Pacific Gas and Electric Company's

CONTRA COSTA-MORAGA 230 KILOVOLT TRANSMISSION LINE RECONDUCTORING PROJECT

Initial Study/Mitigated Negative Declaration

Final

Prepared for:

The State Water Resources Control Board
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REVISIONS AND ERRATA TO THE DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION (OCTOBER 2013)

This document, pages ERR-1 through ERR-9, provides a comprehensive list of the revisions and errata to the Draft Initial Study/Mitigated Negative Declaration (IS/MND) for the Contra Costa-Moraga 230 Kilovolt (kV) Reconductoring Project (project) dated October 2013. The State Water Resources Control Board (State Water Board) has determined that the engineering refinements and new adjustments to construction practices indicated below do not result in a new avoidable significant effect on the environment, and thus do not trigger recirculation of the Draft IS/MND, per Section 15073.5, Article 6 of the California Code of Regulations. These revisions and errata are summarized as follows:

- Specific engineering refinements identified after publication of the Draft IS/MND and listed below.
    - Two additional temporary helicopter landing zones (Landing Zone 4 and Landing Zone 115);
    - Six additional towers that will receive modifications in the form of cage extensions (Towers 34, 36, 37, 45, 62, and 85); and
    - Two other tower modifications, including one tower that will receive an additional reinforcement in the form of bolt replacements (Tower 42) and one tower where existing switches will be replaced with new switches (Tower 102).
- Comments received during the public review process.
- Additional discussion of electric and magnetic fields (EMF) included in the Project Description and Initial Study sections of the Final IS/MND.
- Minor staff-initiated revisions, including providing further clarification and correcting typographical errors.

The subsections that follow identify the revisions and errata to the Draft IS/MND and are organized by section number. Where appropriate, the changes have been shown in red-line/strikeout, where underlined text indicates additions to the document and stricken text indicates portions of the document that have been deleted. Due to the global nature of a select number of changes to the IS/MND, the below list provides a global description of the change rather than calling out each instance of the change. The Final IS/MND incorporates the changes listed below.

GLOBAL CHANGE LIST

The following changes have been applied to the entire Draft IS/MND, as appropriate:

- The approximate number of towers that would be modified has been changed from 56 to 64 (Pages 1, 5, 6, 9, and 45)
- The approximate number of towers that would receive cage extensions, as well as other above-ground reinforcements, has been changed from 47 to 53 (Pages 1, 9, 16, 44, and 58)

- The replacement of the existing switches at Tower 102 has been included (Pages 1, 9, and 17)

- The construction schedule has been modified to indicate that work would begin tentatively between the fourth quarter of 2014 and the first quarter of 2015, with an energization date in mid-2016 or as soon as possible after project construction (Pages 1, 19, and 144)

- The approximate number of towers that would be modified using a helicopter has been changed from 20 to 26 (Pages 9 and 13)

- The footers have been modified to indicate that the document was prepared in June 2014

- The document has been modified to indicate that this is the Final IS/MND

- Attachment A: Detailed Route Map has been revised to reflect the specific engineering refinements

LIST OF ACRONYMS

The list of acronyms has been updated, as appropriate, to include acronyms that have been defined as part of the changes to the Draft IS/MND.

CHAPTER 1 – PROPOSED MITIGATED NEGATIVE DECLARATION

On Page 2, the box preceding Recreation has been checked.

CHAPTER 3 – PROJECT DESCRIPTION

On Page 9, paragraphs 2 and 3 of the Draft IS/MND have been modified as follows:

> Of the ~~56~~ 64 tower modifications, approximately ~~47~~ 53 would involve cage extensions. Of these cage extensions, approximately 29 would be installed for the purposes of reducing electric and magnetic field (EMF) at ground level, approximately 17 would be installed to ensure compliance with CPUC GO 95 clearance requirements, and the remaining seven would be installed to address both EMF exposure and clearance requirements. A more detailed discussion of EMF is provided in Section 3.6 Electric and Magnetic Fields Summary.
>
> In addition to the cage extensions, approximately eight modifications would involve foundation reinforcement, approximately ~~32~~ 37 would involve the installation of additional steel reinforcing members, ~~and~~ approximately two would receive new switches, and the existing switches within approximately one tower would be replaced.

On Page 9, Footnote 2 of the Draft IS/MND has been modified as follows:

> Cage extensions have been proposed for ~~towers~~ Towers 56 and 57 and, as a result, the cell sites may have to be repositioned following construction. Switches

currently mounted to Tower 102 ~~may~~ will need to be ~~relocated within the tower~~ replaced as part of the project.

On Page 10, Section 3.3.1 Construction Areas of the Draft IS/MND has been modified as follows:

Construction of the project would require the use of equipment by crews at multiple defined, ground-based construction areas. These construction areas include tower work areas, crane work areas, pull sites, landing zones, crossing structures and associated work areas, ~~staging areas,~~ and project-specific access roads. A summary of the types of required construction areas and their projected, approximate average sizes are discussed in the subsections that follow and are provided in Table 1: Construction Area Summary, and Table 2: Preliminary Access Summary Table. Staging of equipment and materials may occur within any of the construction areas. In addition, existing PG&E facilities may be used as staging areas.

On Page 11, Table 1: Construction Area Summary of the Draft IS/MND has been revised.

On Page 11, Footnote 6 of the Draft IS/MND has been modified as follows:

Helicopters may hover and touch down briefly at pull sites and work areas during construction. Helicopters may hover, ~~and~~ land, and refuel at landing zones during construction.

On Page 11, Footnote 7 has been added as follows:

Landing Zone 11B is considered optional and would replace Landing Zone 11A in the instance that this site is not usable for construction. As a result, only one of these landing zones has been included in the acreage calculations.

On Page 12, Table 2: Preliminary Access Summary Table of the Draft IS/MND has been revised.

On Page 13, paragraph 3 of the Draft IS/MND has been modified as follows:

Approximately ~~eight~~ 10 temporary landing zones have been identified for helicopters to stage, load, and unload materials, and refuel. Seven landing zones are located in areas of non-native annual grassland vegetation. One landing zone is located in ruderal vegetation, one landing zone is located in a parking lot, and one landing zone is located within a paved cul-de-sac.

On Page 20, the heading for Section 3.4 of the Draft IS/MND has been modified as follows:

Section 3.4 Anticipated Permits and ~~Approvals~~ Agreements

On Page 20, paragraph 2 of the Draft IS/MND has been modified as follows:

The project qualifies for a Clean Water Act (CWA) Section 404 Nationwide Permit ~~#3~~ #12, subject to verification from the United States (U.S.) Army Corps of Engineers (USACE).

On Page 20, Footnote 13 has been added as follows:

> The ECCC HCP/NCCP inventory area is defined as the area in which impacts would be evaluated and conservation would occur. While the City of Antioch is not a member of the ECCC HCP/NCCP, the city is located within the boundary of the ECCC HCP/NCCP inventory area. As a result, federal and state take authorization will be obtained through the ECCC HCP/NCCP in the City of Antioch.

On Page 21, Table 3: Potential Permits and Agreements of the Draft IS/MND has been revised to better distinguish discretionary permits needed from responsible agencies versus agreements and ministerial permits needed from local, non-responsible agencies.

On Page 22, the following language has been added to paragraph 1 of the IS/MND:

> However, local agencies may rely on this IS/MND for CEQA coverage, as appropriate, for agreements, such as but not limited to access or land right agreements, that may be necessary to carry out the project.

On Page 22, Applicant-Proposed Measure (APM-) AIR-01 has been modified as follows:

> APM-AIR-01: Water or approved dust control products will be applied to all exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, ~~and~~ unpaved access roads, and landing zones) at a rate that maintains the soil moisture content to control fugitive dust. Water will only be applied to graveled areas if dust is visible.

On Page 24, APM-BIO-10 has been modified as follows:

> APM-BIO-10: During the pre-construction surveys, described in APM-BIO-11, a qualified biologist will identify potential San Francisco dusky-footed woodrat houses within 50 feet of project activities. At the discretion of a qualified biologist, an exclusion buffer will be established around any woodrat houses that can be avoided, and these exclusion zones will be flagged or fenced. If impacts to a woodrat house are unavoidable, PG&E will develop a Woodrat ~~Trapping and Relocation~~ Plan, and will coordinate with the CDFW ~~to handle and relocate the San Francisco dusky footed woodrats~~.

On Page 34, APM-REC-01 has been added as follows:

> APM-REC-01: In locations where closures or access restrictions within state, regional, or local recreational facilities are required, PG&E will coordinate with the appropriate agency at least 2 weeks in advance of construction activities to develop a plan for project work within these facilities. This coordination will include providing each facility with a description of the planned construction activities and schedule within the facility, and any planned closures or access restrictions to the facility. If requested, PG&E will post notices at key entrances to each facility to alert recreational users of the planned activities. The State Water Board will be notified of the agreed-upon construction scenario with each facility prior to construction.

On Page 34, APM-REC-02 has been added as follows:

> APM-REC-02: In order to prevent non-project personnel from entering construction areas within recreational facilities, the boundaries of these areas will be clearly demarcated using fencing or other highly visible material. The demarcation will be checked regularly and maintained as needed for the duration of use within the recreational facilities. Signs will be posted at regular intervals along this boundary instructing non-project personnel to avoid entering the active construction site.

On Page 35, APM-TRA-04 has been added as follows:

> APM-TRA-04: To ensure traffic safety where temporary closures of public roads or lanes are necessary but local encroachment permits do not apply, PG&E will coordinate the traffic control measures with the appropriate local agency prior the road and/or lane closures. PG&E will implement the traffic control measures during the temporary road and/or lane closures.

On Pages 35 through 44, Section 3.6 Electric and Magnetic Fields Summary has been added.

CHAPTER 4 – INITIAL STUDY

On Pages 46 through 55, Table 4: Land Cover Type Summary and Table 5: Detailed Land Cover Type Assessment of the Draft IS/MND have been revised.

On Page 71, the following text has been added to paragraph 2 of the Draft IS/MND:

> Insignia biologist Jesse Reebs conducted a 1-day reconnaissance-level survey of Landing Zone 4, its associated access road, and access to Tower 34 on March 13, 2014.

Pages 71 and 72 of the Draft IS/MND have been revised as follows:

> Thus, supplemental surveys of these new construction areas were conducted in 2011 by Heath Bartosh and Nomad botanist Erin McDermott on April 18, May 23, June 21, and September 15. After more construction areas were added in 2012, protocol-level botanical surveys in these locations were conducted by Nomad Ecology senior botanist Heath Bartosh on April, 5, May 16, and September 19, 2013 and botanist Katie Gallagher on June 13, 2013. Botanists Erin McDermott and Annemarie Abbondanzo accompanied Mr. Bartosh on the May and September dates, respectively.
>
> These surveys were conducted during timeframes that were appropriate for the identification of special-status plants with potential to occur in the construction areas. Nearby known reference populations of special-status plants were visited to ensure that the phenological timing of the surveys was correct.

On Page 72, paragraph 2 of the Draft IS/MND has been revised as follows:

> These surveys were conducted during timeframes that were appropriate for the identification of special-status plants with potential to occur in the construction

areas. Nearby known reference populations of special-status plants were visited to ensure that the phenological timing of the surveys was correct.

On Page 72, paragraph 5 of the Draft IS/MND has been revised as follows:

The remainder of the special-status plant species were determined to have no potential to occur or to be unexpected to occur based on a lack of suitable habitat in the construction areas, range restrictions, elevation restrictions, or the fact that they would have been detectable during the spring and summer 2010 ~~and~~, 2011, and 2013 surveys and were not observed.

On Page 73, paragraphs 3 and 4 of the Draft IS/MND has been revised as follows:

In addition to special-status plant species observed during the botanical surveys and described in Attachment D: Special-Status Plant Species and Potential to Occur, ~~39~~ 40 plant species that are considered locally rare were also observed within the vicinity of the CC-Moraga Line during the botanical surveys. A locally rare designation does not warrant protection by the CDFW; however, it may warrant consideration under CEQA Code Section 15125(c) and 15380. Of the ~~39~~ 40 locally rare plant species observed, ~~nine~~ 10 species meet criteria warranting consideration under CEQA. The remaining 30 species are not discussed further in this document. Additional information regarding locally rare plant species is provided in the project's Botanical Resource Survey Report. In addition, four of the ~~nine~~ 10 species are CNPS listed species and, therefore, were also discussed previously in this document. Locally rare species that were observed in the vicinity of the CC-Moraga Line include:

- Contra Costa manzanita, CNPS CRPR 1B.2
- Deltoid balsam root (*Balsamorhiza deltoidea*)
- Glandular big tarplant (*Blepharizonia laxa*)
- Oakland star tulip, CNPS CRPR 4.2
- Hospital Canyon larkspur, CNPS CRPR 1B.2
- Desert olive (*Forestiera pubescens*)
- Yellow mustard (*Guillenia flavescens*)
- Diablo helianthella, CNPS CRPR 1B.2
- Indian tobacco (*Nicotiana quadrivalvis*)
- Hairy flowered buckwheat (*Eriogonum nudum* Douglas ex Benth var. *pubiflorum* Benth)

While all ~~nine~~ 10 species were found within the vicinity of the CC-Moraga Line, only ~~two~~ three—Diablo helianthella, ~~and~~ Oakland star tulip, and hairy flowered buckwheat—were present within 25 feet of the construction areas. A detailed discussion of the botanical resource survey results is included in the project's Botanical Resource Survey Report.

On Page 74, paragraph 1 of the Draft IS/MND has been revised as follows:

The remainder of the special-status and/or locally rare plant species observed during the botanical surveys were not located within construction areas during rare plant surveys conducted in 2010 and 2011. During the 2013 surveys of additional construction areas, a single locally rare plant species—hairy flowered

buckwheat—was observed within Work Area 31. This species is considered an A1 species by the East Bay Chapter of CNPS, which means that it is from two or less botanical regions in Alameda and Contra Costa counties, either currently or historically.

On Page 91, paragraph 1 of the Draft IS/MND has been revised as follows:

Approximately ~~13.4~~ 14.25 acres of construction areas are located within an area designated as delta smelt critical habitat; however, no primary constituent elements (PCEs) are present within these areas and, as such, the construction areas are not located in critical habitat for this species.

On Page 117, paragraph 5 of the Draft IS/MND has been modified as follows:

The amount of temporary ground disturbance would be relatively small—approximately 0.6 acre—at each of the pull sites, work areas, and landing zones, for a maximum of approximately ~~28~~ 29 acres. In addition, a maximum of approximately ~~8.9~~ 9.8 acres of grading and/or mowing is anticipated to occur along access roads and overland access routes.

On Page 118, paragraph 5 of the Draft IS/MND has been modified as follows:

Grading a maximum of approximately ~~37~~ 39 acres would have minimal effects on storm water runoff within a basin with the implementation of the above measures.

On Page 126, the following analysis has been added:

The Black Diamond Mines Regional Preserve Park Office would be located approximately 230 feet from the nearest boundary of Landing Zone 35 and 400 feet from the center of Landing Zone 35. Landing Zone 35 would also be located approximately 400 feet from River Loop Trail. Helicopters are anticipated to generate a maximum noise output of approximately 102 dBA at a distance of 50 feet. Because the helicopter would spend limited time hovering, landing, and refueling at the landing zone (cumulatively about 2 hours per day, broken into several landings across an 8-hour period), the anticipated hourly noise average during helicopter activities at the landing zone would be approximately 86.9 dBA at a distance of 50 feet. Assuming that the noise emissions from helicopter activities would attenuate at a rate of 6 dBA for each doubling of distance from the source, the equivalent 8-hour noise level at the Black Diamond Mines Regional Preserve Park Office and River Loop Trail would be approximately 73.6 dBA, which is below the recommended threshold by U.S. DOT. Further, the noise exposure at the office uses would be temporary and intermittent. Helicopters would be active at the landing zone during refueling and to pick up and drop off materials. As such, noise emissions from helicopter use would have a less-than-significant impact at the Black Diamond Mines Regional Preserve Park Office and River Loop Trail. Nonetheless, in order to alert recreational users of the construction activities within the Black Diamond Mines Regional Preserve, APM-REC-01 would be implemented. This APM would require that PG&E coordinate with the EBRPD at least 2 weeks in advance of construction activities to develop a plan for work within the Black Diamond Mines Regional Preserve.

On Page 133, the response from Question 4.14a of the Draft IS/MND has been changed from Less-Than-Significant Impact to Less-Than-Significant Impact with Mitigation Incorporated. The corresponding heading on Page 133 has also been updated.

On Page 133, paragraph 1 of the Draft IS/MND has been modified as follows:

> As summarized in Table 9: Recreational Facilities Spanned by the Project, ~~T~~the project spans 12 recreational facilities. Temporary closure of a recreational facility due to safety reasons or jurisdictional requirements may be required during construction. Specifically, portions of parks would need to close when construction is underway in those areas. Also, during the reconductoring process, portions of the parks that are spanned by the line may need to close. Closure of park facilities where project construction would occur could increase the use of surrounding recreational facilities. In order to reduce the potential impacts to recreational users from park closures, PG&E would implement APM-REC-01 and APM-REC-02. These measures would require that PG&E coordinate with recreational facilities in advance of construction activities within these facilities, including posting notices at key entrances to the preserve and clearly demarcating the boundary of construction areas. ~~However, a~~Any increase in use of nearby parks due to the project would be brief and temporary, and would have a negligible effect on the condition of nearby parks. Existing recreation facility use would not significantly increase because several recreational areas exist within the vicinity; construction activities would be limited in duration; and most construction crew members would commute to the project. As such, potential temporary closures would not result in increased park deterioration. As a result, there would be a less-than-significant impact on recreational facilities.

On Page 134, Table 9: Recreational Facilities Spanned by the Project has been added.

On Page 136, paragraph 2 of the Draft IS/MND has been revised as follows:

> To avoid and minimize the project's potential impacts on traffic, the required ministerial encroachment permits would be obtained and APM-PS-01 and APM-TRA-04 would be implemented. ~~This~~ These APMs would require PG&E to coordinate with local agencies as required prior to conducting the pulls and to install traffic controls, as appropriate. As a result, impacts would be less than significant with mitigation.

On Page 137, paragraph 1 of the Draft IS/MND has been revised as follows:

> To avoid and minimize potential hazards from the project's design, APM-TRA-03 would require all overland access routes to be demarcated and that travel within construction areas and project-specific access roads/routes to be limited to project personnel only, if warranted for safety. PG&E would also obtain applicable encroachment permits and coordinate with local agencies by implementing APM-PS-01 prior to conducting the pulls. With the implementation of APM-TRA-03, APM-TRA-04, and APM-PS-01, impacts would be less than significant with mitigation.

On Page 137, paragraph 5 of the Draft IS/MND has been revised as follows:

> In addition to obtaining the required encroachment permits, PG&E would conduct additional coordination with local agencies, as needed, by implementing APM-PS-01 prior to conducting the pulls. Accordingly, less-than-significant impacts to alternative transportation would be further minimized by APM-TRA-01, APM-TRA-04, and APM-PS-01.

On Pages 144 and 145, the Draft IS/MND has been revised as follows:

> One project, the Trembath Basin Project, would occur directly adjacent to the Contra Costa-Moraga 230 kV Reconductoring Project; however, the construction timing of this project is undetermined. PG&E's Pittsburg-Tesla 230 kV Reconductoring Project is spanned by the Contra Costa-Moraga 230 kV Reconductoring Project and is currently being constructed. Construction of this project may overlap with the construction of the Contra Costa-Moraga 230 kV Reconductoring Project. ~~However, three~~ Two separate PG&E projects—Contra Costa-Delta Switching Station 230 kV Reconductoring Project and the Oakley Generating Station 230 kV Transmission Line Project—could potentially occur in approximately the same timeframe as the Contra Costa-Moraga 230 kV Reconductoring Project; however, their construction schedules are undetermined at this time. The California Department of Transportation State Route 4 Widening: Hillcrest Project, for which construction is scheduled to occur from fall or winter of 2012 until spring of 2015 is the only other project located within 0.5 mile of the CC-Moraga Line that would have a potentially overlapping construction schedule. These projects would be expected to implement minimization measures similar to those incorporated into the project, as listed in Section 3.5 Applicant-Proposed Measures, including meeting air quality requirements, coordinating work activities with the responsible agencies, and implementing applicable best management practices and APMs. As a result, ~~the project would not have a considerable contribution to cumulative impacts during construction~~ these projects are not expected to result in significant cumulative impacts.

On Page 146, Table 10: Existing, Planned, and Proposed Projects within 5 Miles of the Draft IS/MND has been revised.

CHAPTER 5 – REFERENCES

Page 149 of the Draft IS/MND has been updated to include additional references that have been used to prepare the document.

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LIST OF ACRONYMS

401 Certification	Clean Water Act Section 401 Water Quality Certification
ACS	American Cancer Society
AMA	American Medical Association
amps	amperes
APE	Area of Potential Effect
APM	applicant-proposed measure
AWS	Alameda whipsnake
BAAQMD	Bay Area Air Quality Management District
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
CAISO	California Independent System Operator
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CC-Moraga Line	Contra Costa-Moraga 230 kilovolt transmission line
CCVT	coupling capacitor voltage transformer
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CRLF	California red-legged frog
CSA	Council on Scientific Affairs
CT	state-listed as Threatened
CTS	California tiger salamander
CWA	Clean Water Act
CY	cubic yard
dBA	A-weighted decibel
dbh	diameter at breast height
EBRPD	East Bay Regional Park District
ECCC HCP/NCCP	East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan
ELF	extremely low frequency
EMF	electric and magnetic field
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FE	federally listed as Endangered

FP	fully protected species
FT	federally listed as Threatened
GHG	greenhouse gases
GO	General Order
H&SC	California Health and Safety Code
HMBP	Hazardous Material Business Plan
I-	Interstate
IARC	International Agency for Research on Cancer
Insignia	Insignia Environmental
IPAC	integration protection, automation, and control
IS	Initial Study
kV	kilovolt
kV/m	kilovolts per meter
LOS	level of service
mG	milligauss
MM	mitigation measure
MND	Mitigated Negative Declaration
mph	miles per hour
MT	metric ton
MVA	megavolt amperes
NAHC	California Native American Heritage Commission
NIEHS	National Institute of Environmental Health Sciences
Nomad	Nomad Ecology
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
PCE	primary constituent element
PG&E	Pacific Gas and Electric Company
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PPV	peak particle velocity
RAPID	Research and Public Information Dissemination
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SJKF	San Joaquin kit fox
SO_x	sulfur oxides
SPCC	Spill Prevention, Control, and Countermeasure
SSC	Species of Special Concern
SR-	State Route
State Water Board	State Water Resources Control Board
SWPPP	Storm Water Pollution Prevention Plan
TACs	toxic air contaminants

TPZ	Timberland Production Zone
U.S.	United States
USA	Underground Service Alert
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
VOC	volatile organic compounds
V/m	volts per meter
WHO	World Health Organization
µT	microtesla

GLOSSARY OF TERMS

Aerial Lift Truck (or Bucket Truck/Boom Truck)
A truck fitted with an elevated platform or bucket at the end of a hydraulic lifting system.

Ampacity (Current Carrying Capacity)
The maximum amount of electrical current a conductor or device can carry.

Cage Extension
A structure, composed of multiple steel members connected by fasteners, that is added to the top, middle, or base of an existing steel lattice tower. Cage extensions are typically installed to increase the existing tower's height for the purpose of increasing ground clearance of the attached conductors.

Clipping-In
Attaching a new conductor to insulators following pulling and tensioning activities.

Conductor
Overhead wires suspended from power line poles or towers that carry electricity.

Coupling Capacitor Voltage Transformer (CCVT)
A transformer used in power systems to convert a high-voltage signal to a low-voltage signal.

Crossarms
Steel or wood structures that protrude from power line poles or towers used to suspend conductors.

Crossing Structure
A wooden pole or pair of poles that is installed where the reconductoring activity intersects a roadway, railway, walking path, power line, or other feature in order to prevent the reconductored line from falling onto the intersected feature, in the event of unanticipated loss in conductor tension during the reconductoring process. Crossing structures may be in the form of Y structures or H structures.

Dead-End Structure
To help provide adequate conductor tension, the conductor is taught in segments. Dead-end structures are towers at either end of a taught conductor segment, such that they provide tension support at each end of the wire segment. In contrast, towers that that are not dead-end structures are where wires are only suspended from, and not pulled taught.

Dual Bull Wheel Tensioner (Tensioner)
A piece of equipment used to bring the conductor up to the desired tension.

Flower Pot
A flower pot arrangement is used to install crossing structures at locations where excavation is not preferred or feasible. In a flower pot arrangement, the base of the crossing structure is placed in a large container, rather than being bored into the ground.

Geotechnical Fabric
Permeable fabric, usually made from polyester or polypropylene, which can be used for multiple purposes, such as filtering or draining.

Ground Clearance
The distance between the lowest point of the conductor and the ground surface.

Ground Rod
A copper-coated metal rod that is hammered into the earth and connected to vehicles, equipment, or towers to provide an electrical ground.

Insulator
Ceramic or glass components used to attach the conductor to the crossarm.

Pull Site
A construction area used to stage equipment required for installing and removing conductor.

Reconductor
Replace existing conductor with new conductor.

Shoofly
A temporary power line that is installed during construction that maintains electrical service to a substation while allowing portions of the permanent line to be taken out of service.

Span Length
The length of conductor between two adjacent power line structures or towers.

Steel Lattice Tower
A free-standing framework tower made out of steel used to suspend power line conductor.

Switch
Components mounted to a transmission line structure that allows a portion of a circuit to be taken out of service.

Three-Reel Puller (or Puller)
A piece of heavy equipment used to pull wire through power line structures, generally from one pull site to another.

Traveler (or Roller)
Wheel-shaped hardware that attach to crossarms to allow the conductor to be pulled through each structure easily, thus facilitating the removal of the existing conductor or the pulling of the new conductor to its final tension.

Truck-Mounted Augur
A hydraulic drill mounted on a truck that is used to excavate holes in the ground.

Wire Reel Trailer
A trailer used to carry a reel of conductor.

Unclipping
The process of removing existing conductor from insulators prior to pulling activities.

1 PROPOSED MITIGATED NEGATIVE DECLARATION

Project Name: Contra Costa-Moraga 230 Kilovolt (kV) Reconductoring Project (project)

Project Proponent: Pacific Gas and Electric Company (PG&E)
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245 Market Street, #1076A
San Francisco, CA 94105

Project Location: This project includes modifications to the Contra Costa-Moraga 230 kV transmission line (CC-Moraga Line), an approximately 27-mile line originating at Contra Costa Power Plant Substation, located in Contra Costa County at 3325 Wilbur Avenue in the City of Antioch. The line heads generally southwest and terminates at Moraga Substation, located near the intersection of Lost Valley Drive and Valley View Drive in the City of Orinda.

Project Description: In order to maintain service reliability and meet increasing electric load demands in Contra Costa and Alameda counties, PG&E is proposing to replace the wires on (reconductor) the CC-Moraga Line between Contra Costa Power Plant and Moraga substations. The project includes modifying approximately 64 of 132 existing towers along the line and equipment at Contra Costa Power Plant Substation, Rossmoor Substation, and Moraga Substation to accept the new conductor. The tower modifications include approximately 53 cage extensions as well as other above-ground reinforcements. Foundation reinforcements would be added to approximately eight towers, switches would be added to two towers, and existing switches at one tower would be replaced. PG&E anticipates that construction of the project would take approximately 12 months within an 18-month window. The project is scheduled to begin construction tentatively between the fourth quarter of 2014 and first quarter of 2015, with an energization date in mid-2016 or as soon as possible after project construction.

Finding: This Initial Study (IS)/Mitigated Negative Declaration (MND) evaluates the potential for impacts from construction, operation, and maintenance of the project. Each section within this IS includes a completed checklist from the Governor's Office of Planning and Research California Environmental Quality Act (CEQA) Guidelines, Appendix G (California Code of Regulations Section 21080(c)(2)). This IS concludes that—with the implementation of specialized construction techniques, best management practices (BMPs), and applicant-proposed measures (APMs) identified in this document—the project would not result in significant impacts to the environment.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The project design incorporates APMs to minimize impacts on environmental resources. Consequently, as indicated by the following checklist, only the environmental factors checked would be potentially affected by this project to an extent involving at least one impact that is "less than significant with mitigation incorporated."

☐	Aesthetics	☒	Agriculture and Forestry Resources	☒	Air Quality and Greenhouse Gas Emissions
☒	Biological Resources	☒	Cultural Resources	☒	Geology and Soils
☒	Hazards and Hazardous Materials	☒	Hydrology and Water Quality	☐	Land Use and Planning
☒	Mineral Resources	☒	Noise	☐	Population and Housing
☒	Public Services	☒	Recreation	☒	Transportation and Traffic
☐	Utilities and Service Systems	☒	Mandatory Findings of Significance		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that, although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature Date

2 INTRODUCTION

This section of the IS/MND is structured as an expansion of the CEQA Checklist and has been prepared to address the potential environmental impacts associated with the reconductoring of approximately 27 miles of transmission line and associated tower and substation modifications for the PG&E project. This IS/MND has been prepared in accordance with CEQA (Public Resources Code Section 21000 *et seq.*) and the CEQA Guidelines (California Code of Regulations Section 15000 *et seq.*). An IS is prepared by a lead agency to determine whether a project may have a significant effect on the environment. This IS relies on expert opinion based on facts, technical studies, and other substantial evidence to document its findings.

2.0 LEAD AGENCY

The State Water Resources Control Board (State Water Board) is serving as the Lead Agency under CEQA for this project.

2.1 DOCUMENT ORGANIZATION

This document has been organized to address all of the required content for an IS and negative declaration, in keeping with Sections 15063 and 15071 of the CEQA Guidelines. This document is organized as follows:

1 - Proposed Mitigated Negative Declaration
2 - Introduction
3 - Project Description
4 - Initial Study
    4.0 Existing Conditions
    4.1 Aesthetics
    4.2 Agriculture and Forestry Resources
    4.3 Air Quality and Greenhouse Gas Emissions
    4.4 Biological Resources
    4.5 Cultural Resources
    4.6 Geology and Soils
    4.7 Hazards and Hazardous Materials
    4.8 Hydrology, Water Quality, and Beneficial Uses of Waters of the State
    4.9 Land Use and Planning
    4.10 Mineral Resources
    4.11 Noise
    4.12 Population and Housing
    4.13 Public Services
    4.14 Recreation
    4.15 Transportation and Traffic
    4.16 Utilities and Service Systems
    4.17 Mandatory Findings of Significance
5 - References

3 PROJECT DESCRIPTION

PG&E proposes to "reconductor" (i.e., replace existing conductors—the wires—with new conductors) the existing CC-Moraga Line between Contra Costa Power Plant Substation, located near the City of Antioch, and Moraga Substation, located in the City of Orinda—a distance of approximately 27 miles. PG&E owns and operates the existing CC-Moraga Line. The project consists of raising (adding height to) and/or reinforcing approximately 64 of 132 existing lattice steel towers, replacing conductor (wire) along the entire approximately 27-mile alignment, and modifying Contra Costa Power Plant Substation, Rossmoor Substation, and Moraga Substation to accept the new conductors. The project would be engineered and constructed pursuant to applicable engineering guidelines and standards (e.g., California Public Utilities Commission [CPUC] General Order (GO) Number 95).

Reconductoring the existing CC-Moraga Line would avoid impacts that would be expected to occur with construction of a new transmission line in a new route. In coordination with the reviewing agencies, PG&E has incorporated numerous project modifications to avoid and minimize potential impacts to sensitive wildlife species, drainages, wetlands, and aesthetic resources. PG&E has also incorporated APMs to avoid or minimize potential project-related impacts; these are described in Section 3.5 Applicant-Proposed Measures.

