacts of prior hazardous waste disposal and new hazardous material spills. Under CERCLA, EPA has the authority to seek the parties responsible for hazardous materials releases and to ensure their cooperation in site remediation. CERCLA also provides federal funding (the “Superfund”) for the remediation of hazardous materials contamination. The Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499) amends some provisions of CERCLA and provides for a Community Right-to-Know program.

EPA has the authority to implement CERCLA in all 50 states and all United States territories, using a variety of enforcement tools, including orders, consent decrees, and other small party settlements. The identification, monitoring, and remediation of Superfund sites are usually coordinated by state environmental protection and/or waste management agencies. When potentially responsible parties cannot be identified or located, or when responsible parties fail to act, EPA has the authority to remediate abandoned and/or historical sites where hazardous materials contamination is known to exist and to pose a human health hazard.

Pursuant to CERCLA, EPA maintains a National Priorities List (NPL) of uncontrolled or abandoned hazardous waste sites identified for priority remediation under the Superfund program. Sites are identified for listing on the basis of the EPA’s hazard ranking system. Sites may also be placed on the NPL if they meet the following requirements.

- The Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends removing people from the site.
- EPA has determined that the site poses a significant threat to public health.
- It will be more cost-effective for EPA to use its remedial authority than its emergency removal authority to respond to the hazard posed by the site.
Resource Conservation and Recovery Act  
The Resource Conservation and Recovery Act (RCRA) (42 USC Sec. 6901 et seq.) was enacted in 1976 as an amendment to the Solid Waste Disposal Act to address the nationwide generation of municipal and industrial solid waste. RCRA gives EPA the authority to control the generation, transportation, treatment, storage, and disposal of hazardous waste, including underground storage tanks storing hazardous substances. RCRA also establishes a framework for the management of nonhazardous waste. RCRA addresses only active and future facilities; it does not address abandoned or historical sites, which are covered by CERCLA.

RCRA was updated in 1984 by the passage of the federal Hazardous and Solid Waste Amendments (HSWA), which require the gradual phasing out of land disposal of wastes. HSWA, along with amendments adopted in 1986, increased the EPA’s enforcement authority and established more stringent hazardous waste management standards, including a comprehensive underground storage tank program that addresses the storage of petroleum and other hazardous substances (U.S. Environmental Protection Agency 2008b).

Federal Insecticide, Fungicide, and Rodenticide Act  
The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC 136 et seq.) was originally passed in 1947. It has been amended several times, most extensively in 1972, and most recently by the Food Quality Protection Act of 1996. The purpose of FIFRA is to establish federal jurisdiction over the distribution, sale, and use of pesticides. It also gives EPA the authority to study the effects of pesticide use. Other key provisions of FIFRA require pesticide applicators to pass a licensing examination for status as “qualified applicators”; create a review and registration process for new pesticide products; and ensure thorough and understandable labeling that includes instructions for use (Center for Sustainable Systems 2004, U.S. Environmental Protection Agency 2007).

Toxic Substances Control Act  
The Toxic Substances Control Act (TSCA) (15 USC (C. 53) 2601-2692) of 1976 authorizes the EPA to track new (currently not listed on the TSCA inventory) and existing (listed on the TSCA inventory) industrial chemicals produced or imported into the United States. The EPA repeatedly screens these chemicals and can require reporting or testing of those that may pose an environmental or human-health hazard. EPA can ban the manufacture and import of those chemicals that pose an unreasonable risk. Generally, manufacturers must submit premanufacturing notification to EPA prior to manufacturing (or importing) new chemicals for commercial purposes; however, there are notable exceptions, for example, chemicals used in research and development, and substances regulated under other statutes such as FIFRA. In June 2016, President Obama signed into law the Frank R. Lautenberg Chemical Safety for the 21st Century Act which amends the TSCA. The new law includes much needed improvements such as:

- Mandatory requirement for EPA to evaluate existing chemicals with clear and enforceable deadlines;
- New risk-based safety standard;
- Increased public transparency for chemical information; and
- Consistent source of funding for EPA to carry out the responsibilities under the new law.
3.9. Public Health and Environmental Hazards

Other Federal Laws and Regulations

Additional federal regulations that affect hazardous waste management include the following:

- The federal CWA of 1972 is the primary federal law that protects the quality of the nation’s surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that all discharges of pollutants into the nation’s waters are unlawful unless specifically authorized by a permit. This act is described in detail in Section 3.7, Hydrology and Water Quality.

- The federal CAA of 1970 established ambient air standards for six “criteria pollutants”: O₃, CO, Pb, NO₂, PMₓ, and SO₂. The standards are divided into primary and secondary standards; the former are set to protect human health within an adequate margin of safety and the latter to protect environmental values, such as plant and animal life. This act is described in detail in Section 3.2, Air Quality and Climate Change.

State Regulations

California Emergency Services Act

The California Emergency Services Act provides the basic authority for conducting emergency operations following a proclamation of emergency by the governor and/or appropriate local authorities. Local government and district emergency plans are considered to be extensions of the California Emergency Plan, established in accordance with the Emergency Services Act. California Fire Code (CFC). The CFC is Chapter 9 of CCR Title 24. It is created by the California Building Standards Commission and it is based on the IFC created by the International Code Council. It is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The CFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The CFC and the California Building Code use a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, the CFC employs a permit system based on hazard classification. The CFC is updated every three years.

California Unified Program Administration

The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs (see below). The Unified Program Administration and Advisory Group (UPAAG) was created to foster effective working partnerships between local, state and federal agencies. The UPAAG’s goals and objectives are listed in the UPAAG Strategic Plan. The six programs are:

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- California Accidental Release Prevention Program
- Underground Storage Tank Program
- Aboveground Petroleum Storage Act Program
- Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs
California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements

The state agency partners involved in the Unified Program have the responsibility of setting program element standards, working with Cal/EPA on ensuring program consistency, and providing technical assistance to the certified unified program agencies. The following state agencies are involved with the Unified Program:

**California Environmental Protection Agency.** The Secretary of the California Environmental Protection Agency is directly responsible for coordinating the administration of the Unified Program. The Secretary certifies Unified Program Agencies. The Secretary has certified 83 CUPAs to date. These 84 CUPAs carry out the responsibilities previously handled by approximately 1,300 state and local agencies.

**Department of Toxic Substances Control.** The Department of Toxic Substances Control (DTSC) provides technical assistance and evaluation for the hazardous waste generator program including onsite treatment (tiered permitting).

**Governor’s Office of Emergency Services.** The Governor’s Office of Emergency Services is responsible for providing technical assistance and evaluation of the Hazardous Material Release Response Plan (Business Plan) Program and the California Accidental Release Response Plan (CalARP) Programs.

**Office of the State Fire Marshal.** The Office of the State Fire Marshal is responsible for ensuring the implementation of the Hazardous Material Management Plans and the Hazardous Material Inventory Statement Programs. These programs tie in closely with the Business Plan Program.

**State Water Resources Control Board.** The SWRCB provides technical assistance and evaluation for the underground storage tank program in addition to handling the oversight and enforcement for the aboveground storage tank program.

Under Title 22 of the California Code of Regulations and the California Hazardous Waste Control Law, Chapter 6.5, DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. Both RCRA and the Hazardous Waste Control Law impose “cradle to grave” regulatory systems for handling hazardous waste in a manner that protects human health and the environment. Cal/EPA has delegated some of its authority under the Hazardous Waste Control Law to county health departments.

**California Human Health Screening Levels**

The California Human Health Screening Levels (CHHSLs) were developed as a tool to assist in the evaluation of contaminated sites for potential adverse threats to human health. Preparation of the CHHSLs is required by the California Land Environmental Restoration and Reuse Act of 2001 (SB 32 (Chapter 764, Statutes of 2001) (Cal/EPA 2005). The CHHSLs are concentrations of 54 hazardous chemicals in soil or soil gas the Cal/EPA considers to be below thresholds of concern for risks to human health. The CHHSLs were developed by OEHHA, an agency under the umbrella of Cal/EPA, and are contained in its report entitled *Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil* (OEHHA and CEPA 2004).
The thresholds of concern used to develop the CHHSLs are an excess lifetime cancer risk of one in 1 million and a hazard quotient of 1.0 for noncancer health effects. The CHHSLs were developed using standard exposure assumptions and chemical toxicity values published by EPA and Cal/EPA. The CHHSLs can be used to screen sites for potential human health concerns where releases of hazardous chemicals to soils have occurred. Under most circumstances, the presence of a chemical in soil, soil gas, or indoor air at concentrations below the corresponding CHHSLs can be assumed to not pose a significant health risk to people who may live (residential CHHSLs) or work (commercial/industrial CHHSLs) at the site.

**Emergency Response to Hazardous Materials Incidents**

The California Emergency Management Agency (EMA) was established as part of the Governor’s Office on January 1, 2009-created by Assembly Bill 38 (Nava), which merged the duties, powers, purposes, and responsibilities of the former Governor’s Office of Emergency Services with those of the Governor’s Office of Homeland Security.

Cal EMA is responsible for the coordination of overall state agency response to major disasters in support of local government. The Agency is responsible for assuring the state’s readiness to respond to and recover from all hazards-natural, manmade, war-caused emergencies and disasters-and for assisting local governments in their emergency preparedness, response, recovery, and hazard mitigation efforts.

The State of California and local governments throughout the Bay Area have made significant investments in the planning and resources necessary to respond to natural and human-caused emergencies and disasters by recognizing the potential severities that may be possible. Consequently, the State of California Governor’s Office of Emergency Services and its local government partners developed the Bay Area Regional Emergency Coordination Plan to provide a framework for collaboration and coordination during regional events. The Regional Emergency Coordination Plan (RECP) has been prepared in accordance with national and state emergency management systems and plans. The RECP provides an all hazards framework for collaboration among responsible entities and coordination during emergencies in the Bay Area. The RECP defines procedures for regional coordination, collaboration, decision-making, and resource sharing among emergency response agencies in the Bay Area.

The RECP does not replace existing emergency response systems. Rather, it builds on the Standardized Emergency Management System and the California State Emergency Plan to provide methods for cooperation among Operational Areas and the Governor’s OES, Coastal Region. The RECP provides critical linkages to ensure that existing Bay Area emergency response systems work together effectively during the response to an event. In addition, the RECP complies with the requirements of the National Incident Management System and is consistent with the National Preparedness Goal.

**Title 23 of the California Code of Regulations, Underground Storage Tank Act**

The underground storage tank (UST) monitoring and response program is required under Chapter 6.7 of the California Health and Safety Code and Title 23 of the CCR. The program was developed to ensure that the facilities meet regulatory requirements for design, monitoring, maintenance, and
emergency response in operating or owning USTs. The County Department of Environmental Health is the local administering agency for this program.

**Title 27 of the California Code of Regulations, Solid Waste**

Title 27 of the CCR contains a waste classification system that applies to solid wastes that cannot be discharged directly or indirectly to waters of the State and that, therefore, must be discharged to waste management sites for treatment, storage, or disposal. The California Integrated Waste Management Board and its certified local enforcement agency regulate the operation, inspection, permitting, and oversight of maintenance activities at active and closed solid waste management sites and operations.

**SB 1889, Accidental Release Prevention Law/California Accidental Release Prevention Program**

SB 1889 required California to implement a new federally mandated program governing the accidental airborne release of chemicals promulgated under Section 112 of the CAA. Effective January 1, 1997, CalARP replaced the previous California Risk Management and Prevention Program and incorporated the mandatory federal requirements. CalARP addresses facilities that contain specified hazardous materials, known as “regulated substances,” that, if involved in an accidental release, could result in adverse off-site consequences. CalARP defines regulated substances as chemicals that pose a threat to public health and safety or the environment because they are highly toxic, flammable, or explosive.

**Title 14 Division 1.5 of the California Code of Regulations**

CCR Title 14 Division 1.5 establishes the regulations for CAL FIRE and is applicable in all State Responsibility Areas-areas where CAL FIRE is responsible for wildfire protection. Most of the unincorporated areas of the Bay Area are State Responsibility Areas and any development in these areas must comply with these regulations. Among other things, Title 14 establishes minimum standards for emergency access, fuel modification, setback to property line, signage, and water supply.

**Government Code Section 65962.5**

Government Code Section 65962.5 is commonly referred to as the “Cortese List” (after the Legislator who authored the legislation that enacted it). The list, or a site’s presence on the list, has bearing on the local permitting process as well as on compliance with CEQA. However, because this statute was enacted over twenty years ago, some of the provisions refer to agency activities that were conducted many years ago and are no longer being implemented and, in some cases, the information to be included in the Cortese List does not exist.

Government Code § 65962.5 was originally enacted in 1985, and per subsection (g), the effective date of the changes called for under the amendments to this section was January 1, 1992. While Government Code Section 65962.5 makes reference to the preparation of a “list,” many changes have occurred related to web-based information access since 1992 and this information is now largely available on the Internet sites of the responsible organizations. A centralized list is no longer compiled and those requesting a copy of the Cortese “list” are now referred directly to the appropriate information resources contained on the Internet web sites of the boards or departments that are referenced in the statute.
Local Regulations

Through Article VII, Paragraph 5 of the California Constitution, the state legislature, vests the CPUC with exclusive jurisdiction over the siting and design of gas and electrical facilities. California Public Utilities Code Section 1007.5 and other California statutes and case law detail the nature and extent of this sole discretionary permitting authority. Because state law has preempted the field, PG&E is not subject to local land use planning or zoning requirements.

While PG&E’s utility related activities are solely regulated by CPUC and are thus not subject to local zoning ordinances, PG&E consults with local cities and counties to ensure that local concerns and issues are considered during the project planning process; construction and O&M activities are developed and implemented in such a way as to comply with existing local zoning ordinances, when feasible.

The following information is provided to describe the local regulatory context.

The regulation of hazardous materials at the local level is limited to standards, procedures, and policies that relate to siting, construction, and use or operation of businesses, farms, and residences within the jurisdiction. Establishment of standards and transport of hazardous materials and wastes from one location to another is regulated by the federal and state governments (see Hazardous Waste Control Law above). However, counties are commonly responsible for implementing state standards authorized under Chapter 6.11 of the California Health and Safety Code. This may be accomplished by a combination of general plan policies and local ordinances and regulations. In addition, each county’s OES is responsible for planning emergency response actions to hazardous material incidents. Area response plans incorporate hazardous materials inventory data, training for emergency responses, and evacuation planning information.

3.9.1.2 Environmental Setting

The Plan Area supports a diversity of land uses and numerous transportation corridors that contain various potential hazards that pose risks to human health and safety. Some of these hazards are natural, such as wildfire, steep slopes, and seismic hazards, while others are a result of human activities, such as hazardous material sites, pesticide use in agricultural areas, and urban areas in high fire hazard areas. Contaminants associated with the various uses in the Plan Area include a variety of fuels and other petroleum distillates; pesticides, fertilizers, and other agricultural chemicals; lead; radioactivity; and volatile and semivolatile organic chemicals. Construction activities can introduce hazardous materials into the environment and create hazards to people.

The EPA and DTSC maintain lists of hazardous materials sites, and both agencies are responsible for monitoring clean-up efforts and ensuring the sites do not pose substantial hazards to the environment or people. Numerous hazardous materials sites have been recorded in the Bay Area, including several Superfund sites (California Department of Toxic Substances Control 2007, U.S. Environmental Protection Agency 2016). These sites are in various stages of being cleaned up.

The Bay Area contains a mixture of urban areas and open space; the area where development is adjacent to open space is referred to as the wildland urban interface. Wildfire can threaten communities and buildings in this interface, and the State regulates building and fuels management in
this interface to reduce wildfire hazards in urban areas. The State also maps fire hazard severity and identifies wildfire threat areas. Of the 4.39 million acres of land in the Bay Area, 18.5 percent is in a wildfire threat area, and 57.1 percent in State Responsibility Areas has been categorized as having high, very high, or extreme wildfire risk (Association of Bay Area Governments 2010). The extent of wildland urban interface and wildfire threat areas in the counties in the Bay Area is shown in Table 3-22

<table>
<thead>
<tr>
<th>County</th>
<th>Percent of Land in Wildland Urban Interface</th>
<th>Percent of Land in Wildfire Threat Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alameda</td>
<td>43.2</td>
<td>12.2</td>
</tr>
<tr>
<td>Contra Costa</td>
<td>64.3</td>
<td>17.4</td>
</tr>
<tr>
<td>Marin</td>
<td>74.3</td>
<td>23.0</td>
</tr>
<tr>
<td>Napa</td>
<td>43.6</td>
<td>31.2</td>
</tr>
<tr>
<td>San Francisco</td>
<td>47.1</td>
<td>2.2</td>
</tr>
<tr>
<td>San Mateo</td>
<td>53.6</td>
<td>16.3</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>41.4</td>
<td>10.0</td>
</tr>
<tr>
<td>Solano</td>
<td>33.0</td>
<td>14.2</td>
</tr>
<tr>
<td>Sonoma</td>
<td>46.1</td>
<td>44.8</td>
</tr>
</tbody>
</table>

Notes: Wildfire threat areas include high, very high, and extreme threat areas; percent of land is based on total land area of each county.
Source: Association of Bay Area Governments 2010

PG&E facilities are located throughout the Bay Area, and many are located in wildfire threat areas and wildland urban interfaces. Some facilities are likely to be located near hazardous material sites or other hazardous areas, such as airports or airstrips, or on steep slopes. The facilities themselves also pose hazards, which may result from fire caused by electrical facility damage or gas escaping from pipelines. Damage to the facilities could result in damage to nearby buildings or structures or pose safety risks to people. The facilities are constantly threatened by various environmental and man-made hazards, and PG&E performs routine maintenance of its facilities to keep them in proper working condition and minimize public health or safety risks, as well as the risk of damage to other buildings or structures.