3.0 PURPOSE AND NEED AND PROJECT OBJECTIVES

According to a power flow analysis prepared by PG&E in 2009, emergency capacity of the existing double-circuit CC-Moraga Line could be exceeded under peak summer or worst-case power flow conditions. In order to ensure power transmission during peak conditions, PG&E proposes to replace the existing conductors on (reconductor) the CC-Moraga Line with conductors having an increased emergency rating. The existing CC-Moraga Line has a normal summer rating of 826 amperes (amps) (329 megavolt amperes [MVA]), and an emergency rating of 954 amps (380 MVA). The project would replace the existing conductor with conductor that has a higher ampere capacity (or "ampacity;" i.e., the maximum amount of electrical current a conductor can carry before sustaining immediate or progressive deterioration) of 1,714 amps or 683 MVA, rated to handle a minimum of 1,700 amps under normal summer and emergency conditions.

As a result, the overarching objective of the project is to increase reliability and responsive support in the service area of the CC-Moraga Line during outages within the local system. Specifically, the project would allow PG&E to accomplish the following objectives:

- Help PG&E meet mandates of the California Independent System Operator (CAISO),[1] and
- Increase system reliability during partial system outages.

[1] The CAISO is a non-profit public corporation that operates the majority of California's high-voltage power grid. Its mission is to operate the grid in a reliable and efficient manner, provide fair and open transmission access, promote environmental stewardship, facilitate effective markets, and promote infrastructure development.

3.1 PROJECT LOCATION

The CC-Moraga Line is depicted in Figure 1: Project Location Map. The area surrounding the project is a mix of residential and commercial developments, industrial and agricultural areas, and undeveloped natural habitats, as described in this section.

The CC-Moraga Line leaves Contra Costa Power Plant Substation, located at 3325 Wilbur Avenue in the City of Antioch, and heads generally southwest for approximately 2 miles before passing by the eastern fence line of Contra Costa Substation, located at 2111 Hillcrest Avenue in the City of Antioch. The line then spans an active railroad track and State Route (SR) 4 near Hillcrest Avenue in City of Antioch. From this point, it continues southwest through residential portions of the City of Antioch for approximately 4 miles. The line continues cross-country for approximately 4 miles in a generally southwest direction until entering the City of Clayton. From this point, the line spans residential land uses within the cities of Clayton and Concord, and Clayton Quarry for approximately 3.5 miles. The line continues southwest for approximately 3 miles cross-country, where it enters the City of Walnut Creek. The line continues southwest and spans open space and residential uses for approximately 2.7 miles where it spans Interstate-(I-) 680 and enters unincorporated Contra Costa County. After spanning approximately 1 mile of residential areas, the line re-enters the City of Walnut Creek and travels southwest for approximately 1.6 miles, spanning residential areas and a golf course before entering the City of Lafayette. From this point, the line heads west for approximately 1 mile to the Lafayette/Moraga Regional Trail, then enters the Town of Moraga and turns northwest for approximately 1.6 miles to Campolindo High School. The line then heads southwest for approximately 1.2 miles to the City of Orinda, spanning residential areas and Orinda Oaks Park. From this point, the line continues southwest to Moraga Substation, which is located near the intersection of Lost Valley Drive and Valley View Drive in the City of Orinda.

The existing approximately 27-mile-long, double-circuit line is currently located within an approximately 100-foot-wide right-of-way (ROW) centered on the transmission line. This approximately 315-acre ROW would not be changed as a result of the project, and no new land would be acquired.

3.2 PROJECT COMPONENTS

For the purposes of this document and to better describe the project's location, the project is divided into the following three components:

1. Modifying approximately 64 towers along the existing CC-Moraga Line

2. Reconductoring the entire approximately 27-mile-long CC-Moraga Line between Contra Costa Power Plant Substation and Moraga Substation

3. Modifying Contra Costa Power Plant Substation, Rossmoor Substation, and Moraga Substation to accept the new conductors

The locations of these components are depicted in Figure 1: Project Location Map and Attachment A: Detailed Route Map, and are described in more detail below.

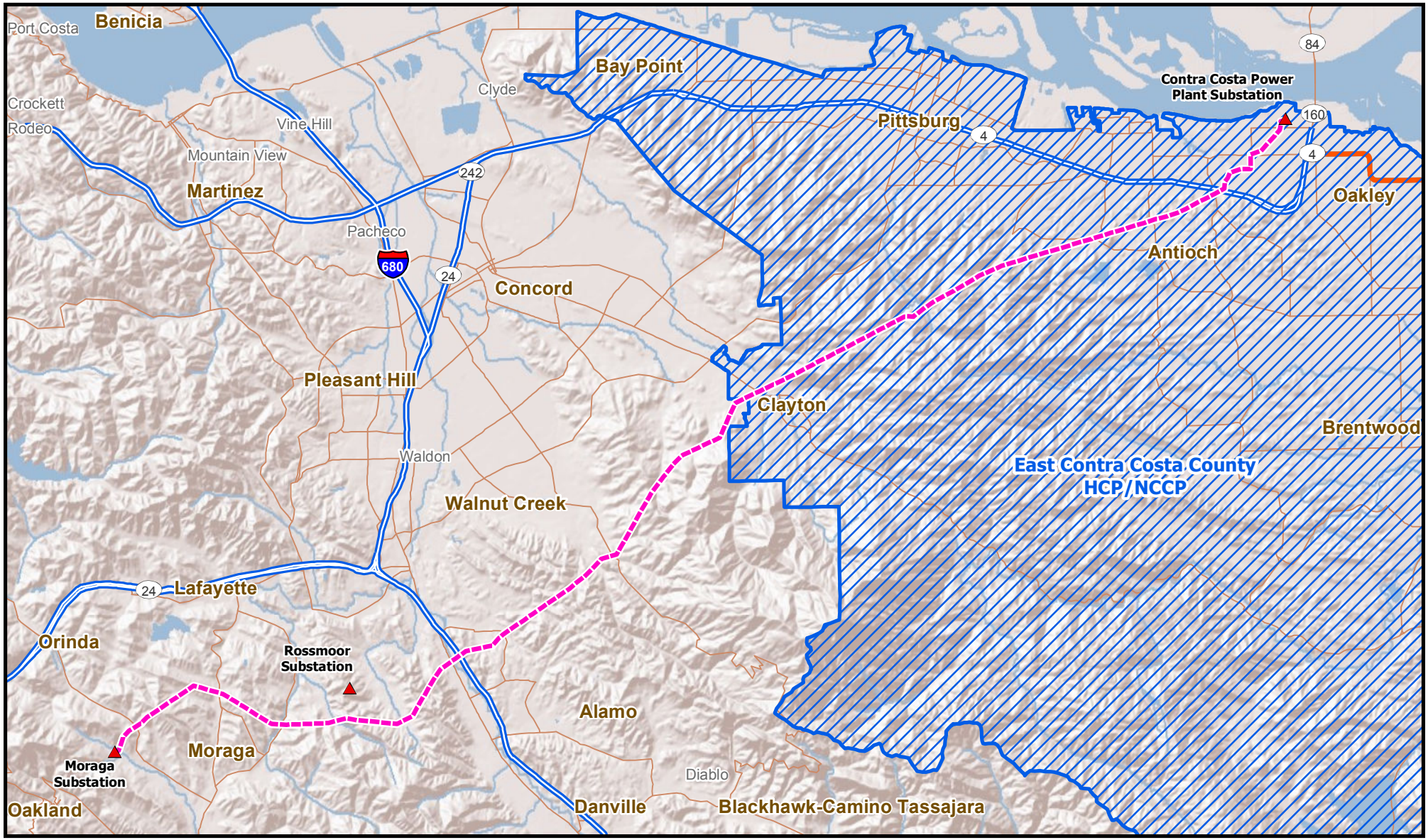

Figure 1: Project Location Map

Contra Costa-Moraga 230 kV Reconductoring Project

Contra Costa-Moraga 230 kV Line

Existing Substation

East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan

Pacific Gas and Electric Company

INSIGNIA ENVIRONMENTAL

1:160,000

0 2 4 8 Miles

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1/31/2012

3.2.0 Tower Modifications

The existing CC-Moraga Line's double-circuit configuration would be maintained under the project. Because work on the transmission line would be limited to modifications of existing towers and conductor replacement, no modifications to the existing alignment would occur and no towers would be removed or installed. The CC-Moraga Line has no additional linear infrastructure collocated on the existing towers, and no new linear facilities would be added.[2]

The CC-Moraga Line is composed of approximately 132 lattice steel towers with bases that range in size from approximately 20 feet by 20 feet to 45 feet by 45 feet. Each tower is installed on four individual concrete-poured foundations. The towers along the line vary in height between approximately 44 feet and 168 feet tall. Four types of tower modifications—cage extensions, foundation reinforcement, additional reinforcement, and switch installation—would be performed prior to reconductoring. Of the 64 tower modifications, approximately 53 would involve cage extensions. Of these cage extensions, approximately 29 would be installed for the purposes of reducing electric and magnetic field (EMF) at ground level, approximately 17 would be installed to ensure compliance with CPUC GO 95 clearance requirements, and the remaining seven would be installed to address both EMF exposure and clearance requirements. A more detailed discussion of EMF is provided in Section 3.6 Electric and Magnetic Fields Summary.

In addition to the cage extensions, approximately eight modifications would involve foundation reinforcement, approximately 37 would involve the installation of additional steel reinforcing members, approximately two would receive new switches, and the existing switches within one tower would be replaced. A helicopter would be used for approximately 26 of the tower modifications. The remaining tower modifications would be performed from project-specific work areas or public roadways. A detailed description of each type of modification has been included in Section 3.3.2 Methods.

3.2.1 Reconductoring

During the reconductoring process, the existing overhead conductors would be replaced with new conductors to increase the capacity of the line.[3] The CC-Moraga Line would maintain its current double-circuit configuration. During the reconductoring process, all existing insulators would be replaced with new, grey, ceramic, non-specular insulators. The new conductors would be installed with an average span length of approximately 1,100 feet and would maintain a minimum ground clearance of 27 feet at maximum operating temperature. The horizontal and vertical spacing between conductors would be approximately 29 and 16.5 feet, respectively.

[2] Towers 56, 57, and 89 along the CC-Moraga Line have cell sites mounted to them. These facilities provide wireless voice and data services in the area. Cage extensions have been proposed for Towers 56 and 57 and, as a result, the cell sites may have to be repositioned following construction. Switches currently mounted to Tower 102 will need to be replaced as part of the project.

[3] Each circuit along the transmission line requires three individual conductors. Due to the double-circuit configuration of the existing line, six conductors would be replaced as part of the project.

3.2.2 Substation Modifications

Modifications to Contra Costa Power Plant Substation, Rossmoor Substation, and Moraga Substation would be minor, and would involve the replacement of existing equipment and structures. All work associated with these modifications would be performed within existing fence lines and on PG&E-owned property.

- **Contra Costa Power Plant Substation.** At Contra Costa Power Plant Substation, PG&E would replace three 1,200-amp switches with 2,000-amp switches. In addition, PG&E would install new line traps, a coupling capacitor voltage transformer (CCVT), and associated structures. All indoor relays would be replaced by standard integration protection, automation, and control equipment (IPAC).

- **Rossmoor Substation.** At Rossmoor Substation, PG&E would replace four 1,200-amp switches with 2,000-amp switches. Also, PG&E would install new a CCVT, line traps, and associated structures, and would replace indoor relays with standard IPAC.

- **Moraga Substation.** At Moraga Substation, PG&E would replace three 1,200-amp switches with 2,000-amp switches, replace existing structures with new structures, and replace indoor relays with standard IPAC.

3.3 CONSTRUCTION

Prior to the start of ground-disturbing activities, PG&E would contact Underground Service Alert (USA) to identify underground utilities in the immediate area.

3.3.1 Construction Areas

Construction of the project would require the use of equipment by crews at multiple defined, ground-based construction areas. These construction areas include tower work areas, crane work areas, pull sites, landing zones, crossing structures and associated work areas, and project-specific access roads. A summary of the types of required construction areas and their projected, approximate average sizes are discussed in the subsections that follow and are provided in Table 1: Construction Area Summary, and Table 2: Preliminary Access Summary Table. Staging of equipment and materials may occur within any of the construction areas. In addition, existing PG&E facilities may be used as staging areas.

Work Areas

As depicted in Attachment A: Detailed Route Map, approximately 29 work areas have been identified for use during project construction activities, including tower work and equipment/materials staging. In some instances, cage extensions would be assembled at the base of the tower, within a portion of the work area. The footprint of the tower may also be used to store/stage materials and equipment. These work areas would typically require between approximately 0.06 and 0.38 acre. One of the planned work areas—near the end of Ptarmigan Drive in Walnut Creek—would accommodate the potential installation of a temporary shoofly,[4] while another—also located near the end of Ptarmigan Drive—would mainly be a temporary access road improvement/widening. Two work areas—Work Area/Pull Site 1 and Work Area/Pull Site 11—would also be used to help facilitate the removal and installation of

[4] A shoofly is a temporary power line that is installed during construction. This temporary line maintains electrical service to a substation while allowing portions of the permanent line to be taken out of service.

Table 1: Construction Area Summary

Construction Area Type[5]	Approximate Number of Sites	Required Improvements	Equipment[6]	Approximate Total Area (acres)
Work Area	29	Work Areas would average approximately 0.47 acre in size. Application of geotechnical fabric and gravel might be temporarily required. Vegetation removal, mowing, and grading are anticipated at approximately four work areas.	Flatbed truck, crane, portable generator, and 4x4 pickup trucks	12.5
Crane Work Area	20	Crane Work Areas would average approximately 0.14 acre in size. Because the crane work areas would be located within existing paved roadways, road shoulders, and/or sidewalks, no improvement would be required.	Flatbed truck, crane, portable generator, and 4x4 pickup trucks	2.8
Landing Zone	10[7]	Landing Zones would be between approximately 0.5 to 1 acre in size. Application of geotechnical fabric and gravel might be temporarily required. Mowing would be required at some locations.	Fuel truck, delivery trucks, and 4x4 pickup trucks	5.4
Pull Site	16	Pull sites would average approximately 0.7 acre in size. Application of geotechnical fabric and gravel might be temporarily required. Vegetation mowing and/or minor grading is anticipated at approximately 10 of the 16 sites.	Small mobile crane, three-reel puller, dual bull wheel tensioner, wire reel trailer, hydraulic press, aerial lift truck, rigging/line truck, portable generator, delivery trucks, and 4x4 pickup trucks	10.2
Crossing Structure Work Area	190	Crossing Structure Work Areas would be approximately 0.01 acre in size. Minimal vegetation removal, mowing, and/or grading may be required.	Line truck with auger, 4x4 pickup truck, and delivery truck	2.0
Total	263	- -	- -	32.9

Note: This information is preliminary and subject to adjustment based on final engineering, ground conditions at the time of construction, and other factors.

[5] Some construction areas would support multiple functions during construction.

[6] Helicopters may hover and touch down briefly at pull sites and work areas during construction. Helicopters may hover, land, and refuel at landing zones during construction.

[7] Landing Zone 11B is considered optional and would replace Landing Zone 11A in the instance that this site is not usable for construction. As a result, only one of these landing zones has been included in the acreage calculations.

Table 2: Preliminary Access Summary Table

Type of Road/Route	Road Surface/ Improvements	Approximate Width (feet)	Approximate Length		Total Approximate Area (acres)
			(feet)	(miles)	
Existing Paved[8]	No improvements are anticipated	12	31,000	5.7	8.4
Gravel/Dirt	Some gravel roads may need to be improved to accommodate safe passage. Dirt roads may require some stabilization using rock, mats, or plates. Some grading and mowing may also occur along dirt access roads. Improvements would typically take place within the existing road footprint.	12	31,750	6.0	8.5
Overland	Some grading, mowing, and/or stabilization with rock, mats, or plates may occur, as necessary.	12	4,700	0.9	1.3
Total	- -	- -	67,450	12.8	18.2

Note: This information is preliminary and subject to adjustment based final engineering, ground conditions at the time of construction, and other factors. For the purposes of determining environmental impacts from the project under CEQA, this table is adequate.

[8] Public roadways have not been included in Table 2: Preliminary Access Summary Table. The access roads/routes in this table would be used to access project components and construction areas from public roadways.

conductor. These work areas would be larger, requiring between 3.1 and 6.3 acres. Alternative work areas near Contra Costa Substation have been identified to help provide flexibility of construction relative to known burrowing owl occurrences near the Contra Costa Substation. All work area locations are preliminary and may need to be adjusted somewhat due to conditions in the field at the time of construction. Vegetation removal, mowing, and grading would be necessary at some of the work areas for fire prevention, vehicle movement, and to create a safe and level surface. In some locations, geotechnical fabric and gravel may be temporarily applied within the work area. APM-HYD-04 will be followed if this situation arises (see Section 3.5 Applicant-Proposed Measures). As depicted in Attachment A: Detailed Route Map, the work areas would typically be accessed via existing access roads or overland access routes. PG&E may also use its existing facility near Contra Costa Power Plant Substation to stage materials and assemble the steel cage extensions. This previously disturbed area is approximately 4.6 acres in size.

Crane Work Areas

As depicted in Attachment A: Detailed Route Map, approximately 20 crane work areas have been identified for use during tower work.[9] These crane work areas would be limited to existing paved roads and would be up to approximately 0.14 acre in size (approximately 200 feet along the length of the road). No vegetation removal, mowing, or grading would be necessary at these locations as they would be limited to existing paved roads, road shoulders, and/or sidewalks. As depicted in Attachment A: Detailed Route Map, the work areas would be accessed via existing access roads or public roadways.

Helicopter Landing Zones

Helicopters would be used during construction to assist with tower modifications and the reconductoring process. Approximately 10 temporary landing zones have been identified for helicopters to stage, load and unload materials, and refuel. Seven landing zones are located in areas of non-native annual grassland vegetation. One landing zone is located in ruderal vegetation, one landing zone is located in a parking lot, and one landing zone is located within a paved cul-de-sac. Alternative landing zones at Contra Costa Substation have been identified to help provide flexibility of construction relative to known burrowing owl occurrences near the Contra Costa Substation. All landing zone locations are preliminary and may need to be adjusted somewhat due to conditions in the field at the time of construction. These landing zones would range in size from approximately 0.5 to 1 acre. Site preparation for the landing zones would be limited to mowing and/or the application of geotechnical fabric and gravel, with no grading or other improvements anticipated.

Approximately 26 towers have been preliminarily identified as towers where modifications would be performed by helicopter. Additional helicopter use might be required, but that would not be determined until the completion of final engineering. Helicopters, similar to the Huey 204 or Super 206, would be used for the tower modifications, and for bringing in all necessary tools and equipment where the use of a crane is not possible. As much as practicable, flight paths would be limited to the existing transmission line ROW.

[9] All crane work area locations are preliminary and may need to be adjusted somewhat due to conditions in the field at the time of construction.

Pull Sites

Pull sites are construction areas used for removal of existing conductors and the placement of new conductors along the transmission line. A list of construction equipment associated with conductor removal and replacement at pull sites is provided in Table 1: Construction Area Summary. Pull sites must be located in line with the conductors and are typically located within relatively flat areas. Approximately 16 pull sites have been preliminarily identified, as depicted on Attachment A: Detailed Route Map. The pull sites would typically be rectangular in shape and would occupy between 0.2 acre and 1.6 acres; however, the average pull site would be approximately 0.7 acre.

Crossing Structure Work Areas

During construction, approximately 190 crossing structures would be installed to protect utility crossings, roads, railroads, or pedestrian areas in the event of an unanticipated conductor break or loss of conductor tension. As described in Section 3.3.2 Methods, during construction alternative methods to installing crossing structures may be implemented to avoid ground disturbance. Crossing structure work areas would be established to accommodate the installation of the crossing structures, the locations of which are depicted in Attachment A: Detailed Route Map. In most instances, the use of these work areas would be short in duration, lasting between 1 and 2 days, and equipment would be staged on existing roads or road shoulders. Ground disturbance within each work area would be limited to a small excavation to install the wooden pole, equipment staging, and parking. No grading or vegetation removal is anticipated. Crossing structure work areas would typically be approximately 0.01 acre each, encompassing a total area of approximately 2.0 acres project-wide.

Project Access

To speed construction and minimize intrusion and ground disturbance, tower modification work would be conducted by helicopter to the extent practicable. In some areas, such as more developed or urban areas, existing land uses would preclude construction by helicopter, and ground-based crews and equipment would perform the work. A network of existing access roads and overland access routes would be used to supplement public roads to reach these areas. A preliminary summary of the access roads currently identified for this project has been included in Table 2: Preliminary Access Summary Table.

Existing Access Roads

As preliminarily depicted in Attachment A: Detailed Route Map, approximately 12.0 miles of existing paved, gravel, and dirt access roads would be used during construction to access towers and construction areas. Typically, these existing roads would be approximately 12 feet wide. The existing paved access roads would not typically require any improvement prior to construction. Existing gravel and dirt access roads may require some improvement prior to use to accommodate safe passage. These improvements may include vegetation removal; minor grading; and/or stabilization using rock, mats, or plates. Improvements would typically be performed within the existing roadway footprint. No new permanent access roads would be constructed as part of the project.

Overland Access Routes

Temporary overland access routes would be required to access construction areas not currently accessible on an existing paved, gravel, or dirt road. These approximately 12-foot-wide routes typically would require mowing, if necessary, to create a visible driving surface and protect against fires. Some routes may also require stabilization using rock, mats, and/or plates prior to

use. The preliminary locations of these overland routes are depicted in Attachment A: Detailed Route Map, although they may change due to final engineering, ground conditions at the time of construction, and other factors. Following the completion of the project, the temporary overland access routes would be allowed to revegetate naturally. A total of approximately 1.3 acres would be needed for use as overland access.

Substation Access

Contra Costa Power Plant Substation, Rossmoor Substation, and Moraga Substation would be accessed on existing paved driveways. No improvements would be made to these paved roads.

3.3.2 Methods

Site Development

During the site development process, existing access roads, overland access routes, and construction areas would be improved/established, as discussed in Section 3.3.1 Construction Areas. Because the majority of the existing CC-Moraga Line's ROW is currently clear of trees, limited tree trimming and removal is anticipated.

Grounding

Temporary personal protection grounds would be installed near the base of each tower during construction activities. Approximately 5/8-inch-diameter copper ground rods would be driven deep enough to reach firm ground (approximately 4 to 6 feet deep) so that approximately 1 foot of the rod would protrude above ground level during construction. Grounding equipment would be connected to the ground rods during construction. The ground rods would remain in the ground throughout the construction period and would be removed when project activities are complete. Ground rods would also be installed near reel pullers, tensioner trucks, and any other equipment that would be operated near an energized conductor.

Crossing Structure Installation

Although uncommon, conductors may fall during the reconductoring process. As a protection measure, crossing structures (constructed of pairs of upright wood poles with a third pole serving as a cross-bar) would be placed at road and railroad crossings, and at locations where the existing or new conductor could come into contact with other power or communication lines or vehicular and/or pedestrian traffic. The cross-bar of the structure suspends sagging lines and prevents contact with the road or other protected features. Where crossing structures would be used to protect overhead transmission or distribution lines, netting would be added to the crossing structures. Steel cable would be installed to hold the nets taut, and the wood poles would be anchored with guy lines.

A line truck would be used to auger an approximately 2-foot-diameter, 8-foot-deep hole. Wood poles would then be set on each side of a crossing. The void between the pole and the excavation would then be backfilled and the surrounding area would be compacted. Where required, anchors would be installed directly into the ground approximately 10 to 15 feet from each pole and would not require excavation.

Crossing structures would be installed in disturbed areas and from paved roads, whenever possible. In some instances, crossing structure sites would be accessed from existing dirt roads or pre-determined overland access routes, and installed with minimal soil disturbance. In

addition, where possible, PG&E would use staged equipment (e.g., bucket trucks) to function as crossing structures or install the crossing structures in a "flower pot" arrangement,[10] thus eliminating the need for excavation. As an alternative to installing crossing structures, PG&E could use flaggers to hold traffic for brief periods of time while the conductors are installed. Although these alternative methods would not cause any ground disturbance, this analysis conservatively assumes some minimal ground disturbance at all crossing structure locations, as described below.

Crossing structures would be installed along a single pull section at a time.[11] Following the reconductoring process within each pull section, the crossing structure poles would be removed, the remaining holes backfilled, and the surrounding area compacted and restored to pre-construction conditions. The crossing structures would then be reused along the next pull section to be reconductored.

Other than minor temporary grading during construction area preparation, the installation of screw anchors during foundation reinforcement, the installation of piers to support the operating platforms for the new switches, and boring of holes for the temporary installation of crossing structures would be the only project activities that would be expected to disturb soil below the immediate surface layer is the. A typical USA investigation would be conducted prior to any boring activities. If a USA investigation finds that underground utilities are located in the immediate vicinity of crossing structure locations, a vacuum truck would be used to excavate an approximately 1-foot-diameter hole in order to identify the exact location of the underground utility, and the crossing structure location would be relocated to avoid the utility feature, as necessary.

In addition, the presence of abandoned underground oil and petroleum product pipelines in the project area between Towers 11 and 12 (parallel to or within the Burlington Northern-Santa Fe Railroad ROW) is known to be possible. These pipelines would not be found in a typical USA investigation. Chevron, and its consulting firm SAIC, Inc. have responsibility for these pipelines. As described in APM-HAZ-05 in Section 3.5 Applicant-Proposed Measures, PG&E would involve SAIC, Inc. engineers in affected locations so that these pipelines can be avoided to the greatest extent possible, and to minimize impacts if they are encountered.

Tower Modifications

Cage extensions, foundation reinforcement, additional reinforcement, and switch installation are four types of tower modifications that would be installed prior to the new conductors. A detailed discussion of these modifications is provided in the subsections that follow.

Cage Extensions

Cage extensions would be installed at approximately 53 towers to accommodate the new conductors. Raising the towers would typically involve adding a cage extension to the top, middle, or base of the existing towers to increase the tower height by approximately 16.5 feet. Work would begin by preparing the towers to accept the extension. The towers would be accessed on foot or by using a crane, pickup truck, or helicopter to install the necessary braces and additional plates.

[10] In a flower pot arrangement, the crossing structure is placed in a large container to avoid auguring the pole into the ground.

[11] A pull section is defined as the portion of the transmission line between two adjacent pull sites.

The cage extensions would typically be assembled at a work area or landing zone and then delivered to the appropriate tower. In some instances, cage extensions would be assembled at the base of the tower, within a portion of the work area. The footprint of the tower may also be used for the staging/storage of equipment and materials. A helicopter, typically a Huey 204 or Super 206, would be used to facilitate tower modifications, as well as to bring in all necessary tools and equipment. As much as feasible, cranes would likely be used to install cage extensions for towers located in urban areas, although topography may preclude use of a crane in some cases. If a crane is used, existing public roads and/or designated project-specific access roads/routes would be used to deliver the materials.

After the cage extension is attached to the tower and if applicable, crew members on the tower would remove the existing bottom set of crossarms from the tower, and the existing conductor would be reattached to the tower. If necessary, the old crossarms would be removed from the project area by helicopter or crane and flatbed truck, and disposed of or recycled in accordance with applicable laws.

Foundation Reinforcement

Approximately eight towers would receive foundation reinforcements during construction. Foundation reinforcements would typically involve adding additional steel plates/members to the existing towers legs. These additional plates/members would then be connected to screw anchors driven directly into the ground near the existing tower foundations to a depth of up to 50 feet deep. The total ground disturbance associated with the screw anchors would be negligible, approximately 18.8 square feet, along the entire 27-mile line. None of the tower foundation reinforcements would be within designated critical habitat and majority of the foundation reinforcements would be within developed, suburban areas. Crews would access the towers requiring foundation reinforcement using existing access roads.

Additional Reinforcement

Approximately 37 towers would receive additional reinforcements (typically consisting of steel plates/members and associated hardware) to upper parts of the tower (above the tower's foundation). Similar to the procedure for cage extensions, crews would access the towers by helicopter or from the ground. Steel members would be added/replaced one at a time to strengthen the existing tower.

Switch Installation

Two towers would receive new switches during construction to allow for operational flexibility during and after construction. In addition, the existing switches at Tower 102 would be replaced with new switches. Switch installation would typically involve installing a new cage-top and/or replacing the existing crossarms at the affected towers. Similar to cage extensions, the switches and associated hardware would typically be assembled at a work area or landing zone, then delivered to the base of the tower. The switches and associated hardware may also be assembled at the base of the tower. After assembly, a crane would be used to install the switches and remove any existing hardware, as appropriate.

The newly installed switches would be operated manually by a technician standing on a new permanent platform that would be mounted on four approximately 6-inch-diameter footings. The platform would be completed by attaching perforated steel decking to the footings. The total permanent ground disturbance associated with the platform footings would be negligible, 1.57 square feet. The existing switch platform at Tower 102 would continue to be used to operate the replacement switches.

Reconductoring

The following subsections describe the construction methods utilized for reconductoring. PG&E would coordinate with the CAISO to obtain all necessary clearances prior to beginning reconductoring work.[12] Obtaining clearances would ensure that the existing line could be taken out of service and that power is redistributed to service centers and customers, so that work could safely proceed on the line.

Traveler Installation and Unclipping

Conductor replacement would begin with the installation of travelers on the bottom of each insulator using helicopters or aerial lift trucks (bucket trucks). The travelers allow the conductor to be pulled through each structure easily, thus facilitating the removal of the existing conductor or the pulling of the new conductor to its final tension.

During the conductor removal or installation process, the conductor's forces—generated by its weight and tension, and located at each end of the pull sections—would be transferred to trucks, tensioners, and pullers. The existing conductor would be placed in a hoist and attached at one end to the steel tower to support the down-strain load, removing the load on the existing insulator conductors. The existing insulators would be removed, and new insulators would be installed with conductor travelers located on the ends. Once the travelers are in place, the hoist would lower the existing conductor onto the travelers. Next, the existing conductor would be unclipped from the existing insulators and placed on the travelers to be pulled out and removed from the structures within a pull section.

The crew—as well as the travelers, insulators, and the tools required to install them—would be brought in by helicopter to most tower sites. If access by ground is necessary, crews would approach the towers on foot, by all-terrain vehicles, or by pickup trucks.

Pulling and Tensioning

Once all of the travelers had been installed in a given pull section of the transmission line, a cable from the puller truck would be attached to the existing conductor at one end of the pull section, and the new conductor would be attached to the existing conductor on the opposite end. As the puller truck removes the existing conductor, the new conductor would be pulled into place. The conductor would be pulled through each structure under a controlled tension to keep it elevated and away from obstacles, thereby preventing damage to the conductor and protecting the public.

Some portions of the existing conductor have been spliced, which means that the conductor was cut and reconnected where the conductor showed prior signs of wear and tear or vulnerability to breakage. Where the conductor has been spliced, the conductor has an irregular size. In order to pull spliced portions of conductor, crews would either (1) manually cut and sleeve the spliced conductor using a bucket truck, crane, or helicopter prior to pulling; or (2) utilize larger travelers and puller trucks in the pulling process to accommodate the irregularly sized conductor. As much as feasible, the method with the least environmental implications would be applied on a case-by-case basis. In open space areas, either a helicopter or larger travelers and puller trucks would be utilized to avoid ground-level disturbance.

[12] PG&E would coordinate with the CAISO prior to taking the lines out of service to ensure that the local transmission system load would not exceed the capabilities of the system without the CC-Moraga Line being energized.

Once the new conductor is pulled into place and the sags between structures are adjusted to a pre-calculated level, it would be removed from the travelers and clipped onto the end of each insulator. The travelers would then be removed, and vibration dampers and other accessories would be installed.

At dead-end structures (conductor end points), crews would use a boom truck to support the down-strain load and enable the removal of the travelers, as well as to provide the crew access to the structures to attach the dead-end hardware. As an alternative, work might be conducted by helicopter using hoists and grips to support the down-strain load.

3.3.3 Equipment

The equipment that would be used during project construction, as well as a summary of deliveries and pickups for each piece of equipment, are outlined in Attachment B: Construction Equipment Summary.

3.3.4 Personnel

Different phases of the construction process would require varying numbers of construction personnel. Generally, one crew of 5 workers and one helicopter crew of 12 personnel would work on the tower modifications. During the peak reconductoring periods, 20 workers and two helicopter crews of approximately 5 personnel and 2 construction monitors would be required. The average line reconductoring workforce would consist of one crew of eight people and one helicopter crew. A maximum of 30 people would be expected to be working on this project at any given time. After the completion of construction, there would be no change from existing maintenance and operations practices by existing PG&E employees.

3.3.5 Schedule

PG&E anticipates that construction of the project would take approximately 12 months within an approximately 18-month window. Site development and preparation for all project components would begin tentatively between the fourth quarter of 2014 and the first quarter of 2015, after which construction would continue with the modification of towers and then reconductoring. The line is expected to be energized in mid-2016, or as soon as possible after construction is completed.

Construction activities would typically occur 6 days a week, as consistent with local ordinances, throughout the duration of the project. Workdays would generally be 10 hours long, with construction typically occurring between 7:00 a.m. and 7:00 p.m. On occasion, construction might be required outside of these hours to minimize impacts on schedules, and as required by other property owners or agencies, such as the CAISO, which might dictate when outages of the electric system could occur. In addition, there may be unforeseen and/or last-minute circumstances where, for safety or other reasons, construction must occur outside of these approved hours. If construction during hours outside of those allowed by local ordinances is necessary, PG&E would follow established protocols by providing advance notice to all property owners within 300 feet of construction activities in accordance with APM-NOI-06 (see Section 3.5 Applicant-Proposed Measures). If PG&E must unexpectedly extend construction hours due to a construction safety or emergency situation, PG&E would complete the work and terminate activities as quickly as is safely possible.

3.4 ANTICIPATED PERMITS AND AGREEMENTS

PG&E would obtain all relevant permits for the project from federal, state, and local agencies. Table 3: Potential Permits and Agreements provides the potential permits and approvals that may be required for project construction.

The project qualifies for a Clean Water Act (CWA) Section 404 Nationwide Permit #12, subject to verification from the United States (U.S.) Army Corps of Engineers (USACE). An Endangered Species Act (ESA) Section 7 Consultation with the U.S. Fish and Wildlife Service (USFWS) is also required and a Biological Opinion would be obtained. In addition, PG&E would obtain an incidental take permit (Fish and Game Code Section 2081) from the California Department of Fish and Wildlife (CDFW) for state-listed species, and a Lake and Streambed Alteration Agreement (Fish and Game Code Section 1600 *et seq.*) for the temporary fill of two ephemeral drainages and the use of an overland travel route during the wet season through one freshwater emergent wetland. For the portions of the project within the East Contra Costa County Habitat Conservation Plan/Natural Communities Conservation Plan (ECCC HCP/NCCP), federal and state take authorizations will be obtained through participation in the HCP/NCCP.[13]

The project would require a CWA Section 401 Water Quality Certification (401 Certification) from the State Water Board, which is also acting as the CEQA Lead Agency. The 401 Certification is a discretionary permit, and compliance with CEQA is required. Note that this project affects two California Water Quality Control Regions: San Francisco Bay and Central Valley. As a result, responsibility for issuance of the 401 Certification is automatically delegated to the State Water Board's Division of Water Quality. Although the State Water Board would issue the 401 Certification for any multi-regional project, compliance with the Water Quality Control Plans for the affected Regions would still be required, along with all other applicable state and regional plans and policies.

The project would also require a National Pollutant Discharge Elimination System (NPDES) Construction General Permit from the State Water Board.

Although this project is under the jurisdiction of the CPUC, the CPUC's General Order (GO) 131-D does not require a discretionary permit for projects that involve the placing of new conductors, insulators or their accessories on supporting structures already built (GO 131-D, Section III.A).

In addition, agreements or ministerial permits may be required from other, local agencies as shown in Table 3: Potential Permits and Agreements. The ministerial permits identified in Table 3: Potential Permits and Agreements are potential and subject to further review determinations by the corresponding local jurisdictions. The project is not subject to discretionary regulation by local government; therefore, if a local jurisdiction's encroachment or grading permit is discretionary, then it would not apply to the project. The CPUC has exclusive jurisdiction over the siting and design of a public utility's electric facilities, which preempts local regulation. The California Constitution vests in the CPUC exclusive power and authority with respect to "all matters cognate and germane to the regulation of public utilities." (Cal. Const., art. XII, § 5). In addition, the California Constitution explicitly prohibits municipalities from regulating "matters

[13] The ECCC HCP/NCCP inventory area is defined as the area in which impacts would be evaluated and conservation would occur. While the City of Antioch is not a member of the ECCC HCP/NCCP, the city is located within the boundary of the ECCC HCP/NCCP inventory area. As a result, federal and state take authorization will be obtained through the ECCC HCP/NCCP in the City of Antioch.

Table 3: Potential Permits and Agreements

Agency	Permit/Agreement
DISCRETIONARY PERMITS	
USACE	Nationwide Permit
USFWS	Biological Opinion
CDFW	Section 1600 Lake and Streambed Alteration Agreement
	Incidental Take Permit
California Department of Transportation (Caltrans)	Encroachment Permit
State Water Board	NPDES Construction General Permit
	Section 401 Water Quality Certification
East Contra Costa County Habitat Conservancy	Incidental Take Permit
AGREEMENTS OR MINISTERIAL PERMITS	
City of Walnut Creek	Encroachment Permit
	Parks Encroachment Permit
City of Antioch	Right-of-Entry Agreement or similar
City of Clayton	Grading Permit
	Encroachment Permit
City of Concord	Encroachment Permit
City of Lafayette	Encroachment Permit
Town of Moraga	Encroachment Permit
City of Orinda	Encroachment Permit
Contra Costa County	Building or Grading Permit
	Encroachment Permit
East Bay Regional Parks District (EBRPD)	Parks Encroachment Permit
Burlington Northern-Santa Fe Railroad	Encroachment Permit
Union Pacific Railroad	Encroachment Agreement

over which the Legislature grants regulating power to the Commission." (Cal. Const., art. XII, § 8). Accordingly, California courts have found that discretionary (as opposed to ministerial) regulation by local governments is preempted by the CPUC's jurisdiction because the construction, design, and operation of public utility facilities are matters of statewide concern. However, local agencies may rely on this IS/MND for CEQA coverage, as appropriate, for agreements, such as but not limited to access or land rights agreements, that may be necessary to carry out the project.

3.5 APPLICANT-PROPOSED MEASURES

Section 21080(C)(2) of the California Public Resources Code provides for the adoption of a mitigated negative declaration when:

- revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration and initial study are released for public review will avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment will occur; and

- there is no substantial evidence, in light of the whole record before the lead agency, that the project, as revised, may have a significant effect on the environment.

In keeping with Section 21080(C)(2) of the California Public Resources Code, PG&E has incorporated the following APMs as part of the project. These measures include PG&E standard construction practices, as well as those measures that are proposed to comply with applicable regulations. These measures are incorporated into the project and would be implemented along with the project elements described previously in this document. With incorporation of these APMs, project impacts from construction and operation of this project would be less than significant. To the extent any of the following measures conflict with requirements in subsequently issued resource agency permits, the resource agency permit requirements shall supersede these measures.

- APM-AIR-01: Water or approved dust control products will be applied to all exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, unpaved access roads, and landing zones) at a rate that maintains the soil moisture content to control fugitive dust. Water will only be applied to graveled areas if dust is visible.

- APM-AIR-02: Open-bodied trucks transporting bulk materials that may become airborne will be completely covered, unless the bulk material is wetted or there is at least 6 inches of freeboard from the top of the container.

- APM-AIR-03: A publicly visible sign with a dedicated hotline for receiving dust complaints will be posted adjacent to the project alignment. A designated contact will be responsible for checking the hotline daily for messages. Complaints will be responded to and corrective actions will be taken within 48 hours. The Bay Area Air Quality Management District's (BAAQMD's) phone number will also be included on the sign.

- APM-AIR-04: All visible mud and dirt that is tracked out onto paved, public roadways will be cleaned up at the conclusion of each workday or at 24-hour intervals for operations that are continuous. Track-out will be cleaned up with a wet sweeper, vacuum device, or with hand tools, depending on the volume of material deposited and the time required to

remove the material. Mud and dirt shall not be deposited into roadside ditches/swales and shall be contained within construction limits.

- APM-AIR-05: Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes, except where idling is required for the equipment to perform its task. Clear signage indicating the 5-minute idling restriction will be posted for construction workers at all active construction sites.

- APM-AIR-06: All construction equipment will be maintained and properly tuned in accordance with manufacturers' specifications or equivalent standard.

- APM-BIO-01: PG&E will submit the names and credentials of biologists proposed to perform pre-construction surveys and monitoring for listed species to the USFWS and CDFW for written approval.

- APM-BIO-02: Prior to any project-related ground disturbance in areas that may support listed species, and if requested, PG&E will develop an Alameda whipsnake (AWS), California red legged frog (CRLF), and California tiger salamander (CTS) Relocation Plan that will specify the steps to capture and contain the species, as well as the criteria for selecting release sites. The AWS, CRLF, and CTS Relocation Plan will be submitted to the CDFW and USFWS for review and approval prior to its implementation. An approved biologist will survey portions of the temporary disturbance areas that may support listed animal species immediately prior to the onset of initial ground-disturbing construction activities and as appropriate during phased construction. If listed species are identified, agency notification protocols per APM-BIO-23 will be followed.

- APM-BIO-03: Surface-disturbing activities will be designed to minimize disturbance to rodent burrows that may provide suitable subterranean habitat for CRLF and CTS. Areas with a high concentration of burrows will be avoided by surface-disturbing activities to the extent feasible.

- APM-BIO-04: Prior to any ground disturbance related to covered activities, a project biologist will conduct a pre-construction survey in areas identified in the planning surveys as supporting potential burrowing owl habitat. The surveys will establish the presence or absence of western burrowing owl and/or habitat features and evaluate use by owls. On the parcel where the activity is proposed, the biologist will survey the proposed disturbance footprint and a 300-foot radius from the perimeter of the proposed footprint to identify occupied burrows and owls. All occupied burrows and burrowing owls will be identified and mapped. In the event that an occupied burrow is discovered within 300 feet of the construction areas, a 250-foot avoidance buffer will be implemented in the breeding season and a 160-foot avoidance buffer will be implemented during project construction in the non-breeding season. If it is not feasible to implement this avoidance buffer, a site-specific plan will be developed and CDFW will be consulted to determine if a reduced avoidance buffer is appropriate based upon 1) the type and duration of construction activities being conducted, 2) sensitivity or acclimation to disturbance, 3) the topography surrounding the burrow site, and/or 4) the implementation of additional protective measures. Seasonally appropriate avoidance buffers will be implemented until the burrow is determined to be inactive.

- APM-BIO-05: A USFWS/CDFW-approved biologist will conduct a protocol-level survey for Swainson's hawk within 0.25 mile of the construction areas within the range of the

species prior to the start of construction. In the event that an active Swainson's hawk nest is discovered within 0.25 mile of the construction areas and overland access routes, a 0.25-mile avoidance buffer will be implemented during project construction. If it is not feasible to implement this avoidance buffer, the USFWS and CDFW will be consulted to determine if a reduced avoidance buffer is appropriate based upon local topography, the planned construction activities, and ongoing monitoring and/or the implementation of additional protective measures. Following consultation with the USFWS and CDFW, appropriate avoidance buffers will be implemented until the nest is determined to be inactive.

- APM-BIO-06: A qualified biologist will conduct a golden eagle survey within 1 mile of the construction areas prior to the start of construction at each area. In the event that an active golden eagle nest is discovered within 0.5 mile of the construction areas, a 0.5-mile avoidance buffer will be implemented during project construction. If it is not feasible to implement this avoidance buffer, the USFWS and CDFW will be consulted to determine if a reduced avoidance buffer is appropriate based upon local topography, the planned construction activities, and/or the implementation of additional protective measures. Following consultation with the USFWS and CDFW, appropriate avoidance buffers will be implemented until the nest is determined to be inactive.

- APM-BIO-07: Prior to any ground disturbance related to covered activities, a USFWS/CDFW-approved biologist will conduct a pre-construction survey in areas, which will be identified during the planning surveys, as supporting suitable breeding or denning habitat for San Joaquin kit fox (SJKF). The surveys will determine the presence or absence of suitable dens, and evaluate use by kit foxes in accordance with USFWS survey guidelines (USFWS 1999).

- APM-BIO-08: If a SJKF den is discovered in the proposed development footprint, the den will be monitored for 3 days by a USFWS/CDFW-approved biologist using a tracking medium or an infrared beam camera to determine if the den is currently being used. If a natal or pupping den is found, USFWS and CDFW will be notified immediately. If SJFK activity is observed at the den during the initial monitoring period, the den will be monitored for an additional 5 consecutive days from the time of the first observation to allow any resident animals to move to another den while den use is actively discouraged.

- APM-BIO-09: If SJKF dens are identified in the (250-foot) survey area from project-specific work areas, pull sites, and landing zones, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No covered activities will occur within the exclusion zones. Exclusion zone radii for known dens will be at least 100 feet and will be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by SJKF.

- APM-BIO-10: During the pre-construction surveys, described in APM-BIO-11, a qualified biologist will identify potential San Francisco dusky-footed woodrat houses within 50 feet of project activities. At the discretion of a qualified biologist, an exclusion buffer will be established around any woodrat houses that can be avoided, and these exclusion zones will be flagged or fenced. If impacts to a woodrat house are unavoidable, PG&E will develop a Woodrat Plan, and will coordinate with the CDFW.

- APM-BIO-11: Pre-construction surveys for special-status species will be conducted at project construction areas by a qualified biologist. These surveys will be conducted in locations with suitable special-status species habitat. Pre-construction surveys at construction areas that have a developed land cover type—as detailed in the Botanical Resource Survey Report, as well any construction areas that are located within urban, residential, paved, or gravel areas—will not be required and will be surveyed at the discretion of the PG&E Project Biologist and biological monitor.

- APM-BIO-12: Special-status plant species that are located in close proximity to construction areas will be flagged and these areas will be avoided during construction. If these areas cannot be avoided, the appropriate agency will be contacted prior to any ground-disturbing activities in the construction area near the special-status plant occurrence. Applicable permit conditions required by these agencies, if necessary, will be incorporated into the project's post-construction revegetation activities. As feasible and as necessary to minimize direct impacts, special-status plant seeds may be collected during pre-construction surveys at the appropriate species-specific time frame and used during post-construction restoration activities. In addition, topsoil may be preserved and re-spread at the site following construction. If factors are present that preclude special-status seed collection and/or topsoil conservation, the appropriate agency will be consulted.

- APM-BIO-13: If work is scheduled to occur during the avian nesting season (March 1 through August 31), nest detection surveys will be conducted at minimum 15 days prior to initial work activities at designated construction areas and towers to determine nesting status in the area. Nest surveys will be accomplished by ground surveys and/or by helicopter and will support phased construction, with surveys scheduled to be repeated if construction lapses in a work area for 30 days between March and July. Nest surveys will follow standard biological survey methods, and survey effort will be tailored to detect specific species, with visits planned at appropriate timeframes/intervals to detect nesting activity. In addition, biologists monitoring construction will conduct nest surveys and/or nest monitoring in areas adjacent to ongoing construction. If nest are found, the project biologist shall establish an appropriate buffer to be in compliance with Migratory Bird Treaty Act and Fish and Game Code 3503. The project biologist shall perform at least two hours of pre-construction baseline monitoring of the nest to characterize "normal" bird behavior. The project biologist shall monitor the nesting birds and shall increase the buffer if the project biologist determines the birds are showing signs of unusual or distressed behavior by project activities. Abnormal nesting behaviors which may cause reproductive harm include, but are not limited to, defensive flights/vocalizations directed towards project personnel, standing up from a brooding position, and flying away from the nest. The project biologist shall have authority to order the cessation of all nearby project activities if the nesting birds exhibit abnormal behavior which may cause reproductive failure (nest abandonment and loss of eggs and/or young) until an appropriate buffer is established. To prevent encroachment, the established buffer(s) shall be clearly marked for avoidance. The established buffer(s) shall remain in effect until the young have fledged or the nest has been abandoned as confirmed by the project biologist. Signs of nest abandonment as determined by the monitoring biologist, shall be reported to CDFW within 72 hours. Helicopter restrictions will include observance of appropriate buffers established by the project biologist and avoidance of hovering in the vicinity of active nest sites. Active nests (defined as the presence of chicks and/or eggs) that occur in developed areas will be considered in the context of the surrounding residential development, ongoing activities, and access constraints.

Nest detection and nest monitoring surveys will not occur within private property areas with access restrictions, including within densely populated residential areas.

- APM-BIO-14: If construction activities are required within an established buffer zone buffer modifications shall be at the discretion of the project biologist based on: 1) the amount, type, and length of the planned disturbance, 2) the species' sensitivity to disturbance, 3) the nest site type, location, and specific landscape/topography conditions, and 4) nest concealment from project activities. Nests will be monitored during construction activities, to confirm that project activities are not resulting in impacts to nesting pairs or young. If the monitoring biologist determines that project activities are resulting in nest disturbance, work will not be allowed to continue within the established buffer zone until the young have fledged. Active nest site monitoring checks will be completed at minimum once per week in active areas of the project, with nest status updates prepared on a weekly basis. Nest monitoring will track, assess, and document nest phase (incubation/hatching/rearing/branching or fledging), and nest status (active, inactive, failed). All special-status avian species detections will be reported to applicable resource agencies.

- APM-BIO-15: Prior to construction, a qualified biologist or other qualified resource specialist will develop an environmental training for all project personnel, which shall cover all pertinent project APMs, permit conditions, and any other required environmental compliance measures. Training will be conducted by a qualified biologist or other qualified resource specialist. All project personnel will attend the training prior to entering the project work area. Upon completion of the training, crew members will sign a form stating that they attended the training and understand the material presented. This training may be combined with other environmental training for the project, such as cultural resource training. In the event that non-English-speaking crew members are employed during the project, an interpreter will be present during the environmental training, or training materials will be supplied in an alternate language.

- APM-BIO-16: Specific portions of the construction areas with sensitive species and/or habitats, as determined by a qualified biologist, will be clearly demarcated for avoidance. Crews will not enter demarcated areas without the prior approval and presence of a qualified biologist.

- APM-BIO-17: Any potentially jurisdictional hydrologic feature in the vicinity of construction areas, with the exception of the drainage at Pull Site 63, the drainage at Crossing Structure 111A, and the wetland along the overland access route to Work Area 114, will be avoided, and will be flagged for avoidance prior to construction. If any of these features also provide suitable habitat for special-status vernal pool species, an additional 50-foot buffer around the hydrologic feature will be established. The boundary of this buffer will be demarcated within any project-specific construction areas and no ground-disturbing activities will occur within the buffer. BMPs will be installed and maintained as necessary in accordance with the project Storm Water Pollution Prevention Plan (SWPPP). All conditions of the project's 401 Certification will be in effect and monitored by qualified monitors throughout the construction process.

- APM-BIO-18: Major ground disturbing work in suitable CRLF and CTS habitat will be conducted during the dry season—generally April 15 to October 31—to the extent feasible. If major ground disturbing work occurs within suitable habitat during the wet season—generally November 1 to April 14—exclusion fencing may be installed around

the perimeter of pull sites and staging areas to exclude species from these areas. This fencing will be installed under the supervision of a biological monitor. The exclusion fencing will remain in place for the duration of the wet season or construction activities and will be repaired as necessary. A biological monitor will check the fence at regular intervals to ensure it is functioning properly and for the presence of special-status species. Fence inspection intervals will be based upon the planned construction activities at each site, recent and forecasted weather events, and the results of pre-construction surveys and previous fence checks. A biological monitor will check the fences daily during any rain events of 0.25 inch or greater and within 48 hours after a rain event of 0.25 inch or greater. If a required inspection cannot be conducted due to access restrictions or safety concerns, the inspection will be attempted the following day.

- APM-BIO-19: A biological monitor will be present during initial ground-disturbing construction activities at each construction area. The biological monitor will have the authority to halt any work activity that might result in resource or protected species impacts. The biological monitor will have the authority to approve a crew to work without a biological monitor if work activities are determined to have a low potential to affect sensitive resources. Multiple biological monitors may be utilized, as necessary, to support multiple construction crews working simultaneously in sensitive habitats and/or in proximity to special-status species.

- APM-BIO-20: Major construction activities in sensitive habitat areas will cease 30 minutes before sunset and will not resume prior to 30 minutes after sunrise. In the event work needs to occur outside of these timeframes, such as work associated with an outage, the biological monitor will be consulted regarding additional measures to be implemented at the site. In addition, certain activities may occur at night for safety purposes, such as work along busy highways. Biological surveys by the approval of a qualified biologist may also occur outside of these timeframes.

- APM-BIO-21: In accordance with the SWPPP, BMPs will be implemented to reduce the potential for erosion and sedimentation during construction. These BMPs may include, but are not limited to, the installation of erosion control fencing or straw wattles, covering soil piles with plastic, protecting storm drain inlets from runoff, and/or controlling vehicle track-out from the construction areas. Plastic monofilament netting (erosion control matting) will not be used; animals can become trapped in or injured by this type of erosion control material, and the plastic residue left by degradation of the material contributes pollution to the soil and water. Appropriate fiber netting or similar natural materials (such as coconut coir matting) will be used for erosion control or other purposes within sensitive areas to reduce the potential for entrapping amphibians.

- APM-BIO-22: Project-related vehicles will observe a maximum 15-mile-per-hour (mph) speed limit on all project access roads/routes and within work areas, pull sites, landing zones, and staging areas, except on city and county roads and state and federal highways, where the posted maximum speed limit will be observed.

- APM-BIO-23: If a special-status species is identified on site, crews will immediately stop work and contact an on-site biological monitor and PG&E. Work will not proceed in the immediate area until the animal has traveled off of the site on its own or has been relocated by an approved biologist. If the identified special-status species is a federally and/or state-listed species the USFWS and/or CDFW (depending upon the listing status) will be notified within 24 hours of any encounter.

- APM-BIO-24: Any equipment or vehicles driven and/or operated within or adjacent to riparian and aquatic habitats will do so only on designated access routes or work areas. Any equipment or vehicles driven and/or operated within or adjacent to riparian and aquatic habitats will be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be harmful to aquatic life. All re-fueling and maintenance of vehicles and equipment will be conducted at a minimum distance of 100 feet from the edge of an aquatic feature to the extent feasible. If infeasible, appropriately-sized secondary containment will be utilized to contain any accidental spills or leaks. Clean-up materials will be kept on site to recover any accidental spills. Riparian and aquatic habitats will be protected from spills during construction by the protection measures specified in the SWPPP.

- APM-BIO-25: During any rain event of 0.25 inch or greater and for a period of 48 hours following a rain event of 0.25 inch or greater, a pre-construction survey by an biological monitor will be conducted immediately preceding any ground-disturbing construction or movement of equipment within 50 feet of any suitable CRLF or CTS habitat. A biological monitor will continue to monitor the work areas throughout the day during these timeframes (rain events of 0.25 inch or greater and for 48 hours following them).

- APM-BIO-26: During project activities, all small trash will be properly contained in covered or enclosed garbage receptacles and removed from the work area daily for disposal. All trash or garbage that may attract any wildlife, including scavengers and predators, will be securely contained at all times. All vehicles will carry and use trash bags. Following construction, all remaining large trash and construction debris (e.g., large shipping crates, large metal recycling containers, etc.) will be removed from the project area for recycling or disposal.

- APM-BIO-27: No firearms will be permitted in the construction area, unless carried by authorized security personnel or law enforcement.

- APM-BIO-28: Vegetation clearing will be confined to the minimal amount necessary to facilitate construction activities. In the event the vegetation has to be removed in special-status species habitat, a biological monitor will evaluate the areas prior to vegetation removal and the applicable APMs will be implemented.

- APM-BIO-29: Prior to construction, a qualified biologist will conduct a desktop habitat assessment within 100 feet of all construction areas to identify potential bat roosting habitat. Follow-up field checks may be conducted to verify desktop results. If construction activities occur within or adjacent to potential bat roosting habitat, focused surveys may be necessary prior to construction to determine roosting status. If an active bat roost is detected, avoidance buffers of up to 100 feet will apply; the size of the buffer zone may be modified at the biologist's discretion based on the species' sensitivity to disturbance. Monitoring checks will be conducted when construction activities occur in the vicinity of an identified roost. To the maximum extent feasible, tree-trimming and tree-removal activities in potential habitat areas will be scheduled during warmer days in the fall or early spring seasons (September 1 to October 15 or February 15 through March 31), outside of the bat breeding season for this region of the state, generally considered from April through August. If project activities cannot avoid impacting active roosts, PG&E will contact the CDFW to discuss implementing alternative measures.

- APM-BIO-30: If initial planning surveys indicate suitable breeding or roosting habitat for Townsend's big-eared bat, a USFWS/CDFW-approved biologist will examine the site to determine if it is occupied by Townsend's big-eared bat. If occupied breeding or roosting habitat is identified, the project proponent will avoid and minimize impacts to the maximum extent practicable. Avoidance measures should include relocating impacts away from the occupied habitat or delaying the impacts until the bats vacate the site. Avoidance and minimization measures will be incorporated into the project design and other portions of the application package prior to submission for coverage under the Plan. If project does not fully avoid impacts to suitable habitat, pre-construction surveys will be required.

- APM-BIO-31: If the project does not avoid impacts to suitable habitat for Townsend's big-eared bat, a pre-construction survey is required to determine whether the sites are occupied immediately prior to construction or whether they show signs of recent previous occupation. Pre-construction surveys are used to determine what avoidance and minimization requirements are triggered before construction and whether construction monitoring is necessary.

- APM-BIO-32: If an occupied Townsend's big-eared bat day roost or prior roosting evidence is discovered during pre-construction surveys, PG&E will consult with a recognized Townsend's big-eared bat expert if additional avoidance is required.

- APM-BIO-33: The project will conform to the PG&E Valley Elderberry Longhorn Beetle Conservation Program and accompanying Programmatic Biological Opinion (File No. 1-1-01-F-0114). Pursuant to this program, crews will be familiar with the program.

- APM-BIO-34: Smoking will only be allowed in enclosed vehicles to reduce the potential for fires. In enclosed company vehicles, no smoking will be allowed if a non-smoker is concurrently in the vehicle.

- APM-BIO-35: To help prevent inadvertent entrapment of special-status species during the construction phase of a project, all excavated, steep-walled holes or trenches more than 6 inches deep will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or other material approved by the qualified biologist, suitable to provide an escape route. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals.

- APM-BIO-36: All pipes, culverts, and similar structures that are stored at the construction site will be capped or will be thoroughly inspected for trapped animals before being buried, re-capped, or moved.

- APM-BIO-37: Prior to movement or use, the area beneath all vehicles and equipment that have remained stationary for 5 minutes or longer will be inspected for the presence of special-status species. If an individual is discovered, equipment will not be moved until the animal has left voluntarily or is removed by a biologist authorized to do so.

- APM-BIO-38: Off-road equipment will be clean of mud, soil, and plant parts prior to being brought to the project. Off-road equipment moved from areas of known and targeted noxious weeds will be cleaned prior to being moved to another site not in the immediate vicinity. If on-road equipment is operated on contaminated, vegetated surfaces, the

equipment will be cleaned prior to departing areas with known weed populations. Methods of on-site cleaning may include, but not be limited to, spraying equipment with air and/or water, driving equipment across rumble strips, and/or sweeping and brushing material from equipment.

- APM-BIO-39: Following construction, areas that are disturbed would be revegetated by reseeding with an appropriate seed mix, as necessary, to restore the area to pre-construction conditions. To avoid introducing invasive or exotic plant species, the seed mix will be reviewed using the California Invasive Plant Council's Inventory Database. The revegetation approach would be based on agency permit requirements, the type of vegetation disturbed, the intensity of the disturbance, and input from landowners, as applicable. In addition, areas that require extensive cut and fill would be recontoured to allow the pre-construction hydrologic conditions to be maintained. SWPPP BMPs would be implemented to reduce erosion after construction is completed.

- APM-BIO-40: During recontouring activities, soils would be compacted to the minimal amount required to conform to construction and geotechnical standards, where appropriate.

- APM-BIO-41: To the extent any of the previous measures conflict with requirements in subsequently issued resource agency permits, the resource agency permit requirements will supersede these measures.

- APM-BIO-42: To minimize impacts such as soil compaction and vegetation disturbance when equipment or vehicles must operate within wetlands associated with access road Work Area 114, appropriate crossing methods and BMPs will be developed by PG&E and approved by the appropriate permitting agencies prior to installation.

- APM-BIO-43: A stream crossing at Pull Site 63 will be subject to temporary project impacts due to installation, operation, removal, and remediation of the pull site. Impacts associated with Pull Site 63 will be minimized by use of appropriate BMPs, minimization of the linear extent of the impact along the stream channel, and minimization of time of operation at the site. Crossing details and BMPs will be subject to agency review before installation. Appropriate revegetation of adjacent reaches of the stream will be conducted to restore the riparian vegetation removed as part of the reconductoring project.

- APM-BIO-44: A channel crossing will be subject to temporary project impacts due to the installation and removal of Crossing Structure 111A. Appropriate BMPs for operations in or near aquatic resources will be used. Installation and removal of the crossing structure will be conducted in a manner that does not destabilize the channel or affect the quality of the water carried by the channel.

- APM-BIO-45: No dogs or any other pets under control of construction personnel will be allowed in the construction area. Presence of land owners' or managers' ranch dogs or livestock on agricultural lands as part of normal ranching operations are not subject to this prohibition.

- APM-CUL-01: Prior to construction, a qualified archaeologist or other similarly qualified resource specialist will develop an environmental training for all project personnel. The training will include information on the protection of archaeological and paleontological

resources and the procedures to be implemented if archaeological remains or fossil remains are encountered by ground-disturbing activities, and shall cover all pertinent project APMs and Mitigation Measures, permit conditions, and any other required environmental compliance measures related to cultural resource protection. Training will be conducted by a qualified archaeologist or other similarly qualified resource specialist. All project personnel will attend the training prior to entering the project work area. This training may be combined with other environmental training for the project, such as biological resource training.

- APM-CUL-02: In the event that a previously unidentified archaeological or paleontological resource is uncovered during construction, all ground-disturbing work will be temporarily halted or diverted away from the discovery to another location at a minimum distance of 100 feet. PG&E's Cultural Resources Specialist or designated representative will inspect the discovery and determine whether further investigation is required.

    - If a previously unidentified archaeological resource is discovered, but can be avoided and no further impacts will occur, the resource will be documented on the appropriate California Department of Parks and Recreation records and no further effort will be required. If the resource cannot be avoided and may be subject to further impact, PG&E will evaluate the significance of the resource and implement data recovery excavation or other appropriate treatment measures in coordination with the landowner, as recommended by a qualified archaeologist.

    - If a previously unidentified paleontological resource is discovered, but can be avoided and no further impacts will occur, the resource will be documented in the appropriate paleontological resource records and no further effort will be required. If the resource cannot be avoided and may be subject to further impact, PG&E will evaluate the significance of the resource and implement data recovery excavation or other appropriate treatment measures in coordination with the landowner, as recommended by a qualified paleontologist.

- APM-CUL-03: Prior to the start of construction, a qualified paleontologist will investigate the actual and likely impacts resulting from construction activities and determine the depths of impact in the formations with moderate and high sensitivity, and will develop a monitoring program if conditions and construction activities warrant one. The monitoring program will require that a Paleontological Monitor will be present during all construction-related excavations except pole auguring (including mass grading, earth-moving and trenching below 3 feet of surface, or at a depth otherwise determined by a qualified paleontologist) in formations where there would be high potential to disturb sensitive resources as determined by the qualified paleontologist. Construction-related activities within formations with moderate sensitivity may require the presence of a Paleontological Monitor up to three times per week, depending on the work being conducted and the potential for impacts to sensitive resources, as determined by the qualified paleontologist. All scientifically significant fossils salvaged during construction monitoring will be prepared for curation, identified to element and the lowest possible taxonomic level, and transferred to an approved paleontological repository for permanent storage with the permission of the landowner. The results of the paleontological monitoring program will then be detailed in a Final Paleontological Monitoring Report.