### 3.9.2 Environmental Consequences

#### 3.9.2.1 Methodology for Impact Analysis

Impacts related to public health and safety and environmental hazards were analyzed qualitatively based on professional judgment in light of the Covered Activities and conservation strategy of the Bay Area O&M HCP. The impact analysis focuses on the potential for the Proposed Action or alternatives to expose the public and environment to hazards or hazardous materials. The analysis considers potential effects on workers, the general public, and the environment. Analyses in other
sections, such as Section 3.6, Geology/Soils and Paleontology, and Section 3.7, Hydrology and Water Quality, provide additional discussion of related impacts.

### 3.9.2.2 Environmental Programs and Avoidance and Minimization Measures

Provided below are discussions that describe applicable PG&E’s Environmental Programs that address potential public health and environmental hazards. Additionally, some of the proposed AMMs from the HCP to address impacts to listed species may also apply to public health and environmental hazards.

Applicable PG&E Environmental Programs include:

PG&E complies with applicable state and federal laws, regulations, and requirements pertaining to hazardous materials and hazardous wastes. Relevant regulations include the following, the Federal Toxic Substances Control Act; Clean Water Act; Clean Air Act; Solid Waste Disposal Act; and Comprehensive Environmental Responsibility, Compensation, and Liability Act.

PG&E’s hazardous materials program consists of:

- promotion and dissemination of educational materials via training sessions, and on job sites as necessary;
- implementation of legal protocols for hazardous materials handling to avoid and minimize public, worker, and environmental exposure; and
- monitoring and reporting of environmental impacts associated with construction or ongoing operational activities.

As part of its environmental awareness training program, PG&E includes specific information on hazardous materials, such as definitions of hazardous materials; legal requirements for hazardous materials storage, transportation, and handling; agency oversight; and BMPs to minimize the potential for hazardous materials effects. Following are examples of the types of measures PG&E implements to reduce the potential for spills and releases of hazardous substances during its O&M and construction activities:

- fueling and servicing all vehicles offsite;
- following standard BMPs when handling any hazardous or potentially hazardous substances;
- to the extent practicable, avoiding storage of hazardous substances such as paints, solvents, epoxies, etc., at the work site and in the staging area. If such substances must be stored onsite, quantities are minimized and materials are securely stored in closed containers located away from drainage courses, storm drains, and areas of stormwater infiltration;
- removing litter and construction-related materials from the job site following completion of work;
• ensuring that maintenance and construction personnel have been trained in current procedures and best available technology for spill prevention and cleanup of accidental spills; and

• keeping a spill kit or kits at the worksite at all times when hazardous materials are in use, and ensuring that all personnel know how to access and use the kit(s).

In the event of a spill or release of hazardous materials, work is stopped immediately, and cleanup measures are implemented as necessary to remediate the spill and protect terrestrial ecosystems, surface water quality and aquatic ecosystems, groundwater quality, and human health. Adjacent land uses and emergency responders are notified immediately in the event of a substantial spill or release.

Applicable HCP AMMs include:

• FP-02/BMP-9 – Park vehicles and equipment on pavement, existing roads, or other disturbed or designated areas (barren, gravel, compacted dirt).

• FP-03 – Use existing access and ROW roads. Minimize the development of new access and ROW roads, including clearing and blading for temporary vehicle access in areas of natural vegetation.

• FP-07 – Vehicle speeds on unpaved roads will be restricted to 15 miles per hour.

• FP-08 – Prohibit trash dumping, firearms, open fires (such as barbecues), hunting, and pets (except for safety in remote locations) at work sites.

• FP-09/BMP-3 – During fire season in designated State Responsibility Areas, equip all motorized equipment with federally approved or state-approved spark arrestors. Use a backpack pump filled with water and a shovel and fire-resistant mats and/or windscreens when welding. During fire “red flag” conditions as determined by Cal Fire, curtail welding. Each fuel truck will carry a large fire extinguisher with a minimum rating of 40 B:C. Clear parking and storage areas of all flammable materials.

• FP-15 – Prohibit vehicular and equipment refueling 250 feet from the edge of vernal pools and 100 feet from the edge of other wetlands, streams, or waterways. If refueling must be conducted closer to wetlands, construct a secondary containment area subject to review by an environmental field specialist and/or biologist. Maintain spill prevention and cleanup equipment in refueling areas.

• Plant-01 – No herbicides will be used for vegetation management, pole clearing, or any other purpose within 100 feet of a Map Book zone (except vegetation management’s direct application to cut stumps when greater than 25 feet from a Map Book Zone and in conformance with applicable pesticide regulations).

• BMP-4 – Contractor shall be responsible for checking the daily Project Activity Level (a measure of fire weather conditions that, at certain levels, restricts activities otherwise permitted) during fire season when working on U.S. Forest Service property.
• BMP-5 – Smoking shall not be permitted during fire season, except in a barren area or in an area cleared to mineral soil at least three feet in diameter. Under no circumstances shall smoking be permitted during fire season while employees are operating light or heavy equipment, or walking or working in grass and woodlands.

• BMP-6 – Hunting, firearms, portable stoves, open fires (such as barbecues) not required by the activity, and pets (except for safety in remote locations) shall be prohibited in vegetation management work activity sites. All trash, food items, and human-generated debris shall be properly contained and/or removed from the site.

• BMP-10/FP-15 – When practical, fuel vehicles and equipment offsite. If it is necessary to fuel onsite, the following precautions shall be taken: No vehicles or equipment shall be refueled within 250 feet of vernal pools and 100 feet of a watercourse, ditch, wetland, or a pond, unless a bermed and lined refueling area is constructed. The fueling operator must stay with the fueling operation at all times. Do not top off tanks. Spill containment and cleanup materials must be available. Spills must be immediately cleaned up and contaminated materials disposed of properly. Fueling trucks and operators must have all necessary permits, licenses, and training. Any spills must be reported immediately to supervisor and PG&E vegetation management representative.

• BMP-23 – If an environmental protection incident occurs, such as accidental introduction of substances into waterways or wetlands, accidental taking of an endangered species, or hazardous material spills, etc., call your supervisor and the PG&E vegetation management representative immediately.

• BMP-28 – Any vehicles driven and/or operated within or adjacent to streams shall be checked and maintained daily to prevent leaks of materials that, if introduced to the water, could be harmful to aquatic life.

• BMP-31 – All herbicide applications performed by vegetation management contractors shall be made in compliance with label requirements as well as all appropriate federal, state, and local laws, rules, and regulations. Note: Use of herbicides and pesticides is not a Covered Activity under the HCP.

• BMP-32 – Only herbicides registered by the federal EPA and California EPA shall be applied.

• BMP-34 – Each application shall be covered by a written Pest Control Recommendation.

• BMP-35 – A Licensed Pest Control Advisor shall oversee all herbicide and tree growth regulator applications. A qualified applicator shall supervise contractors making herbicide and tree growth regulator applications for vegetation management.

• BMP-37 – The Pest Control Business License holder (applicator) shall report herbicide use monthly to the County Agricultural Commissioner.
BMP-38 – Contractor shall conduct annual worker safety training sessions for all contractor employees involved in the herbicide applications and manual/mechanical clearing. As requested, documentation of this training shall be on file with the PG&E representative who administers their contract.

BMP-41 – Mixing and loading of herbicides is prohibited in watercourse protection zones (see BMPs 60 and 61 for watercourse protection zones).

BMP-42 – Applicator shall have a spill prevention and cleanup kit in their vehicle and at the job site.

BMP-44 – Empty herbicide containers shall be taken offsite, triple rinsed, and disposed of in a proper manner.

BMP-45 – Minimum operating pressures shall be used. Nozzle tips that produce a coarser droplet should be used to minimize drift.

BMP-46 – Pesticides shall not be transported in the same compartment with persons, food, or feed. Pesticide containers shall be secured to the vehicle during transportation in a manner that shall prevent spillage into or off the vehicle.

BMP-47 – The contractor shall have a written training program for employees who handle pesticides. The written program must describe the materials and the information that shall be provided and used to train the employees.

BMP-48 – Training must be completed before an employee is allowed to handle any pesticide and continually updated to cover any new pesticides that shall be handled. Training must be repeated at least annually thereafter.

BMP-58 – Contractor shall have a water source containing a minimum of 300 gallons of water and 250 feet of 1-inch hose onsite at all times during operation. The water source must either be self-propelled or always attached to a vehicle capable of moving it to where it is needed. Where access/terrain allows, contractor’s water source must always be within 500 feet of the mowing/cutting operation. Excess water shall be disposed of in accordance with all laws and regulations.

BMP-59 – Each mower shall have a minimum of a 10-pound, Class A, B, C fire extinguisher mounted in the cab.

BMP-60 – Contractor must stay onsite for one-half hour after mowing operations end for the day to ensure fire safety. When extreme fire levels are reached, the following extra precautions must be implemented immediately.

1. An additional support person shall be dedicated to follow the mower with an Indian Back Pump and McLeod.

2. Mowing hours will be reduced to the hours of 5:00 a.m. through 12:30 p.m.
3. The use of a humidity meter shall occur. A reading of less than (<) 20% humidity shall stop the mowing operation for the day. Readings shall be taken every 3 hours during operation.

3.9.2.3 Proposed Action

The potential effects described below pertain to both construction and operations.

Impact 3.9-1: Impacts from Hazardous Materials Used for Covered Activities Would Pose a Hazard to People or the Environment

Many of the Covered Activities would require the use of hazardous substances such as fuels and lubricants for vehicles and equipment; paints; solvents; and epoxies. Minor new construction and pipeline upgrades could require additional substances such as paving media. The hazardous substances would need to be transported to the work area, where they would be used on-site in designated areas. Some of these activities, including transportation of hazardous substances, would take place near sensitive locations, such as schools and hospitals.

The transport and use of hazardous substances poses a risk to people and the environment in the event of an accident or spill. For example, vehicles could leak or spill fuel, brake fluid, and lubricants. Spills could occur during fueling or servicing activities or during delivery of fuels and other substances to work sites, with the potential to contaminate soil and surface- or groundwater and potentially resulting in toxic effects on vegetation, wildlife, workers, and the general public. Substances such as solvents, paints, and epoxy could pose similar concerns if accidentally released or improperly handled or disposed.

During all activities, PG&E would comply with applicable state and federal laws, regulations, and requirements pertaining to hazardous materials and hazardous wastes; implement AMMs and BMPs identified in the Bay Area O&M HCP; and comply with its environmental practices. With compliance and implementation of appropriate measures, the potential for hazardous materials used or transported for Covered Activities to result in substantial effects on the environment or pose health or safety risks to the public would be minimized.

The existing Environmental Programs described above and the following AMMs will ensure minimal effects: FP-15, Plant-01, BMP-10/FP-15, BMP-23, BMP-31, BMP-32, BMP-34, BMP-35, BMP-37, BMP-38, BMP-41, BMP-42, BMP-44, BMP-45, BMP-46, BMP-47, BMP-48.

Impact 3.9-2: Hazards from Activities on Sites with Known Hazardous Materials Contamination

PG&E facilities may be located on or near known hazardous material sites, but new facilities would not be located on a site with known hazardous materials contamination unless the site has already been fully remediated prior to construction. Because of the diversity and distribution of sites with known hazardous materials contamination in the Plan Area, it is possible that O&M activities would take place on contaminated sites, although PG&E minimizes such activities. PG&E policies and regulatory requirements dictate that only appropriately trained and qualified personnel work on sites with known contamination, thereby minimizing the potential for health or safety risks. In addition, as
noted above, Environmental Programs provide for education and training of personnel regarding hazardous materials, protocols for handling hazardous materials and for responding to a spill incident, and monitoring of hazardous conditions. Also, the AMMs listed above address fire hazard, hazards associated with refueling at a construction site, and use of herbicides. The existing Environmental Programs and AMMs described above will ensure minimal to no effects.

**Impact 3.9-3: Impedance of Emergency Response or Access**

While much of the Bay Area is urban or suburban in character, some roadways in the Plan Area are rural in nature, with narrow lanes or a minimal number of lanes. Some Covered Activities could adversely affect traffic flow by requiring temporary lane or road closures, or by moving construction equipment on roadways, resulting in traffic safety hazards. Lane or road closures may be necessary during pipeline replacement or installation, and such closures could impede emergency access in areas where alternative routes are not readily available. For facilities located along roads, many activities would take place along the road shoulders and would not impede access. Even a small number of construction traffic trips on such roadways could adversely affect traffic flow; heavy, slow-moving construction equipment could be a particular concern in this situation. Similarly, in rapidly expanding urban/suburban areas, where traffic congestion is a prime concern, additional traffic including heavy equipment and/or truck traffic would be a concern for traffic flow.

To address potential adverse effects on traffic flow and safety, PG&E is committed to a range of industry-standard BMPs to reduce effects of construction trip generation on traffic flow and safety. These include:

- providing through access for emergency vehicles or notifying emergency service providers in advance of any needed lane or route closures;
- maintaining access for private roads;
- providing adequate off-road parking and staging for vehicles, equipment, and materials throughout the work period;
- restricting all construction parking and staging to right-of-way (ROW) and pre-approved staging areas, and keeping construction equipment in designated staging areas when not in use;
- posting construction warning signs in advance of the construction area and at intersections that provide access to the construction area;
- restricting all non-emergency construction traffic, including haul and delivery trucks, to normal daytime business hours, unless a local jurisdiction identifies a need for off-hours routing to avoid impacts on peak-hour commute traffic; and
- avoiding key commute routes and “rate-limiting” intersections during peak traffic periods, and working with local jurisdictions to identify the routes and intersections that should be avoided, and appropriate alternate travel routes or times.
In addition to the BMPs described above, PG&E will also be required to operate vehicles in accordance with the terms of Caltrans encroachment permits where activities occur in Caltrans ROW. Finally, the larger-scale activities that pose the greatest concern for traffic flow are expected to occur infrequently.

In summary, because traffic impedance associated with most Covered Activities would be comparatively small and of short duration, and in view of the traffic control commitments in place, activities enabled by the proposed action are not expected to result in a substantial increase in traffic congestion, significant traffic safety hazards, or impedance of emergency response. The existing Environmental Programs described above will ensure minimal to no effects.

**Impact 3.9-4: Increased Wildfire Hazards from Covered Activities**

Some Covered Activities would use equipment that could ignite nearby vegetation and cause a wildfire, creating a hazard for people and structures in the vicinity of the work area. Activities in the wildland urban interface would pose a greater risk to developed areas if a wildfire is ignited as a result of the activities. Wildfire is not a risk in urban areas, but man-made fire could pose a risk to people or structures. More than 50 percent of the Bay Area has a high to extreme risk of wildfire, and PG&E activities in high-risk areas could increase wildfire hazards, particularly during the dry season. New electrical facilities would also pose a hazard if the facilities become damaged and result in sparks that ignite vegetation or nearby structures; this potential is considered low because of the designs of the facilities and compliance with applicable building codes and CPUC regulations. Designation of habitat mitigation lands would not increase wildfire hazards, but the lands may be subject to natural wildfires, which could temporarily affect habitat quality. PG&E has included money for restoration to address this changed circumstance.

PG&E takes necessary precautions during its activities to minimize the risk of wildfire from construction or operation. During all activities, PG&E would implement AMMs and BMPs identified in the Bay Area O&M HCP and consult with local and state jurisdictions regarding wildfire hazards in accordance with its Land Use and Planning Practices. With these commitments, PG&E’s activities would not increase risks associated with wildfire hazards.

The existing Environmental Programs described and the following AMMs will ensure minimal effects: FP-02/BMP-9, FP-03, FP-08, BMP-3, BMP-4, BMP-5, BMP-6, BMP-58, BMP-59, and BMP-60.

### 3.9.2.4 No Action Alternative

Under the No Action Alternative, the Service would not issue an incidental take permit related to the Bay Area HCP. PG&E would continue its existing program of O&M activities and minor new construction activities and implement current environmental programs and practices, including BMPs. A regional HCP would not be implemented, and individual activities would be subject to project-by-project evaluations, and incidental take authorizations and mitigation if they would affect federally listed species. Because compensation requirements would be assessed on a project-by-project basis, smaller parcels of land would likely be identified for enhancement or preservation for the individual projects instead of as part of a regional conservation effort. The creation of numerous small habitat mitigation lands would increase the need for management activities on more lands.
Similar types of O&M and minor new construction activities would be implemented under the No Action Alternative, and impacts related to hazardous materials and public health and safety would be the same as those described for the Proposed Action. The project-by-project approach for protecting special-status species would not result in effects similar to those of the proposed action on public health and safety.
3.10 Visual Resources

This section characterizes the visual setting of the Plan Area and analyzes the effects of the Proposed Action and No Action alternatives on aesthetics and visual resources. The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area. The scenic quality component can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area. Viewer response is a combination of viewer exposure and viewer sensitivity.