- APM-CUL-04: In the unlikely event that Native American human remains are discovered during construction, work will be halted within 100 feet of the find and PG&E's Cultural Resource Specialist will be notified. PG&E's Cultural Resource Specialist will be responsible for contacting the county coroner.

- APM-HAZ-01: PG&E will implement fire prevention practices in accordance with its BMPs manual and fire prevention plan, such as keeping appropriate firefighting equipment on site; ensuring consistent access to firefighting equipment; maintaining firefighting equipment in operating condition; ensuring access to a temporary or permanent water supply; locating internal, combustible, engine-powered equipment away from combustible materials, and allowing smoking only in designated areas.

- APM-HAZ-02: PG&E will prepare and implement a Spill Prevention, Control, and Countermeasure (SPCC) Plan for the project, including construction areas on the power line and for the substations to be provided in the SWPPP.

- APM-HAZ-03: As applicable, PG&E employees who work in the construction areas and substations will follow PG&E's training requirements of PG&E's Hazardous Material Business Plan (HMBP).

- APM-HAZ-04: PG&E will include in the construction contracts the appropriate language pertaining to handling hazardous materials and spills, in accordance with applicable federal, state, and local laws, rules, and regulations.

- APM-HAZ-05: PG&E will notify Chevron's consultant SAIC and coordinate excavation of auger holes for crossing structure towers in the area near known or suspected abandoned pipelines with SAIC staff.

- APM-HYD-01: Any potential wetland or water features in the vicinity of construction areas—with the exception of the drainage between the two areas that comprise Pull Site 63, the drainage that is located at Crossing Structure 111A, and the wetland located along the overland access route to Work Area 114—will be flagged for avoidance. The approved crossings and/or boundaries of approved disturbance within the three hydrologic features where avoidance is not feasible will be marked with signs or other highly visible marking. Construction activities and vehicle traffic within these features will be limited to the areas of permitted disturbance.

- APM-HYD-02: Any equipment or vehicles driven and/or operated within or adjacent to riparian and aquatic habitats will be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be harmful to aquatic life. All re-fueling and maintenance of vehicles and equipment will be conducted at a minimum distance of 100 feet from the edge of an aquatic feature to the extent feasible. If infeasible, appropriately sized secondary containment will be utilized to contain any accidental spills or leaks. Cleanup materials will be kept on site to recover any accidental spills. Riparian and aquatic habitats will be protected from spills during construction by the protection measures specified in the SWPPP.

- APM-HYD-03: In accordance with the SWPPP, BMPs will be implemented to reduce the potential for erosion and sedimentation during construction. These BMPs may include, but are not limited to: the installation of erosion control fencing or straw wattles, covering soil piles with plastic, protecting storm drain inlets from runoff, and/or controlling vehicle

track-out from the action area. Plastic monofilament netting (erosion control matting) will not be used in suitable habitat for listed amphibians and reptiles because these species can become trapped in this type of erosion control material. Tightly woven fiber netting or similar natural materials (such as coconut coir matting) will be used for erosion control or other purposes within these areas to reduce the potential for entrapping amphibians and reptiles.

- APM-HYD-04: If warranted to prevent erosion, geotechnical fabric and gravel may be applied within construction areas. Depending on the design of the temporary bridge to be installed at Pull Site 63, geotechnical fabric may be applied along the width of the bridge during construction to prevent erosion into the stream channel and to stabilize the bank. These materials will be removed following construction.

- APM-MIN-01: PG&E will provide advance coordination with Clayton Quarry for accessing Work Area 60 and Crossing Structures 111 and 111A through the quarry's driveway.

- APM-NOI-01: Unless otherwise warranted by emergency conditions or construction safety, construction activities will be limited to the following hours, by location:

    - City of Antioch: between 7:00 a.m. and 6:00 p.m. on weekdays; between 8:00 a.m. and 5:00 p.m. on weekdays within 300 feet of occupied dwellings; and between 9:00 a.m. and 5:00 p.m.on weekends and holidays, regardless of the distance from the occupied dwellings

    - City of Concord: between 7:30 a.m. and 6:00 p.m. on weekdays, and between 8:00 a.m. and 5:00 p.m. on weekends

    - City of Clayton: between 7:00 a.m. and 10:00 p.m. daily

    - City of Walnut Creek: between 7:00 a.m. and 6:00 p.m. on non-holiday weekdays

    - City of Lafayette: between 7:00 a.m. and 10:00 p.m. on weekdays and Saturdays

    - City of Orinda: between 8:00 a.m. and 6:00 p.m. on weekdays, and between 10:00 a.m. and 5:00 p.m. on Saturdays

- APM-NOI-02: Equipment will be positioned within designated work areas, pull sites, landing zones, and staging areas to maximize the distance from residences and to maintain safe and effective operation, while also maintaining consistency with biological resource requirements.

- APM-NOI-03: All internal combustion engine-driven equipment will be equipped with exhaust mufflers that are in good condition and that meet or exceed the manufacturers' specifications. All equipment will be maintained and well-tuned according to PG&E's standards.

- APM-NOI-04: Where work areas are located within 80 feet of residences or schools, a temporary and approximately 3-foot-tall noise barrier will be placed between sensitive receptors and stationary pieces of noise-generating equipment that are unable to move under their own power while they are in use.

- APM-NOI-05: Helicopters will maintain a height of at least 500 feet when passing above residential areas, except when they are at construction areas or actively assisting with construction activities.

- APM-NOI-06: If construction during hours outside of those allowed by local ordinances (as described in APM-NOI-01) is necessary and PG&E has advance notice of the need, PG&E would follow established protocols by providing advance notice to all property owners within 300 feet of construction activities. If PG&E must unexpectedly extend construction hours due to a construction safety or emergency situation, PG&E will complete the work and terminate activities as quickly as is safely possible.

- APM-NOI-07: PG&E will coordinate with the landowners in the vicinity of Tower 98 to develop alternative construction scenarios to facilitate the required tower modification at this location. Potential scenarios may include, but will not be limited to, the use of helicopters to perform all modifications, the use of overland access routes to deliver materials to Tower 98 and the use of helicopters to perform the tower modifications, and the use of overland access routes to deliver materials to Tower 98 and ground-based crews to perform the tower modification. The State Water Board will be notified of the agreed-upon construction scenario prior to construction.

- APM-PS-01: At least 24 hours prior to implementing any road or lane closure, PG&E will coordinate with applicable emergency service providers in the project vicinity, including, as appropriate to the location: Contra Costa County Fire Protection District, East Contra Costa Fire Protection District, Moraga-Orinda Fire District, Antioch Police Department, Clayton Police Department, Concord Police Department, Lafayette Police Department, Moraga Police Department, Orinda Police Department, and Walnut Creek Police Department. PG&E will provide emergency service providers with information regarding the road or lanes to be closed; the anticipated date, time, and duration of closures; and a contact telephone number.

- APM-REC-01: In locations where closures or access restrictions within state, regional, or local recreational facilities are required, PG&E will coordinate with the appropriate agency at least 2 weeks in advance of construction activities to develop a plan for project work within these facilities. This coordination will include providing each facility with a description of the planned construction activities and schedule within the facility, and any planned closures or access restrictions to the facility. If requested, PG&E will post notices at key entrances to each facility to alert recreational users of the planned activities. The State Water Board will be notified of the agreed-upon construction scenario with each facility prior to construction.

- APM-REC-02: In order to prevent non-project personnel from entering construction areas within recreational facilities, the boundaries of these areas will be clearly demarcated using fencing or other highly visible material. The demarcation will be checked regularly and maintained as needed for the duration of use within the recreational facilities. Signs will be posted at regular intervals along this boundary instructing non-project personnel to avoid entering the active construction site.

- APM-TRA-01: PG&E will contact a railroad representative at least 2 months prior to conductor pulling activities to coordinate crossing structure locations and to prevent service interruption. The crossing structures will be installed in coordination with a railroad representative, if requested.

- APM-TRA-02: PG&E will comply with requirements of Title 14 of the Code of Federal Regulations (CFR) and the Federal Aviation Administration (FAA) regarding helicopter use, including preparation of a Helicopter Lift Plan if required.

- APM-TRA-03: Overland access routes will be demarcated and non-project-related personnel would be kept out of the overland access routes, pull sites, landing zones, and work areas, if warranted for safety.

- APM-TRA-04: To ensure traffic safety where temporary closures of public roads or lanes are necessary but local encroachment permits do not apply, PG&E will coordinate the traffic control measures with the appropriate local agency prior to the road and/or lane closures. PG&E will implement the traffic control measures during the temporary road and/or lane closures.

3.6 ELECTRIC AND MAGNETIC FIELDS SUMMARY

This section describes electric magnetic fields (EMFs), information regarding its effects on human health, State Water Board findings on EMFs, and the measures included in this project to minimize EMF exposure. EMF is a term used to describe electric and magnetic fields that are created by electric voltage (electric field) and electric current (magnetic field). Power frequency EMF is a natural consequence of electrical circuits, and can be either directly measured using the appropriate measuring instruments or calculated using appropriate information.

Based on the information in the record, the State Water Board makes the following findings on EMFs:

Consistent with CEQA Guidelines Section 15145, the lead agency finds that the impact of EMF is too speculative for evaluation because there is no conclusive scientific information and, therefore no substantial evidence on the record, that there is a link between exposure to EMFs and human health impacts. Therefore, this IS/MND provides no further discussion of the effects of EMFs beyond the review provided in this section.

As discussed below, CPUC has developed requirements that utilities must consider “no-cost” and “low-cost” measures, where feasible, to reduce exposure from new or upgraded utility facilities. PG&E was directed to develop, submit, and follow EMF guidelines to implement the CPUC decision for this project. These measures are described below.

3.6.1 Electric Fields

Electric fields are present whenever voltage exists on a wire, and are not dependent on current. The magnitude of the electric field is primarily a function of the configuration and operating voltage of the line and decreases with the distance from the source (line). The electric field can be shielded (i.e., the strength can be reduced) by any conducting surface, such as trees, fences, walls, buildings, and most types of structures. The strength of an electric field is measured in volts per meter (V/m) or kilovolts per meter (kV/m).

3.6.2 Magnetic Fields

Magnetic fields are present whenever current flows in a conductor, and are not dependent on the voltage present on the conductor. The strength of these fields also decreases with distance from the source. However, unlike electric fields, most common materials have little shielding effect on magnetic fields.

The magnetic field strength is a function of both the current on the conductor and the design of the system. Magnetic fields are measured in units called Gauss.[14] However, for the low levels normally encountered near power systems, the field strength is expressed in a much smaller unit, the milligauss (mG), which is one- thousandth of a Gauss.

Power frequency EMF is present where electricity is used. This includes not only utility transmission lines, distribution lines, and substations, but also the building wiring in homes, offices, and schools, and in the appliances and machinery used in these locations. Typical magnetic fields from these sources can range from below 1 mG to above 1,000 mG (i.e., 1 Gauss).

Magnetic field strengths diminish with distance. Fields from compact sources (i.e., those containing coils, such as small appliances and transformers) decrease in inverse proportion to the distance from the source cubed. For three-phase power lines with balanced currents, the magnetic field strength drops off inversely proportional to the distance from the line squared. Fields from unbalanced currents that flow in paths, such as neutral or ground conductors, fall off inversely proportional to the distance from the source. Conductor spacing and configuration also affect the rate at which the magnetic field strength decreases.

The magnetic field levels of PG&E's overhead and underground transmission lines would vary depending upon customer power usage. Magnetic field strengths for typical PG&E transmission line loadings at the edge of the ROW are approximately 10 to 90 mG. Under peak load conditions, the magnetic fields at the edge of the ROW would not likely exceed 150 mG. There are no long-term, health-based federal or state government EMF exposure standards. State regulations for magnetic fields have been developed in New York and Florida (150 mG and 200 mG, respectively, at the edge of the ROW). However, these are based on limiting exposure from new facilities to levels no greater than existing facilities.

The strongest magnetic fields around the outside of a substation come from the power lines entering and leaving the station. The strength of the magnetic fields from transformers and other equipment decreases quickly with distance. Beyond the substation fence, the magnetic fields produced by the equipment within the station are typically indistinguishable from background levels.

3.6.3 Possible Health Effects

The possible effects of EMF on human health have come under scientific scrutiny. Concern about EMF originally focused on electric fields; however, much of the recent research has focused on magnetic fields. Uncertainty exists as to what characteristics of magnetic field exposure need to be considered to assess human exposure effects. Among the characteristics considered are field intensity, transients, harmonics, and changes in intensity over time. These characteristics may vary from power lines to appliances to home wiring, and this may create different types of exposures. The exposure most often considered is intensity or magnitude of the field.

There is a consensus among the medical and scientific communities that there is insufficient evidence to conclude that EMF causes adverse health effects. Neither the medical nor scientific communities have been able to provide any foundation upon which regulatory bodies could establish a standard or level of exposure that is known to be either safe or harmful. Laboratory

[14] Magnetic fields can also be measured in units called Tesla (T). 1 Gauss = 1 x 10^{-4} T.

experiments have shown that magnetic fields can cause biologic changes in living cells, but scientists are not sure whether any risk to human health can be associated with them. Some studies have suggested an association between surrogate measures of magnetic fields and certain cancers while others have not.

3.6.4 Reviews of EMF Studies

Hundreds of EMF studies have been conducted over the last 20 years in the areas of epidemiology, animal research, cellular studies, and exposure assessment. A number of nationally recognized multi-discipline panels have performed comprehensive reviews of the body of scientific knowledge on EMF. These panels' ability to bring experts from a variety of disciplines together to review the research gives their reports recognized credibility. It is standard practice in risk assessment and policymaking to rely on the findings and consensus opinions of these distinguished panels. None of these groups have concluded that EMF causes adverse health effects or that the development of standards were appropriate or would have a scientific basis.

Reports by the National Institute of Environmental Health Sciences (NIEHS), National Research Council/National Academy of Sciences, World Health Organization (WHO), International Agency for Research on Cancer (IARC), American Cancer Society (ACS), and American Medical Association (AMA) conclude that insufficient scientific evidence exists to warrant the adoption of specific health-based EMF mitigation measures. The potential for adverse health effects associated with EMF exposure is too speculative to allow the evaluation of impacts or the preparation of mitigation measures.

National Institute of Environmental Health Sciences

In June of 1999, the federal government completed a $60-million EMF research program managed by the NIEHS and the Department of Energy (DOE). Known as the EMF RAPID (Research and Public Information Dissemination) Program. In their report to the U.S. Congress, the NIEHS concluded that:

> The NIEHS believes that the probability that ELF [Extremely Low Frequency] EMF exposure is truly a health hazard is currently small. The weak epidemiological associations and lack of any laboratory support for these associations provide only marginal, scientific support that exposure to this agent is causing any degree of harm.

The NIEHS report also included the following conclusions:

> The National Toxicology Program routinely examines environmental exposures to determine the degree to which they constitute a human cancer risk and produces the 'Report on Carcinogens' listing agents that are 'known human carcinogens' or 'reasonably anticipated to be human carcinogens.' It is our opinion that based on evidence to date, ELF EMF exposure would not be listed in the 'Report on Carcinogens' as an agent 'reasonably anticipated to be a human carcinogen.' This is based on the limited epidemiological evidence and the findings from the EMF RAPID Program that did not indicate an effect of ELF EMF exposure in experimental animals or a mechanistic basis for carcinogenicity.
>
> The NIEHS agrees that the associations reported for childhood leukemia and adult chronic lymphocytic leukemia cannot be dismissed easily as random or negative

> findings. The lack of positive findings in animals or in mechanistic studies weakens the belief that this association is actually due to ELF EMF, but cannot completely discount the finding. The NIEHS also agrees with the conclusion that no other cancers or non-cancer health outcomes provide sufficient evidence of a risk to warrant concern.
>
> Epidemiological studies have serious limitations in their ability to demonstrate a cause and effect relationship whereas laboratory studies, by design, can clearly show that cause and effect are possible. Virtually all of the laboratory evidence in animals and humans and most of the mechanistic work done in cells fail to support a causal relationship between exposure to ELF EMF at environmental levels and changes in biological function or disease status. The lack of consistent, positive findings in animal or mechanistic studies weakens the belief that this association is actually due to ELF EMF, but it cannot completely discount the epidemiological findings.
>
> The NIEHS suggests that the level and strength of evidence supporting ELF EMF exposure as a human health hazard are insufficient to warrant aggressive regulatory actions; thus, we do not recommend actions such as stringent standards on electric appliances and a national program to bury all transmission and distribution lines. Instead, the evidence suggests passive measures such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures. NIEHS suggests that the power industry continue its current practice of siting power lines to reduce exposures and continue to explore ways to reduce the creation of magnetic fields around transmission and distribution lines without creating new hazards. We also encourage technologies that lower exposures from neighborhood distribution lines provided that they do not increase other risks, such as those from accidental electrocution or fire.

U.S. National Research Council/National Academy of Sciences

In May 1999, the National Research Council/National Academy of Sciences—an independent scientific agency responsible for advising the federal government on science, technology, and medicine—released its evaluation of the scientific and technical content of research projects conducted under the U.S. EMF RAPID Program, concluding that:

> The results of the EMF RAPID Program do not support the contention that the use of electricity poses a major unrecognized public-health danger. Basic research on the effects of power-frequency magnetic fields on cells and animals should continue, but a special research-funding effort is not required. Investigators should compete for funding through traditional research-funding mechanisms. If future research on this subject is funded through such mechanisms, it should be limited to tests of well-defined mechanistic hypotheses or replications of reported positive effects. If carefully performed, such experiments will have value even if their results are negative. Special efforts should be made to communicate the conclusions of this effort to the general public effectively.

The following specific recommendations were made by the committee:

1. The committee recommends that no further special research program focused on possible health effects of power-frequency magnetic fields be funded. Basic research on the effects of power-frequency magnetic fields on cells and animals should continue, but

investigators should compete for funding through traditional research funding mechanisms.

2. If, however, Congress determines that another time-limited, focused research program on the health effects of power-frequency magnetic fields is warranted, the committee recommends that emphasis be placed on replications of studies that have yielded scientifically promising claims of effects and that have been reported in peer-reviewed journals. Such a program would benefit from the use of a contract-funding mechanism with a requirement for complete reports and/or peer-reviewed publications at program's end.

3. The engineering studies were initiated without the guidance of a clearly established biologic effect. The committee recommends that no further engineering studies be funded unless a biologic effect that can be used to plan the engineering studies has been determined.

4. Much of the information from the EMF RAPID biology program has not been published in peer-reviewed journals. NIEHS should collect all future peer-reviewed information resulting from the EMF RAPID biology projects and publish a summary report of such information periodically on the NIEHS Website.

5. The communication effort initiated by EMF RAPID is reasonable. The two booklets and the telephone information line are useful, as is the EMF RAPID Internet site. There are two limitations to the effort. First, it is largely passive, responding to inquiries and providing information, rather than being active. Second, much of the information produced is in a scientific format not readily understandable by the public. The committee recommends that further material produced to disseminate information on power-frequency magnetic fields be written for the general public in a clear fashion. The Web site should be made more user-friendly. The booklet *Questions and Answers about EMF* should be updated periodically and made available to the public.

World Health Organization

The WHO established the International EMF Project in 1996 to investigate potential health risks associated with exposure to EMF. A WHO Task Group recently concluded a review of the health implications of ELF EMF.

A Task Group of scientific experts was convened in 2005 to assess any risks to health that might exist from exposure to ELF EMF. Previously in 2002, the IARC examined the evidence regarding cancer; this Task Group reviewed evidence for a number of health effects, and updated the evidence regarding cancer. The conclusions and recommendations of the Task Group are presented in a WHO report titled “Extremely Low Frequency Fields Environmental Health Criteria Monograph No. 238” and Factsheet No. 322 and state the following:

> “New human, animal and in vitro studies, published since the 2002 IARC monograph, do not change the overall classification of ELF magnetic fields as a possible human carcinogen.”
>
> “A number of other diseases have been investigated for possible association with ELF magnetic field exposure. These include cancers in both children and adults, depression, suicide, reproductive dysfunction, developmental disorders, immunological modifications and neurological disease. The scientific evidence

supporting a linkage between ELF magnetic fields and any of these diseases is much weaker than for childhood leukaemia and in some cases (for example, for cardiovascular disease or breast cancer) the evidence is sufficient to give confidence that magnetic fields do not cause the disease."

"…the epidemiological evidence is weakened by methodological problems, such as potential selection bias. In addition, there are no accepted biophysical mechanisms that would suggest that low-level exposures are involved in cancer development. Thus, if there were any effects from exposures to these low-level fields, it would have to be through a biological mechanism that is as yet unknown. Additionally, animal studies have been largely negative. Thus, on balance, the evidence related to childhood leukaemia is not strong enough to be considered causal."

"Policy-makers should establish an ELF EMF protection programme that includes measurements of fields from all sources to ensure that the exposure limits are not exceeded either for the general public or workers."

"Government and industry should monitor science and promote research programmes to further reduce the uncertainty of the scientific evidence on the health effects of ELF field exposure."

"Policy-makers, community planners and manufacturers should implement very low-cost measures when constructing new facilities and designing new equipment including appliances."

"Changes to engineering practice to reduce ELF exposure from equipment or devices should be considered, provided that they yield other additional benefits, such as greater safety, or little or no cost."

"When changes to existing ELF sources are contemplated, ELF field reduction should be considered alongside safety, reliability and economic aspects."

International Agency for Research on Cancer

In June 2001, the IARC, a branch of the WHO, evaluated the carcinogenic risk to humans of static and ELF EMF. In October 2001, the WHO published a Fact Sheet that summarized the IARC findings. Below is an excerpt from the fact sheet:

In June 2001, an expert scientific working group of IARC reviewed studies related to the carcinogenicity of static and ELF EMFs. Using the standard IARC classification that weighs human, animal and laboratory evidence, ELF magnetic fields were classified as possibly carcinogenic to humans based on epidemiological studies of childhood leukaemia. Evidence for all other cancers in children and adults, as well as other types of exposures (i.e. static fields and ELF electric fields) was considered not classifiable either due to insufficient or inconsistent scientific information.

"Possibly carcinogenic to humans" is a classification used to denote an agent for which there is limited evidence of carcinogenicity in humans and less than sufficient evidence for carcinogenicity in experimental animals.

This classification is the weakest of three categories ("is carcinogenic to humans," "probably carcinogenic to humans" and "possibly carcinogenic to humans") used by

IARC to classify potential carcinogens based on published scientific evidence. Some examples of well-known agents that have been classified by IARC are listed below:

Classification	Examples of Agents
Carcinogenic to humans (usually based on strong evidence of carcinogenicity in humans)	Asbestos Mustard gas Tobacco (smoked and smokeless) Gamma radiation
Probably carcinogenic to humans (usually based on strong evidence of carcinogenicity in animals)	Diesel engine exhaust Sun lamps UV radiation Formaldehyde
Possibly carcinogenic to humans (usually based on evidence in humans which is considered credible, but for which other explanations could not be ruled out)	Coffee Styrene Gasoline engine exhaust Pickled Vegetables ELF magnetic fields

DO ELF FIELDS CAUSE CANCER?

ELF fields are known to interact with tissues by inducing electric fields and currents in them. This is the only established mechanism of action of these fields. However, the electric currents induced by ELF fields commonly found in our environment are normally much lower than the strongest electric currents naturally occurring in the body such as those that control the beating of the heart.

Since 1979 when epidemiological studies first raised a concern about exposures to power line frequency magnetic fields and childhood cancer, a large number of studies have been conducted to determine if measured ELF exposure can influence cancer development, especially leukaemia in children.

There is no consistent evidence that exposure to ELF fields experienced in our living environment causes direct damage to biological molecules, including DNA. Since it seems unlikely that ELF fields could initiate cancer, a large number of investigations have been conducted to determine if ELF exposure can influence cancer promotion or co-promotion. Results from animal studies conducted so far suggest that ELF fields do not initiate or promote cancer.

However, two recent pooled analyses of epidemiological studies provide insight into the epidemiological evidence that played a pivotal role in the IARC evaluation. These studies suggest that, in a population exposed to average magnetic fields in excess of 0.3 to 0.4 μT [microtesla], twice as many children might develop leukaemia compared to a population with lower exposures. In spite of the large number data base, some uncertainty remains as to whether magnetic field exposure or some other factor(s) might have accounted for the increased leukaemia incidence.

Childhood leukaemia is a rare disease with 4 out of 100,000 children between the age of 0 to 14 diagnosed every year. Also average magnetic field exposures above

> 0.3 or 0.4 μT in residences are rare. It can be estimated from the epidemiological study results that less than 1 percent of populations using 240 volt power supplies are exposed to these levels, although this may be higher in countries using 120 volt supplies.
>
> The IARC review addresses the issue of whether it is feasible that ELF-EMF pose a cancer risk. The next step in the process is to estimate the likelihood of cancers in the general population from the usual exposures and to evaluate evidence for other (non-cancer) diseases. This part of the risk assessment should be finished by WHO in the next 18 months."

American Cancer Society

In the journal *A Cancer Journal for Clinicians*, the ACS reviewed EMF residential and occupational epidemiologic research in an article written by Dr. Clark W. Heath, Jr., ACS's Vice President of Epidemiology and Surveillance Research. Dr. Heath reviewed 13 residential epidemiologic studies of adult and childhood cancer. Dr. Heath wrote:

> "Evidence suggesting that exposure to EMF may or may not promote human carcinogenesis is mostly based on...epidemiologic observations...While those observations may suggest such a relationship for leukemia and brain cancer in particular, the findings are weak, inconsistent, and inconclusive...The weakness and inconsistent nature of epidemiologic data, combined with the continued dearth of coherent and reproducible findings from experimental laboratory research, leave one uncertain and rather doubtful that any real biologic link exists between EMF exposure and carcinogenicity."

American Medical Association

The AMA adopted recommendations of its Council on Scientific Affairs (CSA) regarding EMF health effects. The report was prepared as a result of a resolution passed by AMA's membership at its 1993 annual meeting. The following recommendations are based on the CSA's review of EMF epidemiologic and laboratory studies to date, as well as on several major literature reviews:

- Although no scientifically documented health risk has been associated with the usually occurring levels of electromagnetic fields, the AMA should continue to monitor developments and issues related to the subject.

- The AMA should encourage research efforts sponsored by agencies such as the National Institutes of Health, the U.S. DOE, and the National Science Foundation. Continuing research should include study of exposures to EMF and its effects, average public exposures, occupational exposures, and the effects of field surges and harmonics.

- The AMA should support the meeting of an authoritative, multidisciplinary committee under the auspices of the National Academy of Sciences or the National Council on Radiation Protection and Measurements to make recommendations about exposure levels of the public and workers to EMF and radiation.

3.6.5 California Public Utilities Commission Decision Summary

Background

On January 15, 1991, the CPUC initiated an investigation to consider its role in mitigating the health effects, if any, of EMF from utility facilities and power lines. A working group of interested parties, called the California EMF Consensus Group, was created by the CPUC to advise it on this issue. It consisted of 17 stakeholders representing citizens groups, consumer groups, environmental groups, state agencies, unions, and utilities. The Consensus Group's fact-finding process was open to the public, and its report incorporated concerns expressed by the public. Its recommendations were filed with the Commission in March 1992.

In August 2004, the CPUC began a proceeding known as a "rulemaking" (R.04-08-020) to explore whether changes should be made to existing CPUC policies and rules concerning EMF from electric transmission lines and other utility facilities.

Through a series of hearings and conferences, the Commission evaluated the results of its existing EMF mitigation policies and addressed possible improvements in implementation of these policies. The CPUC also explored whether new policies are warranted in light of recent scientific findings on the possible health effects of EMF exposure.

The CPUC completed the EMF rulemaking in January 2006 and presented these conclusions in Decision D.06-01-042:

- The CPUC affirmed its existing policy of requiring no-cost and low-cost mitigation measures to reduce EMF levels from new utility transmission lines and substation projects.

- The CPUC adopted rules and policies to improve utility design guidelines for reducing EMF, and provides for a utility workshop to implement these policies and standardize design guidelines.

- Despite numerous studies, including one ordered by the Commission and conducted by the California Department of Health Services, the CPUC stated, "we are unable to determine whether there is a significant scientifically verifiable relationship between EMF exposure and negative health consequences."

- The CPUC said it will "remain vigilant" regarding new scientific studies on EMF, and if these studies indicate negative EMF health impacts, the Commission will reconsider its EMF policies and open a new rulemaking if necessary.

In response to a situation of scientific uncertainty and public concern, the decision specifically requires PG&E to consider "no-cost" and "low-cost" measures, where feasible, to reduce exposure from new or upgraded utility facilities. It directs that no-cost mitigation measures be undertaken, and that low-cost options—when they meet certain guidelines for field reduction and cost—be adopted through the project certification process. PG&E was directed to develop, submit, and follow EMF guidelines to implement the CPUC decision. Four percent of total project budgeted cost is the benchmark in implementing EMF mitigation, and mitigation measures should achieve incremental magnetic field reductions of at least 15 percent.

No-Cost and Low-Cost Measures Incorporated Into Project

To comply with CPUC requirements, the following “no-cost” and “low-cost” measures have been considered in the design of the project:

- The first measure considered is optimal phasing. Optimal phasing involves inverting the phasing of one circuit on the same towers so that the magnetic fields emitted by the circuits cancel each other out more effectively. The phases of the CC-Moraga Line are already arranged for minimum magnetic field levels at the edge of the ROW. The existing phasing will be maintained by the project.

- The second measure is increasing the height of the line by increasing the tower height. Consistent with CPUC Decision D.06-01-042, which requires PG&E to consider “no-cost” and “low-cost” measures where feasible to reduce exposure from new or upgraded utility facilities, and consistent with PG&E’s EMF guidelines, PG&E identified and considered for EMF mitigation approximately 49 towers in the school and residential land use areas. Of these, approximately ten were previously raised under a separate maintenance project and three towers were not recommended for raises for engineering reasons. The work and cost required to raise the towers were evaluated against “low cost” or “no cost” criteria spelled out in the CPUC-approved EMF Design Guidelines for Electrical Facilities. Thus, as a result of this process, approximately 36 towers are anticipated to be raised by 15 to 16.5 feet under the Contra Costa-Moraga 230 kV Reconductoring for the purposes of reducing EMF exposure. It should be noted that the total number of towers to be raised under the project is larger (approximately 53 towers) because some towers need to be raised for reasons other than EMF. Other reasons to raise towers include compliance with CPUC GO 95, which requires a minimum clearance between the transmission line (conductor) and the ground depending on the characteristics of the conductor. Of the approximately 36 towers being raised for EMF purposes, 29 are being raised solely to reduce EMF exposure, and the remaining seven towers are being raised to address both EMF exposure and GO 95 clearance requirements.

4 INITIAL STUDY

4.0 EXISTING CONDITIONS

4.0.0 Existing Electrical System

PG&E owns and operates the CC-Moraga Line, which spans the cities of Antioch, Clayton, Concord, Walnut Creek, Lafayette, and Orinda; the Town of Moraga; and portions of unincorporated Contra Costa County. The existing line is located between Contra Costa Power Plant Substation in Antioch and Moraga Substation in Orinda—a distance of approximately 27 miles. A more detailed route description has been provided in Section 3.1 Project Location. Figure 1: Project Location Map depicts the CC-Moraga Line alignment. The project would require replacing the existing conductors with new conductors, and modifying approximately 64 of 132 existing lattice steel towers.

4.0.1 Local Setting and Land Use

The project lies in Contra Costa County, northeast of the San Francisco Bay. Suisun Bay and the deltas of the San Joaquin and Sacramento rivers lie to the north of the project. Most of the larger communities of the San Francisco Bay Area lie to the south and southwest. The project route passes through residential areas within the cities of Antioch, Clayton, Concord, Walnut Creek, Lafayette, and Orinda; the Town of Moraga; and unincorporated portions of Contra Costa County. The line also spans open space areas, including Black Diamond Mines Regional Preserve and Diablo Foothills Regional Park. The project route crosses many arterial roadways, including SR-4 and I-680.