3.10.1 Affected Environment

3.10.1.1 Regulatory Setting

Aesthetics and visual resources are regulated indirectly through a variety of federal, state, and local laws and programs. For example, the federal government does not explicitly regulate visual resources, but recognizes their value and preserves them under the aegis of the National Park, National Wildlife Refuge, National Monument, and National Scenic Byway systems and through protections afforded under the NHPA (see related discussion in Section 3.4, Cultural Resources). Similarly, aesthetic values are preserved at the state level through the establishment of state parks and preserves and through the California Scenic Highway Program. In addition, although local jurisdictions are not required to address visual resources as a separate topic in their general plans, most do consider aesthetic values in developing their planning framework.

The following sections provide additional information on visual resources regulatory programs of greatest relevance in the Plan Area: the California Scenic Highway Program and the General Plan process. The National Park, National Wildlife Refuge, National Monument, and National Scenic Byway systems are not discussed further because they would not be directly affected by the proposed action.

State Regulations

California Scenic Highway Program

The California Legislature initiated the California Scenic Highway Program (Streets and Highways Code Sec. 260 et seq.) in 1963, with the goal of preserving and protecting the state’s scenic highway corridors from changes that would diminish their aesthetic value. The State Scenic Highway System consists of eligible and officially designated routes. A highway may be identified as eligible for listing as a state scenic highway if it offers travelers scenic views of the natural landscape, largely undisrupted by development. Eligible routes advance to officially designated status when the local jurisdiction adopts ordinances to establish a scenic corridor protection program and receives approval from Caltrans.

As noted, a corridor protection program must be adopted by the local governments with land use jurisdiction through which the roadway passes as the first step in moving a road from “eligible” to “designated” status. Each designated corridor is monitored by the State and designation may be revoked if a local government fails to enforce the provisions of the corridor protection program. While there are no restrictions on scenic highway projects, local agencies and Caltrans must work
together to coordinate transportation and development projects and ensure the protection of the corridor’s scenic value to the greatest extent possible. In some cases, local governments have their own land use and site planning regulations in place to protect scenic values along a designated corridor.

There are five legislatively required elements of scenic corridor protection (California Department of Transportation 2008). They are:

- Regulation of land use and density of development (i.e., density classifications and types of allowable land uses).
- Detailed land and site planning (i.e., permit or design review authority and regulations for the review of proposed developments).
- Control of outdoor advertising (i.e., prohibition of off-premise advertising signs and control of on-premise advertising signs).
- Careful attention to and control of earthmoving and landscaping (i.e., grading ordinances, grading permit requirements, design review authority, landscaping and vegetation requirements).
- The design and appearance of structures and equipment (i.e., design review authority and regulations for the placement of utility structures, microwave receptors, wireless communication towers, etc.).

Caltrans stresses the need for citizen participation in developing the guidelines that implement these requirements (California Department of Transportation 2008). In addition, the scenic highways program includes specific requirements for the undergrounding of electric and communication distribution facilities near state scenic highways (California Public Utilities Code Section 320).

**California Public Utilities Commission**

Section 320 of the California Public Utilities Code requires the undergrounding of all future electric and communication distribution facilities which are proposed to be erected in proximity to any highway designated a state scenic highway pursuant to Streets and Highways Code Section 260 of the California Public Utilities Code, and which would be visible from such scenic highways if erected above ground, whenever feasible and not inconsistent with sound environmental planning (California Department of Transportation 2008b).

**Open Space Easement Act of 1974**

Cities and counties can use open space easements as a mechanism to preserve scenic resources, if they have adopted open-space plans, as provided by the Open Space Easement Act of 1974 (Gov. Code, §§ 51070.-51097). According to this Act, a city or county may acquire or approve an open-space easement through a variety of means, including use of public money.

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9 State law requires the undergrounding of all visible electric distribution and communication utilities within 1,000 feet of a Scenic Highway.
Local Regulations

Through Article VII, Paragraph 5 of the California Constitution, the state legislature, vests the CPUC with exclusive jurisdiction over the siting and design of gas and electrical facilities. California Public Utilities Code Section 1007.5 and other California statutes and case law detail the nature and extent of this sole discretionary permitting authority. Because state law has preempted the field, PG&E is not subject to local land use planning or zoning requirements.

While PG&E’s utility related activities are solely regulated by CPUC and are thus not subject to local zoning ordinances, PG&E consults with local cities and counties to ensure that local concerns and issues are considered during the project planning process; construction and O&M activities are developed and implemented in such a way as to comply with existing local zoning ordinances, when feasible.

The following information is provided to describe the local regulatory context.

California law requires local jurisdictions (including counties and cities) to develop comprehensive, long-term general plans to guide their land use decision-making and physical development (Government Code Section 65300). Of the seven required “elements” or chapters in a General Plan, several relate directly or indirectly to the aesthetic issues faced by a community as it manages its growth. For instance, the land use element identifies an appropriate balance and distribution of the various types of land uses—residential, commercial, industrial, recreational, etc.—present in a growing community. The conservation element establishes guidelines for the conservation and use of the area’s natural resources, including rivers, streams, and lakes; forest lands; soil resources; and mineral deposits. The open space element contains goals and strategies to preserve open space for a range of purposes, including outdoor recreation. General plans may also contain additional elements on topics of concern to the local community; common themes that bear on aesthetics and visual resources include recreation and parks, community design, and heritage or cultural resources. Some communities also adopt ordinances or municipal code provisions in support of specific aesthetic or community design goals.

City and county general plans may include policies for protection of scenic resources, such as hillsides, natural areas, landmarks, roads, and historic districts. Such policies may restrict new development in areas that maintain scenic vistas or areas that contain important character-defining structures. Additionally, design guidelines established at the local level may establish specific standards for addressing development where local character and/or important visual resources may be affected.

3.10.1.2 Environmental Setting

The visual setting of the Plan Area is characterized by a variety of land uses and environmental conditions that exist across the nine counties of the Bay Area. Agricultural lands, open space, and the Pacific Ocean coastline provide some of the key aesthetic resources. Views along roads and highways in the Plan Area vary from essentially undisturbed views of rural open space and ocean landscapes to crowded urban settings with limited distant views. PG&E facilities and infrastructure are located throughout the Plan Area in or adjacent to undeveloped lands; agricultural areas; small and mid-size communities such as Napa, Martinez, Sebastopol, San Anselmo, and Half Moon Bay;
and large urban centers such as San Jose, San Francisco, Oakland, and Fremont. These facilities are part of the existing visual setting of the area, and the visibility of the facilities varies depending on their locations and proximity to key viewpoints, such as scenic highways or overlooks.

Many of the highways in the Bay Area have been officially designated or determined eligible for designation as state scenic highways (Table 3-23). These highways provide scenic views of the coast, ocean, open space, agricultural lands, and other visually appealing settings. No national scenic byways have been designated in the Plan Area. Scenic vistas in the Plan Area, such as vistas of the ocean, the Marin headlands, the East Bay hills, and San Bruno Mountain, are visible from hills and ridgelines surrounding San Francisco and from many locations along the coast and throughout the nine counties in the Bay Area.

Table 3-23. State Scenic Highways and Routes in the Bay Area

<table>
<thead>
<tr>
<th>Highway/Route</th>
<th>Location</th>
<th>Mileposts</th>
<th>County(ies)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Santa Cruz County line to south city limit near Half Moon Bay</td>
<td>0.0–26.2</td>
<td>San Mateo</td>
<td>Designated</td>
</tr>
<tr>
<td>1</td>
<td>State Route 101 near Marin City to State Route 101 near Leggett</td>
<td>0.0-105.6</td>
<td>Marin, Sonoma, Mendocino</td>
<td>Eligible</td>
</tr>
<tr>
<td>1</td>
<td>State Route 35 in San Francisco to State Route 101 near Golden Gate Bridge</td>
<td>1.9–7.1</td>
<td>San Francisco</td>
<td>Eligible</td>
</tr>
<tr>
<td>1</td>
<td>State Route 101 near San Luis Obispo to State Route 35 Near Daly City</td>
<td>16.7-1.9</td>
<td>San Francisco, San Mateo, San Luis Obispo</td>
<td>Eligible</td>
</tr>
<tr>
<td>4</td>
<td>State Route 160 near Antioch to State Route 84 near Brentwood</td>
<td>31.1–40.5</td>
<td>Contra Costa</td>
<td>Eligible</td>
</tr>
<tr>
<td>9</td>
<td>Santa Cruz County line to Los Gatos city limit</td>
<td>0.0–10.8</td>
<td>Santa Clara</td>
<td>Designated</td>
</tr>
<tr>
<td>12</td>
<td>Danielli Ave east of Santa Rosa to London Way near Aqua Caliente</td>
<td>22.4-34.0</td>
<td>Sonoma</td>
<td>Designated</td>
</tr>
<tr>
<td>12</td>
<td>State Route 101 near Santa Rosa to State Route 121 near Sonoma</td>
<td>16.0–41.4</td>
<td>Sonoma</td>
<td>Eligible</td>
</tr>
<tr>
<td>17</td>
<td>State Route 1 near Santa Cruz to State Route 9 near Los Gatos</td>
<td>0.0–7.1</td>
<td>Santa Clara, Santa Cruz</td>
<td>Eligible</td>
</tr>
<tr>
<td>24</td>
<td>East portal of Caldecott Tunnel to Interstate 680 near Walnut Creek</td>
<td>0.3–9.1</td>
<td>Contra Costa</td>
<td>Designated</td>
</tr>
<tr>
<td>29</td>
<td>Trancas Street in Napa to SR 20 near Upper Lake</td>
<td>13.0-52.5</td>
<td>Napa, Lake</td>
<td>Eligible</td>
</tr>
<tr>
<td>29</td>
<td>State Route 37 near Vallejo to State Route 221 near Napa</td>
<td>4.7-8.7</td>
<td>Solano, Napa</td>
<td>Eligible</td>
</tr>
<tr>
<td>35</td>
<td>Santa Cruz County line to Half Moon Bay Road (State Route 92)</td>
<td>0.0–23.0</td>
<td>San Mateo</td>
<td>Designated</td>
</tr>
</tbody>
</table>
## Table 3-23. State Scenic Highways and Routes in the Bay Area

<table>
<thead>
<tr>
<th>Highway/Route</th>
<th>Location</th>
<th>Mileposts</th>
<th>County(ies)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>State Route 251 near Nicasio to State Route 101 near Novato</td>
<td>0.0-11.2</td>
<td>Marin</td>
<td>Eligible</td>
</tr>
<tr>
<td>37</td>
<td>State Route 101 near Ignacio to State Route 29 near Vallejo</td>
<td>11.2-9.5</td>
<td>Marin, Sonoma, Solano</td>
<td>Eligible</td>
</tr>
<tr>
<td>80</td>
<td>Interstate 280 near First Street in San Francisco to State Route 61 in Oakland</td>
<td>3.2-2.8</td>
<td>San Francisco, Alameda</td>
<td>Eligible</td>
</tr>
<tr>
<td>84</td>
<td>State Route 238 (Mission Boulevard) to Interstate 680</td>
<td>10.8–17.9</td>
<td>Alameda</td>
<td>Designated</td>
</tr>
<tr>
<td>92</td>
<td>State Route 1 to Interstate 280</td>
<td>0.0-7.3</td>
<td>San Mateo</td>
<td>Eligible</td>
</tr>
<tr>
<td>101</td>
<td>Opposite San Francisco to State Route 1 in Marin City</td>
<td>0.0-4.1</td>
<td>Marin</td>
<td>Eligible</td>
</tr>
<tr>
<td>101</td>
<td>State Route 37 near Ignacio to State Route 37 near unincorporated Ignacio</td>
<td>19.1-20.9</td>
<td>Marin</td>
<td>Eligible</td>
</tr>
<tr>
<td>116</td>
<td>State Route 1 to south city limit Sebastopol</td>
<td>0.0–27.8</td>
<td>Sonoma</td>
<td>Designated</td>
</tr>
<tr>
<td>121</td>
<td>State Route 37 near Sears Point to State Route 12 near Sonoma</td>
<td>0.0-7.5</td>
<td>Sonoma</td>
<td>Eligible</td>
</tr>
<tr>
<td>121</td>
<td>State Route 221 near Napa Street to Trancas Street in Napa</td>
<td>6.0-9.4</td>
<td>Napa</td>
<td>Eligible</td>
</tr>
<tr>
<td>152</td>
<td>County line to county line</td>
<td>22.1-13.9</td>
<td>Santa Clara</td>
<td>Eligible</td>
</tr>
<tr>
<td>160</td>
<td>State Route 4 near Antioch to Sacramento</td>
<td>0.0-36.0</td>
<td>Contra Costa, Sacramento</td>
<td>Eligible</td>
</tr>
<tr>
<td>221</td>
<td>State Route 29 at Suscol Road to State Route 121 in Napa</td>
<td>0.0-2.7</td>
<td>Napa</td>
<td>Eligible</td>
</tr>
<tr>
<td>239</td>
<td>Interstate 580 west of Tracy to State Route 4 near Brentwood</td>
<td>0.0-7.0</td>
<td>Alameda, Contra Costa</td>
<td>Eligible</td>
</tr>
<tr>
<td>251</td>
<td>State Route 37 near Nicasio to State Route 1 near Point Reyes</td>
<td>0.0-5.1</td>
<td>Marin</td>
<td>Eligible</td>
</tr>
<tr>
<td>280</td>
<td>Santa Clara County Line to North City Limit San Bruno</td>
<td>0.0–21.8</td>
<td>San Mateo</td>
<td>Designated</td>
</tr>
<tr>
<td>280</td>
<td>State Route 17 to Interstate 80 near First Street in San Francisco</td>
<td>5.4-7.0</td>
<td>Santa Clara, San Mateo, San Francisco</td>
<td>Eligible</td>
</tr>
<tr>
<td>580</td>
<td>San Joaquin County line to State Route 205</td>
<td>0.0–0.4</td>
<td>Alameda</td>
<td>Designated</td>
</tr>
<tr>
<td>580</td>
<td>San Leandro city limit to State Route 24 in Oakland</td>
<td>34.5–45.2</td>
<td>Alameda</td>
<td>Designated</td>
</tr>
</tbody>
</table>
### Table 3-23. State Scenic Highways and Routes in the Bay Area

<table>
<thead>
<tr>
<th>Highway/Route</th>
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<th>Mileposts</th>
<th>County(ies)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>680</td>
<td>Mission Boulevard in Fremont to Contra Costa County line</td>
<td>6.4–21.9</td>
<td>Alameda</td>
<td>Designated</td>
</tr>
<tr>
<td>680</td>
<td>Alameda County Line to State Route 24</td>
<td>0.0–14.4</td>
<td>Contra Costa</td>
<td>Designated</td>
</tr>
</tbody>
</table>

Source: California Department of Transportation 2016

### 3.10.2 Environmental Consequences

#### 3.10.2.1 Methodology for Impact Analysis

Typically, the analysis of impacts on visual resources is based on three key parameters:

- The visual character and scenic quality of potentially affected visual resources at the project site, in the immediate project vicinity, and in the surrounding region.
- The visibility of the project site and vicinity to members of the public.
- Public viewer response to the potentially affected visual resources.

Although the majority of Covered Activities would take place within or immediately adjacent to existing PG&E ROWs, the precise locations of individual activities on these lands are not foreseeable at this time. Thus, it is not possible to identify either the specific views that would be affected or the likely viewer populations and their concerns. As a result, this analysis focuses on identifying the general types of visual changes that could result from the Covered Activities and determining which changes could adversely affect visual resources or the viewer experience. Similarly, because specific impacts (i.e., specific locations affected and the nature and extent of visual changes) cannot be identified at this time, this document focuses on identifying a strategy to ensure that an appropriate level of visual resources protection is provided on a case-by-case basis.

Impacts related to aesthetics or visual resources were assessed qualitatively based on professional judgment in light of the nature of the Covered Activities and conservation strategy of the Bay Area O&M HCP. The impact analysis in this chapter focuses on the potential for the HCP and Covered Activities to degrade or otherwise modify the visual setting or character of the Plan Area, particularly in or near scenic areas. Analyses in other sections, such as Section 3.3, Biological Resources, and Section 3.6, Geology/Soils and Paleontology, provide additional discussion of related impacts on vegetation and ground surfaces, respectively.
3.10.2.2 Environmental Programs and Avoidance and Minimization Measures

Provided below are discussions that describe applicable PG&E’s Environmental Programs that address visual resources impacts. Additionally, some of the proposed AMMs from the HCP to address impacts to listed species may also apply to visual resources.