The project route begins in a flat semi-industrial area along the south side of the San Joaquin River but begins to rise out of this alluvial plane within the first few miles. The remainder of the route traverses hilly residential areas interspersed with open space. A mixture of oak savanna, oak woodland, grassland, and chaparral characterize most of the area's vegetation patterns. Mount Diablo, located about 4 miles southeast of the project route, is a major landscape feature. The route terminates at Moraga Substation, which is set in a hilly and heavily wooded residential area of Moraga.

4.0.2 Natural Resources

The transmission line corridor crosses several named creeks, streams, and other waterways. These named features include Kirker Creek, Mount Diablo Creek, Galindo Creek, Arroyo Del Cerro, Pine Creek, San Ramon Creek, Tice Creek, Grizzly Creek, and Las Trampas. The nearest landlocked water body to the project area is Fay Hill Reservoir, located approximately 100 feet northeast of the project. The project is located less than 1 mile from Lafayette Reservoir, Contra Loma Reservoir, and Antioch Municipal Reservoir. In addition, the project is located approximately 0.6 mile southeast of Lake Alhambra.

Approximately half of the project—from Contra Costa Power Plant Substation to Tower 56—is located within the ECCC HCP/NCCP. The ECCC HCP/NCCP provides a framework to protect natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered species.

A number of upland and wetland vegetation communities, and man-made developed areas, are present with in the transmission line corridor. The most dominant community is non-native grassland, followed by areas that are developed or contain ruderal or ornamental vegetation.

Table 4: Land Cover Type Summary provides a summary of the types of land cover located within the project's construction areas. Table 5: Detailed Land Cover Type Assessment provides a detailed breakdown of the land cover types within each of the project's construction areas. Both tables summarize the land cover types inside and outside of the ECCC HCP/NCCP boundary.

Table 4: Land Cover Type Summary

Land Cover Type	Area Within ECCC HCP/NCCP Boundary (acres)	Area Outside ECCC HCP/NCCP Boundary (acres)	Total (acres)
Non-Native Annual Grassland	15.17	8.35	23.52
Non-Native Annual Grassland/Central Coast Riparian Scrub	--	1.59	1.59
Non-Native Annual Grassland/Oak Woodland	--	0.02	0.02
Chaparral Scrub/Oak Woodland	--	0.88	0.88
Developed/Ornamental/Ruderal	9.27	7.47	16.75
Total	24.44	19.07	42.75

Note: This information is preliminary and subject to adjustment based final engineering, ground conditions at the time of construction, and other factors.

The sections that follow provide a discussion of the project's potential impacts to environmental resources.

Table 5: Detailed Land Cover Type Assessment

Construction Area[15]	Approximate Size (acres)	Approximate Size within "Natural" Areas (acres)[16]	Land Cover Type	Notes
Pull Site 1 West	0.23	--	Developed	Contra Costa Power Plant Substation property
Pull Site 1 East	0.23	--	Developed	Contra Costa Power Plant Substation property
Work Area/Pull Site 1	3.11	3.11	Non-Native Annual Grassland	
Access to Work Area/Pull Site 1	0.46	--	Developed	
Crossing Structures 1 through 5	0.05	--	Developed/Ruderal	Disturbed area near roadside or railroad track
Access to Crossing Structure 3	0.14	--	Developed	Dirt road through vineyard
Access to Crossing Structure 5	0.70	--	Developed	Dirt road through vineyard
Work Area 4	0.08	--	Developed	Existing gravel lot
Access to Work Area 4	0.17	--	Developed	Dirt road through vineyard
Landing Zone 4	0.80	--	Ruderal	
Access to Landing Zone 4	0.13	--	Developed	
Crossing Structures 6 through 73	0.68	--	Ruderal/Non-Native Annual Grassland/Ornamental/Developed	
Pull Site 7 and 8	1.33	1.33	Non-Native Annual Grassland	Disked regularly

[15] Minor adjustments may be made to these work areas due to conditions on the ground or construction needs, subject to Lead Agency approval. No adjustments may be made without lead agency authorization, if they create new or additional significant environmental impacts that trigger a need for additional CEQA documentation.

[16] Construction areas with multiple types of land cover types were reviewed on a case-by-case basis. The primary land cover type was used to determine if the construction area was located within a natural area.

Construction Area[15]	Approximate Size (acres)	Approximate Size within "Natural" Areas (acres)[16]	Land Cover Type	Notes
Access to Pull Site 7 and 8	0.02	--	Developed	Dirt road on edge of vineyard
Work Area/Pull Site 11A	6.26	6.26	Non-Native Annual Grassland	Mowed/disked regularly
Access to Work Area/Pull Site 11A	0.14	--	Developed	Dirt and gravel road through highly disturbed ruderal field
Work Area/Pull Site 11B	--	--	Developed	Located in a currently disturbed area that is being developed as part of a Bay Area Rapid Transit Project
Landing Zone 11A	0.54	0.54	Non-Native Annual Grassland	Mowed/disked regularly. An alternate location for this Landing Zone has been identified with a disturbed portion of Contra Costa Substation.
Access to Landing Zone 11	0.02	0.02	Non-Native Annual Grassland	Mowed/disked regularly
Landing Zone 11B	--	--	Developed	Located within Contra Costa Substation
Access to Crossing Structures 16 and 17	0.02	--	Ruderal	Overland road through highly disturbed ruderal field
Access to Crossing Structures 18 and 19	0.13	--	Developed	Dirt access road through a disked, ruderal field
Work Area 12 NE/12 SW	0.11	--	Ruderal	Disked regularly
Access to Work Area 12 NE/Work Area 12 SW	0.16	--	Developed	Dirt access road through a disked, ruderal field
Crane Work Area 14	0.14	--	Developed	Located on Barmouth Drive
Crane Work Area 15	0.14	--	Developed	Located on Westbourne Drive
Crane Work Area 16	0.14	--	Developed	Located on Ashburton Drive
Work Area 17	0.11	0.11	Non-Native Annual Grassland	

Construction Area[15]	Approximate Size (acres)	Approximate Size within "Natural" Areas (acres)[16]	Land Cover Type	Notes
Access to Work Area 17	0.10	0.10	Non-Native Annual Grassland	
Crane Work Area 19	0.14	--	Developed	Located on Dandridge Court
Work Area 21	0.06	--	Ruderal	
Access to Work Area 21	0.01	--	Ruderal	
Work Area 22	0.06	--	Developed	Partially in paved parking lot and partially landscaped turf-grass (Chichibu Park)
Crane Work Area 23	0.14	--	Developed	Located on Davi Court
Work Area 24A	0.10	--	Ruderal	
Access to Work Area 24A	0.06	--	Ruderal	
Work Area 24B	0.10	--	Ruderal	
Access to Work Area 24B	0.10	--	Developed/Ruderal	
Work Area 26	0.11	--	Developed	
Work Area 27	0.06	--	Developed	
Work Area 28	0.06	--	Developed	
Crane Work Area 28	0.14	--	Developed	Located on Candlestick Drive
Work Area 29	0.07	0.07	Non-Native Annual Grassland	
Access to Work Area 29	0.06	--	Developed	Existing dirt road
Pull Site 29	0.52	--	Developed/Ruderal	Graded vacant lots in residential development
Crane Work Area 30	0.14	--	Developed	Located on Finch Court
Access to Tower 30	0.06	0.06	Non-Native Annual Grassland	

Construction Area[15]	Approximate Size (acres)	Approximate Size within "Natural" Areas (acres)[16]	Land Cover Type	Notes
Crossing Structures 74 through 76A	0.03	0.03	Non-Native Annual Grassland	
Access to Crossing Structure 76A	0.02	0.02	Non-Native Annual Grassland	
Work Area 31	0.25	0.25	Non-Native Annual Grassland	
Access to Work Area 31	0.01	0.01	Non-Native Annual Grassland	
Crossing Structures 77 through 81A	0.07	0.07	Non-Native Annual Grassland/Ruderal	
Access to Tower 34	1.02	--	Developed	
Landing Zone 35	0.43	0.43	Non-Native Annual Grassland	Mowed regularly
Access to Landing Zone 35	0.16	--	Developed	Gravel road
Pull Site 41A North	0.39	0.39	Non-Native Annual Grassland	
Access to Pull Site 41A North	0.18	--	Developed	Dirt road that is disked regularly
Pull Site 41A South	0.57	0.57	Non-Native Annual Grassland	
Access to Pull Site 41A South	0.11	--	Developed	Dirt road
Access to Landing Zone 43	0.12	--	Developed	Gravel road
Access to Crossing Structure 81A	0.19	--	Developed	Dirt road
Landing Zone 43	0.91	0.91	Non-Native Annual Grassland	
Pull Site 49	0.47	0.47	Non-Native Annual Grassland/ Ruderal	Near residential development
Crossing Structures 82 through 101	0.21	--	Developed/Ornamental/Non-Native Annual Grassland	

Construction Area[15]	Approximate Size (acres)	Approximate Size within "Natural" Areas (acres)[16]	Land Cover Type	Notes
Pull Site 50	0.23	0.23	Non-Native Annual Grassland/ Ornamental	Located in park
Crane Work Area 51	0.14	--	Developed	Located on paved access road from Blue Oak Lane
Work Area 52	0.25	0.25	Non-Native Annual Grassland	
Access to Tower 52	0.19	--	Developed	Gravel road
Crane Work Area 54	0.14	--	Developed	Located on paved access road from Indianhead Way
Crane Work Area 55	0.14	--	Developed	Located on Clayton Road
Subtotal within the ECCC HCP/NCCP Boundary	24.44	15.70	--	--
Crossing Structures 102 through 110	0.10	--	Developed/Ornamental/Non-Native Annual Grassland	
Crane Work Area 57	0.14	--	Developed	Located on Pine Hollow Road
Crane Work Area 59	0.14	--	Developed	Located on Froyd Road
Work Area 60	0.11	0.11	Non-Native Annual Grassland	
Access to Work Area 60	0.79	--	Developed	
Access to Crossing Structure 111 and 111A	0.46	--	Developed	Near active quarry
Crossing Structures 111 and 111A	0.02	--	Developed/Ruderal	Near active quarry
Pull Site 63	1.59	1.59	Non-Native Annual Grassland/Central Coast Riparian Scrub	
Access to Pull Site 63	0.83	--	Developed	

Construction Area[15]	Approximate Size (acres)	Approximate Size within "Natural" Areas (acres)[16]	Land Cover Type	Notes
Landing Zone 64	0.91	0.91	Non-Native Annual Grassland	
Access to Crossing Structure 112	0.15	--	Developed	Gravel road
Crossing Structures 112 to 119	0.07	--	Non-Native Annual Grassland/Ruderal	
Landing Zone 77	0.51	0.51	Non-Native Annual Grassland	
Access to Landing Zone 77	0.03	--	Developed	Existing dirt ranch road
Pull Site 77 North	1.12	1.12	Non-Native Annual Grassland	
Access to Pull Site 77 North	0.04	--	Developed	Existing dirt ranch road
Work Area 77	0.06	0.06	Non-Native Annual Grassland	
Access to Work Area 77	0.77	--	Developed	Existing dirt ranch road
Pull Site 77 South	0.42	0.42	Non-Native Annual Grassland	
Access to Pull Site 77 South	0.03	--	Developed	Existing dirt ranch road
Crossing Structures 120 and 121	--	--	Non-Native Annual Grassland	
Access to Crossing Structures 120 and 121	0.08	0.08	Non-Native Annual Grassland	
Crossing Structures 122 through 124	0.03	0.03	Non-Native Annual Grassland	
Crossing Structures 125 through 150	0.28	--	Developed/Ornamental/Non-Native Annual Grassland	Within or adjacent to residential developments

Construction Area[15]	Approximate Size (acres)	Approximate Size within "Natural" Areas (acres)[16]	Land Cover Type	Notes
Crane Work Area 86	0.14	--	Developed	Located on Rudgear Road
Crane Work Area 87	0.14	--	Developed	Located on Dapplegray Lane
Pull Site 88	0.69	--	Developed/Ornamental	Paved bicycle path in residential area
Crane Work Area 90	0.14	--	Developed	Located on Hackamore Court
Work Area 91	0.06	0.06	Non-Native Annual Grassland	
Access to Work Area 91	0.32	--	Developed	Existing dirt road
Landing Zone 91	0.51	0.51	Non-Native Annual Grassland	
Access to Landing Zone 91 from Work Area 91	0.03	--	Developed	Existing dirt road
Crane Work Area 93	0.14	--	Developed	Located on Vista Lane
Crane Work Area 94	0.14	--	Developed	Located On Sydney Drive
Crossing Structure 151 and 152	0.02	0.02	Oak Woodland/Non-Native Annual Grassland/Ruderal	
Landing Zone 96	0.23	0.23	Non-Native Annual Grassland	
Access to Landing Zone 96	0.13	--	Developed	
Work Area 97	0.06	0.06	Non-Native Annual Grassland/Ruderal	
Crossing Structures 153 through 162	0.11	--	Developed/Ornamental Vegetation/ Non-Native Annual Grassland/Ruderal	Within or adjacent to residential development
Work Area 98	0.06	0.06	Non-Native Annual Grassland/ Ornamental	
Access to Work Area 98	0.14	0.14	Non-Native Annual Grassland/ Ornamental	

Construction Area[15]	Approximate Size (acres)	Approximate Size within "Natural" Areas (acres)[16]	Land Cover Type	Notes
Pull Site 98	1.03	1.03	Non-Native Annual Grassland/ Ornamental	
Crane Work Area 99	0.14	--	Developed	Located on Terra Granada Drive
Crane Work Area 100	0.14	--	Developed	Located on Ptarmigan Drive
Work Area 101	0.19	0.19	Chaparral Scrub/Oak Woodland	
Access to Work Area 101	0.24	--	Developed	Dirt fire road
Work Area 102	0.23	0.23	Chaparral Scrub/Oak Woodland	
Access to Work Area 102	0.01	--	Developed	Dirt fire road
Crossing Structures 162A and 162B	--	--	Chaparral Scrub/Oak Woodland	Direct-buried crossing structures to be substituted for a "flower pot" or staged equipment
Work Area 102A	0.23	0.23	Chaparral Scrub/Oak Woodland	
Work Area 103	0.06	0.06	Chaparral Scrub/Oak Woodland	
Access to Work Area 103	0.22	--	Developed	Dirt fire road
Work Area 104	0.09	--	Developed	Roadside pullout covered in woodchips
Crossing Structures 165 through 174	0.11	0.11	Chaparral Scrub/Oak Woodland	
Work Area 107	0.38	0.38	Non-Native Annual Grassland	Partially within an existing dirt fire road
Access to Work Area 107	0.23	--	Developed	Dirt fire road
Landing Zone 110	0.51	0.51	Non-Native Annual Grassland	
Access to Landing Zone 110	0.13	--	Developed	Dirt fire road
Pull Site 112	0.69	0.69	Non-Native Annual Grassland	

Construction Area[15]	Approximate Size (acres)	Approximate Size within "Natural" Areas (acres)[16]	Land Cover Type	Notes
Work Area 114	0.15	0.15	Non-Native Annual Grassland	
Access to Work Area 114	0.33	0.33	Non-Native Annual Grassland	
Crossing Structure 175	0.01	0.01	Non-Native Annual Grassland	
Landing Zone 115	0.06	--	Developed	
Crossing Structures 176 through 182	0.08	--	Developed/Ornamental Vegetation/ Non-Native Annual Grassland/Ruderal	
Work Area 118	0.06	0.06	Oak Woodland	
Access to Work Area 118	0.31	0.31	Non-Native Annual Grassland	Surrounded by oak woodland
Crane Work Area 120	0.14	--	Developed	Located on Donald Drive
Crossing Structure 183	0.01	0.01	Non-Native Annual Grassland	
Crossing Structures 184 through 189	0.07	--	Developed/Ornamental Vegetation/ Non-Native Annual Grassland/Ruderal	
Pull Site 126	0.69	0.69	Non-Native Annual Grassland	
Access to Pull Site 126	0.03	--	Developed	Dirt road
Subtotal Outside of the ECCC HCP/NCCP Boundary	18.31	11.78	--	--
Total	42.75	27.48	--	--

Note: This information is preliminary and subject to adjustment based final engineering, ground conditions at the time of construction, and other factors.

4.1 AESTHETICS

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?			✓	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?			✓	
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			✓	
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?			✓	

A visual assessment involving analysis of the viewshed surrounding the project alignment and visual simulations of the modified towers has been prepared for this project. The following analysis summarizes the conclusions from that study.

Question 4.1a – Scenic Vista Effects – Less-Than-Significant Impact

One potentially affected scenic vista occurs along the project alignment, along North Gate Road in the City of Walnut Creek. North Gate Road is recognized by the City of Walnut Creek General Plan as having a panoramic view of Mount Diablo. In the vicinity of Tower 77, temporary construction-related activity—including equipment, materials, and work crews along the CC-Moraga Line—may be briefly visible from portions of North Gate Road. Because these effects would be visible only briefly by travelers, and brief in duration and temporary, lasting only approximately 2 weeks during pulling activities, they would be less than significant.

The existing CC-Moraga Line is a minor landscape element in views from this roadway, and the two towers situated closest to the roadway would not change as a result of the project. Because the existing line is already visible and because the project would result in a minor and incremental visible change of the scenic vista, the project would not have a substantial effect on this vista. As a result, impacts would be less than significant.

Question 4.1b – Scenic Resource Damage within a State Scenic Highway (i.e. trees, rock outcroppings, and historic buildings) – Less-Than-Significant Impact

The project would involve minor modifications to some of the existing transmission structures visible from I-680, a state scenic highway. However, the project would not affect trees, rock outcroppings, and historic buildings within the I-680 corridor. As described in Section 4.5 Cultural Resources, only one historic building eligible for listing in the California Register of Historic Resources (CRHR)—the Moraga Substation Transformer Handling House—has been

identified within the project area; however, this structure is not visible from I-680 and would not be altered and would not lose its historical significance.

The visual change in the one tower visible from I-680 would not be particularly noticeable from I-680 given the large original size of the structure, the limited change in tower height (approximately 15 feet) and the distance from the roadway to the tower. Because the project would cause a minor incremental change that would not substantially alter the character or quality of the landscape as seen by I-680 motorists, impacts would be less than significant.

Operation and maintenance of the CC-Moraga Line after construction would not be any different from that for the existing line. As such, there would be no impact.

Question 4.1c – Visual Character Degradation – Less-Than-Significant Impact

Temporary construction-related visual impacts would result from the visibility of a helicopter and ground-based equipment, materials, and work crews along the CC-Moraga Line and at the substations. Construction activity would be noticeable to varying degrees, and would be seen by local residents, motorists, and recreational users. Construction activities would take place over an approximately 12-month period; however, construction-related visual effects would be relatively short term because the duration of construction would be limited (several days to several weeks) at any individual location along the project alignment. Because of its temporary nature, this impact would be less than significant.

Approximately 53 of the towers would be modified with cage extensions to increase the structures' heights by approximately 15 to 16.5 feet. While the overall height of the towers would increase, their general appearance would be unchanged. Modifications within the developed, fenced portions of Contra Costa Power Plant Substation, Rossmoor Substation, and Moraga Substation would not be readily noticeable when compared to the existing views from outside the substation fence lines, given the presence of existing substation structures. The visual simulations in Attachment C: Visual Simulations demonstrate that the visual change associated with the project would not be noticeable to the public, particularly because of the minor amount of modification involved and the prior existence of the utility structures. Therefore, the project would cause a minor, incremental change to existing visual conditions and would not substantially affect the existing landscape character or visual quality in the project area. Thus, impacts would be less than significant.

Question 4.1d – New Light or Glare – Less-Than-Significant Impact

As described in Section 4.11 Noise, construction of the project would be limited to the daytime hours permitted by local ordinances except as necessary for safety or clearance requirements, as described in APM-NOI-01. As described in APM-NOI-06, If PG&E must unexpectedly extend construction hours due to a construction safety or emergency situation, PG&E would complete the work and terminate activities as quickly as is safely possible. As a result, no nighttime lighting would typically be required.

No permanent lighting is planned for the line, and no new lighting is planned for the substations. The tower extensions would add a small amount of additional surface area from which the amount of light or glare could increase. In addition, the new metal cage extensions would temporarily be slightly shinier than the older metal in the remainder of the tower; this difference is expected to last for one to two rainy seasons until the cage extension metal weathers. The project would also include the replacement of existing insulators with new non-specular ceramic insulators that would be grey in color, and would reduce potential glare. In addition, the new

conductors would weather to a dull gray finish. Therefore, no new sources of light and glare would be introduced, and impacts would be less than significant.

4.2 AGRICULTURE AND FORESTRY RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				✓
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				✓
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				✓
d) Result in the loss of forest land or conversion of forest land to non-forest use?		✓		
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?				✓

Question 4.2a – Farmland Conversion – No Impact

The project would only conduct work on an existing transmission route and would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Portions of the project are directly adjacent to agricultural land; however, none of the agricultural land would be permanently converted to non-agricultural use due to the temporary proposed work. Some grape vines would be removed for the installation of temporary crossing structures 3 and 5; however, upon removal of the crossing structures, the land would return to agricultural use. Therefore, no land use changes would occur as the result of this project and no impact would occur. Furthermore, operation and maintenance activities would not change as a result of the project. Therefore, no impact would occur.

Question 4.2b – Agricultural Zoning or Williamson Act Conflicts – No Impact

The project would have no impact on existing zoning for agricultural use, as no land would be converted or manipulated in agriculturally zoned areas. Work Area 77, Pull Site 77 North, Pull Site 77 South, and Landing Zone 77 would be located within land under Williamson Act

contract. However, temporary use of these work areas would not subdivide any parcels or result in any change to contract status or ownership. Therefore, no impact would occur.

Operation and maintenance activities would not result in any new conflicts with zoning for agricultural use or Williamson Act contracts. Therefore, no impact would occur.

Question 4.2c – Forest Land or Timberland Zoning Conflicts – No Impact

No land within the project ROW is currently zoned strictly for forest use by Contra Costa County. No portion of the project would span timberland or timberland zoned Timberland Production (TPZ). Therefore, the project would not conflict with existing zoning for forest land, timberland, or a TPZ, and no impact would occur.

Existing operation and maintenance activities would not change as a result of the project. Therefore, no impacts would occur as a result of operation and maintenance activities following construction.

Question 4.2d – Loss or Conversion of Forest Land – Less-Than-Significant Impact with Mitigation

Construction would only involve work on an existing transmission route and would not convert forest land to non-forest use. Portions of the project outside of the ROW are located in areas designated as forest land; however, none of the forest land would be converted to non-forest use due to the temporary proposed work.

Limited tree trimming and removal are anticipated in areas outside of the ROW designated as forest land. A preliminary review indicated that a limited number of young and mature trees—including but not limited to oak and blue laurel—would need to be trimmed and/or removed along the access roads and within construction areas in the vicinity of Towers 101, 102, and 103. PG&E's revegetation efforts, as required by APM-BIO-39, would include replacement of these or any trees that require removal with trees of the appropriate species and size. The area of impacted forest land would represent less than approximately 0.1 percent of the 40,750 acres of land designated as forest land in Contra Costa County, and the proposed amount of tree trimming and removal would not be enough to convert the impacted forest land to another cover type. Thus, construction would not result in the loss of forest land or conversion of forest land to non-forest use, and would have less-than-significant impacts.

While the project would have less-than-significant impacts, there are measures that could be implemented to further minimize the project's potential impacts on forestry resources. APM-BIO-39 requires PG&E restore areas disturbed during construction to pre-construction conditions.

Operation and maintenance activities would be conducted within the existing ROW and in the same manner as they were prior to this project. Therefore, operation and maintenance activities would not result in the loss or conversion of any forest land.

Question 4.2e – Other Farmland or Forest Land Conversion – No Impact

Project construction would not result in any other conversion of farmland to non-agriculture use, or forest land to non-forest use. In addition, because operation and maintenance activities would be conducted in the same manner as they were prior to the project and within established ROWs, operation and maintenance activities would not result in any other permanent conversion of farmland to non-agriculture use or forest land to non-forest use.

4.3 AIR QUALITY AND GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?		✓		
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		✓		
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?		✓		
d) Expose sensitive receptors to substantial pollutant concentrations?		✓		
e) Create objectionable odors affecting a substantial number of people?			✓	
f) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?		✓		
g) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				✓

The BAAQMD CEQA Air Quality Guidelines provide a set of criteria to assist in the preliminary evaluation of the impacts to air quality as a result of project activities. An air quality analysis for the project was conducted using these criteria. Details of the regulatory framework and the analysis are available in the Air Quality and Greenhouse Gas Emissions Technical Report prepared for this project. The discussion below summarizes the conclusions in that report.

Question 4.3a – Air Quality Plan Conflicts – Less-Than-Significant Impact with Mitigation

As shown in Table 6: Average Daily Construction Emissions from Vehicle Use, the average daily emissions of particulate matter (PM) less than 10 microns in diameter (PM_{10}), PM less than 2.5 microns in diameter ($PM_{2.5}$), nitrogen oxides (NO_x), and volatile organic compounds (VOCs) would be below the BAAQMD significance thresholds.[17] The BAAQMD does not have a quantitative threshold for fugitive dust during construction activities. Rather, compliance with the BAAQMD's CEQA Air Quality Guidelines requires projects to implement BMPs that control

[17] The latest BAAQMD CEQA Guidelines were adopted in 2010. These guidelines are currently under CEQA review and have been included in this analysis for reference purposes.

fugitive dust. The average daily fugitive dust emissions from project construction would consist of approximately 10.42 pounds of $PM_{2.5}$ and approximately 24.24 pounds of PM_{10}. The calculation of these fugitive dust emission rates has taken into account the implementation of APM-AIR-01 through 04, which include daily watering of unpaved construction areas, covering of haul trucks that transport earth material, and other measures. In addition, APM-BIO-22, which limits traffic on project access roads and overland access routes to 15 mph, would be implemented. Fugitive dust emissions due to construction would be less than significant with the implementation of APM-AIR-01 through 04, which are consistent with the BMPs included in the BAAQMD's CEQA Air Quality Guidelines; APM-BIO-22; and the project-specific SWPPP. As shown in Table 6: Average Daily Construction Emissions from Vehicle Use, implementation of these required BMPs and APMs would ensure that BAAQMD thresholds would not be exceeded and the project would not conflict with any applicable air quality plans; therefore, impacts would be less than significant with mitigation.

Table 6: Average Daily Construction Emissions from Vehicle Use

Category	Simulated Average Daily Emission Rate (pounds per day)					
	$PM_{2.5}$	PM_{10}	NO_x	SO_x	CO	VOCs
Emission Source						
Off-Road Vehicles	1.49	1.81	39.20	0.00	26.89	5.05
On-Road Vehicles	0.26	0.29	7.76	0.02	2.20	0.52
Helicopters	1.98	3.43	5.75	1.81	5.75	1.83
Total	3.73	5.53	52.71	1.83	34.84	7.40
Applicable Threshold	54	82	54	–	–	54
Threshold Exceeded?	No	No	No	Not Applicable (NA)	NA	No

Note: SO_x = sulfur oxides, CO = carbon monoxide

PG&E currently owns and operates the existing CC-Moraga Line, and the existing operation and maintenance activities would not change as a result of the project. Modifications to Contra Costa Power Plant Substation, Rossmoor Substation, and Moraga Substation would be minor, involving the replacement of existing equipment and structures. No generators or other emission-generating equipment would be installed. As a result, there would be no additional operational emissions and no associated impact.

Question 4.3b – Air Quality Standard Violations – Less-Than-Significant Impact with Mitigation

Criteria Air Pollutant Emissions

As described above, with the implementation of APM-AIR-01 through 04, project emissions would not exceed the California Ambient Air Quality Standards or National Ambient Air Quality

Standards, and would not contribute substantially to any existing or project-related air quality violations for criteria pollutants for which the BAAQMD is currently designated as nonattainment—ozone (O_3), $PM_{2.5}$, or PM_{10}.

In addition, project emissions would comply with the significance limits for PM_{10} and $PM_{2.5}$ set by the BAAQMD for construction projects. Due to the short-term nature of these emissions and the compliance with all applicable significance thresholds, impacts from O_3, $PM_{2.5}$, and PM_{10} would be less than significant. The project would not violate any air quality standards or contribute substantially to an existing or projected air quality violation. While the BAAQMD is designated as attainment for nitrogen dioxide, with the implementation of APM-AIR-05 and 06, the simulated NO_x emissions would show compliance with the BAAQMD CEQA Air Quality Guidelines. As a result, impacts would be less than significant with mitigation.

Once operational, the project would not create any air emissions beyond those associated with maintenance and repair of the project. Because the project is already operated and maintained by PG&E and these activities would not change as a result of the project, there would be no impact as a result of operation and maintenance activities.

Greenhouse Gas Emissions

The California Air Resources Board (CARB) and BAAQMD have not developed quantitative greenhouse gas (GHG) emission thresholds for construction. On October 24, 2008, the CARB released its interim CEQA significance thresholds for GHGs. The guidance divides projects analyzed under CEQA into two categories—industrial and residential/commercial—and provides significance criteria for each. The project qualifies as an industrial project; thus, impacts would be considered less than significant if the project with mitigation would emit no more than approximately 7,000 metric tons per year of carbon dioxide (CO_2) equivalent (CO_2e) per year from operation of non-transportation-related GHG sources. Table 7: GHG Emissions from Construction presents the total GHG emissions expected from project construction. The project's construction emissions, when totaled across the entire approximately 12-month construction schedule, would be approximately 1,575 metric tons (MT) of CO_2e, which would be less than 0.1 percent of the projected annual CO_2e emissions in Contra Costa County and well below the CARB limit of 7,000 MT.

Although GHG emissions without implementation of the APMs would be below relevant significance thresholds, APM-AIR-05 and 06 have been proposed to further reduce GHG emissions, as suggested by the BAAQMD's CEQA Air Quality Guidelines. The reduction associated with all APMs cannot be calculated using the URBEMIS model, but it is estimated that CO_2 emissions would be reduced by approximately 5 percent with the implementation of APM-AIR-05 and 06. Therefore, emissions would be reduced by approximately 75 MT, from 1,575 MT to approximately 1,500 MT. Therefore, impacts would be less than significant with mitigation.

As described previously, once operational, the existing maintenance and repair activities associated with the transmission line and substations would not change as a result of the project, and there would be no impact as a result of these activities.

Table 7: GHG Emissions from Construction

Equipment Type	CO_2 Emissions (metric tons)	Methane (CH_4) Emissions (metric tons)	Nitrous Oxide (N_2O) Emissions (metric tons)	CO_2e Emissions (metric tons)
Emission Source				
Off-Road Vehicles	1,005.11	0.057	0.026	1,014.29
On-Road Vehicles	195.65	0.006	0.006	197.75
Helicopters	359.18	0.010	0.012	363.00
Total	1,559.94	0.073	0.044	1,575.05
Approximate Reduction due to APM-AIR-05 and 06	78.00	0.004	0.002	78.75
Total with APMs	1,481.94	0.069	0.042	1,496.30

Question 4.3c – Criteria Pollutant Increases – Less-Than-Significant Impact with Mitigation

As described previously, construction of the project would lead to a temporary increase in criteria air pollutants. To minimize fugitive dust emissions, PG&E would implement APM-AIR-01 through 04. APM-BIO-22, which would reduce vehicle speeds on unpaved areas, would also be implemented. To reduce NO_x emissions, PG&E would implement APM-AIR-05 and 06, which include limiting equipment idling time and maintaining equipment in accordance with PG&E's company standards. With implementation of these APMs, all criteria air pollutant emissions would comply with applicable BAAQMD guidelines and fall below the applicable BAAQMD thresholds. Therefore, impacts would be less than significant with mitigation.

Once operational, the project would not generate any criteria pollutants beyond those currently associated with maintenance and repair of the project. Because operation and maintenance activities would not change after construction, no impact would occur.

Question 4.3d – Sensitive Receptor Exposure – Less-Than-Significant Impact with Mitigation

For purposes of this evaluation, a "sensitive receptor" is an area where human populations—especially children, seniors, and sick persons—are located, and where there is reasonable expectation of continuous human exposure within air quality standard averaging periods (i.e., 24-hour, 8-hour, and 1-hour). Sensitive receptors typically include residences, hospitals, and schools.