Applicable PG&E Environmental Programs include:

As part of the standard environmental review process, environmental staff evaluates potential visual impacts when changes in heights or appearance of utility infrastructure could affect the aesthetics of a given facility, as well as the local environment where the facility is located. Most of PG&E’s O&M work does not alter the aesthetic value of the facilities significantly. If a potential visual impact is identified, the land planner will work with the project manager and engineering team to modify the design plans to ensure that potential visual impacts are not created and are consistent with zoning, ordinances and applicable regulations. Measures typically include one or more of the following:

- modifications or changes to the location (siting) of new or replacement facilities;
- modifications or changes to the design of new or replacement facilities;
- revegetation of disturbed areas using methods consistent with its setting.

PG&E minimizes visual disturbance during O&M and construction activities by requiring work crews to follow BMPs, including maintaining sites in a clean orderly condition, storing building materials and equipment in construction staging areas and/or away from public view, and removing construction debris promptly at regular intervals.

In addition to its general practices to protect visual resources, PG&E has adopted a Dark Sky Initiative specifically aimed at reducing light pollution (“urban glow,” glare, and light trespass or fugitive light). This is consistent with the California Energy Commission’s current effort to develop standards regulating the use of outdoor lighting at public and private sector facilities in the state. PG&E’s Dark Sky Initiative includes promoting and offering a range of Dark Sky–friendly products and services. As part of the program, the company will be:

- offering full cutoff–type (reduced glare) replacement lenses and luminaires, and new post-top lights with Dark Sky-approved shielding, through its street lighting program;
- developing replacement and retrofit programs for aging fixtures that are not Dark Sky–friendly;
- creating new brochures and outreach materials for service planning personnel to distribute to local jurisdictions and private developers to make them aware of Dark Sky options available through the company.

PG&E now also routinely incorporates Dark Sky–friendly components in its new facilities.
Applicable HCP AMMs include:

- **FP-04** – Locate off-road access routes and work sites to minimize impacts on plants, shrubs, and trees, small mammal burrows, and unique natural features (e.g., rock outcrops).

- **Plant-08** – PG&E will prune shrubs in a manner that promotes re-sprouting. If permanent impacts are unavoidable, establish new individuals by planting seedlings or from cuttings in adjacent suitable habitat. PG&E will implement best management practices including vehicle, equipment, and personnel hygiene protocols; procedures for conducting activities in infected areas; and timing restrictions that avoid working when soils are moist and the likelihood of spreading *P. cinnamomi* is greatest.

- **BMP-25 (FP-10)** – The disturbance or removal of vegetation within the work area shall not exceed the minimum necessary to complete operations, subject to other public and health and safety directives governing the safe operations and maintenance of electric and gas facilities. Precautions shall be taken to avoid damage to non-target vegetation.

- **BMP-27** – Vegetation that at mature height does not pose a threat to the conductors shall not be removed, unless the removal is required to maintain compliance with California Public Resource Code Section 4292 (pole clearing).

### 3.10.2.3 Proposed Action

The potential effects described below pertain to both construction and operations.

**Impact 3.10-1: Adverse Changes in Visual Setting as a Result of Covered Activities**

Covered Activities would result in varying levels of ground disturbance and changes in the visual setting of the Plan Area. Temporary changes to the visual setting would result from ground disturbance/earthwork; vegetation removal and ground clearing; the use of vehicles, personnel, and supplies in undeveloped areas; glare generated by reflections from metal and glass vehicle surfaces; and introduction of high-intensity nighttime construction lighting.

Vegetation removal creates a temporarily denuded surface that may contrast strongly with the surrounding area in terms of color and visual texture. Grading further modifies the work site by producing barren cut and/or fill areas; it may also create slopes that are unnaturally steep or unnaturally flat compared to the surrounding area. Visual changes associated with vegetation removal and grading would begin early in the construction period. Depending on the nature of the surrounding vegetation—grassland, chaparral, woodland, landscaping, etc.—vegetation impacts could continue to be apparent for some time.

Construction-related changes in the visual setting would be primarily temporary and would have minimal effects on the visual quality of the area because many Covered Activities are maintenance related actions associated with existing facilities. PG&E requires work crews to follow good construction site housekeeping practices to minimize construction-related visual disturbance, such as maintaining sites in a clean, orderly condition; storing building materials and equipment in construction staging areas and/or away from public view; and promptly removing construction debris.
at regular intervals. Disturbed areas are also revegetated or returned to their pre-disturbance conditions, which would ensure minimal alterations to the visual setting over the long term.

Longer term changes would result from new or modified facilities, such as taller facilities in urban areas or a new substation in a rural area. These facilities would alter the visual setting of the area and would be more noticeable in scenic areas where fewer existing facilities or buildings are located. New or modified facilities could create conflicts in areas with sensitive viewer groups, such as residential areas where new or larger facilities could block views of surrounding areas or in open space areas where new or modified facilities would be noticeable from scenic viewpoints.

For new or modified facilities that could adversely modify the visual setting over the long term, PG&E would coordinate with the local jurisdictions and landowners to ensure the compatibility of its facilities with surrounding uses. New or modified facilities would also be minor and would not result in extensive disturbance or substantial alterations to the visual setting. The facilities would be consistent with existing PG&E facilities in the area and would simply be extensions of those facilities, with minimal potential for substantially altering the visual quality of the local area.

The existing Environmental Programs and the following AMMs will ensure minimal effects: FP-02, FP-03, FP-04, FP-14, Plant-08, BMP-12, BMP-24, BMP-25 (FP-10), BMP-27, and BMP-56.

**Impact 3.10-2: Adverse Effects on Visual Resources Associated with Scenic Highways as a Result of Covered Activities**

Covered Activities may be implemented along or near designated or eligible scenic highways in the Plan Area (Table 3-23). CPUC regulations prohibit the installation of overhead distribution facilities within 1,000 feet of the ROW of any officially designated state or county scenic highway if the facilities would be visible to travelers on that highway (California Public Utilities Code Section 320). Because of this restriction, underground facilities are more likely along scenic highways, and installation of such facilities would result in temporary disturbance, as described in Impact 3.10-1, along the highway corridor. Construction activities near the highway could be visible to travelers and could result in temporary degradation of the visual resources along the highway. PG&E programs provide for minimization of disturbance and restoration of the disturbed area following construction, which would minimize long-term effects on visual resources along scenic highways.

PG&E will also consult with local jurisdictions to ensure that new facilities are as consistent with, and appropriate to, the visual setting as possible. In siting needed new facilities, PG&E will work with appropriate agencies to avoid or minimize impacts on visual resources within eligible and designated scenic highway corridors. If facilities must be located within these corridors, PG&E will work with the local authority to identify and implement appropriate measures that are feasible and compatible with CPUC regulations and PG&E’s mandate to deliver safe, reliable electricity and natural gas services.

The existing Environmental Programs and the following AMMs will ensure minimal effects: FP-02, FP-03, FP-04, FP-14, Plant-08, BMP-12, BMP-24, BMP-25 (FP-10), BMP-27, and BMP-56.
Impact 3.10-3: Introduction of New Substantial Sources of Light or Glare

Covered Activities could take place at any time of the day and could require nighttime lighting during construction or for security purposes. In addition, new facilities that introduce pavement, cement, metal, glass, painted wood, and/or other potentially reflective surfaces could create a new source of glare in the local area. Depending on the design of new facilities and the nature of surrounding land uses, increases in glare or nighttime lighting could pose a concern for drivers and could disturb viewers or wildlife in scenic or rural areas. Some light and glare effects cannot be avoided, but PG&E would implement measures to minimize the duration of the effects, as they relate to construction activities, and coordinate with local jurisdictions to minimize long-term effects through modifications in design or facility location. PG&E also has a Dark Sky Initiative to reduce light pollution, and new facilities will incorporate dark sky-friendly components to minimize light pollution, including glare and nighttime fugitive light. The existing Environmental Programs, particularly the Dark Sky Initiative, will ensure minimal effects.

Impact 3.10-4: Changes in Visual Setting from Habitat Mitigation Lands

The designation of habitat mitigation lands would preserve high-quality open space in the Plan Area and maintain the land’s aesthetic values. This land would be protected from development and other substantial land alterations that could degrade the quality of the visual setting. As a result, over the long term, the Proposed Action would ensure the preservation and improve the quality of natural open space in the Plan Area, which would result in aesthetic benefits. The existing Environmental Programs and the following AMMs will ensure minimal effects: FP-02, FP-03, FP-04, FP-14, Plant-08, BMP-12, BMP-24, BMP-25 (FP-10), BMP-27, and BMP-56.

3.10.2.4 No Action Alternative

Under the No Action Alternative, the Service would not issue an incidental take permit related to the Bay Area HCP. PG&E would continue its existing program of O&M activities and minor new construction activities and implement current environmental programs and practices, including BMPs. A regional HCP would not be implemented, and individual activities would be subject to project-by-project evaluations, and incidental take authorizations and mitigation if they would affect federally listed species. Because compensation requirements would be assessed on a project-by-project basis, smaller parcels of land would likely be identified for enhancement or preservation for the individual projects instead of as part of a regional conservation effort. The creation of numerous small habitat mitigation lands would increase the need for management activities on more lands.

PG&E would be expected to use similar criteria for identifying suitable compensation lands as defined in the proposed HCP and to coordinate with appropriate agencies and landowners to establish habitat mitigation lands and minimize the potential for aesthetic conflicts. Aesthetic impacts would be similar to those described for the Proposed Action, but without a regional HCP, the preservation of habitat mitigation lands would be more fragmented and spread-out across the Plan Area. The aesthetic benefits of preserving the lands would still be realized, but large areas of open space would be less likely to be preserved.
3.11 References

3.11.1 Agricultural Resources


Air Quality and Climate Change


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Biological Resources


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3.11. References


3.11.2 Cultural Resources


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3.11.3 Environmental Justice


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3.11.4 Geology/Soils and Paleontology


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3.11.5 Hydrology and Water Quality


3.11.6 Noise and Vibration


3.11.7 Public Health and Environmental Hazards


3.11.8 Visual Resources


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Chapter 4. Other Required Analyses

This chapter provides analyses required under NEPA in addition to those included in Chapter 3, as follows: 1) unavoidable adverse effects, 2) potential irreversible and irretrievable commitments of resources, 3) short-term uses versus long-term productivity, 4) cumulative effects, and 5) the environmentally preferable alternative.

4.1 Unavoidable Adverse Effects

As described in Chapter 3, the design criteria, avoidance, minimization and mitigation measures, conservation strategy, and environmental commitments associated with the implementation of the Bay Area O&M HCP (Proposed Action) ensures that adverse effects on all resource areas from the Covered Activities are less than significant. Unavoidable adverse impacts on the human environment are not anticipated.

4.2 Irreversible and Irretrievable Commitments of Resources

Implementation of the Proposed Action would result in an irretrievable commitment of construction materials used to construct and maintain various gas and electric facilities, as well as fuels used to power vehicles and equipment.

4.3 Short-Term Uses Versus Long-Term Productivity

Implementation of the Proposed Action would result in the use of non-renewable energy sources, such as gasoline and diesel fuel, for powering vehicles for transportation to job sites and powering construction and maintenance equipment. Other resources may be used in routine construction and maintenance activities.

The Proposed Action would improve the long-term productivity by facilitating PG&E’s Bay Area O&M activities, thereby ensuring the efficient production and delivery or gas and electricity to its customers.

4.4 Cumulative Effects

4.4.1 NEPA Requirements

NEPA requires an evaluation of a proposed undertaking’s potential to contribute to cumulative effects in the Plan Area—or larger surrounding area that may be affected. Cumulative effects are defined as those effects to the environment resulting from the incremental effect of the Proposed Action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).
The analysis of the Proposed Action in this section expands the geographic and temporal borders of the Plan Area to include the effects on specific resources, ecosystems, and human communities that occur incrementally in conjunction with other actions, projects, and trends. The purpose of the cumulative effects analysis, as stated by the CEQ, “is to ensure that federal decisions consider the full range of consequences” (Council on Environmental Quality 1997).

A cumulative effects analysis broadens the scope of analysis to include effects beyond those attributable solely to the implementation of the alternatives. The process of analyzing cumulative effects, or impacts, requires consideration of cumulative effects issues in each of the traditional components of the EA, including scoping, describing the affected environment, and determining environmental consequences. The incorporation of cumulative effects analysis also aids in the development of alternatives and appropriate mitigation measures.

The analysis in this section considers the incremental effects of the Proposed Action on specific resources, ecosystems, and human communities that could occur in conjunction with other reasonably foreseeable actions, projects, and trends. As recommended by CEQ’s Considering Cumulative Effects, only those potential cumulative effects that are considered to be relevant or consequential are discussed in depth (Council on Environmental Quality 1997).

The status of affected resources is based on the information provided in the Affected Environment sections in Chapter 3 of this document, which was derived from specific resource studies that were undertaken for the alternatives and additional review and analysis. The geographic boundaries of the cumulative effects area were determined based on the nature of the resources affected and the distance that such effects may travel. As an example, increased sedimentation of waterways that results from a project is limited to the watershed in which it occurs. As a result, it is only necessary to examine effects within that watershed. In contrast, air quality emissions from a project can travel over far greater distances and, therefore, necessitate analysis on a county, air basin, or regional level. For this analysis, the geographic boundary of the cumulative effects area is generally that of the Plan Area, although with some resources (e.g., water, biological resources), smaller natural or cultural boundaries are used.

4.4.2 Approach to Analysis

The analysis addresses both types of cumulative effects identified by CEQ: those that represent the combined effect of activities occurring under more than one action and those resulting solely from the additive effect of repeated activities under the Proposed Action. Both types of effects are analyzed based on professional judgment in light of current standards of care specific to each resource topic. Consistent with CEQ’s cumulative effects guidance, the analysis focuses on aspects of regional cumulative effects to which the Proposed Action has the potential to contribute; cumulative effects to which the Proposed Action would not contribute are not discussed or analyzed in detail.

There are two approaches to identifying cumulative projects and their associated impacts. The list approach identifies individual projects in order to identify potential cumulative impacts. The projection approach uses a summary of projections in an adopted general plan or related planning document to identify potential cumulative impacts. This EA uses the projection approach for the following reasons. First, the Proposed Action covers a large and diverse geographic area, within nine
Bay Area counties and multiple local jurisdictions, each of which establishes land use plans and
determines whether projects within their jurisdictions will be approved and proceed to construction.
However, Covered Activities described in Chapter 2 are subject only to CPUC requirements. Next,
Covered Activities under the Proposed Action, while described in Chapter 2 of this EA, have not been
specifically identified for implementation. That is, the location, timing, and extent of O&M activities
at particular locations has not been determined. Rather, while the HCP will facilitate the Service’s
permitting process as it relates to take of covered species, the HCP does not set forth a detailed
construction program that would aid in the assessment of cumulative effects. As such, Covered
Activities occur in conjunction with construction projects implemented by both public and private
entities throughout the Plan Area over the course of the 30-year time frame of the HCP.

The Association of Bay Area Governments (ABAG) is the regional planning organization that
monitors planning activities of the various Bay Area jurisdictions, develops regional growth forecasts,
and adopts regional plans to help guide and respond to anticipated growth. Plan Bay Area 2040 is
ABAG’s latest regional plan; as of November 2016, it is under public review prior to consideration by
the ABAG Commission. To address the multi-jurisdictional issue noted above ABAG’s Regional
Forecast for Plan Bay Area 2040 report was consulted. According to the report, as part of four-year
update of the Plan Bay Area, ABAG has modified the growth projections for the period of 2010
through 2040, which is approximately the time period of the HCP. The forecast was accepted by the
ABAG Executive Board in January 2016. The report indicates that between 2010 and 2015,
employment in the Bay Area grew by 19 percent, and the pace of population growth accelerated from
a half percent annually between 2000 and 2010 to over 1 percent annually between 2010 and 2015;
this represents a shift from net out-migration of working-aged adults to net in-migration.

ABAG’s report recognizes the cyclic nature of growth in the Bay Area, which is affected by the
national economy, product cycles of the region’s key industrial sectors, and local land use policy.
Between 2010 and 2040, the region is projected to grow from 3.4 million jobs and 7.2 million people
to 4.7 million jobs and 9.5 million people. Following are specific forecasts for the 2010 to 2040 time
period:

- Addition of 1.3 million jobs
- Addition of 2.4 million people
- Addition of 783,000 households
- Addition of 823,000 housing units

Clearly, the projected growth in the Bay Area will result in construction, both infill development and
greenfield development (i.e., previously undeveloped land), in various portions of the Bay Area
which will have varying environmental effects. The environmental effects of the Proposed Action, as
described in Chapter 3, will add to the cumulative environmental effects of other development and
maintenance activities performed by others, resulting from projected growth described in Plan Bay
Area 2040.
4.4.3 Cumulative Effects Analysis

4.4.3.1 Agricultural Resources

The principal cumulative effects concern relative to agricultural resources is conversion of agricultural land to nonagricultural uses. The Bay Area has a significant amount of land in agricultural uses. In 2010, just over half of the region’s approximately 4.5 million acres were classified as agricultural land, as defined by the California Department of Conservation Farmland Mapping and Monitoring Program (California Department of Conservation 2016). Of these 2.3 million acres of agricultural land, over 70 percent (about 1.7 million acres) are used for grazing. Products grown in the Bay Area include field crops, fruit and nut crops, seed crops, vegetable crops and nursery products. Field crops, as well as pasture lands, represent approximately 63 percent of Bay Area agricultural land.

Over the last 50 years, a large amount of agricultural land has been converted to urban uses in the Bay Area. According to the U.S. Census of Agriculture, the region had over 3 million acres of land in farms in 1954. By 2007 (the most recent year for which data is available), land in farms, which includes pasture lands, had decreased by 36 percent, over a million fewer acres than in 1954 (U.S. Department of Agriculture 2012). During this same period, Cropland Harvested decreased by 44 percent. Irrigated land, however, increased by 12 percent, due primarily to very large increases in vineyard planting in Napa and Sonoma counties.

Conversion of agricultural land or open space as a result of development projects is location-specific in nature, and as such, impacts resulting from the Proposed Action would occur primarily at the local level, with regional impacts essentially being the culmination of localized impacts. According to Plan Bay Area 2040, in the next 30 years 4,385 acres of agricultural land that could potentially be converted to urban development. This represents a negligible proportion (0.2 percent) of all agricultural land in the Bay Area. The majority of conversion would occur on grazing lands (2,992 acres or 68 percent of all converted acres) and would be focused in Contra Costa and Solano counties (1,432 and 1,020 acres, respectively). Of the total acres converted, 820 acres are identified as Prime or Unique Farmland, or Farmland of Statewide Importance. Additionally, 471 acres of agricultural land under Williamson Act contact could be converted to urbanized land. The majority of these Williamson Act acres would be in Solano, Alameda, and Santa Clara counties.

As noted in Section 3.1 Agricultural Resources, aboveground upgrades and expansions, and new aboveground facilities, could require footprints of less than three acres. As such, the Proposed Action would result in conversion of small areas of agricultural land to non-agricultural use to support installation of new facilities, expansion of existing facilities, and acquisition of new ROWs. Any such upgrades and expansions occurring on designated agricultural land would result in the permanent conversion of small areas of farmland to non-agricultural use. According to PG&E, permanent conversion of agricultural land will occur at a rate that averages approximately 1 acre per year throughout the Plan Area over the 30-year term of the HCP. However, the majority of agricultural land conversions are temporary. Such levels of land conversion are minor compared to the total acreage of farmlands in the project area. The 30-acre loss of agricultural land over the course of the 30-year term of the HCP, when added to the loss associated with other development projected to occur in the Plan Area, would be a less than cumulatively considerable.
As part of the HCP Conservation Strategy (see Chapter 5 of the HCP), some additional land could be acquired to support habitat mitigation under the proposed HCP; although, as discussed in the HCP, this would affect only grazing lands. Lands would only be acquired from willing sellers, and most lands identified for compensation use would likely continue to be grazed after acquisition, and thus would not undergo a change in uses. Moreover, in contrast to a residential development or other similar projects, the Proposed Action would not result in the loss or conversion of agricultural land to urban or other developed use. For example, under the Proposed Action, any grasslands acquired for mitigation use would be permanently protected from urban development and managed to benefit biological resources in perpetuity. Because of the commitment to manage mitigation lands for biological benefit, the physical attributes of unirrigated grassland that may be acquired under the Proposed Action would not be lost or otherwise altered. Consequently, habitat mitigation is not expected to result in any significant physical impact on agricultural land on an incremental basis, nor would habitat mitigation result in a cumulatively considerable contribution to regional agricultural conversion impacts.

### 4.4.3.2 Air Quality and Climate Change

As discussed in Section 3.2, Air Quality and Climate Change, most of the Plan Area is located in the San Francisco Air Basin and is under the jurisdiction of BAAQMD. The remainder is in the Sacramento Valley Air Basin, under the jurisdiction of the Yolo-Solano Air Quality Management District (YSAQMD).

As described in Section 3.2, most of the Plan Area is in nonattainment for federal and/or state ozone, PM10, PM2.5, and CO standards. Significant cumulative effects are thus considered to exist for these pollutants. The analysis of cumulative effects addresses the potential for emissions of ozone precursors, PM2.5, PM10, or CO under the Proposed Action to constitute a cumulatively considerable contribution to existing effects. The analysis focuses on O&M and minor new construction, which are expected to be the only substantial sources of pollutant emissions associated with the Proposed Action.

**Contribution to Existing Cumulative Air Quality Effects—Ozone, PM2.5, PM10, and CO**

Several types of equipment routinely used in O&M and minor new construction activities emit ozone precursors:

- vehicles—including cars/trucks, light aircraft, and helicopters—used for site access and inspection patrols;
- heavy trucks used to deliver equipment and offhaul debris and excavated materials from work sites;
- heavy construction equipment, such as excavators, graders, backhoes, and compactors; and
- small power equipment, such as chainsaws, walk-behind compactors, and generators.

In addition, painting and paving activities can emit ozone precursor gases. PM (fugitive dust) would be generated during ground-disturbing activities such as vegetation removal, excavation, grading, and
fill placement, and by vehicles and equipment traveling on unpaved roads and offroad. Vehicle and equipment exhaust gases ("tailpipe emissions") would also contribute a small amount of PM and CO.

As discussed in Section 3.2, it is not possible to predict the precise numbers and types of vehicles needed or the duration and frequency of their use at this time, but it is anticipated that PG&E’s activities would continue in approximately their current manner, with the same environmental commitments and regulatory compliance protection in place. The overall activity level would likely increase somewhat over the 30-year permit term as development proceeds and the demand for electricity and natural gas service increase. However, individual activities would continue to be short-term and intermittent. In addition, PG&E’s internal combustion and diesel equipment fleet would become cleaner overall over the long term, as older equipment obsolesces and is replaced with newer equipment. O&M activities associated with emergency response are the same (i.e., the amount and extent) as the other Covered Activities, except with respect to timing and urgency of completing the work.

Although ozone precursors, PM, and CO would be generated from Covered Activities, emissions from individual activities would be minimized with implementation of the AMMs and BPMs, and long-term emissions of all Covered Activities would also be minimized. Moreover, since Covered Activities and O&M activities would be similar to existing conditions and implemented under the No Project Alternative, there would be no net increase in construction or operational emissions. Accordingly, neither construction nor operation of the project would generate net criteria pollutant emissions, relative to the No Project Alternative, in excess of BAAQMD or YSAQMD cumulative thresholds. The Proposed Action is therefore not considered likely to make a cumulatively considerable contribution to existing effects on ozone, PM, or CO levels in the Plan Area.

**Potential for New, Additive Greenhouse Gas Emissions**

As discussed in Section 3.2, GHG emissions contributing to global climate change are attributable in large part to human activities associated with the combustion of fossil fuels, which produces CO₂ as a byproduct. Use of fossil fuels in the transportation sector was the single largest source of GHG emissions in California and in the BAAQMD, accounting for 37 percent of the total GHG emissions in the state in 2014 and 40 percent of the total GHG emissions in the BAAQMD in 2011 (California Air Resources Board 2016; Bay Area Air Quality Management District 2015).

O&M and minor new construction would require transportation and construction activities that use and combust fossil fuels. These transportation and construction activities necessary for project implementation would generate CO₂, CH₄, and N₂O, from diesel and gasoline combustion.

PG&E maintains its own vehicle and heavy equipment fleet. PG&E’s fleet complies with existing air quality standards and would implement future GHG emission standards. Specifically, the company’s Fleet Department maintains company vehicles to ensure that tailpipe emissions are at or below applicable state and federal standards. Additionally, while California’s stricter GHG vehicle emission standards began applying to vehicles manufactured in 2009, PG&E had already started to reduce potential GHG emissions associated with O&M and minor new construction by replacing its fleet with light and heavy vehicles that minimize GHG emissions. PG&E’s fleet includes hybrids, a large number of natural gas-powered vehicles, and a liquefied natural gas heavy duty vehicle. PG&E’s Bay
Area fleet is also operating a new diesel-electric hybrid service truck that is emission free and decreases fuel use by 40 to 60 percent.

Current implementation of PG&E’s existing environmental programs and practices has reduced GHG emissions. According to PG&E, its fleet has minimized the use of petroleum, which has in turn avoided generating tons of CO₂ and other GHG emissions.

State and local agencies have adopted, or are currently drafting, climate action plans and significance thresholds for GHG emissions that contribute to global climate change. BAAQMD has adopted mass emission and efficiency thresholds for land-use development and stationary source projects. YSAQMD was also part of a working group to establish GHG thresholds in the SVAB. These thresholds have not been formally adopted by YSAQMD and are considered draft. Neither BAAQMD’s nor YSAQMD’s thresholds specifically address activities associated with utilities’ infrastructure and operation.

O&M and minor new construction activities would generate small amounts of GHG emissions, principally, if not exclusively, as a component of tailpipe emissions. Vehicle and equipment use would be intermittent and short-term, with substantially more down time than time in operation. Emission reductions would also occur through improved engine efficiency overtime and PG&E’s compliance with air quality district measures and implementation of their own environmental programs and practices. Moreover, as discussed above, since Covered Activities and O&M activities would be similar to existing conditions and implemented under the No Project Alternative, there would be no net increase in construction or operational GHG emissions. Accordingly, neither construction nor operation of the project would generate net GHG emissions, relative to the No Project Alternative that would have a cumulatively considerable impact.

### 4.4.3.3 Biological Resources

The analysis of cumulative impacts on biological resources within the Plan Area is based on a review of ABAG’s regional Plan Bay Area 2040 and an evaluation of the following HCPs and other conservation planning efforts for the Bay Area region: East Alameda Conservation Strategy; East Contra Costa County HCP and NCCP; San Bruno Mountain Area HCP; Santa Clara Valley HCP and NCCP; Santa Rosa Plain Conservation Strategy; and Solano HCP.

Like much of the rest of California, the Plan Area has been subject to cumulative impacts related to the loss and degradation of habitat as a result of land use practices over the past 150 years. Conversion to agricultural use and accelerating urbanization have been the primary factors in the loss of the Plan Area’s native grassland, scrub, woodlands, forests, and riparian/wetland habitats. As a result of this land conversion, of the 402,440-acre Plan Area, 61% of land cover types are in urban areas, 32% are in natural land-cover types (i.e., forest, grassland, riparian, shrubland, wetland, dune, and barren/ruderal), and 7% are in agricultural areas. The Plan Area’s aquatic habitats have been affected by various types of pollutants, including agricultural and petro chemicals, pollutants delivered via urban runoff, and increased sediment delivery resulting from ground disturbance during construction. Habitat modifications and construction activities can affect individual plant and wildlife species and result in reductions in their populations, which can be detrimental to listed or other special-status species. The Proposed Action’s contribution to this cumulative effect would be
minimal compared to the Plan Area, as well as the total acreage associated with the nine Bay Area counties.

PG&E’s Covered Activities would contribute to habitat modifications and impacts on the 31 covered species (including designated critical habitat), as well as other federally-listed species (plants, wildlife, and fish) and migratory birds not covered in the HCP. Development and other construction activities in the Plan Area could also affect habitats and individual plants or wildlife, resulting in cumulative impacts on federally listed species and their habitats across the Plan Area. In compliance with the Endangered Species Act, other lead agencies and project proponents will be required to consult with or request incidental take permits from the Service if the activity is not covered by another approved HCP. As part of those processes, measures similar to those described in the proposed Bay Area O&M HCP would be expected to be implemented to avoid or minimize take of federally listed species and impacts on the species or their habitats. The Proposed Action’s contribution to impacts to the 31 covered species is not expected to preclude survival or recovery of any of the species when considered with other cumulative development within both the Plan Area, as well as the total acreage associated with the nine Bay Area counties. This is because the HCP includes measures which adequately minimize and compensate for Plan Area impacts.

A cumulative loss of modeled habitat for the 31 covered species may occur initially, but it would likely be offset by the restoration, enhancement, and protection of high quality habitat in the Plan Area, similar to the proposed HCP conservation strategy, ensuring a minimal net loss of habitat across the Plan Area over the long term. As part of the HCP conservation strategy, PG&E will provide habitat mitigation at an equivalent or higher-value habitat level in advance of impacts on covered species. PG&E will base its mitigation on acreages estimated and actual habitat losses, and will adjust the timing of acquisitions based on forecasted habitat impacts. Even though the majority of impacts will be from temporary disturbance, PG&E will provide mitigation for both temporary and permanent impacts on modeled habitat.

In addition, AMMs implemented during construction activities, similar to those described in the proposed HCP, would protect known federally listed plant populations and minimize disturbance to federally listed wildlife and migratory birds, reducing take or impacts on individual plants and wildlife. For plants, plant salvage and new plantings in a restoration area, similar to those measures described in the proposed HCP conservation strategy, would offset direct impacts on populations or individuals. Limited operating periods and pre-construction surveys in combination with protection buffers around active wildlife nests, dens, roosts, or other sensitive locations, similar to those described in the proposed HCP, would minimize the potential for direct impacts on wildlife.

In summary, with the Environmental Programs and AMMs described in Section 3.3, Covered Activities under the Proposed Action are not expected to result in a cumulatively considerable contribution to regional loss of natural habitats or impacts on non-covered individual plants or wildlife, and the proposed HCP is expected to result in a net long-term benefit with regard to providing compensatory mitigation to offset cumulative regional habitat loss. It would also result in corollary benefits to common and special-status plants and wildlife using the habitats preserved and protected.
4.4.3.4 Cultural Resources

Throughout California, the Native American cultural legacy, including culturally important sites and traditional cultural practices, has been substantially affected by land management practices over the past century and a half. The nine counties of the Plan Area are no exception, and a significant cumulative impact is considered to exist with regard to loss of cultural resources and cultural heritage. Because they would require ground disturbance, Covered Activities enabled under the Proposed Action would have some potential to contribute to this loss.

As discussed in Section 3.4, Cultural Resources, the principal concern is that the ground disturbance required for some O&M activities and for construction of new infrastructure would have the potential to damage or destroy buried cultural materials. O&M activities disturb comparatively small footprints and primarily affect ROW corridors that have already been disturbed, but there is still some potential for additional disturbance to adversely affect unknown buried resources. However, as Chapter 2 and Section 3.4 describe, PG&E intends to continue its existing environmental program and would implement AMMs, in addition to complying with all federal and state regulations for the protection of cultural resources. Any Covered Activity that would result in ground disturbance would trigger the AEA screening process, would require cultural resources studies in advance of ground disturbance, and would result in AMMs. Consequently, although there is some potential for minor new construction activities under the Proposed Action to contribute to a cumulative loss of cultural resources in the Plan Area, the contribution would be avoided, minimized, and mitigated to the extent practicable. As such, any residual effect would not represent a cumulatively considerable contribution, nor would it result in a cumulatively considerable effect.

4.4.3.5 Environmental Justice

As discussed in Section 3.5, the Proposed Action’s incremental effects related to environmental justice are expected to be minimal. The analysis presented in Section 3.5 considered effects over the entire Plan Area throughout the 30-year permit term, including implementation of PG&E’s existing environmental justice program. The Proposed Action would not result in a cumulatively considerable effect.

4.4.3.6 Geology/Soils and Paleontology

Geology and Soils

Analysis of the Proposed Action’s contribution to cumulative effects related to geology, paleontological resources, and soils focuses on topsoil resources. Accelerating development in the Bay Area over recent decades has contributed to progressive unavailability and loss of topsoil resources, representing a significant cumulative impact in parts of the Plan Area. Areas where topsoil loss has been particularly important include the fringes and suburbs of rapidly expanding suburban communities such as Dublin, San Ramon, Walnut Creek, Fremont, Santa Rosa, Vallejo, Fairfield, Morgan Hill, and Gilroy, which are located adjacent to established urban centers such as San Francisco, Oakland, and Santa Clara.
Loss of topsoil resources is a concern for two reasons. First, topsoil has intrinsic value as part of a healthy ecosystem, recycling nutrients, supporting vegetation, and capturing and to some extent filtering incident precipitation. Topsoil is also essential to support agriculture, so it has economic importance in the still largely agricultural regions of the Bay Area (e.g., Solano County, Sonoma County, Napa County, and southern Santa Clara County). From a cumulative effects perspective, the loss of topsoil as an agricultural resource is related to concerns regarding loss and conversion of agricultural lands, but is distinct in that it focuses specifically on the physical resource itself, rather than the broader perspective of an area’s existing and planned land uses.

As discussed in Section 3.6, Geology/Soils and Paleontology, O&M activities enabled by the Proposed Action would be conducted in or immediately adjacent to existing PG&E ROWs, which have undergone varying degrees of disturbance and thus do not represent an important topsoil resource. As a result, Covered Activities are not expected to make a cumulatively considerable contribution to loss of topsoil resources in the Plan Area.

Minor new construction projects could be sited outside existing ROWs, and could have footprints of as much as several acres, so there is a potential for topsoil to be lost due to erosion as a result of at least some of these activities. Most if not all new facilities would be constructed near existing infrastructure, and some of the sites would likely already be disturbed, offering little topsoil value. Construction on sites contiguous with open space or agricultural land could result in loss of undisturbed topsoil resources. Overall, losses would be small enough that they are evaluated as minor on an activity-by-activity basis with implementation of measures contained in the HCP and PG&E’s existing environmental programs and AMMs, and they are not expected to be cumulatively considerable.