Some residential properties and schools are located directly adjacent to the alignment. Approximately five pull sites and one work area are located within 80 feet of a residence or school. Due to their proximity to the project, these sensitive receptors would be exposed to temporary increases in criteria air pollutants from fugitive dust and increased equipment use within temporary work spaces and landing zones. In addition, construction activities would generate toxic air contaminants (TACs) in the form of diesel PM from on-road vehicle and off-

road equipment use. Due to the nature of this project, these exposures would be limited to construction areas where active construction would typically last between 1 and 14 days. In addition, no dust-emitting demolition activities would occur as part of the project. As a result, impacts would be considered less than significant without the implementation of APMs.

While the project would have less-than-significant impacts, APM-AIR-05 and 06, which limits vehicle idling time and would ensure that equipment is properly maintained, would further reduce the TAC emissions in these areas. With these APMs, impacts to sensitive receptors would be less than significant with mitigation.

The number of vehicular and aerial inspections required to operate and maintain the transmission line and substations is not anticipated to change as a result of the project. Because operation and maintenance activities would not change after construction, no new sensitive receptors would be exposed to pollutants and no new impacts would occur.

Question 4.3e – Odor – Less-Than-Significant Impact

Typical odor nuisances include hydrogen sulfide, ammonia, chlorine, and other sulfide-related emissions. No significant sources of these pollutants would be used or disturbed during construction. Diesel engines used during construction could also emit odors. As previously described, some residences are located directly adjacent to the project alignment. However, because there would be few sources of odor and construction would be short term, lasting only a few days at each tower, impacts due to odor would be less than significant.

As described previously, operation and maintenance activities for the project would not differ following construction. As a result, there would be no changes in odor emissions during operation and maintenance activities, and there would be no impact.

Question 4.3f – Greenhouse Gas Emissions – Less-Than-Significant Impact with Mitigation

The BAAQMD has not adopted GHG significance thresholds for construction-related emissions. The project would generate approximately 1,575 $MTCO_2e$ before the implementation of APMs, and approximately 1,500 MT after, when totaled across the approximately 12-month construction period. The amount of $MTCO_2e$ generated would remain below the CARB's annual operational threshold of 7,000 $MTCO_2e$ for non-transportation sources. As a result, impacts would be less than significant without the use of APMs.

While the project would have less-than-significant impacts, APM-AIR-05 and 06 have been proposed to further reduce GHG emissions, as suggested by the BAAQMD's CEQA Air Quality Guidelines. Due to the short-term nature of the emissions and the fact that no significance thresholds would be exceeded, the GHG emissions related to construction would be less than significant with mitigation.

As described previously in the response to Question 4.3b, the BAAQMD has established operational-related GHG significance thresholds.[18] For non-stationary source projects, such as public land uses and facilities, the BAAQMD threshold is 1,100 $MTCO_2e$ during operation. Once operational, the project would not create any GHG emissions beyond those currently associated with the ongoing maintenance and repair of the project, which would not exceed the established

[18] The latest BAAQMD CEQA Guidelines were adopted in 2010. These guidelines are currently under CEQA review and have been included in this analysis for reference purposes.

BAAQMD threshold in any event. Because operation and maintenance activities would not change after construction, there would be no impact associated with operation of the project.

Question 4.3g – Applicable Greenhouse Gas Plan Conflicts – No Impact

As previously described in the response to Question 4.3f, the project's simulated construction emissions would be below applicable GHG significance thresholds. Construction of the project would not conflict with any state or local GHG plans or goals. Once operational, the project would not create any GHG emissions beyond those currently associated with maintenance and repair of the project, and current operation and maintenance activities do not conflict with any applicable GHG plans. Because operation and maintenance activities would not change after construction, no impact would occur.

4.4 BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		✓		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		✓		
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		✓		
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			✓	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				✓
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				✓

The section describes the biological resources in the vicinity of the project, and identifies potential impacts to habitats and species that could result from the construction, operation, and maintenance of the project. In addition, potential impacts to riparian communities, jurisdictional wetlands and waters, and migratory wildlife corridors are addressed. The ECCC HCP/NCCP was reviewed to confirm that construction of the project would not conflict with the goals,

objectives, and policies of the ECCC HCP/NCCP. With the implementation of PG&E's APMs, which are listed in Section 3.5 Applicant-Proposed Measures, the impacts of the project on biological resources would be less than significant.

Methodology

The potential for special-status plant and wildlife species to occur in the vicinity of the CC-Moraga Line was determined based on the results of a desktop review of biological literature and databases, a general habitat assessment survey, focused surveys for listed reptiles and amphibians, a branchiopod habitat assessment, and a botanical resource survey. For the purposes of this document, construction areas are defined as the immediate area of disturbance at each work area, pull site, landing zone, crossing structure work area, overland access route, and dirt or gravel access road. Species are considered special status if they meet one or more of the following criteria:

- Plant and animal species listed as endangered, threatened, or candidates for listing under the federal ESA
- Plant and animal species listed as endangered, threatened, or candidates for listing under the California Endangered Species Act
- Animals designated as Fully Protected Species, as defined in California Fish and Game Code Sections 3511, 4700, 5050, and 5515
- Animal species designated as Species of Special Concern (SSC) by the CDFW
- Plant species listed as California Rare Plant Rank (CRPR) 1B, 2, 3, or 4 by the California Native Plant Society (CNPS)

In addition, bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), which are protected by the Bald and Golden Eagle Protection Act (BGEPA), are considered special-status species.

Literature and Database Review

A search was conducted of relevant literature and databases, including the California Natural Diversity Database (CNDDB) maintained by the CDFW. Special-status plant and wildlife species occurrences within a 5-mile buffer of the CC-Moraga Line were identified.[19] A review of a species list provided by the USFWS Sacramento Fish and Wildlife Office's species list generator, was conducted across the six USGS 7.5-minute quadrangles spanned by the project—Antioch North, Antioch South, Clayton, Las Trampas Ridge, Oakland East, and Walnut Creek—were searched. Additional sources of information included biological resource surveys Insignia Environmental (Insignia) has conducted for previous projects in the project vicinity; the CNPS Inventory of Rare and Endangered Vascular Plants of California; aerial photographs; National Wetland Inventory data; USFWS species profiles; CDFW life history accounts and range maps; the Contra Costa County, California Breeding Bird Atlas (Flying Emu Birding Pages 2011); the CDFW's Special Plants and Animals List – Recent List Changes (CDFW 2011); and the PG&E Delta Distribution Planning Area Capacity Increase Substation Project's Proponent's Environmental Assessment. Critical habitat designations provided by the USFWS were reviewed to identify areas of designated critical habitat spanned by the project in order to identify significant listed species habitat in the vicinity of the CC-Moraga Line. The ECCC HCP/NCCP and other reports resulting from studies conducted in the vicinity of the CC-Moraga

[19] The 5-mile CNDDB search included portions of the following U.S. Geological Survey (USGS) quadrangle maps: Briones Valley, Oakland West, Oakland East, Walnut Creek, Las Trampas Ridge, Honker Bay, Clayton, Diablo, Antioch North, Antioch South, Jersey Island, and Brentwood.

Line were also reviewed. These sources were used to identify the special-status plant and wildlife species with potential to occur in the vicinity of the CC-Moraga Line. A number of additional information sources were reviewed before the botanical resource surveys were conducted. These include, but are not limited to: the Consortium of California Herbaria; the CDFW Special Vascular Plants, Bryophytes and Lichens List; the Annotated Checklist of the East Bay Flora, Unusual and Significant Plants of Alameda and Contra Costa Counties; and Flowering Plants and Ferns of Mount Diablo.

Field Surveys

Insignia biologists John Kunna and Michele Barlow conducted a reconnaissance-level survey of the construction areas in June 2010. Insignia biologists John Kunna and Kristi Bischel conducted a general habitat assessment on July 22, 2010. Insignia biologists DJ Allison and Kristi Bischel conducted field visits on August 2 and 3, 2010, to support the previous habitat assessment. Insignia biologists John Kunna and Kristi Bischel conducted further refinement of the habitat assessments during field visits with PG&E construction representatives on November 15 and 16, 2010. During these field visits, habitat was assessed to determine the potential for special-status wildlife in the vicinity of each landing zone, pull site, work area, and overland access route. Insignia biologists Peter Boice and Lisa Eigner conducted additional field visits on May 31 and June 1, 2012, to assess work areas and access routes that were added to the project after the 2010 field visits. In 2012, helicopter and ground surveys were conducted to identify potential raptor nests and suitable raptor nesting and foraging habitat in the vicinity of the construction areas. Insignia biologist Peter Boice and California Environmental Services biologist Gretchen Flohr conducted a reconnaissance-level survey to identify suitable branchiopod habitat within 250 feet of certain construction areas. On May 24 and June 5, 2013, Insignia biologists Peter Boice and Jesse Reebs conducted an additional reconnaissance-level survey to assess construction areas and access routes that were added to the project after the 2012 field visits. An additional, 1-day reconnaissance-level survey was conducted by Insignia biologist John Kunna on June 18, 2013 to evaluate the construction areas identified for use during switch installation. Insignia biologist Jesse Reebs conducted a 1-day reconnaissance-level survey of Landing Zone 4, its associated access road, and access to Tower 34 on March 13, 2014.

In 2012, Senior Herpetologist Karen Swaim of Swaim Biological, Inc. was contracted for her expert opinion on federally and state-listed reptiles and amphibians, including potential project impacts to these species. Karen Swaim conducted additional habitat assessments and surveys of selected habitat areas/planned work sites. The complete focused survey report has been included in the project's Biological Assessment.

Nomad Ecology (Nomad) conducted botanical resource surveys of the construction areas in the spring and summer of 2010, with follow-up surveys of new construction areas in the spring and summer of 2011. Specifically, Nomad biologist Heath Bartosh conducted focused botanical surveys of the CC-Moraga Line on April 9; April 12 through 16; May 11, 12, 25, and 27; June 16 and 18; and September 23 and 24, 2010. Heath Bartosh was aided by Garcia and Associates botanist Eric Wrubel on April 16, 19, 20, 28, and 30; and May 3, 4, and 5, 2010. Additional construction areas were identified following the conclusion of the 2010 botanical survey season. Thus, supplemental surveys of these new construction areas were conducted in 2011 by Heath Bartosh and Nomad botanist Erin McDermott on April 18, May 23, June 21, and September 15. After more construction areas were added in 2012, protocol-level botanical surveys in these locations were conducted by Nomad Ecology senior botanist Heath Bartosh on April, 5, May 16, and September 19, 2013 and botanist Katie Gallagher on June 13, 2013. Botanists Erin

McDermott and Annemarie Abbondanzo accompanied Mr. Bartosh on the May and September dates, respectively.

These surveys were conducted during timeframes that were appropriate for the identification of special-status plants with potential to occur in the construction areas. Nearby known reference populations of special-status plants were visited to ensure that the phenological timing of the surveys was correct.

The study area for these botanical resource surveys included all construction areas and an approximately 30-foot radius around each CC-Moraga Line tower. During these surveys, vegetation communities and special-status plant species were documented. The survey was conducted by qualified botanists and in accordance with CNPS Botanical Survey Guidelines; the CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities; and the USFWS's Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants.

Question 4.4a – Sensitive Species – Less-Than-Significant Impact with Mitigation

Relevant literature and databases identified a total of 120 special-status species—72 plants and 48 animals—with the potential to occur in the vicinity of the CC-Moraga Line. The project's Biological Assessment and State-Protected Species Assessment provide detailed descriptions of the methods used to identify species with a potential to occur in the vicinity of the CC-Moraga Line.

Special-Status Plants

Based on the results of the literature and database reviews and general habitat assessment survey, 72 special-status plant species were considered in the assessment. Of these 72 plant species, 14 are state-listed as endangered, threatened, or rare, and all of the species are CNPS list 1 through 4 species. Results of the botanical survey found that, of the 72 special-status species considered, 4 are present in the vicinity of the construction areas. The remainder of the special-status plant species were determined to have no potential to occur or to be unexpected to occur based on a lack of suitable habitat in the construction areas, range restrictions, elevation restrictions, or the fact that they would have been detectable during the spring and summer 2010, 2011, and 2013 surveys and were not observed.

The special-status plant species found to be present in the vicinity of the construction areas include:

- Contra Costa manzanita (*Arctostaphylos manzanita* ssp. *laevigata*), CNPS CRPR 1B.2
- Oakland star tulip (*Calochortus umbellatus*), CNPS CRPR 4.2[20]
- Hospital Canyon larkspur (*Delphinium californicum* var. *interius*), CNPS CRPR 1B.2[21]
- Diablo helianthella (*Helianthella castanea*), CNPS CRPR 1B.2

While all four species were found within the vicinity of the construction areas, only two—Diablo helianthella and Oakland star tulip—were present in close proximity to construction areas. Approximately 10 individuals of Oakland star tulip were observed approximately 25 feet east of

[20] The CNPS maintains an Inventory of Rare or Endangered Vascular Plants of California. CNPS Rare Plant Rank 4 species include a watch list of plants that are of limited distribution or infrequent throughout a broader area in California.

[21] CNPS CRPR 1B.2 species are rare, threatened, or endangered in California and elsewhere, and are fairly endangered in California.

Tower 103 during the 2010 rare plant surveys. One population of Diablo helianthella was observed within 30 feet of Towers 103 and 104 during the 2010 rare plant surveys.

The remaining two species—Contra Costa manzanita and Hospital Canyon larkspur—were observed within the vicinity of the construction areas, but are unlikely to occur within the construction areas. During the 2011 surveys, a single population represented by one individual of Contra Costa manzanita was observed within the study area along Black Diamond Way approximately 0.5 mile south of Tower 42 near a road junction in non-native annual grassland. During the 2010 surveys, a single population of Hospital Canyon larkspur was observed within the vicinity of construction areas on the Mangini Ranch, located immediately east of the access road to Tower 69. This population comprises approximately 250 individuals. Although the access road to Tower 69 abuts this population, direct impacts to individuals or the seed bank are not anticipated since there is no need for project-related activities to enter the desert olive scrub patch, which supports this taxon.

Locally Rare Plants

In addition to special-status plant species observed during the botanical surveys and described in Attachment D: Special-Status Plant Species and Potential to Occur, 40 plant species that are considered locally rare were also observed within the vicinity of the CC-Moraga Line during the botanical surveys. A locally rare designation does not warrant protection by the CDFW; however, it may warrant consideration under CEQA Code Section 15125(c) and 15380. Of the 40 locally rare plant species observed, 10 species meet criteria warranting consideration under CEQA. The remaining 30 species are not discussed further in this document. Additional information regarding locally rare plant species is provided in the project's Botanical Resource Survey Report. In addition, four of the 10 species are CNPS listed species and, therefore, were also discussed previously in this document. Locally rare species that were observed in the vicinity of the CC-Moraga Line include:

- Contra Costa manzanita, CNPS CRPR 1B.2
- Deltoid balsam root (*Balsamorhiza deltoidea*)
- Glandular big tarplant (*Blepharizonia laxa*)
- Oakland star tulip, CNPS CRPR 4.2
- Hospital Canyon larkspur, CNPS CRPR 1B.2
- Desert olive (*Forestiera pubescens*)
- Yellow mustard (*Guillenia flavescens*)
- Diablo helianthella, CNPS CRPR 1B.2
- Indian tobacco (*Nicotiana quadrivalvis*)
- Hairy flowered buckwheat (*Eriogonum nudum* Douglas ex Benth var. *pubiflorum* Benth)

While all 10 species were found within the vicinity of the CC-Moraga Line, only three—Diablo helianthella, Oakland star tulip, and hairy flowered buckwheat—were present within 25 feet of the construction areas. A detailed discussion of the botanical resource survey results is included in the project's Botanical Resource Survey Report.

Special-status plant species could be impacted by the project during the use of construction areas and during improvements to existing access roads. Impacts could include temporary disturbance of and/or permanent loss of individual special-status plants, disturbance of their seed banks, or the introduction of weed species. Of the four special-status plant species and five additional locally rare plant species observed during botanical resource surveys conducted in 2010 and 2011, only two—Diablo helianthella and Oakland star tulip—were found within

areas that could be temporarily impacted by the project. Approximately 10 individuals of Oakland star tulip were observed approximately 25 feet east of Tower 103 during the 2010 rare plant surveys. One population of Diablo helianthella was observed within 30 feet of both Towers 103 and 104 during the 2010 rare plant surveys. According to the botanical survey results, Diablo helianthella may occur within or near Work Area 103. Although Oakland star tulip was also observed in the vicinity of Tower 103, it was not observed within Work Area 103. The remainder of the special-status and/or locally rare plant species observed during the botanical surveys were not located within construction areas during rare plant surveys conducted in 2010 and 2011. During the 2013 surveys of additional construction areas, a single locally rare plant species—hairy flowered buckwheat—was observed within Work Area 31. This species is considered an A1 species by the East Bay Chapter of CNPS, which means that it is from two or less botanical regions in Alameda and Contra Costa counties, either currently or historically. Based on the proximity of special-status plants species to certain construction areas, the project has the potential to cause adverse effects to special-status plant species without the implementation of APMs.

In order to avoid and minimize any potential effects to special-status plant species, PG&E has designed APMs to be implemented prior to, during, and following construction. As described in Section 3.5 Applicant-Proposed Measures, PG&E would implement APM-BIO-12 and 16, which require that all special-status and locally rare plant species would be identified and flagged for avoidance prior to construction. In addition, in accordance with APM-BIO-15, a qualified biologist would conduct environmental training for construction personnel regarding all sensitive species. Furthermore, in accordance with APM-BIO-19, a qualified biologist would be present during work within sensitive areas, including those in the vicinity of special-status and/or locally rare plant species. PG&E would also implement APMs-BIO-28, 38, and 39 which specify that vegetation clearing would be limited to the minimum amount required, vehicles would be cleaned to prevent the spread of noxious weeds, and that all impacted areas would be returned to pre-construction conditions after construction is completed. As discussed in Section 3.5 Applicant-Proposed Measures and APM-BIO-41, any additional measures associated with permits obtained from resource agencies prior to construction also would be implemented.

Special-Status Wildlife

Results of the literature and database reviews indicated a potential for 48 special-status wildlife species to occur within 5 miles of the CC-Moraga Line. The results of the research and field work conducted for the project found that, of these 48 species, 11 are present or have a high potential to occur, 10 have a moderate potential to occur, and 3 have a low potential to occur within the construction areas. In addition, 24 of the special-status wildlife species were determined to have no potential to occur due to range restriction or a lack of suitable habitat in the construction areas. The potential for special-status wildlife species to occur in the construction areas is further described in Attachment E: Special-Status Wildlife Species and Potential to Occur.

The following 11 special-status wildlife species have a high potential to occur, or are known to occur, within the construction areas:

- California tiger salamander (*Ambystoma californiense*), federally listed as Threatened (FT) and state-listed as Threatened (CT)
- Pallid bat (*Antrozous pallidus*), SSC
- Golden eagle (*Aquila chrysaetos*), fully protected species (FP) and BGEPA
- Burrowing owl (*Athene cunicularia*), SSC

- Swainson's hawk (*Buteo swainsoni*), CT
- White-tailed kite (*Elanus leucurus*), FP
- Western red bat (*Lasiurus blossevillii*), SSC
- Alameda whipsnake (*Masticophis lateralis euryxanthus*), FT and CT
- San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), SSC
- Foothill yellow-legged frog (*Rana boylii*), SSC
- California red-legged frog (*Rana draytonii*), FT and SSC

The following 10 special-status wildlife species have a moderate potential to occur within the construction areas:

- Grasshopper sparrow (*Ammodramus savannaru*), SSC
- Silvery legless lizard (*Anniella pulchra pulchra*), SSC
- Vernal pool fairy shrimp (*Branchinecta lynchi*), FT
- Townsend's big-eared bat (*Corynorhinus townsendii*), SSC
- Western pond turtle (*Emys marmorata*), SSC
- Loggerhead shrike (*Lanius ludovicianus*), SSC
- Vernal pool tadpole shrimp (*Lepidurus packardi*), federally listed as Endangered (FE)
- Coast horned lizard (*Phrynosoma blainvillii*), SSC
- American badger (*Taxidea taxus*), SSC
- San Joaquin kit fox (*Vulpes macrotis mutica*), FE and CT

The following three special-status wildlife species were found to have a low potential to occur within the construction areas:

- Tricolor blackbird (*Agelaus tricolor*), SSC
- Belted kingfisher (*Ceryle alcyon*), SSC
- Northern harrier (*Circus cyaneu*), SSC

Detailed descriptions of the habitat, distribution, and life history of each of the aforementioned federally listed species are provided in the project's Biological Assessment. The remaining, non-federally listed, special-status species are described in the project's State-Protected Species Assessment.

Special-Status Invertebrate Species

Vernal Pool Fairy Shrimp

Construction areas were sited to avoid all potential aquatic, wetland, and vernal pool habitat to the maximum extent feasible. No vernal pools are located within any of the construction areas; however, one seasonal wetland is located along the overland access route to Work Area 114. This seasonal wetland was assessed for potential to support vernal pool fairy shrimp, and it was determined that the wetland is outside the known range of vernal pool fairy shrimp. In addition, the seasonal wetland does not contain suitable vernal pool fairy shrimp habitat, because it is too densely vegetated with grasses, and the only features that hold water are isolated cattle hoof prints. Furthermore, there are no CNDDB occurrences of this species within 5 miles of the seasonal wetland. Therefore, there is no potential that vernal pool fairy shrimp would occur in the seasonal wetland. In order to further reduce impacts to the seasonal wetland, PG&E would follow the BMPs outlined in the SWPPP. With the exception of the seasonal wetland along the access route to Work Area 114 that, on closer inspection, was determined to be unsuitable for vernal pool fairy shrimp, no suitable habitat was identified within any of the construction areas or

overland access routes. Because there is no suitable habitat for vernal pool fairy shrimp within the construction areas or access roads, no direct impacts to vernal pool fairy shrimp are anticipated.

Indirect impacts to vernal pool fairy shrimp may occur as a result of ground-disturbing activities in the vicinity of the suitable vernal pool fairy shrimp habitat. Ground-disturbing activities may alter the hydrologic conditions of the area, and negatively affect vernal pool fairy shrimp habitat.

In order to avoid and minimize any potential indirect effects to vernal pool fairy shrimp, no major ground-disturbing activities, such as grading, would be conducted within 250 feet of suitable vernal pool fairy shrimp habitat. Some minor ground-disturbing activities may occur within 250 feet of suitable vernal pool fairy shrimp habitat, such as crossing structure installation. However, crossing structure installation requires minimal ground disturbance, and is unlikely to impact the hydrology of the area. If there is a potential for crossing structure installation to impact vernal pool fairy shrimp habitat, PG&E would use an alternative method that does not involve ground disturbance, such as using a bucket truck or installing a flower pot. PG&E plans to use a bucket truck or a flower pot at Crossing Structures 112, 120, and 121, due to their proximity to suitable vernal pool fairy shrimp habitat. In addition, unrestricted runoff from the construction areas has the potential to cause sedimentation of suitable vernal pool fairy shrimp habitat. In accordance with APM-BIO-21, PG&E would implement the BMPs included in the SWPPP developed for the project. These BMPs would prevent sediment and other materials from being transported from the construction areas into adjacent water bodies or drainages. BMPs included in the project SWPPP would be implemented which would control sedimentation, erosion, and hazardous liquids that could impact the quality of water in any aquatic features that may be present within 250 feet of any construction area. Therefore, none of the planned construction activities are expected to permanently alter the hydrology of or introduce fill into water bodies or drainages within 250 feet of a construction area. APMs-BIO-01, 15, 16, 19, and 20 would also be implemented and include monitoring of ground-disturbing project activities by a qualified biologist, and flagging of sensitive resources. With the implementation of these APMs, impacts to vernal pool fairy shrimp are anticipated to be less than significant with mitigation. Further, PG&E would acquire Section 404/401 permits from the USACE and State Water Board and a 1600 Lake and Streambed Alteration Agreement from the CDFW; these permits would further ensure less-than-significant impacts on the wetland in which vernal pool species could occur.

Vernal Pool Tadpole Shrimp

Construction areas were sited to avoid all potential aquatic, wetland, and vernal pool habitat to the maximum extent feasible. No suitable habitat for vernal pool tadpole shrimp is located within any of the construction areas. One seasonal wetland located along the alternative overland access route to Work Area 114 may be impacted during wet-season construction at Tower 114. However, the seasonal wetland does not contain suitable vernal pool habitat and there are no CNDDB occurrences of this species within 5 miles of the CC-Moraga Line. Furthermore, the only aquatic habitat in the seasonal wetland is where cattle hoof prints have filled with water, and the smallest waterbody vernal pool tadpole shrimp have ever been seen in had a surface area of 54 square feet (USFWS 1996b). Therefore, there is no potential that vernal pool tadpole shrimp would occur in the seasonal wetland. Because there is no suitable habitat for vernal pool tadpole shrimp within the construction areas or access roads, no direct impacts to vernal pool tadpole shrimp are anticipated.

Indirect impacts to vernal pool tadpole shrimp may occur as a result of ground-disturbing activities in the vicinity of the suitable vernal pool tadpole shrimp habitat. Ground-disturbing

activities may alter the hydrologic conditions of the area, and negatively affect vernal pool tadpole shrimp habitat. Based on the proximity of vernal pool tadpole shrimp habitat to certain construction areas, construction activities could have the potential to cause adverse effects to vernal pool fairy shrimp without the inclusion of avoidance measures.

In order to avoid and minimize potential effects to vernal pool tadpole shrimp, PG&E does not anticipate conducting major ground-disturbing activities, such as grading, within 250 feet of suitable vernal pool tadpole shrimp habitat. Some minor ground-disturbing activities may occur within 250 feet of potentially suitable vernal pool tadpole shrimp habitat, such as crossing structure installation. However, crossing structure installation requires minimal ground disturbance, and is unlikely to impact the hydrology of the area. If there is a potential for crossing structure installation to impact vernal pool tadpole shrimp habitat, PG&E would use an alternative method that does not involve ground disturbance, such as using a bucket truck or installing a flower pot. PG&E plans to use a bucket truck or a flower pot at Crossing Structures 112, 120, and 121, due to their proximity to suitable vernal pool tadpole shrimp habitat. In addition, runoff from the construction areas may cause sedimentation of suitable vernal pool tadpole shrimp habitat. In accordance with APM-BIO-21, PG&E would implement the BMPs included in the SWPPP developed for the project. These BMPs would prevent sediment and other materials from being transported from the construction areas into adjacent water bodies or drainages. PG&E would implement BMPs included in the project SWPPP to control sedimentation, erosion, and hazardous liquids that could impact the quality of water in any aquatic features that may be present within 250 feet of any construction area. Therefore, none of the construction activities would permanently alter the hydrology of or introduce fill into water bodies or drainages within 250 feet of a construction area. APMs-BIO-01, 15, 16, 19, and 20 would also be implemented and include monitoring of ground-disturbing project activities by a qualified biologist, and flagging of sensitive resources. With the implementation these APMs, impacts to vernal pool tadpole shrimp are anticipated to be less than significant with mitigation. Further, PG&E would acquire Section 404/401 permits from the USACE and State Water Board and a 1600 Lake and Streambed Alteration Agreement from the CDFW; these permits would further ensure less-than-significant impacts on the wetland in which vernal pool species could occur.

Special-Status Fish Species

No special-status fish species have the potential to occur within the construction areas. Therefore, no impact would occur.

Special-Status Amphibian Species

Three special-status amphibian species—California red-legged frog, California tiger salamander, and foothill yellow-legged frog—are present or have a high potential to occur within the construction areas. The potential impacts to each of these species are discussed in further detail in the following subsections.

California Tiger Salamander

Potential California tiger salamander habitat in the vicinity of the CC-Moraga Line includes both aquatic breeding habitat and upland habitat. No potential aquatic breeding habitat is located within 250 feet of any of the construction areas. As such, no impacts to breeding habitat would occur. Also, no permanent impacts to habitat would occur as a result of the project.

As part of the focused California tiger salamander surveys conducted by Swaim Biological, Inc., the potential for direct take of California tiger salamander was assessed at a number of

construction areas that are within suitable California tiger salamander upland habitat. Approximately 7.45 acres of suitable California tiger salamander upland habitat—defined as within 1.24 miles of suitable breeding habitat and connected through available migratory corridors—may be temporarily impacted as a result of the project. Direct impacts to California tiger salamander may result from the crushing or entombment of individuals in underground refuges located in the construction areas within 1.24 miles of suitable breeding habitat. Since all work in upland habitat would occur during the dry season to the extent feasible—as specified in APM-BIO-18—any individuals located within the construction areas would likely be in underground refuges. Impacts to individuals could occur as a result of grading or the use of heavy equipment in areas with California ground squirrel (*Spermophilus beecheyi*) burrows. However, APM-BIO-03 states that burrows would be avoided and all construction areas were sited to avoid California ground squirrel burrow complexes to the extent feasible. There is potential for encountering migrating salamanders during the wet season in upland habitat as well. Indirect effects on California tiger salamanders would be temporary and associated with construction activities. There is the potential that increased noise and vibration resulting from heavy equipment and helicopters could disturb any California tiger salamanders that occur in the vicinity of the construction areas.

Grading and other uses of the construction areas have the potential to temporarily displace existing populations of California ground squirrel, which is the primary developer of suitable underground California tiger salamander habitat. It may also result in the destruction of suitable underground California tiger salamander habitat, including burrows, soil cracks, or crevices. This could result in loss of upland habitat, including soil cracks and crevices, which may serve as temporary cover for migrating individuals during the wet season. Since each construction area would be relatively small, it is not anticipated that this would result in a significant loss of necessary refuges within any one portion of the construction areas. In addition, it is anticipated that local California ground squirrel populations would re-establish within these temporarily impacted areas once construction was complete. Based on the presence of California tiger salamander movement and upland habitat within certain construction areas, construction activities could have the potential to cause adverse effects to California tiger salamander without the implementation of APMs.

In order to avoid and minimize potential adverse effects to California tiger salamander, APMs would be implemented prior to, during, and following construction. APMs-BIO-11, 26, and 27 require pre-construction surveys for sensitive species; require the removal of waste to avoid attracting predators to the project construction areas; and prohibit firearms on site. APM-BIO-25 would require pre-construction surveys to be conducted for California tiger salamander during and following any rain events. APMs-BIO-01, 02, 15, 16, 19, 20, 22, 23, 35 through 37, 39, and 45 would also be implemented and include monitoring of ground-disturbing project activities by a qualified biologist, and flagging of sensitive resources. Therefore, with the implementation of project APMs, impacts to California tiger salamander would be less than significant with mitigation.

California Red-Legged Frog

California red-legged frogs were observed in a pond adjacent to a project access road during site assessments conducted in August 2010. Although the project would not impact any aquatic breeding habitat, it is expected to impact upland habitat for this species. Upland habitat includes grasslands, chaparral, and forests within 2 miles of known or potential aquatic breeding habitat. Areas that are separated from aquatic habitat by barriers, such as major roads or large housing developments, are not considered suitable upland habitat.

Direct impacts on California red-legged frog could result from the crushing of individuals in the construction areas while California red-legged frogs are dispersing between aquatic habitats during the rainy season. Based on the presence of California red-legged frog upland habitat within certain construction areas, construction activities could have the potential to cause substantial adverse effects to California red-legged frog without the implementation of APMs.

In order to avoid and minimize potential adverse effects to California red-legged frog, PG&E has designed APMs to be implemented prior to, during, and following construction. As described in APM-BIO-18, project activities in suitable California red-legged frog upland habitat would be conducted during the dry season as feasible, when there is a considerably lower potential for adults or juveniles to disperse through the construction areas than during the wet season. Upland habitat within the construction areas is unlikely to be occupied by California red-legged frogs during the dry season, as they are less likely to disperse from aquatic habitat during the dry season. APM-BIO-25 would require pre-construction surveys to be conducted for California red-legged frog during and following any rain events. PG&E would also implement APMs-BIO-01, 02, 11, 15, 16, 19, 22, 23, 26 through 28, 35 through 37, and 45, which include flagging select areas with sensitive habitat near construction areas for avoidance, conducting environmental training for construction crew members, requiring the presence of a qualified biologist during work in sensitive areas, and maintaining a speed limit of 15 mph to minimize the potential for crushing California red-legged frogs on access routes.