**Paleontological Resources**

As discussed in Section 3.6, Geology/Soils and Paleontology, some of the Plan Area’s geologic units have the potential to contain significant paleontological resources. Many of the Covered Activities that would be enabled by the proposed action would result in some degree of ground disturbance and thus could damage paleontological resources if any are present at the work site. This is most likely to occur where ground disturbance is greater and the work site has not experienced substantial prior disturbance. Thus, the greatest concern focuses on new minor construction, habitat enhancement, restoration, and creation activities that are likely to occur on previously undisturbed or largely undisturbed parcels. In most cases, new minor construction would require preparation of a site-specific geotechnical investigation. The potential for significant effects on paleontological resources as a result of routine O&M activities is lower, because ground disturbance associated with these activities is typically confined to existing ROWs and immediately adjacent areas, which have already undergone some level of disturbance associated with installation and maintenance of existing infrastructure. PG&E’s *Soils and Geology Program* includes a requirement for notification of a staff geologist or contract paleontologist in the event a discovery is made. This current PG&E program entails implementing any prescribed protective measures at a job site where a paleontological discovery is made. As a result, Covered Activities are not expected to make a cumulatively considerable contribution to loss of paleontological resources in the Plan Area.
4.4.3.7 Hydrology and Water Quality

Water resources in the Plan Area are subject to several cumulative effects: progressive modification of natural drainage patterns in much of the nine-county region; groundwater overdraft, particularly in the Delta region of Contra Costa and Solano counties; degradation of surface water quality in a number of drainage systems throughout the Plan Area; and localized degradation of groundwater quality. The Proposed Action would not result in substantial drainage modifications and thus is not expected to make a considerable contribution to cumulative drainage modification effects, nor would it alter patterns of groundwater use or result in new demand for groundwater. This analysis therefore focuses on water quality issues.

Surface Water Quality

As discussed in Section 3.7, Hydrology and Water Quality, the quality of surface waters in the Plan Area varies widely. The San Francisco Bay Regional Water Quality Control Board (SFRWQCB) has classified the San Francisco Bay and many of its tributaries as impaired for various water quality constituents. The Clean Water Act requires that states identify water bodies that do not meet water quality standards (see Regulatory Setting discussion in Section 3.7). Total Maximum Daily Loads (TMDLs) are action plans to restore clean water by examining these water quality problems, identifying sources of pollutants, and specifying actions that create solutions. The TMDL process leads to a "pollution budget" designed to restore the health of a polluted or impaired body of water. The TMDL process provides a quantitative assessment of water quality problems, contributing sources of pollution, and the pollutant load reductions or control actions needed to restore and protect the beneficial uses of an individual waterbody impaired from loading of a particular pollutant. More specifically, a TMDL is defined as the sum of the individual waste load allocations for point sources, load allocations for non-point sources, and natural background such that the capacity of the water body to assimilate pollutant loading (the loading capacity) is not exceeded (40 CFR §130.2). In other words, a TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. This calculation also includes a margin of safety and consideration of seasonal variations. In addition, the TMDL contains the reductions needed to meet water quality standards and allocates those reductions among the pollutant sources in the watershed.

Within the Bay Area region, the 2010 303(d) list (as defined in Regulatory Setting discussion of Section 3.7) includes more than 270 listings in 88 water bodies (State Water Resources Control Board 2016). Water Board staff are currently developing TMDL projects or studies to address more than 160 of these listings. Completed and current TMDL projects in the Bay Area are listed below.

Completed TMDL Projects:
- Guadalupe River Watershed – Mercury
- Napa River – Sediment and Pathogens
- Richardson Bay – Pathogens
- San Francisco Bay – Mercury and PCBs
- Sonoma Creek – Pathogens and Sediment
- Tomales Bay – Mercury and Pathogens
- Urban Creeks – Pesticide Toxicity
- Walker Creek – Mercury
TMDL Projects in Development:

- Butano and Pescadero Creeks – Sediment
- Lagunitas Creek – Sediment
- Napa River – Nutrients
- North San Francisco Bay – Selenium
- San Francisquito Creek – Sediment
- San Pedro Creek and Pacifica State Beach – Indicator Bacteria
- Sonoma Creek – Nutrients
- Suisun Marsh – Low Dissolved Oxygen/Organic Enrichment, Mercury, Nutrients, and Salinity
- Walker Creek – Sediment

TMDLs account for all pollutant sources, including discharges from wastewater treatment facilities; runoff from homes, agriculture, and streets or highways; “toxic hot spots;” and deposition from the air. The specific urban runoff BMPs and level of implementation that will be required in TMDLs will be determined through TMDL development. The amount of pollution reductions anticipated suggests TMDLs will require significant increases in resources applied to urban runoff control and significant changes in scope and approach to urban runoff control programs.

Land development as anticipated in Plan Bay Area 2040 would likely result in incremental increases in the amount of impervious surfaces in the region, such as new paved areas, building rooftops, parking lots, etc. This increase in the amount of impervious surface has the potential to generate additional stormwater pollution in runoff during storm events and could therefore present the potential for accumulation and release of petroleum hydrocarbons, lubricants, sediments, and metals (generated by the wear of automobile parts), which if not managed appropriately could violate water quality standards. The management of landscaped areas would also present the potential for increased runoff and infiltration of herbicides and pesticides. These types of common urban pollutants could be transported in runoff, washed by rainwater from rooftops and landscaped areas into onsite and local drainage networks, and potentially adversely affecting the quality of receiving surface waters or groundwater.

Pollutant concentrations in runoff from a site depend on numerous factors, including ground conditions, intensity and duration of rainfall, and the presence of effective BMPs. In general, existing local stormwater management plans and policies and State Water Board requirements, which implement federal Clean Water Act requirements, would prevent these potential impacts from rising to a level of significance through regulations that minimize the creation of pollution generating surfaces. Clean Water Act Section 402 NPDES MS4 Phase I and Phase II permits, which cover all jurisdictions as well as large institutional users, require stormwater management plans, which in turn require source and treatment control measures. In many cases, stormwater drainage control measures and compliance with RWQCB Municipal Regional Stormwater Permit Order No. 2011-0083 Provision C.3 ( Provision C.3) may already be required by local jurisdictions as standard conditions of approval for building permit applications, while PG&E’s Covered Activities would only be subject to regulation by the CPUC.
Groundwater Quality

As discussed in Section 3.7, groundwater quality in the Plan Area is generally suitable for most urban and agricultural uses, with only local impairments. According to the DWR, groundwater basins that are located close to the San Francisco Bay, such as the northern Santa Clara, southern Sonoma, Petaluma, and Napa valleys, have high TDS and chloride concentrations. Groundwater basins south of the Santa Clara Valley and the shallow aquifer zone within the Petaluma Valley are reported to have elevated levels of nitrate. Groundwater with high TDS, iron, and boron levels make the water unfit for agricultural uses in the Calistoga area of Napa Valley. There are numerous reports of groundwater contamination in the Plan Area; these include contamination from leaking underground storage tanks, the release of fuel hydrocarbons, and spills or persistent leaks of organic solvents at industrial sites.

Groundwater quality tests were conducted throughout the Plan Area by DWR between 1994 and 2000. Water quality test results for the San Francisco Bay hydrologic region showed that 85 percent of the samples met the state’s primary drinking water standards maximum contaminant levels (MCLs). The water quality testing for the San Francisco Bay hydrologic region was conducted on 485 public water supply wells in approximately half of the basins. Contaminants in the water samples included inorganics (36 percent), radioactivity (4 percent), nitrates (37 percent), pesticides (7 percent), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOC) (16 percent). Similar results were found throughout the Plan Area (Department of Water Resources 2003).

Potential Contribution to Cumulative Effects on Water Quality

Increased Sediment Delivery

Many, if not all, Covered Activities enabled under the Proposed Action would result in some degree of ground disturbance, with the potential to increase sediment delivery via runoff to surface water bodies. Increased sediment delivery is a potential concern because it can increase water turbidity, degrade habitat quality for some native species, alter stream function, and increase infrastructure and channel maintenance costs.

As discussed in Chapter 2 and Section 3.7, PG&E intends to continue the company’s existing program of erosion and sediment control measures, and will also continue to comply with requirements of the federal CWA, including preparation of a SWPPP for activities with the potential to disturb more than 1 acre. With these measures in place, sediment generated by individual activities should be effectively reduced; however, erosion and sediment movement would not be entirely eliminated, and sediment delivery could be locally and temporarily increased. The potential for increases would be greater with minor new construction because of the increased extent and duration of disturbance.

Excess sediment load delivered to area waterways would primarily be confined to fine sediment. Fine sediments may be carried long distances in suspension but would eventually drop out of transport in backwaters or when river or stream drainage empties into standing water. Because the duration of increased delivery would be temporary, sediment from different sites would be delivered in discrete pulses, and one pulse would be expected to move through the local system and settle out of transport before the next arrived. Thus, from a short-term water quality perspective, the effects of
increased sediment loading as a result of on land work are not expected to be cumulatively considerable.

Depending on the nature and location of O&M and minor new construction and the degree of success achieved by erosion control measures, the net contribution of sediment to area waterways over the 30-year permit term could vary from almost nil to a more substantial level. However, in light of the continuing protection that would be afforded by PG&E’s water quality program and the requirements of the federal CWA, sediment generated by O&M and minor new construction is not expected to result in a cumulatively considerable contribution to regional water quality degradation in impaired systems over the permit term, nor is the likely level of increase in sediment delivery expected to create a new, significant additive cumulative effect on systems not already identified as impaired.

In-channel work could also increase sediment mobility and water turbidity, with some potential for adverse effects on water quality. However, sediment containment measures would continue to be used for all activities under the Proposed Action, as described in Chapter 2 and Section 3.7. With these measures in place, sediment generated by individual activities should be effectively reduced but would not be entirely eliminated; on some job sites, sediment mobility could be locally and temporarily increased. Moreover, as discussed in Section 3.7, almost any construction below the ordinary high water mark of any stream or wetland would require PG&E either to obtain a permit from the Corps under CWA Section 404, a water quality certification from the RWQCB, and a streambed alteration agreement from CDFW. In light of PG&E’s existing environmental program and AMMs, and the additional protection provided by the expected regulatory agency review processes, water quality effects associated with individual activities are expected to be minor. The long-term additive effect of in-channel work and the Proposed Action’s contribution to regional water quality concerns are also expected to be minor. No cumulatively considerable contribution is expected as a result of in-channel work, nor is the likely level of increase expected to create a significant additive cumulative effect on systems not already identified as impaired.

### Spills and Releases

As discussed in Section 3.9, Public Health and Environmental Hazards, various Covered Activities would entail handling and use of a wide variety of substances that could degrade surface water and/or groundwater quality in the event of a spill, including fuels, lubricants, epoxy and other adhesives, paints, waterproofing compounds, asphalt paving, and herbicides (see discussion in Section 4.4.3.9, below). In light of PG&E’s existing environmental program and AMMs for water quality protection, hazardous materials handling, and herbicide use, and the additional protection provided by the SWPPP requirement, water quality effects related to spills/releases of hazardous materials are expected to be minimal, as discussed in Section 3.7. The potential for a cumulatively considerable contribution to regional water quality degradation in impaired systems is also considered minor, and would be further reduced by regulatory requirements for cleanup and remediation of hazardous materials spills. The likely additive effect is not expected to represent a cumulatively considerable effect.

### 4.4.3.8 Noise and Vibration

The Plan Area includes a diversity of land uses ranging from urban to agricultural and rural. Urban and rapidly developing areas are typically subject to cumulative noise impacts, while agricultural and
rural areas are much less likely to be so impacted. Because of the diversity of noise environments in
the Plan Area, a regional cumulative impact is essentially the ambient noise environment. As noted
in Section 3.8, because the proposed HCP is a 30-year operating conservation program, information
regarding the range of Covered Activities is known, but site-specific information is not. For
individual O&M and minor new construction activities that may occur during the 30-year permit
term, the specific types and number of vehicles and equipment at a given site, and their duration and
frequency of use, are not available. The same is true for activity-specific noise levels. Noise levels
for these activities are expected to be similar, however, to levels for existing O&M and minor new
construction currently implemented by PG&E. In most instances, existing O&M activities are
temporary and sporadic.

As identified above, Covered Activities would be distributed across the Plan Area. Because of their
wide geographic distribution and short-term, intermittent nature, Covered Activities are not expected
to result in a cumulatively considerable effect on noise conditions.

4.4.3.9 Public Health and Environmental Hazards

As discussed in Section 3.9, Public Health and Environmental Hazards, various O&M and minor new
construction activities would entail handling and use of substances meeting the Title 22 definition of
hazardous materials. For example, facilities inspections would require fuels, lubricants, and hydraulic
fluid for the vehicles used to patrol PG&E infrastructure. Maintenance and repair activities would
require vehicle fuels, lubricants, and hydraulic fluid for vehicles and equipment, and could also
require concrete, epoxy, paints, and/or asphalt paving. Minor new construction activities could use
any of the substances identified above for the O&M program, as well as additional paints, adhesives,
waterproofing compounds, and other substances needed for specific projects. Spills or releases of any
of these substances could result in localized contamination and could also contribute to degradation of
surface- and groundwater quality (see related discussion in Section 4.4.3.7, above).

As described in Section 3.7, PG&E complies with all applicable state and federal laws, regulations,
and requirements pertaining to hazardous materials and hazardous wastes, and has an ongoing
hazardous materials safety program that requires staff and contractors to follow BMPs such as:

- fueling and servicing all vehicles offsite;
- to the extent practicable, avoiding or minimizing storage of hazardous substances such as
  paints, solvents, epoxies, etc., at the work site and in the staging area;
- securely storing any hazardous materials that must be kept on the work site in closed
  containers located away from drainage courses, storm drains, and areas of stormwater
  infiltration;
- ensuring that maintenance and construction personnel have been trained in current procedures
  and best available technology (BAT) for spill prevention and cleanup of accidental spills;
- keeping a spill kit or kits at the worksite at all times when hazardous materials are in use, and
  ensuring that all personnel know how to access and use the kit(s); and
stopping work immediately in the event of a hazardous materials spill or release, and implementing appropriate cleanup and remediation measures to protect terrestrial ecosystems, surface water quality and aquatic ecosystems, groundwater quality, and human health.

In addition, for activities with the potential to disturb an area greater than 1 acre, the federal Clean Water Act requires the preparation of a SWPPP that includes a Spill Prevention and Response Plan (see Section 3.7, Hydrology and Water Quality). As described in Section 3.9, the Spill Prevention and Response Plan would identify the hazardous materials to be used during construction; describe measures to prevent, control, and minimize the spillage of hazardous substances; describe transport, storage, and disposal procedures for these substances; and outline procedures to be followed in case of a spill of a hazardous material. SWPPP components, including the Spill Prevention and Response Plan, are under the regulatory oversight of the RWQCB with jurisdiction over the work site.

In light of PG&E’s existing environmental program and AMMs and BMPs, and the additional protection provided by the SWPPP requirement, adverse effects related to spills/releases of hazardous materials are expected to be minimal, as discussed in Section 3.9. To create an additive cumulative effect, multiple spills or releases would need to occur in the same area or in hydrologically connected areas. This is considered unlikely, but could occur because ROWs represent areas where similar activities are repeated over the long term. Thus, there is some, probably minor, potential for additive cumulative effects related to hazardous materials use along PG&E’s ROW corridors. Because of regulatory clean-up and remediation requirements, the additive cumulative effect, if any, is not expected to be cumulatively considerable.

### 4.4.3.10 Visual Resources

As discussed in Section 3.10, Visual Resources, Covered Activities could result in short-term visual effects during construction, including removal of vegetation, alteration of land forms, and introduction of reflective or illuminated objects. Long-term, operational visual effects may also occur as a result of construction of larger or taller structures, some of which may require nighttime illumination for security purposes or may reflect sunlight. While many of the Covered Activities would not be readily visible from beyond the immediate vicinity of a construction site, in other instances—due to close proximity to an urbanized area or a roadway or being located on a prominent hillside—Covered Activities could have a long-term visual effect. However, because of PG&E’s existing environmental program and AMMs included in the HCP, the cumulative effect of Covered Activities is not expected to be cumulatively considerable.

### 4.5 Environmentally Preferable Alternative

NEPA requires identification of an environmentally preferable alternative (40 CFR 1505.2[b]). The environmentally preferable alternative is the alternative that would result in the least damage to the environment and meet the Proposed Action’s purpose and need. With the No Action alternative, PG&E would apply for individual take permits for each individual activity as needed to carry out O&M activities that would result in the take of federally listed species. A regional HCP would not be prepared, as described for the Proposed Action, and the need for consultation with the Service would be determined on a project-by-project basis. O&M activities would continue to be implemented as they currently are, following PG&E’s environmental programs and practices and in compliance with
any permits that are necessary for implementation. The No Action Alternative does not meet the purpose and need of the Proposed Action, which is to: respond to PG&E’s application for a Section 10(a)(1)(B) ITP for the 31 Covered Species (18 wildlife species and 13 plant species) based on the Covered Activities proposed in the HCP; protect and preserve the Covered Species by protecting and enhancing high quality habitat in the Plan Area; conserve the ecosystems that the Covered Species depend on by partnering with other under development and permitted habitat conservation plans in the Bay Area; and ensure the long-term survival of the Covered Species through protection and management of the species and their habitats in the Plan Area. Therefore, the Proposed Action is the environmentally preferable alternative.