The project would result in the temporary disturbance of approximately 12.04 acres of suitable California red-legged frog upland foraging habitat. In order to avoid take of California red-legged frog individuals, seasonal restrictions on construction activities during the rainy season would be implemented as described in APM-BIO-18. As part of the focused California red-legged frog surveys conducted by Swaim Biological, Inc., the potential for direct take of California red-legged frog was assessed at a number of construction areas that are within suitable upland habitat. Focused surveys for California red-legged frog indicated that construction activities have a moderate potential to take California red-legged frog during the wet season at Pull Site 77 North and South, Landing Zone 77, Crossing Structure 114, and Crossing Structure 115. Due to the potential for construction equipment to crush California red-legged frogs during construction activities, they may be adversely affected as a result of project activities if work is conducted during the wet season at Pull Site 77 North and South, Landing Zone 77, Crossing Structure 114, or Crossing Structure 115. There is the potential that increased noise and vibration resulting from heavy equipment and helicopters could indirectly disturb California red-legged frog in the construction areas. As described in APM-BIO-18, seasonal restrictions on construction activities during the rainy season would be implemented to the extent feasible in order to avoid indirect effects to California red-legged frog. With the implementation of the project APMs, impacts to California red-legged frog would be less than significant with mitigation.

Foothill Yellow-Legged Frog

The stream that passes between Towers 125 and 126, approximately 100 feet north of Pull Site 126, provides suitable habitat for foothill yellow-legged frog. This species is highly aquatic and is unlikely to leave the stream to forage in upland habitats; however, these frogs have been found underground and beneath objects approximately 150 feet from water features. This species has a low potential to be present within construction areas or access roads; therefore, there is a low potential for individual frogs to be crushed by vehicles or construction equipment during construction activities. Disturbance could also be caused by the increased noise and vibrations associated with construction activities, increased vehicle use, and heavy equipment which can

disrupt normal foothill yellow-legged frog behaviors and activities. Based on the proximity of suitable aquatic habitat to certain construction areas, construction activities would have the potential to cause adverse effects to foothill yellow-legged frog without the implementation of APMs.

In order to reduce potential adverse effects to foothill yellow-legged frog, PG&E has designed APMs to be implemented prior to, during, and following construction. As described in APM-BIO-17 and 22 in Section 3.5 Applicant-Proposed Measures, water features—with the exception of the unnamed drainages at Crossing Structure 111A and Pull Site 63, and the seasonal wetland located along the overland access route to Work Area 114—would be avoided and a speed limit of 15 mph would be maintained. In addition, in accordance with APM-BIO-19, a qualified biologist would be present during all work in sensitive areas, including work with potential to impact this species at Pull Site 126. Furthermore, in order to avoid impacting the quality of the foothill yellow-legged frog's aquatic habitat, BMPs would be implemented in accordance with the SWPPP, as described in APM-BIO-21 and APM-BIO-24. PG&E would also implement APMs-BIO-11, 15, 23, 26 through 28, 35 through 37, 39, and 45, to further minimize impacts to foothill yellow-legged frog. These measures include, but are not limited to: conducting pre-construction surveys for special-status species, presenting an environmental training to construction crews to increase awareness of special-status species and other biological concerns, stopping work if a special-status species is observed on site, covering excavations to prevent entrapment of wildlife, and restoring impacted areas to pre-construction conditions. As discussed in Section 3.5 Applicant-Proposed Measures, any additional measures associated with permits obtained from resource agencies prior to construction would also be implemented.

Because the project has been designed to avoid and minimize impacts to special-status species' habitat and PG&E would implement project APMs to further reduce impacts, potential impacts to foothill yellow-legged frogs are anticipated to be less than significant with mitigation.

Special-Status Reptile Species

One special-status reptile species—Alameda whipsnake—has a high potential to occur within the construction areas. Three special-status reptile species—western pond turtle, silvery legless lizard, and coast horned lizard—have a moderate potential to occur within the construction areas. Potential impacts to these species are discussed in the subsections that follow.

Alameda Whipsnake

Potential direct effects on Alameda whipsnake would be associated with temporary construction activities. Direct effects on Alameda whipsnake may result from crushing of individuals by construction equipment, vehicles, or crews while working within suitable core or movement habitat. Direct mortality or injury to Alameda whipsnake could also occur during grading activities. As part of the focused Alameda whipsnake surveys conducted by Swaim Biological, Inc., the potential for direct take of Alameda whipsnake was assessed at temporary disturbance areas that are within suitable Alameda whipsnake habitat. The complete focused survey report is included in the project's Biological Assessment.

Alameda whipsnakes are most likely to occur aboveground in the construction areas in the spring and fall when they are most active. There is a lower risk of encountering Alameda whipsnakes during the hottest parts of summer or during winter when they are less likely to leave burrows or other refuges. Alameda whipsnakes are aboveground and active diurnally from late March into November, depending on the ambient temperatures. Alameda whipsnakes have a high potential to occur in construction areas that support chaparral or woodland vegetation

communities as shown in Table 4: Land Cover Type Summary and Table 5: Detailed Land Cover Type Assessment. Alameda whipsnakes are more likely to occur in grassland areas of the project that are within 600 feet of scrub or chaparral vegetation communities than in areas that are more than 600 feet away from chaparral vegetation communities. In addition, the presence of construction crews and equipment, and the clearing of vegetation in the construction areas would result in a temporary loss of suitable Alameda whipsnake core and movement habitat. This would result in a temporary loss of suitable habitat and displacement, as individuals would likely be deterred from entering active construction sites or would abandon these areas. This would result in a temporary loss of approximately 0.91 acre of core habitat and approximately 10.99 acres of movement habitat. However, none of the work in these locations would result in impacts to rock outcroppings. Based on presence of Alameda whipsnake core and movement habitat within certain construction areas, construction activities have the potential to cause adverse effects to Alameda whipsnake without the implementation of APMs.

In order to reduce potential adverse effects to Alameda whipsnake, PG&E has designed APMs to be implemented prior to, during, and following construction. As described in APM-BIO-22, vehicle travel will be limited to 15 mph in order to reduce the risk of direct mortality or injury to Alameda whipsnake as a result of construction-related vehicular traffic on overland access routes and direct mortality within construction areas in core or movement habitat. In addition, PG&E would implement APMs-BIO-01, 02, 11, 15, 16, 19, 20, 23, 26 through 28, 34 through 37, and 45, which include conducting pre-construction surveys for sensitive species, flagging select areas with sensitive habitat near construction areas for avoidance, conducting environmental training for construction crew members, and requiring the presence of a qualified biologist during work in sensitive areas. Temporary construction impacts are not anticipated to substantially reduce the number or restrict the range of Alameda whipsnakes.

Construction of the project would also result in temporary impacts to approximately 2.31 acres of critical habitat for Alameda whipsnake. These impacts would result from the clearing of vegetation and temporary use of the area by equipment and crews. All of these impacts are anticipated to be temporary. The duration of the temporary impacts is anticipated to be the construction time period and one growing season following the completion of construction activities. Due to impacts to Alameda whipsnake critical, core, and movement habitat, Alameda whipsnakes may be adversely affected as a result of project activities.

Vegetation clearing and temporary use of an area by equipment and crews could indirectly affect Alameda whipsnake by temporarily reducing prey populations in the immediate area. Due to the small sizes of construction areas, these temporarily impacted areas are not anticipated to constitute a significant effect on the overall availability of wintering, foraging, and cover habitat for Alameda whipsnake. It is anticipated that these areas would begin to return to their pre-project conditions during the following rainy season when precipitation promotes the growth of new vegetation. With the implementation of the project APMs, impacts to Alameda whipsnake would be less than significant with mitigation.

Western Pond Turtle

Increased vehicle traffic and vibrations due to the use of heavy equipment could disturb western pond turtle individuals by disrupting normal behaviors and activities. In addition, direct mortality or injury is possible during the use of vehicles and heavy equipment, which could crush individuals or impact turtle nest sites. Based on the proximity of suitable aquatic habitat to

certain construction areas, construction activities have the potential to cause adverse effects to western pond turtle without the implementation of APMs.

In order to avoid and minimize potential effects to western pond turtle, PG&E has designed APMs to be implemented prior to, during, and following construction. To avoid western pond turtles that are moving during the night, PG&E would implement APM-BIO-20, as described in Section 3.5 Applicant-Proposed Measures, which specifies that work be conducted during daylight hours in special-status species' habitat to the extent feasible. PG&E would also implement APMs-BIO-11, 15, 16, 17, 19, 21 through 24, 26, 27, 35 through 37, 39, and 45, as described in Section 3.5 Applicant-Proposed Measures, to further reduce potential impacts to western pond turtle and its habitat. These measures include, but are not limited to: providing environmental training for construction personnel, conducting pre-construction surveys, requiring the presence of a qualified biologist during work in sensitive areas, avoiding potential wetland and water features, installing erosion control measures, and restricting vehicle speeds on overland access routes.

Because the project has been designed to avoid and minimize impacts to special-status species habitat, and because PG&E would implement project APMs to further reduce impacts, potential impacts to western pond turtle are anticipated less than significant with mitigation.

Silvery Legless Lizard

Increased vehicle traffic and vibrations due to the use of heavy equipment could disturb silvery legless lizard individuals by disrupting normal behaviors and activities. In addition, direct mortality or injury to silvery legless lizard individuals could occur during the use of vehicles and heavy equipment, which could crush individuals or collapse burrows occupied by this species. Based on the potential for silvery legless lizard to occur in certain construction areas, construction activities have the potential to cause adverse effects to silvery legless lizard without the implementation of APMs.

In order to avoid and minimize potential effects to silvery legless lizard, PG&E has designed APMs to be implemented prior to, during, and following construction. PG&E would implement APMs-BIO-11, 15, 16, 19, 20, 22, 26 through 28, 34 through 37, 39, 40, and 45, as described in Section 3.5 Applicant-Proposed Measures, to reduce potential impacts to this species and its habitat. These measures include, but are not limited to: providing environmental training for construction personnel, conducting pre-construction surveys, requiring the presence of a qualified biologist during work at Pull Site 7 and Pull Site 8, avoiding burrows to the extent feasible, and restricting vehicle speeds on overland access routes.

Because the project has been designed to avoid and minimize impacts to special-status species' habitat, and because PG&E would implement the project APMs to further reduce impacts, potential impacts to silvery legless lizard would be less than significant with mitigation.

Coast Horned Lizard

Increased vehicle traffic and vibrations due to the use of heavy equipment could disturb coast horned lizard individuals by disrupting normal behaviors and activities. In addition, direct mortality or injury to coast horned lizard individuals could occur due to crushing of individuals during construction vehicle and equipment use. Based on the potential for coast horned lizard to occur in certain construction areas, construction activities have the potential to cause adverse effects to coast horned lizard without the implementation of APMs.

In order to avoid and minimize potential adverse effects to coast horned lizard, PG&E has designed APMs to be implemented prior to, during, and following construction. PG&E would implement APM-BIO-11, as described in Section 3.5 Applicant-Proposed Measures, which requires pre-construction surveys be conducted in construction areas. In addition, PG&E would implement APM-BIO-19 which requires that a qualified biologist be present during construction activities in sensitive areas. With the implementation of these measures, coast horned lizards occurring in construction areas would be more likely to be avoided. PG&E would also implement APMs-BIO-15, 16, 20, 22, 23, 26 through 28, 34 through 37, 39, 40, and 45, as described in Section 3.5 Applicant-Proposed Measures, to minimize impacts to this species and its habitat. These measures include, but are not limited to: providing environmental training for construction personnel, maintaining a speed limit of 15 mph to minimize the potential for crushing coast horned lizards on access routes, and stopping work if a coast horned lizard is discovered and there is potential for impact.

Because the project has been designed to avoid and minimize impacts to special-status species' habitat, and because PG&E would implement the project APMs to further reduce impacts, potential impacts to coast horned lizard are anticipated to be less than significant with mitigation.

Special-Status Avian Species

Three special-status avian species—burrowing owl, golden eagle, and Swainson's hawk—have a high potential to occur within the construction areas. Three special-status avian species—grasshopper sparrow, white-tailed kite, and loggerhead shrike—have a moderate potential to occur within the construction areas.

Burrowing Owl

The project has the potential to impact burrowing owl, which utilizes ground squirrel burrows or other artificial structures (such as pipes) for nesting. Grading and other uses within construction areas have the potential to temporarily displace existing populations of California ground squirrel, which is the primary developer of suitable nesting habitat for burrowing owl. Increased vehicle traffic and vibrations due to the use of heavy equipment could also disturb burrowing owl individuals by disrupting normal behaviors and activities. In addition, direct mortality or injury to burrowing owl individuals could occur during the use of vehicles and heavy equipment, which could collapse burrows occupied by this species. If work were to occur during the burrowing owl nesting season (February 1 through August 31), burrowing owl nests and breeding behavior could be impacted. Work during the winter months has potential to impact burrowing owls occupying underground burrows within construction areas.

To help avoid impacts to nesting burrowing owls, PG&E would implement APM-BIO-03 and 04, as described in Section 3.5 Applicant-Proposed Measures. These measures require that areas with high concentrations of burrows be avoided to the extent possible, pre-construction surveys would be conducted in construction areas where the species could occur, and active burrowing owl nest sites would be monitored. Surveys in 2012 detected burrowing owls at Contra Costa Substation, and additional wintering and breeding surveys for burrowing owls are planned to ensure that the distribution of burrowing owls is known prior to construction. In addition, general avian nesting surveys would be conducted before the start of construction, as described in APM-BIO-13 and 14. PG&E would also implement APMs-BIO-11, 15, 16, 19, 22, 23, 26, 27, 36, and 45, to minimize impacts to this species and its habitat. These measures include providing environmental training for construction personnel, requiring the presence of a qualified biologist during work in sensitive areas, and restricting vehicle speeds on overland and unpaved access

routes and roads. PG&E would also restore all temporarily disturbed areas to pre-construction conditions, as described in APM-BIO-39. It is anticipated that once the area is restored, local California ground squirrel populations would re-establish within these temporarily impacted areas.

Because the project has been designed to avoid and minimize impacts to special-status species' habitat, and because PG&E would implement project APMs to further reduce impacts, potential impacts to burrowing owl would be less than significant with mitigation.

Golden Eagle

The use of helicopters near golden eagle nests has potential to impact golden eagles by disrupting normal courtship and nesting activities. The use of helicopters and other construction equipment also has potential to disrupt foraging behavior, if prey species are displaced as a result of ground disturbance in construction areas. This impact is anticipated to be minimal given the relative sizes of planned work areas in comparison to available foraging habitat and the standard, large territories in use by golden eagles.

To avoid impacts to this species, two rounds of helicopter surveys would be conducted during the early nesting season—January and/or February—to identify potential golden eagle nests in the vicinity of the construction areas. In addition, general avian nesting surveys would be conducted from the ground at the start of construction. APM-BIO-06 would also require a golden eagle survey to be conducted within 1 mile of the construction areas and project alignment prior to construction activities occurring during the nesting season. If golden eagle nests are discovered, appropriate avoidance buffers would be implemented around active nests, as described in APM-BIO-13 and APM-BIO-14 in Section 3.5 Applicant-Proposed Measures. PG&E would also implement APMs-BIO-11, 15, 16, 19, 20, 22, and 26 through 28, which include, but are not limited to: providing environmental training for construction personnel, requiring the presence of a qualified biologist during work in sensitive areas, and stopping work if there is potential to impact a golden eagle or a nesting pair of eagles on site. By not using helicopters or other construction equipment within the buffer established for any golden eagle nests and the implementation of other project APMs, there would be no impact to golden eagle.

Swainson's Hawk

The project has potential to impact Swainson's hawks by disrupting normal nesting activities due to the use of helicopters, vehicles, and construction equipment. Although unlikely, project activities have a low potential to disrupt foraging behavior if prey species are displaced as a result of ground disturbance in construction areas. This impact is anticipated to be minimal given the relative sizes of planned work areas in comparison to available foraging habitat and the standard, large territories in use by Swainson's hawks.

Swainson's hawks were not observed during the general raptor nesting surveys of the CC-Moraga Line conducted in 2012; however, PG&E also commissioned a Swainson's hawk nesting survey in support of a nearby gas transmission line project in 2012. This survey found a Swainson's hawk nest approximately 0.7 mile east of Pull Site 1 East. Incubation behavior was not specifically observed, no chicks or fledglings were detected, and it was considered that this nesting attempt may have been undertaken by a young pair. The eastern end of the project is within the range of this species and suitable nesting habitat is present. General avian nesting surveys would be conducted again at the start of construction. As described in APM-BIO-05, focused protocol-level surveys for Swainson's hawk would be conducted prior to the start of construction. The appropriate avoidance buffers would be implemented around active nests, as

further described in APM-BIO-05 and also in APM-BIO-13 and 14 in Section 3.5 Applicant-Proposed Measures. PG&E would also implement APMs-BIO-01, 11, 15, 16, 19, 20, 22, and 26 through 28 to avoid impacts to this species and its habitat. These measures include providing environmental training for construction personnel, requiring the presence of a qualified biologist during work in sensitive areas, and stopping work if there is potential to impact a Swainson's hawk or a nesting pair of Swainson's hawks on site. With the implementation of project APMs, impacts to Swainson's hawks would be less than significant with mitigation.

Grasshopper Sparrow

The project has potential to impact grasshopper sparrows by disrupting normal nesting activities due to the use of helicopters, vehicles, and construction equipment, if these activities occur during the nesting season in areas in use by grasshopper sparrows. In addition, because grasshopper sparrows nest on the ground, direct impacts to grasshopper sparrow adults, young, or eggs could also occur by crushing of nests or disturbance of nest sites during construction vehicle and equipment use.

To help minimize impacts to this species, general avian nesting surveys would be conducted at the start of construction and as necessary as construction is phased across the landscape. Active nests would be avoided and/or monitored for disturbance, as described in APM-BIO-13 and 14 in Section 3.5 Applicant-Proposed Measures. PG&E would also implement APMs-BIO-11, 15, 16, 19, 20, 22, 26 through 28, and 39 to avoid impacts to this species and its habitat. These measures include, but are not limited to: providing environmental training for construction personnel, requiring the presence of a qualified biologist during work in sensitive areas, and stopping work if there is potential to impact a grasshopper sparrow or a nesting pair of grasshopper sparrows on site.

Because the project has been designed to avoid and minimize impacts to special-status species' habitat, and because PG&E would implement the project APMs to further reduce impacts, impacts to grasshopper sparrow would be less than significant with mitigation.

White-Tailed Kite

The project has potential to impact white-tailed kites by disrupting normal nesting activities due to the use of helicopters, vehicles, and construction equipment. Although unlikely, project activities have a low potential to disrupt foraging behavior if prey species are displaced as a result of ground disturbance in construction areas. This impact is anticipated to be minimal given the relative sizes of planned work areas in comparison to available foraging habitat and the standard, large territories in use by white-tailed kites.

To avoid impacts to this species, general avian nesting surveys would be conducted at the start of construction as described in APM-BIO-13 in Section 3.5 Applicant-Proposed Measures. If active white-tailed kite nests are found in the vicinity of the construction areas, avoidance buffers measuring approximately 500 feet would be implemented around active white-tailed kite nests. PG&E would also implement APMs-BIO-11, 15, 16, 19, 20, 22, 26 through 28, and 39 to avoid impacts to this species and its habitat. These measures include, but are not limited to: providing environmental training for construction personnel, requiring the presence of a qualified biologist during work in sensitive areas, and stopping work if there is potential to impact a white-tailed kite or a nesting pair of white-tailed kites on site. With the implementation of avoidance buffers around active white-tailed kite nests and other project APMs, impacts to white-tailed kites would be less than significant with mitigation.

Loggerhead Shrike

The project could impact loggerhead shrikes by disturbing nesting activities by the use of vehicles and construction equipment during the nesting season if shrikes are nesting nearby. Project activities are not anticipated to disrupt loggerhead shrike foraging behavior, as prey would likely still be available during temporary disturbance.

To help minimize impacts to this species, general avian nesting surveys would be conducted at the start of construction and the appropriate avoidance strategy would be implemented around active nests, as described in APM-BIO-13 and 14 in Section 3.5 Applicant-Proposed Measures. PG&E would also implement APMs-BIO-11, 15, 16, 19, 20, 22, 26 through 28, and 39 to minimize impacts to this species and its habitat. These measures include, but are not limited to: providing environmental training for construction personnel, requiring the presence of a qualified biologist during work in sensitive areas, and stopping work if there is potential to impact a loggerhead shrike or a nesting pair of loggerhead shrikes on site. With the implementation of project APMs, impacts to loggerhead shrike would be less than significant with mitigation.

Special-Status Mammalian Species

Four special-status mammalian species—San Francisco dusky-footed woodrat, San Joaquin kit fox, pallid bat, and western red bat—have a high potential to occur within the construction areas. Two special status species—Townsend's big-eared bat and American badger—have a moderate potential to occur within the construction areas. The potential impacts to each of these species are discussed in further detail in the following subsections.

San Francisco Dusky-Footed Woodrat

San Francisco dusky-footed woodrat habitat could be impacted during vegetation removal or grading. In addition, direct mortality could also result from crushing of woodrat individuals by vehicles or construction equipment. Based on the potential for San Francisco dusky-footed woodrat to occur in certain construction areas, construction activities would have the potential to cause adverse effects to San Francisco dusky-footed woodrat without the implementation of APMs.

In order to avoid and reduce potential effects to San Francisco dusky-footed woodrat, APMs would be implemented prior to, during, and following construction. PG&E would implement APM-BIO-10 in Section 3.5 Applicant-Proposed Measures, which requires that a qualified biologist identify all San Francisco dusky-footed woodrat houses before the start of construction. Houses would be flagged and avoided as feasible. If houses cannot be avoided, APM-BIO-10 requires the relocation of nests as appropriate. In addition, to further reduce the potential for direct impacts to this mostly nocturnal species, PG&E would implement APM-BIO-20, which requires that work be conducted during daylight hours in special-status species habitat to the extent feasible. PG&E would also implement APMs-BIO-11, 15, 16, 19, 22, 23, 26 through 28, 34, 36, 37, and 45, to minimize impacts to this species and its habitat. These measures include, but are not limited to: providing environmental training for construction personnel, conducting pre-construction surveys, requiring the presence of a qualified biologist during work in sensitive areas, and restricting vehicle speeds in construction areas.

Because the project has been designed to avoid and minimize impacts to special-status species' habitat, and because PG&E would implement the project APMs to further reduce impacts, potential impacts to San Francisco dusky-footed woodrat are anticipated to be less than significant with mitigation.

San Joaquin Kit Fox

Indirect impacts to San Joaquin kit fox may result from the temporary impacts to the construction areas, including a loss of potential future denning habitat, loss of vegetative cover, and displacement of prey. Due to the small sizes of individual impacted areas within the construction areas, these temporarily impacted areas are not anticipated to substantially reduce the overall availability of denning, foraging, and cover habitat for San Joaquin kit fox. It is anticipated that these areas would begin to return to their pre-construction conditions during the following rainy season when precipitation promotes the growth of new vegetation.

Direct impacts on San Joaquin kit fox could result from the loss of suitable foraging and denning habitat as a result of construction activities and increased human presence in currently occupied areas. It is anticipated that approximately 7.45 acres of suitable foraging habitat would be temporarily disturbed as a result of construction of the project. While no den sites large enough to support San Joaquin kit fox were observed in the construction areas during 2010 surveys, existing California ground squirrel burrows, which are often enlarged by San Joaquin kit foxes, were present in the construction areas. The California ground squirrel burrows may be destroyed during construction of the project, resulting in a loss of potential future denning sites for San Joaquin kit fox. Impacts to San Joaquin kit fox burrows are not anticipated because no suitable San Joaquin kit fox burrows were identified during biological surveys. The project is located in suitable foraging habitat for San Joaquin kit fox that would be temporarily impacted as a result of the project. In addition, the presence of construction equipment, crews, and helicopters may temporarily displace San Joaquin kit fox during foraging activities. These activities may also displace prey species, such as kangaroo rats or other rodents, causing a shift in normal foraging or dispersal behavior. There is also the potential that increased noise and vibration resulting from heavy equipment and helicopters could disturb denning San Joaquin kit foxes in the surrounding area, outside of the construction areas. Based on the presence of San Joaquin kit fox foraging and denning habitat within certain construction areas, construction activities have the potential to cause adverse effects to San Joaquin kit fox without the implementation of APMs.

In order to avoid and minimize potential adverse effects to San Joaquin kit fox, APMs would be implemented prior to, during, and following construction. As specified in APM-BIO-07, PG&E would conduct focused San Joaquin kit fox surveys prior to construction in order to identify active den sites that may be impacted by the project. If an active San Joaquin kit fox den is discovered, APM-BIO-08 and 09 provide additional survey and avoidance methods to reduce impacts to San Joaquin kit fox. With the implementation of the project APMs, impacts to San Joaquin kit fox would be less than significant with mitigation.

Pallid Bat, Western Red Bat, and Townsend's Big-Eared Bat

Impacts to bat foraging or movement are anticipated to be minimal. Direct impacts to pallid bats, western red bats, or Townsend's big-eared bats may occur if construction activities result in the disruption or abandonment of nearby active bat roosts. No bat roosts have been identified in the vicinity of construction areas to date; however, focused bat surveys have not been conducted, and roosts may become established prior to the start of construction. In addition, direct mortality or injury to bat species, as well as loss of roosting and foraging habitat, could occur during tree trimming or tree removal activities. Increased vehicle traffic and vibrations due to the use of heavy equipment could also disturb individual bats by disrupting normal behaviors and activities. Based on the potential for these bat species to roost in the proximity of certain construction areas, construction activities have the potential to cause adverse effects without the implementation of APMs.

In order to avoid and minimize potential adverse effects to pallid bat, western red bat, and Townsend's big-eared, APMs would be implemented prior to, during, and following construction. PG&E would implement APMs-BIO-29 through 32 in Section 3.5 Applicant-Proposed Measures, which require that a habitat assessment be conducted for bat species prior to construction activities. If roosting bats are detected, an appropriate avoidance buffer would be implemented. APM-BIO-29 requires a qualified biologist be present during any tree-trimming and tree-removal activities to help construction crews avoid bat species. In addition, PG&E would implement APMs-BIO-11, 15, 16, 19, 26 through 28, and 39 to minimize impacts to this species and its habitat. These measures include, but are not limited to: providing environmental training for construction personnel, requiring the presence of a qualified biologist during work in sensitive areas, and restricting vegetation clearing to the minimum amount necessary.

Because the project has been designed to minimize impacts to special-status species and PG&E would implement project APMs to further reduce impacts, potential impacts to pallid bats, western red bats, and Townsend's big-eared bats would be less than significant with mitigation.

American Badger

Impacts to American badger could result from the temporary loss of suitable habitat for cover or from the loss of foraging habitat as a result of construction activities and other increased human presence in currently occupied areas. Construction activities could also displace prey items, which may interrupt normal foraging or dispersal behavior. There is also the potential that increased noise and vibration resulting from heavy equipment use and helicopters could disturb American badgers in the surrounding area. Based on the potential for American badger to occur within certain construction areas, construction activities have the potential to cause adverse effects to American badger without the implementation of APMs.

In order to avoid and minimize potential effects to American badger, APMs would be implemented prior to, during, and following construction. PG&E would implement APM-BIO-03, as described in Section 3.5 Applicant-Proposed Measures, which requires that burrows be avoided to the extent feasible. In addition, due to the small sizes of individual construction areas, temporarily impacted areas would not be expected to constitute a significant effect on the overall availability of foraging and cover habitat. PG&E would also implement APMs-BIO-11, 15, 16, 19, 20, 22, 23, 27, 35, 36, 39, and 45, to minimize impacts to this species and its habitat. These measures include, but are not limited to: providing environmental training for construction personnel, conducting pre-construction surveys, requiring the presence of a qualified biologist during work in sensitive areas, and restricting vehicle speeds on overland access routes. In addition, measures to avoid San Joaquin kit fox, such as den surveys, would assist in the avoidance of badgers.

Because the project has been designed to minimize impacts to special-status species, and because PG&E would implement project APMs to further reduce impacts, potential impacts to American badger would be less than significant with mitigation.

Critical Habitat

As depicted in Figure 2: Critical Habitat Map, the project spans or is located near critical habitat for Delta smelt, California red-legged frog, and Alameda whipsnake. The potential for impacts to the critical habitat for each of these species are described in the following subsections.

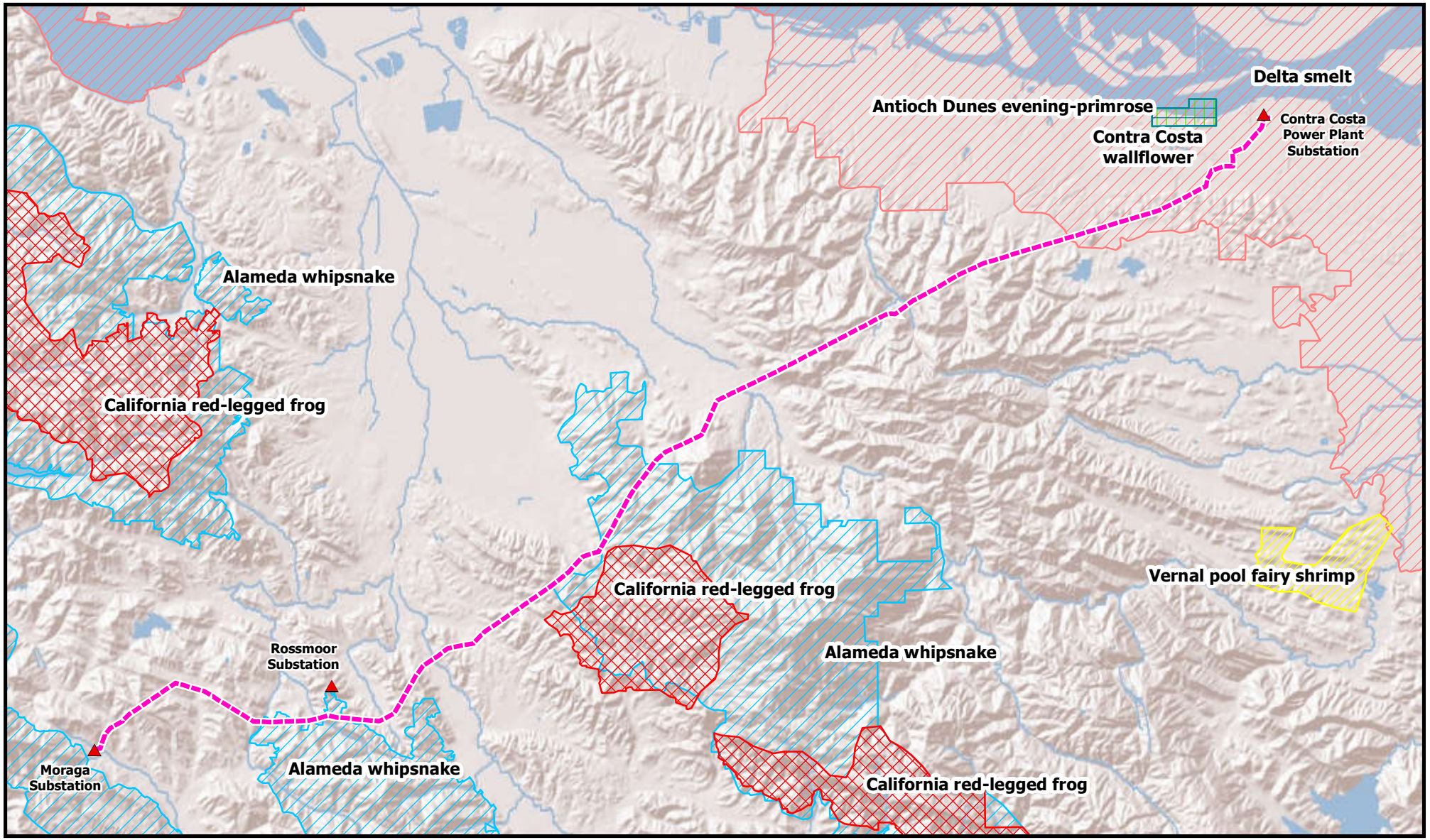

Figure 2: Critical Habitat Map

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- California red-legged frog
- Alameda whipsnake
- Antioch Dunes evening-primrose
- Contra Costa wallflower
- Delta smelt
- Vernal pool fairy shrimp

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Delta Smelt

Approximately 14.25 acres of construction areas are located within an area designated as delta smelt critical habitat; however, no primary constituent elements[22] (PCEs) are present within these areas and, as such, the construction areas are not located in critical habitat for this species. Ground-disturbing work within this upland habitat has limited potential to generate sedimentation or erosion that could flow to the Sacramento River or San Joaquin River because the construction areas do not include major hydrologic features, no ground disturbance would occur in aquatic habitat, and limited ground disturbance would occur outside of delta smelt habitat. In addition, measures from the project's SWPPP would be in place to prevent sediment movement and runoff. As a result, no effects to delta smelt critical habitat are anticipated as a result of the project.