4.6 References Cited in this Section


Chapter 5. List of Preparers

The individuals listed below were involved with the preparation of this EA.

5.1 United States Fish and Wildlife Service

Mike Thomas – Division Chief, Conservation Planning

Joshua Emery – Fish and Wildlife Biologist, Endangered Species Division

Sheila Larsen – Senior Staff Biologist (retired)

5.2 North State Resources, Inc.

Timothy Reilly – Principal-in-Charge

Wirt Lanning – Project Manager

Leslie Perry – Environmental Analyst/Biologist

Randy Chafin – Environmental Planner

Connie Carpenter – Environmental Scientist

Jed McLaughlin – Environmental Analyst

Mim Roeder – Cultural Resources Specialist

Kathryn McDonald – Technical Editor

Teri Mooney – GIS Analyst

Sylvia Langford – Desktop Publisher
Pacific Gas & Electric Company Bay Area Operations and Maintenance Habitat Conservation Plan Draft Environmental Assessment

December 2016

Prepared by:
U.S. Fish and Wildlife Service
2800 Cottage Way, W-2650
Sacramento, CA 95825-1846
Contact: Mike Thomas, Division Chief
Conservation Planning Branch
(916) 414-6678

Prepared by:
North State Resources, Inc.
5000 Bechelli Lane, Suite 203
Redding, CA 96002
Contact: Wirt Lanning
PG&E Bay Area Operations and Maintenance Habitat Conservation Plan
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APPENDIX A

Public Draft Habitat Conservation Plan
Appendix B. PG&E Environmental Programs

B.1 Overview

Pacific Gas and Electric Company (PG&E) employs a large and diverse staff of environmental and regulatory compliance professionals whose primary roles are to ensure that activities are completed in compliance with applicable environmental and natural resource laws and regulations. Environmental staff screen and review projects and/or activities when natural resources could be impacted and they routinely develop and prescribe best management practices (BMPs) that are implemented during PG&E’s routine operations and maintenance (O&M) activities. When required, environmental staff obtain ministerial and discretionary permits, and assist in implementing the corresponding permit conditions and BMPs. The following describes PG&E’s practices of how environmental staff review covered activities with the goals of avoiding and minimizing effects to natural resources during the course of conducting O&M activities.

To achieve these goals, PG&E’s overall environmental screening processes can be categorized into four phases: project assessment, environmental screening and review, project refinement, and release to construction (See Figure 1-2 in HCP).

Phase 1 – Project Assessment

During the first phase, PG&E staff (land planners and engineers) evaluates a given project and begin developing the project scope and description. The level of detail in the project description varies based on the activity size (e.g., less detailed for small projects and more detailed for large projects) and an initial assessment of the site conditions and constraints. Typically, a project description for a large capital improvement project, such as electric reconductoring or gas pipeline replacement project includes an evaluation of site access, temporary construction areas, construction footprint, construction schedule, and outage schedule, with the ultimate goal of assessing the environmental impacts and potential discretionary permits and environmental review requirements. The time required developing the project scope and description varies from 1 day to greater than 1 year, with some projects taking 2 years or more.

Phase 2 – Environmental Screening and Review

During the second phase, PG&E’s staff of land planners, biologists, cultural resource specialists, vegetation management staff, and environmental field specialists conducts initial environmental screening and review of the proposed project and associated work activities. Multiple environmental screening processes are used by the various staff supporting the project depending on the line of business (LOB) and type of work. Land planners review for the need to acquire ministerial and discretionary permits as well as ensuring the company has adequate land rights to conduct the work. For example, in areas where PG&E implements a covered activity, the HCP team provides HCP compliance screening. For distribution projects, land planning analysts and land planners evaluate the results of automated environmental assessments (AEA) (e.g., environmental screening) to assess whether small activities may have impacts in particular sensitive areas. On large projects greater
than 0.1 acre, land planners and biologists work closely with project managers and construction crews to review activities for potential impacts, develop the appropriate avoidance and minimization measures (AMM), and acquire the necessary permits or authorizations prior to beginning work. During the screening process, projects and activities are evaluated for potential impacts on wetlands, state and federal waters, and listed or special-status species and their respective habitats. PG&E staff verifies that the necessary land rights are obtained for both temporary and permanent easements. PG&E maintains a comprehensive geographic information system (GIS) that contains all utility facilities, land rights, and an array of landscape scale information to evaluate projects/activities, and uses this system to evaluate all aspects of a project’s scope or description.

**Phase 3 – Project Refinement**

During the third phase, based on the results of the environmental screening and review, PG&E staff (land planners, biologists, field crews, and other specialists) identifies regulatory requirements and other appropriate AMMs and best management practices (BMPs) to avoid and minimize impacts from construction. Based on this information and information from the second phase, the project may be refined or modified to minimize impacts.

**Phase 4 – Environmental Release to Construction**

The fourth phase is a release to construction memoranda. PG&E staff implements an (ERTC) process, or an equivalent procedure, to ensure projects and activities are not released for construction without first complying with all conditions and requirements in the memoranda for compliance requirements, environmental constraints or restrictions.

This screening process, in conjunction with PG&E’s annual environmental awareness training and project-specific tailboard trainings, helps ensure that PG&E avoids and minimizes project impacts and complies with applicable environmental laws and regulations.

**B.2 Specific Programs and Practices**

Additional background on the environmental screening conducted for each resource area is provided below.

**Land Use and Planning Practices**

PG&E employs land planners to ensure that projects are built in compliance with applicable state and federal laws and regulations. PG&E follows compatible land use policies and practices and, when necessary, PG&E consults with local (county and city) jurisdictions concerning land use issues and local agency permitting requirements. PG&E also obtains ministerial permits, such as grading and encroachment permits when necessary.

**Visual Resources Practices**

As part of the standard environmental review process, environmental staff evaluates potential visual impacts when changes in heights or appearance of utility infrastructure could affect the aesthetics of a given facility, as well as the local environment where the facility is located. Most of PG&E’s O&M work does not alter the aesthetic value of the facilities significantly. If a potential visual impact is
identified, the land planner will work with the project manager and engineering team to modify the
design plans to ensure that potential visual impacts are not created and are consistent with zoning,
ordinances and applicable regulations. Measures typically include one or more of the following:

- modifications or changes to the location (siting) of new or replacement facilities;
- modifications or changes to the design of new or replacement facilities;
- revegetation of disturbed areas using methods consistent with its setting.

PG&E minimizes visual disturbance during O&M and construction activities by requiring work crews
to follow BMPs, including maintaining sites in a clean and orderly condition, storing building
materials and equipment in construction staging areas and/or away from public view, and removing
construction debris promptly at regular intervals.

**Biological Resources Program**

PG&E has developed and implemented procedures that are designed to conserve biological resources
and protect sensitive species in the course of performing work. These practices promote conservation
and comply with all federal and state regulations protecting biological resources.

**Biologists**

PG&E employs terrestrial and aquatic biologists to meet PG&E’s regulatory requirements. The
biologists have special expertise in botany, vernal pools, fisheries, wetland delineations, herpetology,
ornithology, mammalogy, and marine biology. Biologists work directly with project managers, land
planners, construction crews, and engineers in the operation, maintenance, and construction of PG&E
infrastructure. The biologists also work directly with O&M staff from electric and gas operations
throughout the service territory.

Biologists ensure regulatory compliance and protection of biological resources. Biologists screen,
review, and carry out complex evaluations that can have differing levels of scope and oversight,
depending on the type of activity, the extent of ground disturbance, the location of utility facilities,
and the proximity to known or suspected biological resources. Typical responsibilities include:

- evaluating activity impacts and effects;
- conducting environmental training and tailboard meetings with crews;
- conducting biological surveys;
- prescribing BMP and protection measures and overseeing their implementation;
- serving as the biological monitor during construction;
- relocating special-status species out of harm’s way at construction sites when necessary and
  under the appropriate authorizations;
- developing appropriate site restoration plans; and
• developing management plans and determining compensatory mitigation needs for projects.

**Methods and Process for Screening**

PG&E’s environmental review, planning, and screening process varies by the specific LOB, with gas and electric distribution activities typically requiring less intensive review and planning than gas or electric transmission activities as these activities are often located in areas of urban and residential uses. Figure 5-2 of the HCP illustrates the existing environmental review process for various types of covered activities. There are five general work processes for reviewing and assessing environmental impacts from PG&E projects. The respective environmental screening groups are responsible for maintaining compliance for their respective LOB.

In general, each of the environmental review groups will do the following procedure for its respective LOB. For most projects presented in Figure 5-2, a team of land planners, biologists, cultural resource specialists, and environmental field specialists will first review, plan, and screen covered activities. PG&E’s biologists review covered activities to evaluate their potential to impact sensitive or protected habitats, wetlands, and waterways. Biological review typically includes reviewing results from the California Natural Diversity Database (CNDDB), mapping locations known to be occupied by special-status plants and wildlife, and reviewing company files, where available, for past biological survey results and reports. In addition, biologists often conduct biological surveys, before, during, and sometimes after activities are completed. To support the biological review process, PG&E maintains an extensive internal GIS system called MapGuide that contains an array of land ownership, aerial imagery, facility, and jurisdictional information and data.

For some smaller activities, PG&E uses an AEA screening tool to screen many of the small electric (e.g., pole replacements) and small gas activities. Projects undergoing AEA review are automatically screened using a variety of data layers (e.g., waterways, CNDDB, serpentine soils, conservation easements, critical habitat, kit fox dens, levees, protected lands, anadromous fish streams, and vernal pools) and then released to construction if no data layers are flagged for manual review. If any AEA data layers are flagged for manual review, the flagged activity will be evaluated further by a land planner or biologist before being released to construction.

Environmental review of vegetation management activities includes a team of land planners, qualified biologists, foresters, arborists, and tree inspectors, who will review, plan, and screen their respective work before work in the field commences.

**Development of Protection Measures**

After the completion of surveys, studies, and analyses, the biologist determines whether a biological resource is known to exist within the area of potential impact. The biologist then develops environmental protection measures to minimize impacts to sensitive resources, including the following list commonly used during construction:

- using the smallest possible construction footprint;
- minimizing ground disturbance in all areas and particularly in sensitive areas such as riparian habitats;
keeping vehicles on existing roads as much as possible;

- maintaining clean worksites;

- implementing measures to control and minimize the spread of noxious weeds by using certified weed-free materials and washing all equipment to remove invasive plants or seeds prior to working in the project site.

- using exclusion fencing or flagging to alert crews to the presence of sensitive habitats and to serve as protection;

- maintaining appropriate exclusion buffers for nesting birds in accordance with PG&E’s Nesting Bird Management Plan

- requiring crews to stay within a designated work area, and/or;

- keeping the removal of vegetation to the minimum required.

**Training**

The biologists provide training to PG&E employees and contractors using three approaches—general biological resources awareness training, Avian Protection Plan/Nesting Bird Management Plan training, and project-specific biological resource trainings. Systematic education of employees and contractors advance the following objectives:

- to aid in the identification of biological resources;

- best practices for working in proximity to biological resources, including nesting birds; and

- steps to take in the event of an inadvertent discovery of a sensitive species.

Trainings related to specific projects are detailed below under construction compliance.

**Construction Compliance**

Prior to construction, all natural resource protection measures are detailed in a project’s ERTC memorandum, indicating that environmental review is complete and that all protection measures are required to be implemented as prescribed.

Construction crews are educated about biological resources that may be present in the project area. Such trainings are tailored to address the unique circumstances of a given project and, at a minimum, cover the following:

- summary of the requirements in the ERTC or other applicable documents;

- verification that the project manager or job foreman is in possession of the ERTC or other applicable document that provides important contact information for the biologists;
- review of the sensitive species discovery protocols;
- summary of the types of sensitive species or natural resources that may be encountered in the field; and
- delineation of all work exclusion zones.

In addition, the biologist or their consulting expert will work closely with the crews in the field to confirm the location and protection of exclusion zones and to coordinate any required biological construction monitoring.

**Geology and Soils Program**

PG&E evaluates the geology and soils at worksites where new or replacement facilities are constructed. The purpose of the investigation is to provide a geologic basis for the development of appropriate project design. Investigations typically consider geologic structure, including primary and secondary seismic hazards as defined by the State of California; soils; slope stability; previous history of excavation and fill placement; earthwork recommendations; and any other topics identified by PG&E’s design engineer(s), the geotechnical engineer, or the project engineering geologist.

**Water Quality Protection Program**

*Overview*

PG&E’s water quality protection program consists of:

- promotion and dissemination of water quality educational materials via training sessions, internal websites, and on job sites as necessary;
- onsite tailboard briefings for jobs requiring environmental oversight;
- BMPs to avoid and minimize effects to water quality; and
- monitoring and reporting of environmental impacts associated with construction or operational activities.

As part of its environmental awareness training program, PG&E includes specific information on protecting water quality, such as legal requirements to protect water quality, work practices that could adversely affect water quality, water quality permitting requirements and thresholds, and BMPs to minimize the potential for water quality effects. A Water Quality Pollution Prevention training program is given to employees who regularly implement water quality BMPs.

BMPs for the protection of surface waters (including water bodies with defined bed/banks as well as vernal pools and swales) are described in PG&E’s *Good Housekeeping Activity Specific Erosion and Sediment Control Plan*. The manual includes a wide variety of measures that are implemented based on site conditions and the nature of the activity. Commonly used measures include the following.

- Use effective BMPs to reduce or prevent pollutants in all water discharges.
When possible, conduct activities near streams, wetlands, or on saturated soils during the dry season. If work is necessary during the rainy season, it should be conducted during dry spells between rain events.

Do not refuel vehicles within 100 feet of wetlands, streams, or other waterways. Vehicles operating adjacent to wetlands and waterways must be inspected and maintained daily to prevent leaks.

If overland access routes are required or excavation and/or other ground disturbing work are within 250 feet of a vernal pool, contact the PG&E Project Biologist for guidance.

Minimize the amount of hazardous materials at the site and store hazardous liquids, wastes, and all chemicals in watertight containers with appropriate secondary containment to prevent any spillage or leakage, or store in a completely enclosed storage shed.

Cover hazardous materials prior to rain, at the end of each day, and during non-work days.

Install, monitor, and maintain a stabilized entrance/exit, ensure that traffic uses the stabilized entrance/exit; and monitor adjacent roadways for tracking.

Do not allow rinse or wash water (concrete rinse, paint wash, etc.) to contact the ground and/or paved surfaces nor allow rinse or wash water to be directed or dumped into any drain inlet or surface water and properly dispose of all rinse and/or wash water.

Monitor, maintain, and prevent discharges from waste disposal containers to the storm drain system or surface waters.

Contain and protect stockpiled waste materials.

Keep spill cleanup kits on-site, with fueling and maintenance vehicles, and accessible at all times.

Train all personnel with regard to the location, use, and contents of the spill kit(s). If safe, stop and clean spills (with absorbents) immediately, notify the Environmental Field Supervisor (EFS), dispose of materials properly, and cover the spill or contaminated area prior to precipitation.

Properly maintain vehicles, clean leaks immediately, and dispose of materials properly. Fuel and maintain vehicles and equipment in a proper, designated area and monitor the area regularly.

Monitor BMPs daily during construction activity and repair, replace, and/or maintain BMPs to correct any deficiencies.

Upon completion, remove temporary, non-biodegradable materials and equipment from the site. Clear debris, construction materials, and contaminants; return drainage ways to their pre-construction slope, line and grade; and cover disturbed soil areas with a combination of temporary and permanent vegetative stabilization measures.
Where appropriate, reseed disturbed areas following the completion of work.

**Use and Disposal of Water**

All activities requiring the use or disposal of water are conducted in compliance with current regulatory requirements. These include the federal Clean Water Act; California’s Porter-Cologne Water Quality Control Act and requirements of the State Water Resources Control Board and Regional Water Quality Control Boards; and local (county and/or city) regulations and policies.

**Storm Water Pollution Prevention Plans**

Under Section 402 of the federal Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permitting process requires all construction projects that disturb more than 1 acre of land to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP). A copy of the SWPPP must be posted at the project site, and a notice of intent to discharge stormwater must be filed with the Regional Water Quality Control Board with jurisdiction over the work site.

A SWPPP includes the following information:

- A description of site characteristics, including runoff and drainage characteristics and soil erosion hazard.

- A description of proposed construction procedures and construction site housekeeping practices, including prohibitions on discharging or washing any of the following materials into streets, shoulder areas, inlets, catch basins, gutters, natural or modified drainages, or agricultural drainages: concrete; solvents and adhesives; thinners; paints; fuels; sawdust; dirt; gasoline; asphalt and concrete saw slurry; and chlorinated water.

- A description of measures that will be implemented for erosion and sediment control, including requirements to:
  - conduct major construction activities involving excavation and spoils haulage during the dry season, to the extent possible;
  - conduct all construction work in accordance with site-specific construction plans that minimize the potential for increased sediment inputs to storm drains and surface waters;
  - grade and stabilize spoils sites to minimize erosion and sediment input to surface waters and generation of airborne particulate matter (see discussions under the Air Quality Program, below); and
  - implement erosion control measures as appropriate to prevent sediment from entering storm drains and surface waters to the extent feasible, including the use of silt fencing or fiber rolls to trap sediments and erosion control blankets on exposed slopes. Note that monofilament materials will not be used in areas known to support covered amphibian or reptile species.
Note that some of these measures overlap with PG&E’s routine water quality BMPs, as described above.

- A Spill Prevention and Response Plan that identifies the hazardous materials to be used during construction; describes measures to prevent, control, and minimize the spillage of hazardous substances; describes transport, storage, and disposal procedures for these substances; and outlines procedures to be followed in case of a spill of a hazardous material.

### Drainage Plans and Restoration of Surface Drainage

PG&E’s typical practice for O&M and minor construction is to implement erosion control during ground-disturbing activities (see discussion of water quality BMPs in Overview above), and to return the site as close as possible to its pre-existing grade once work is completed. Facilities are generally designed to minimize drainage disruption, although in some cases, regulations and the company’s Construction Stormwater Management Program (includes Activity-Specific and Site-Specific Sediment Control Plans) require that a site be graded to provide interior drainage and/or passive water treatment to prevent spills from contaminating surface waters.

For some of its new facilities, PG&E develops a drainage and/or runoff quality control plan. For example, if a grading permit is required from a local jurisdiction (county or city), the terms of the permit may require a drainage plan. The drainage plan goal is to achieve consistency with accepted engineering standards of care, and to ensure that:

- construction earthwork does not adversely modify existing surface drainage patterns; and that

- where surface drainage must be altered to accommodate construction, measures are implemented to:
  - maintain flow in natural, modified, and constructed channels; and
  - ensure that post-construction runoff and groundwater infiltration at the site are not substantially altered.

The plan may also provide for design measures and/or BMPs as appropriate to maintain the quality of runoff waters and waters that infiltrate into the subsurface. Such measures may include passive treatment such as grassy swales or other site-appropriate provisions.

### Cultural Resources Program

PG&E has developed standard practices and implemented procedures that are designed to conserve cultural resources that occur throughout PG&E’s service territory. Cultural resources, whether known or unknown, could be encountered at any time during normal O&M activities associated with generating and delivering energy. PG&E’s standard practices and procedures promote preservation and comply with all federal and state regulations protecting cultural resources.
Cultural Resource Specialists

PG&E employs cultural resource specialists (CRS), all of whom meet the Secretary of the Interior’s Professional Qualification Standards for archaeology or architectural history. The CRS team has extensive experience identifying, evaluating, and treating a wide variety of historic and prehistoric resources using National Register and California Register criteria. CRS work directly with internal project managers, land planners, construction crews, and engineers in the operation, maintenance, and construction of PG&E infrastructure. CRS also work directly with operations and maintenance staff from electric and gas operations and energy supply throughout the service territory.

CRS ensure regulatory compliance and protection of cultural resources. CRS are also active stewards of the cultural resources that exist within PG&E’s properties and rights of ways. CRS screen, review, and carry out studies that can have differing levels of scope and oversight depending on the type of activity, the extent of ground disturbance, the location of utility facilities, and the proximity to known or suspected cultural or archaeological resources. Typical responsibilities include scoping and oversight of resource investigations (e.g., resource inventories, evaluations, and studies), reviewing and preparing technical reports, and managing consultations with the State Historic Preservation Office (SHPO) and other agency stakeholders. CRS staff are the primary staff responsible for developing and maintaining close working relationships with Native American communities throughout PG&E’s service territory.

PG&E is also supported by a team of external experts in the fields of archaeology, architectural history, ethnography, geology and history.

Methods and Process for Screening

PG&E complies with all applicable cultural resource laws and regulations and PG&E has developed standards for providing stewardship of cultural resources. For example, most project-managed ground-disturbing activities are screened by CRS for potential impacts to cultural resources. Project screening also includes consulting PG&E’s confidential geospatial cultural resources database and linked document library, published literature (archaeology, ethnography and history), historic topographic and plat maps, recent listings for the California and National Registers, and publically-available documents such as Environmental Impact Reports and Environmental Impact Statements. Projects with larger ground disturbance that have a greater potential to affect cultural resources are given greater scrutiny and typically require additional study or analysis. Such consideration may include:

- field studies;
- in-depth research (e.g., records searches through the California Historical Resources Information System or CHRIS);
- queries using confidential cultural resources geospatial database as part of both automated and manual environmental screening and reviews;
- application of advanced analytical tools (such as buried site sensitivity modeling);
• consultation with the Native American Heritage Commission, and
• outreach to affected communities.

**Development of Protection Measures**

Where a significant intact resource is known and could be affected, measures are developed and implemented to minimize impacts to sensitive resources. Site protection measures that are routinely implemented include:

• establishing work exclusion zones;
• finding alternate work locations or access routes;
• prohibiting vehicles, staging, or construction within site boundaries;
• erecting temporary construction fencing or hanging flagging to facilitate resource avoidance;
• hand digging holes (as opposed to mechanical auguring) or setting poles, for example, by helicopter to minimize ground disturbance;
• replacing facilities in the same location to minimize ground disturbance;
• assigning an archaeological and/or Native American construction monitor within known or suspected archaeological sites;
• developing an in-field training for presentation to the crews; and
• performing archaeological recovery and interpretation when impacts cannot be avoided.

**Training**

CRS provide training to PG&E employees and contractors using two approaches—a general cultural resources awareness training and project-specific cultural resource trainings. Systematic education of employees and contractors advance the following objectives:

• to provide an understanding of the ethnographic and archaeological setting of PG&E’s facilities, properties, and rights-of-ways;
• to aid in the identification of cultural resources that could be uncovered during ground-disturbing activities;
• to identify best practices for working in proximity to cultural resources; and
• to identify steps to take in the event of an inadvertent discovery of cultural resources or human remains.

Trainings related to specific projects are detailed below under construction compliance.
**Construction Compliance**

The methods, results, and recommendations generated from the screening and development of protection measures are typically presented in PG&E’s Cultural Resources Constraints Report (CRCR) or standard Archaeological Survey Report. Prior to construction, environmental and natural resource protection measures, including those for cultural resource protection, are detailed in a project’s ERTC memorandum, indicating that environmental review is complete and that all protection measures are required to be implemented as prescribed.

Construction crews will be educated about cultural resources that may be present in the project area. Such trainings are tailored to address the unique circumstances of a given project and, at a minimum, cover the following:

- summary of the requirements in the ERTC or other applicable documents;
- verification that the job foreman is in possession of a CRCR, ERTC or other applicable document, such as PG&E’s Cultural Resources Awareness and Response brochure that provides the discovery protocol, including the phone number for the responsible CRS;
- review of the discovery protocols;
- summary of the types of prehistoric and/or historic artifacts/features that may be encountered in the field or at the job site;
- description of the context(s) within which such material may be found. For example, it may be appropriate to note the potential depth of suspected deposits, expectation for changes in soil color/texture, etc.; and
- delineation of all work exclusion zones.

In addition, the CRS or their contractor will work closely with the crews in the field to confirm the location and protection of exclusion zones and to coordinate any archaeological or Native American construction monitoring that may be required.

General cultural resources BMPs required for all PG&E efforts include: minimizing ground disturbance, keeping vehicles on existing roads, leaving artifacts where they are found, reporting potential cultural resources and any accidental damage to resources to the CRS, removing only materials brought onsite, and promoting individual accountability for the avoidance and protection of resources.

If cultural material, such as chipped or ground stone, historic debris, or building foundations is discovered during ground-disturbing activities (other than emergency activities that cannot feasibly be interrupted), all activities will cease within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with PG&E, other appropriate agencies, and tribal representatives. Treatment may include measures such as limiting work, avoiding the site, capping the site, or conducting data recovery excavation.
In the rare event that human remains are discovered, PG&E complies with the requirements of Section 5097.98 of the California Public Resources Code, which stipulates halting further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the County Coroner has been contacted to determine that no investigation of the cause of death is required. If the Coroner determines that the remains are Native American:

1. the Coroner will contact the Native American Heritage Commission;
2. the Native American Heritage Commission will identify the person or persons it believes to be the most likely descendant from the deceased Native American; and
3. the most likely descendant will make recommendations to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods, unless the Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission.

When emergency repairs are needed, PG&E is required to conduct them as rapidly as possible to ensure continuity of service and protect public safety. As a result, it is typically infeasible to incorporate cultural resources studies, avoidance measures, or treatment into the emergency repairs process. However, if PG&E emergency O&M work discovers or disturbs cultural resources, PG&E follows up with appropriate treatment measures to address impacts and avoid additional damage in the future. These may involve conducting recovery excavations, capping the site to avoid further disturbance of artifacts, or other procedures. If a find is determined to be significant, the qualified archaeologist will determine the appropriate parties to contact, and will meet with those parties to determine the appropriate course of action. Significant cultural resource materials recovered are subject to scientific analysis and professional museum curation, and are documented in a report prepared by the qualified archaeologist according to current professional standards.

**Transportation and Circulation Practices**

PG&E implements a variety of traffic control measures and commitments for all O&M and construction activities to ensure that they do not unduly impede traffic flow or affect emergency response. These include the following:

- providing through access for emergency vehicles at all times. If lane closures must occur during the course of construction, local fire and police departments are notified to allow the design of alternative evacuation and emergency access and evacuation routes. PG&E makes every effort to allow emergency service providers adequate lead time to ensure that emergency access and response times are maintained during work periods;

- maintaining access for private roads;

- providing adequate off-road parking and staging for vehicles, equipment, and materials throughout the work period;
restricting all construction parking and staging to right-of-way and pre-approved staging areas, and keeping construction equipment in designated staging areas when not in use;

posting construction warning signs in advance of the construction area and at intersections that provide access to the construction area;

restricting all non-emergency construction traffic, including haul and delivery trucks, to normal daytime business hours, unless a local jurisdiction identifies a need for off-hours routing to avoid impacts on peak-hour commute traffic;

avoiding key commute routes and “rate-limiting” intersections during peak traffic periods, either by traveling different routes or by traveling at non-peak times; and

providing adequate parking for new or expanded facilities.

Noise and Vibration Practices

PG&E makes every feasible effort to comply with local noise and vibration standards. If local standards cannot be met, the company makes every effort to work out a mutually satisfactory compromise for noise abatement/mitigation.

During O&M and construction activities, PG&E project managers and construction leads are responsible for implementing a variety of BMPs as needed, depending on the nature of the activity. Typical measures include:

- conducting work during daytime hours;
- using standard equipment with noise control devices (e.g., mufflers) that meet manufacturers’ specifications;
- using “quiet” equipment (i.e., equipment designed with noise control elements);
- installing portable barriers to shield compressors and other small stationary equipment where necessary;
- installing sound barriers for pile-driving activity, where practicable, by using an acoustic curtain or blanket around the point of impact;
- directing equipment exhaust stacks and vents away from buildings, when feasible;
- routing truck traffic away from noise-sensitive areas, where feasible;
- following a common-sense approach to vehicle use, and encouraging workers to shut off vehicle engines whenever possible;
- limiting pick-up trucks and other small equipment to an idling time of 5 minutes;
Identifying “sensitive receptors” who might be disturbed by construction noise and notifying them in advance of upcoming work; and

- Responding promptly to complaints raised by adjacent residents.

**Air Quality Program**

PG&E complies with all applicable federal and state air quality regulations. The company’s air quality program consists of:

- Promotion and dissemination of air quality educational materials via training sessions, and on job sites as necessary; and

- BMPs to avoid and minimize air quality effects.

As part of its general environmental awareness program, PG&E includes information on air quality, such as legal requirements, vehicle operation restrictions, and BMPs to minimize fugitive dust. Fugitive dust BMPs are typically designed and implemented to meet the requirements of local air quality and could include the following measures:

- The crew shall not allow visible dust to pass beyond the project boundary. The crew shall abate dust by:
  - applying dust suppressants (e.g. water) to area being disturbed and/or have the potential to be disturbed and to storage stockpiles;
  - limiting vehicle speed to and post speed limits (no greater than 15 mph);
  - loading haul trucks with a freeboard (space between top of truck and load) of six inches or greater;
  - covering or applying water to the top of the haul truck load;
  - cleaning-up carryout and trackout at least daily; and
  - washing down vehicles and equipment as necessary and permitted.

- The crew shall not generate dust in amounts that create a nuisance to wildlife or people, particularly where sensitive receptors such as schools and hospitals are located nearby or down wind.

In addition, BMPs are implemented to minimize air pollutant emissions during construction and O&M activities such as the following:

- Encourage construction workers to carpool to the job site to the extent feasible. The ability to develop an effective carpool program for the project will depend upon the proximity of carpool facilities to the area, the geographical commute departure points of construction
workers, and the extent to which carpooling will not adversely affect worker arrival time and the project’s construction schedule.

- Minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time will depend on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for use following start-up. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a “common sense” approach to vehicle use, so that idling is reduced as far as possible below the maximum of 5 consecutive minutes allowed by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a “common sense” approach to vehicle use.

- Maintain construction equipment in proper working conditions in accordance with PG&E standards.

- Minimize construction equipment exhaust by using low-emission or electric construction equipment where feasible. Portable diesel fueled construction equipment with engines 50 hp or larger and manufactured in 2000 or later will be registered under the CARB Statewide Portable Equipment Registration Program.

- Minimize welding and cutting by using compression of mechanical applications where practical and within standards.

- Encourage use of natural gas powered vehicles for passenger cars and light-duty trucks where feasible and available.

- Encourage the recycling of construction waste where feasible.

In addition, PG&E specifically targets reduction of GHG gases, specifically Sulfur Hexafluoride (SF6) emissions, at electric substations. PG&E implements a system-wide SF6 emission reduction program. CARB has adopted the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear sections 95350 to 95359, title 17, California Code of Regulations, which requires that company-wide SF6 emission rate not exceed 1 percent by 2020. Since 1998, PG&E has implemented a programmatic plan to inventory, track, and recycle SF6 inputs, and inventory and monitor system-wide SF6 leakage rates to facilitate timely replacement of leaking breakers. PG&E has improved its leak detection procedures and increased awareness of SF6 issues within the company. X-ray technology is now used to inspect internal circuit breaker components to eliminate dismantling of breakers, reducing SF6 handling and accidental releases. As an active member of EPA’s SF6 Emission Reduction Partnership for Electrical Power Systems, PG&E has focused on reducing SF6 emissions from its transmission and distribution operations and has reduced the SF6 leak rate by 89 percent and absolute SF6 emissions by 83 percent.
Hazardous Materials Program

PG&E complies with applicable state and federal laws, regulations, and requirements pertaining to hazardous materials and hazardous wastes. Relevant regulations include the following, the Federal Toxic Substances Control Act; Clean Water Act; Clean Air Act; Solid Waste Disposal Act; and Comprehensive Environmental Responsibility, Compensation, and Liability Act.

PG&E’s hazardous materials program consists of:

- promotion and dissemination of educational materials via training sessions, and on job sites as necessary;
- implementation of legal protocols for hazardous materials handling to avoid and minimize public, worker, and environmental exposure; and
- monitoring and reporting of environmental impacts associated with construction or ongoing operational activities.

As part of its environmental awareness training program, PG&E includes specific information on hazardous materials, such as definitions of hazardous materials; legal requirements for hazardous materials storage, transportation, and handling; agency oversight; and BMPs to minimize the potential for hazardous materials effects. Following are examples of the types of measures PG&E implements to reduce the potential for spills and releases of hazardous substances during its O&M and construction activities:

- fueling and servicing all vehicles offsite;
- following standard BMPs when handling any hazardous or potentially hazardous substances;
- to the extent practicable, avoiding storage of hazardous substances such as paints, solvents, epoxies, etc., at the work site and in the staging area. If such substances must be stored onsite, quantities are minimized and materials are securely stored in closed containers located away from drainage courses, storm drains, and areas of stormwater infiltration;
- removing litter and construction-related materials from the job site following completion of work;
- ensuring that maintenance and construction personnel have been trained in current procedures and best available technology for spill prevention and cleanup of accidental spills; and
- keeping a spill kit or kits at the worksite at all times when hazardous materials are in use, and ensuring that all personnel know how to access and use the kit(s).

In the event of a spill or release of hazardous materials, work is stopped immediately, and cleanup measures are implemented as necessary to remediate the spill and protect terrestrial ecosystems, surface water quality and aquatic ecosystems, groundwater quality, and human health. Adjacent land uses and emergency responders are notified immediately in the event of a substantial spill or release.
Environmental Justice Program

*Environmental justice* refers to the concept that adverse impacts of both utility and agency decisions should not disproportionately affect disadvantaged communities. PG&E’s environmental justice program includes:

- conducting educational training regarding environmental justice issues;
- promotion and dissemination of environmental justice educational materials throughout the company;
- identifying potentially significant existing and future environmental justice concerns; and
- coordinating and planning outreach to affected interest groups to evaluate potential measures to avoid, minimize, or mitigate environmental justice concerns.

PG&E’s Environmental Policy Department is responsible for implementing the program, and for keeping regulatory agencies apprised of the status of these efforts.