California Red-Legged Frog

The CC-Moraga Line crosses through Contra Costa County approximately 750 feet north of an area designated California red-legged frog critical habitat. In addition, Landing Zone 77, Pull Site 77 North and South, and Work Area 77 are located approximately 500 feet north of an area designated California red-legged frog critical habitat. Because all project activities would be located outside of California red-legged frog critical habitat and would have no effect on these areas, there would be no impact.

Alameda Whipsnake

The CC-Moraga Line traverses two areas designated as Alameda whipsnake critical habitat, for a total of approximately 2.8 miles. The project would extend through approximately 1.7 miles of an area designated as Alameda whipsnake critical habitat between Towers 77 and 67 and approximately 1.1 miles of an area between Towers 109 and 101. The following construction areas would be located in these areas designated as Alameda whipsnake critical habitat: Landing Zone 77; Pull Site 77 North; Work Areas 101, 102, 102A, 103, 104, and 107; and Crossing Structures 162A, 162B, 171, and 172.

It is anticipated that the project would result in temporary disturbance to approximately 2.31 acres of designated critical habitat for Alameda whipsnake. PCEs for Alameda whipsnake—including plant canopy covers, rock outcrops, small mammal burrows, and other forms of cover—are present in the construction areas. Temporary impacts to Alameda whipsnake critical habitat would result from the clearing of vegetation and the temporary use of the area by equipment and crews. Based on the presence of Alameda whipsnake critical habitat within certain construction areas, construction activities would have the potential to cause temporary effects to Alameda whipsnake critical habitat without the implementation of APMs. Also, installation of four 6-inch-diameter platform footings at two towers would occur in critical habitat for Alameda whipsnake; however, the resulting total footprint would be a negligible 1.57 square feet and would have no material impact on the critical habitat.

In order to avoid and minimize potential adverse effects to Alameda whipsnake critical habitat, APMs-BIO-15, 16, 22, 28, and 34 would be implemented prior to, during, and following construction. These measures would require that construction crews receive training on the pertinent project APMs, permit conditions, and any other required environmental compliance measures; areas of special-status species habitat would be flagged for avoidance, where

[22] Primary constituent elements are those physical and biological features of a landscape that a species needs to survive and reproduce.

feasible; vegetation clearing would be limited to the extent feasible; and smoking would be limited to enclosed vehicles. Temporary impacts would be specific to designated work areas and access. It is anticipated that these areas would begin to return to their pre-construction conditions during the following rainy season when precipitation would promote the growth of new vegetation. In addition, areas that are disturbed would be actively revegetated by reseeding with an appropriate seed mix, as necessary, to restore the area to pre-construction conditions. The revegetation approach would be based on agency permit requirements, the type of vegetation disturbed, the intensity of the disturbance, and input from landowners, as applicable. Because the project has been designed to minimize impacts to special-status species' habitat, and because PG&E would implement project APMs to further reduce impacts, potential impacts to Alameda whipsnake critical habitat are anticipated to be less than significant with mitigation.

Question 4.4b – Sensitive Natural Communities – Less-Than-Significant Impact with Mitigation

Five vegetation communities—characterized according to *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *A Manual of California Vegetation* (Sawyer et al. 2009)—were documented in the construction areas during habitat assessment and botanical resource surveys. Of these five communities, Central Coast riparian scrub is the only sensitive natural vegetation community that would be impacted as part of the project.

Approximately 0.15 acre of Central Coast riparian scrub would be impacted by the clearing of vegetation at Pull Site 63. The drainage that runs between the eastern and western portions of Pull Site 63 was observed to be dry and primarily supporting several riparian plant species and ruderal vegetation during site visits in the dry season. Riparian vegetation was in the form of cottonwoods and willow trees. In order to reduce these impacts to the bed, channel, and bank of the unnamed ephemeral drainage, PG&E would install an approximately 14-foot-wide temporary bridge connecting the two pull site locations. The installation of the bridge may require the existing bank to be stabilized. After the work is completed, the bridge would be removed and the drainage would be returned to pre-construction conditions. Construction activities would have the potential to cause adverse effects to this riparian vegetation without the implementation of APMs.

In order to minimize potential effects to this riparian vegetation, PG&E would implement APMs prior to, during, and following construction. PG&E would implement APMs-BIO-15, 16, 19, 22 through 24, and 29, which include flagging of sensitive resources, providing environmental training for construction personnel, using only designated access roads and construction areas, requiring the presence of a qualified biologist during work in sensitive areas, and restricting vegetation clearing to the minimum amount necessary. APM-BIO-43 requires that BMPs be subjected to agency review prior to installation. In addition, APM-BIO-39 requires that areas that are disturbed would be revegetated by reseeding with an appropriate seed mix or plantings, as necessary, to restore the area to pre-construction conditions. The revegetation approach would be based on agency permit requirements, the type of vegetation disturbed, the intensity of the disturbance, and input from landowners, as applicable. In addition, areas that require extensive cut and fill would be recontoured to allow the pre-construction hydrologic conditions to be maintained. SWPPP BMPs would be implemented to reduce erosion after construction is completed.

As discussed in Section 3.5 Applicant-Proposed Measures, any additional measures associated with permits obtained from resource agencies prior to construction would also be implemented.

Accordingly, potential impacts to sensitive natural communities would be less than significant with mitigation.

PG&E would employ the same operation and maintenance activities along the CC-Moraga Line and within substations as it did before the project. Therefore, operation and maintenance of the project would have no impact on sensitive natural communities.

Question 4.4c – Effects on Waters of the State Including Federally Protected Wetlands – Less-Than-Significant Impact with Mitigation

The project would temporarily impact three aquatic resource features, including an ephemeral drainage at Crossing Structure 111A, an ephemeral drainage at Pull Site 63, and a wetland feature within the wet-season overland access route to Work Area 114. These features are waters of the state and waters of the U.S. Impacts to these features would be minimized to the greatest extent possible through project design and with implementation of APMs and applicable permit conditions.

Two overland access routes may be established to Work Area 114. The first overland access route is intended for use during the dry season and is located completely outside the boundaries of the seasonal slope wetland located near Tower 114. Because this route is located on a hillside and involves traversing steep terrain, a second, flatter overland access route has been identified for use during the wet season. This second, alternative access would be used in lieu of the first access route during the wet season if necessary to ensure the safety of construction crew and equipment. A portion of this second overland access route would traverse a seasonal wetland. PG&E plans to access Work Area 114 by driving pickup trucks, crew trucks, and cranes along the overland access routes. If the overland access route through the wetland is used, this activity may degrade the quality of the wetland temporarily. The overland route would travel through the wetland for approximately 116 feet and would be approximately 12 feet wide, resulting in approximately 0.03 acre of temporary impacts. Due to the existing terrain in this location, some minor grading along this route may be required within the seasonal wetland to establish a flat overland access route. This grading is conservatively estimated at less than 110 cubic yards and will only be conducted if it is required for the safe passage of construction equipment, including a crane, which would be used to modify Tower 114.

In order to reduce potential temporary effects to this wetland feature, PG&E will implement APMs and BMPs (such as the installation of silt fencing along the graded areas) prior to, during, and following construction. As described in APM-BIO-42, BMPs will be developed by PG&E and approved by the appropriate permitting agencies prior to installation. Selection of specific BMPs would vary depending on weather at the time of construction, and interaction with other applicable permit conditions. All final access route measures would be subject to applicable agency review. If access is possible during dry soil conditions, light vehicles with low-pressure tires may be used to avoid soil compaction, rutting, or disturbance of vegetation. Mats or similar weight-distributing devices may be used if moist soil conditions are encountered and cannot be avoided. Silt fences may be installed to reduce the risk of contaminates, such as sediment, from entering the wetland.

Use of access roads across aquatic resources would be minimized by construction scheduling and planning that minimizes the number of trips over the route. Installation of superfluous structural components, such as silt fencing in locations where no purpose is served, would be avoided. Following construction, overland access routes would be returned to pre-construction contours and actively revegetated by reseeding with an appropriate seed mix, as necessary, to restore the area to pre-construction conditions. The revegetation approach would be based on

agency permit requirements, the type of vegetation disturbed, the intensity of the disturbance, and input from landowners, as applicable.

In addition, two ephemeral drainages would occur at Crossing Structure 111A and Pull Site 63. Impacts to these drainages are described in detail in Section 4.8 Hydrology, Water Quality, and Beneficial Uses of Waters of the State. The construction activities planned within these hydrologic features would have the potential to cause adverse effects to these hydrologic features without the implementation of APMs.

In order to avoid and minimize potential adverse effects to these hydrologic features, PG&E would implement APMs and BMPs in these locations. APM-BIO-43 requires that BMPs at Pull Site 63 would be subject to agency review before installation, and APM-BIO-44 requires that the installation and removal of Crossing Structure 111A would be conducted in a manner that would not destabilize the channel or affect the quality of the water carried by the channel. In addition, these locations would be restored following construction. With the application of these APMs and any applicable permit conditions, potential impacts to waters of the state would be less than significant with mitigation.

Question 4.4d – Interfere with Native Wildlife Movement – Less-Than-Significant Impact

Because the project would involve the reconductoring of existing overhead transmission lines in an existing corridor and no new permanent roads would be constructed, the project would not interfere with wildlife movement corridors. No major areas would be blocked by project construction activities because work would occur in limited areas at one time.

The portions of the project that traverse designated critical habitat for delta smelt would be located outside of suitable delta smelt habitat. In these locations the PCEs for delta smelt are not present. Delta smelt or other fish species would not be expected in the drainages that would be impacted by the project. Therefore, the movement of fish species would not be affected.

It is anticipated that approximately 10.99 acres of movement habitat for Alameda whipsnake would be temporarily impacted. Construction would be phased so that temporary impacts would be relatively short in duration and any impediment to whipsnake dispersal from use of construction areas would be temporary and minimal on a population level. In addition, construction areas would be expected to begin returning to pre-project conditions during the following rainy season when precipitation would promote the growth of new vegetation. As a result, the project would not significantly interfere with Alameda whipsnake movement corridors.

The project is located in the Pacific Flyway, a major north-south avian migratory corridor that extends along the West Coast from Alaska to Patagonia, and provides suitable foraging habitat for many resident and migratory avian species. The Pacific Flyway links breeding grounds in the north to more southerly wintering areas and, therefore, is utilized by an abundance of bird species during migration. Contra Costa County provides resting and foraging areas for numerous birds during the migratory seasons. Although the project is located along the Pacific Flyway, the flyway encompasses the majority of the state of California. Due to the small size of the construction areas and the temporary nature project impacts, the avian migration routes associated with the Pacific Flyway would not be impacted as a result of the project.

PG&E would employ the same operation and maintenance activities along the transmission line and at the substations as it did prior to the project. Therefore, operation and maintenance of this project would have no impact on wildlife movement corridors.

Question 4.4e – Conflict with Local Policies – No Impact

Construction of the project would not conflict with any environmental plans, policies, or regulations adopted by agencies with jurisdiction over local land uses.

This project is within the jurisdiction of the CPUC and is not subject to local land use policies concerning biological resources. Moreover, it involves upgrades to an existing power line and has only temporary impacts on biological resources. As such, it does not conflict with any local General Plan policies concerning biological resources.

Although PG&E is subject to the discretionary permitting jurisdiction of the CPUC and, as such, is not subject to local tree ordinances. As such the project would not conflict with any applicable local tree protection ordinances. Please see Question 4.2d – Loss or Conversion of Forest Land for a discussion of measures PG&E would take for impacts on trees.

After reconductoring, PG&E would employ the same operation and maintenance activities of the transmission line and substations as it did prior to the project. Therefore, operation and maintenance of the project would not conflict with any existing plans, policies, or regulations, and there would be no impact.

Question 4.4f – Conflict with Conservation Plan – No Impact

Approximately half of the project—from Contra Costa Power Plant Substation to Tower 56—is located within the ECCC HCP/NCCP, and thus, take coverage in these locations would be subject to the requirements of the ECCC HCP/NCCP and associated incidental take permits as directed by the Plan Administrator. The remaining half of the project, from Tower 57 to Moraga Substation, is not within the ECCC HCP/NCCP boundary and take coverage would be provided through a Section 7 consultation with the USWFS and a Section 2081 Incidental Take Permit from the CDFW. PG&E would follow all requirements included in these permits and authorizations, which are not expected to conflict with provisions in the ECCC HCP/NCCP. The project would not conflict with any other approved local, regional, or state HCP.

PG&E would employ the same operation and maintenance activities of the transmission line and substations as it did prior to the project. Therefore, operation and maintenance of the project would not conflict with any existing HCP, NCCP, or other approved local, regional, or state HCP.

4.5 CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of an historical resource as defined in § 15064.5?				✓
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		✓		
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		✓		
d) Disturb any human remains, including those interred outside of formal cemeteries?		✓		

PG&E conducted a cultural resources investigation in order to identify and record archaeological resources within the Area of Potential Affects (APE); evaluate archaeological and built environment resources within the APE for their potential eligibility for listing in the National Register of Historic Places and the CRHR; and to make recommendations for avoiding impacts to all resources within the APE. The following activities were performed:

- a cultural records search at the Northwest Information Center of the Historic Resources Inventory System, which is affiliated with the State of California Office of Historic Preservation;
- a consultation with the Native American Heritage Commission (NAHC) and Native American groups and individuals;
- a review of geological mapping of Quaternary surface deposits in the region;
- field surveys of the project location; and
- research of PG&E company records.

This investigation did not identify any known archaeological resources within the project ROW. However, approximately 15 percent of the APE was evaluated to have a moderate to high sensitivity for buried sites, which indicates a moderate to high probability that recent sedimentation has covered archaeological sites that may be exposed during sub-surface construction activities. Approximately nine construction areas are located in areas of moderate to high sensitivity. There are no known cultural resources located within 0.5 mile of the project that are listed on the CRHR, California Inventory of Historic Resources, California Points of Historical Interest, or California State Historic Landmarks. There are several built-environment resources that would cross or include portions of the CC-Moraga Line; however, all of these are either ineligible for listing on the CRHR or would be outside the project ROW. The Moraga Substation Transformer Handling House is the only resource that is considered an historical resource for the purposes of CEQA impacts. Of the 53 work areas, landing zones, and pull sites, 15 were determined to have moderate sensitivity and 20 were determined to have a moderate-to-high or high sensitivity for paleontological resources.

Due to the sensitive nature of cultural sites, the results of the cultural resources investigation have not been included as an attachment; however, this study is available upon request by a qualified cultural resource specialist.

Question 4.5a – Historical Resource Change – No Impact

Record searches and field surveys of the project corridor were conducted to identify historic resources, which are broadly considered to be resources listed on national, state, and local registers; or an object, building, structure, site, area, place record, or manuscript determined to be historically significant.

The Moraga Substation Transformer Handling House is the only resource within the project area that is considered an historical resource under CEQA. At Moraga Substation, the project would replace three 1,200-amp switches with 2,000-amp switches; replace existing structures with new structures; and replace indoor relays with standard integration protection, automation, and control equipment. However, no modifications would be made to the Moraga Substation Transformer Handling House itself. In addition, the proposed modifications in other parts of the substation would be minor, and would not result in material alteration of the Moraga Substation Transformer Handling House such that this resource would lose its historical integrity and, therefore, eligibility for listing in the CRHR. Therefore, there would be no impact on historical resources.

Following construction, the project would not disturb any historic resources, because there would be no changes to existing operation and maintenance activities. Furthermore, the project improvements to Moraga Substation would not alter views of the Moraga Substation Transformer Handling House, which is not readily visible from public vantage points. Therefore, no impacts to cultural resources would be expected during the continuing operation and maintenance activities required for the transmission line and substations.

Question 4.5b – Archaeological Resource Change – Less-Than-Significant Impact with Mitigation

Approximately 15 percent of the project alignment contains areas of moderate to high sensitivity which could contain archaeological resources that have not been identified to date. A maximum of approximately 37 acres of vegetation clearing and approximately 6,200 cubic yards (CY) of grading/excavation activities would occur during construction of the project. As previously discussed, approximately nine temporary work areas, pull sites, landing zones, or crossing structures are located in areas of moderate to high buried site sensitivity. Because it is not feasible to eliminate the possibility of buried archaeological resources, the project would have the potential to cause an adverse change in the significance of an archaeological resource.

To avoid and minimize the potential for impacts to archaeological resources, APM-CUL-01 and 02 would be implemented. APM-CUL-01 involves project personnel training for the protection of archaeological resources and identifies procedures to be followed if a buried archaeological resource is encountered during ground-disturbing activities. APM-CUL-02 requires that ground-disturbing activities be halted and relocated to another area if previously unidentified archaeological resources are uncovered during construction activities; this measure also includes the steps to be taken by PG&E's Cultural Resources Specialist or designated representative. With the implementation of these APMs, impacts to archaeological resources would be less than significant with mitigation.

Following construction, the project would not disturb any potential archaeological resources, because there would be no substantial changes to existing operation and maintenance activities. Excavation and grading activities would be performed at similar intensities and locations as they are currently. Therefore, no impacts to cultural resources would be anticipated during the continuing operation and maintenance of the transmission lines and substations.

Question 4.5c – Paleontological Resource Destruction – Less-Than-Significant Impact with Mitigation

Because the project involves the reconductoring of an existing transmission line and would require minimal ground disturbance, the potential for impacts to paleontological resources would be low. As previously discussed, 15 construction areas would be located within areas considered to have a moderate sensitivity, and 20 construction areas would be located within areas considered to have a moderate-to-high or high sensitivity for paleontological resources. Only four of these 20 areas, totaling approximately 0.7 acre, would require grading or excavation. While not anticipated, the presence of buried paleontological resources is unknown. Accordingly, ground-disturbing activities could potentially directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

To avoid and minimize reduce the potential impacts to paleontological resources, APM-CUL-01 through 03 would be implemented. Accordingly, potential impacts on paleontological resources would be less than significant with mitigation.

Following project construction, no disturbance to any potential paleontological resources would occur because there would be no substantial changes to the existing operation and maintenance activities. Excavation and grading activities would be performed at similar intensities and locations as they are currently. Therefore, no impacts to paleontological resources would be anticipated during the continuing operation and maintenance of the transmission line and substations.

Question 4.5d – Human Remains Disturbance – Less-Than-Significant Impact with Mitigation

No known Native American sites of concern are located within a 0.5-mile radius of the CC-Moraga Line. The likelihood of encountering human remains during project construction would be very low, mainly because the project would involve only minor excavation (associated with installation of the crossing structures) and superficial grading; thus, the potential for accidentally discovering human remains exists.

In order to avoid and minimize the potential disturbance of human remains, APM-CUL-04 would be implemented. In the unlikely event that Native American human remains are discovered, this APM requires that work would be halted in the vicinity of the find and the county coroner would be notified. Within 48 hours of notification by the NAHC, the “most likely descendant” would make recommendations regarding the treatment and disposition of the remains. As a result, impacts would be less than significant with mitigation.

Following construction, the project would not disturb any potential human remains because there would be no changes to existing operation or maintenance procedures. Therefore, no impacts to human remains would be anticipated during the continuing operation and maintenance of the transmission line and substations.

4.6 GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?[23]				✓
ii) Strong seismic ground shaking?				✓
iii) Seismic-related ground failure, including liquefaction?				✓
iv) Landslides?			✓	
b) Result in substantial soil erosion or the loss of topsoil?		✓		
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			✓	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				✓
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				✓

[23] Refers to California Geological Survey (CGS) Special Publication 42 (CGS, 2007).

Question 4.6a – Human Safety and Structural Integrity

i. Earthquake Fault Rupture – No Impact

The Concord fault approaches the project alignment near Tower 77, which is shown on Attachment A: Detailed Route Map, while the Clayton-Marsh Creek-Greenville fault crosses the existing line approximately 0.1 mile southwest of Tower 53. However, the likelihood of fault surface rupture occurring within the short duration of the construction period would be very low. Project activities would involve minimal, temporary ground disturbance, and no modifications to the bases of towers would occur. Temporary crossing structures would be installed in approximately 190 locations, typically on road shoulders. The increase in tower height and the installation of the new conductor would not affect the structures' ability to withstand earthquakes. The existing foundations and substation equipment are designed to withstand significant seismic events.

Because the project would not involve the installation of any new towers, and because the substation modifications would only require replacement of existing equipment, project activities would not increase the likelihood for rupture of a known earthquake fault. Operation and maintenance activities of the transmission line and substations would continue in the same manner as before the project. As a result, there would be no impact.

ii. Strong Seismic Shaking – No Impact

Seismic activity is taken into account in the design of the project structures and would not be likely to affect the integrity of the towers or the transmission line. Thus, the related risk of potential substantial adverse effects to people or structures would be highly unlikely. Furthermore, because the CC-Moraga Line is already in place and the project would not affect the integrity of the structures, no substantial adverse effects to structures or people would be expected, and there would be no impact.

iii. Ground Failure – No Impact

Due to the design standards required for transmission and substation construction, there would be a very low likelihood of a strong ground-shaking event resulting from the project that would create a risk to human safety. Likewise, the potential for an impact due to strong ground shaking also would be extremely low. There would be no change to the potential for ground surface failure if the towers are modified and the conductor replaced, because no significant ground disturbance would occur as part of the project. As a result, there would be no impact.

iv. Landslides – Less-Than-Significant Impact

Given the limited area and temporary nature of ground disturbance associated with the project, and the fact that disturbed areas would be revegetated following construction, the increase in landslide potential would be negligible. As a result, construction-related impacts would be less than significant.

There would be no change in the types of equipment used or activities required for ordinary operation and maintenance of project structures, compared with those required for the existing CC-Moraga Line. Temporarily disturbed areas would be returned to pre-construction conditions. Therefore, there would be no impact related to landslides during operation and maintenance activities for the project.

Question 4.6b – Soil Erosion or Topsoil Loss – Less-Than-Significant Impact with Mitigation

Construction of the project would involve only minimal surface disturbance, including limited grading in some temporary work areas and along existing dirt access roads along the transmission line, as well as limited excavation activities for the temporary installation of crossing structures. The project would result in a maximum of approximately 37 acres of construction areas. These disturbances would primarily occur in previously disturbed, flat areas, such as agricultural fields and grazed lands.

To avoid and minimize the potential for impacts due to soil erosion or topsoil loss, PG&E would implement BMPs as described in the project-specific SWPPP, as described in APM-HYD-03. Because surface disturbance would be minimal and disturbed areas would be restored and revegetated, impacts resulting from soil erosion would be less than significant with mitigation.

Operation and maintenance of the transmission line would continue in the same manner as prior to the project. Thus, no new impacts to topsoil or substantial soil erosion would be expected from operation and maintenance activities.

Question 4.6c – Geologic Unit Instability – Less-Than-Significant Impact

As previously discussed, the effects of seismic activity are taken into account in the design of the towers. Furthermore, given the temporary nature of the project and the minimal grading and excavation that would occur, the geologic units underlying the project would not be expected to create unstable conditions for the project structures, and impacts related to geologic unit instability would be less than significant during project construction.

Operation and maintenance of the transmission line would continue in the same manner as prior to the project. Therefore, there would be no impact.

Question 4.6d – Expansive Soils – No Impact

Expansion and contraction of volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil can change significantly. As a consequence of such volume changes, structural damage to building and infrastructure may occur. However, no new structures would be constructed as part of the project; therefore, no impacts associated with expansive soils would occur.

Question 4.6e – Septic Suitability – No Impact

Soil permeability is a consideration for projects that require septic system installation. Because the project would not involve installation of a septic tank, there would be no impact.

4.7 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		✓		
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		✓		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?		✓		
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?				✓
e) For a project within an airport land use plan or within two miles of a public airport or public use airport for which such a plan has not been adopted, result in a safety hazard for people residing or working in the project area?		✓		
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				✓
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?		✓		
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fire, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?		✓		

Prior to beginning any work activity, PG&E would prepare a Job Hazards Analysis as part of its Health and Safety Plan. In addition, PG&E would develop and implement a SWPPP; a SPCC Plan as part of Title 40 of the Code of Federal Regulations; and a Hazardous Substance Control and Emergency Response Plan in accordance with California Health and Safety Code (H&SC) Section 25500. In addition, a spill plan will be provided in the SWPPP. PG&E crew members and licensed contractors employed on the project would be trained and certified on the topics contained in these plans prior to construction. These plans and trainings are discussed in the following section.

Question 4.7a – Hazardous Material Transport, Use, or Disposal – Less-Than-Significant Impact with Mitigation

The construction activities associated with this project generally do not pose a hazardous materials risk; however, construction equipment would require refueling and periodic maintenance. Routine transport, use, and disposal of hazardous materials—such as fuels, lubricating oil, and hydraulic fluid—during construction could potentially result in releases of these materials. However, these activities would be conducted in accordance with standard construction BMPs. Proper handling of hazardous materials and spills would occur in accordance with the applicable laws and regulations provided in the H&SC and California Code of Regulations. Therefore, potential impacts associated with the transport, use, and disposal of hazardous materials would be less than significant without implementation of APMs.

While the project would have less-than-significant impacts, there are measures that could be implemented to further minimize the project's potential impacts from hazards material transport, use, and disposal. APM-HAZ-03 requires that PG&E employees who will work in the construction areas and substations follow PG&E training requirements of PG&E's HMBP, as applicable. APM-HAZ-04 requires PG&E to include appropriate language pertaining to handling hazardous materials and spills in the construction contracts. Accordingly, less-than-significant impacts would be further minimized by APM-HAZ-04.

PG&E routinely transports, uses, and disposes of hazardous materials in association with the operation and maintenance of its substations and the existing CC-Moraga Line. The procedures PG&E would follow to safely handle and dispose of such materials upon project completion would not change from existing practices. Therefore, no new impacts would result from the project.

Question 4.7b – Reasonably Foreseeable Upset and Accident Conditions – Less-Than-Significant Impact with Mitigation

As discussed previously, the project's construction activities would not pose a hazardous materials risk. All required refueling and maintenance, as well as containment and treatment of any accidental spills or leaks, would be conducted in accordance with standard construction BMPs. The volume of hazardous materials that would be used during construction would be small, and all spills would be immediately controlled and contained. As a result, impacts would be less than significant without implementation of APMs.

While the project would have less-than-significant impacts, there are measures that could be implemented to further minimize the project's potential impacts from reasonably foreseeable upset and accident conditions. APM-HAZ-02 requires that PG&E prepare and implement a SPCC Plan for the project including construction areas on the power line. Accordingly, less-than-significant impacts would be further minimized by APM-HAZ-02.

PG&E regularly handles hazardous materials associated with the operation of its facilities. PG&E currently implements and would continue to implement a SPCC Plan for each substation to ensure that any foreseeable upsets or accidents are appropriately addressed. The relevant procedures would remain the same as those prior to construction of the project. Therefore, no new impacts related to the release of hazardous materials would occur as a result of the project.

Question 4.7c – Hazardous Substances in Close Proximity to Schools – Less-Than-Significant Impact with Mitigation

Approximately three schools are located within 0.25 mile of the project alignment. However, construction near schools would be temporary and short term, lasting between 1 and 14 days. The project would not involve the use of significant quantities of volatile hazardous materials, and any hazardous materials released or encountered during construction would be contained and managed. In addition, the project would comply with local air quality emissions regulations, as discussed in Section 4.3 Air Quality and Greenhouse Gas Emissions. Due to the temporary and short-term nature of construction and the relatively small quantity of hazardous materials to be used during construction, impacts to schools from potential hazardous substance emissions would be less than significant without implementation of APMs.

While the project would have less-than-significant impacts, there are measures that could be implemented to further minimize the project's potential impacts from the use of hazardous substances in close proximity to schools. APM-HAZ-02 requires that PG&E prepare and implement a SPCC Plan for the project including construction areas on the power line. Accordingly, less-than-significant impacts would be further minimized by APM-HAZ-04.

PG&E routinely transports, uses, and disposes of hazardous materials in association with the operation and maintenance of its substations and the existing CC-Moraga Line. The procedures PG&E would follow to safely handle and dispose of these materials following project completion would not change from existing practices. As a result, no new impacts to schools would occur due to operation and maintenance of the project.

Question 4.7d – Existing Hazardous Materials Sites – No Impact

The project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. There are no known existing federal Superfund or state response sites within 0.25 mile of the project. The project would not be located within any leaking underground storage tank sites or within the mapped contamination or remediation areas. Therefore, no impact would occur.

Project-related operation and maintenance activities would not change from currently existing conditions and no new impacts would be anticipated. Therefore, the potential for uncovering existing hazardous materials sites during operation and maintenance of the project would be unlikely, and no impact would occur.

Question 4.7e – Public Airport Hazards – Less-Than-Significant Impact with Mitigation

The project would not be located within an airport land use plan area or within 2 miles of a public airport. Helicopter flight paths would generally be limited to the existing transmission line ROW and project-specific landing zones. Helicopter use would be in accordance with all applicable federal, state, and local aviation rules and regulations and would not create any new hazards. Because the modified towers would not be markedly taller than the existing towers, the tower modifications would not create a permanent air traffic hazard. As a result, impacts would be less than significant without implementation of APMs.

While the project would have less-than-significant impacts, there are measures that could be implemented to further minimize the project's potential impacts from public airport hazards. APM-TRA-02 requires that PG&E comply with the requirements of Title 14 of the CFR and the FAA, including preparation of a Helicopter Lift Plan if required. Accordingly, less-than-significant impacts would be further minimized by APM-TRA-02.

Question 4.7f – Private Airstrip Hazards – No Impact

The project would not be located within the vicinity of a private airstrip. Because the modified towers would not be markedly taller than the existing towers and the project is not within 2 miles of a private airstrip, the tower modifications would not create a permanent air traffic hazard. Thus, no impact would occur.

Question 4.7g – Emergency Evacuation and Response Plan Interference – Less-Than-Significant Impact with Mitigation

Project construction could interfere with the emergency routes of fire protection, police, or other emergency service providers in the immediate area due to temporary road closures. As discussed in Section 4.15 Transportation and Traffic, roads could be closed for 10 to 15 minutes during the pull of each conductor, the installation of temporary crossing structures, or equipment and material deliveries to the ROW.

There are measures that could be implemented to reduce the project's potential impacts from emergency evacuation and response plan interference. APM-PS-01 would require PG&E to coordinate with emergency service providers prior to road closures in order to avoid significant impacts to response times. Accordingly, interference with the emergency evacuation and response plan would be less than significant with mitigation.

Because the location of the towers and project access roads would not change as a result of construction, there would be no impacts to emergency evacuation or response plans during operation and maintenance of the project.

Question 4.7h – Wildland Fires – Less-Than-Significant Impact with Mitigation

The majority of the CC-Moraga Line (approximately 12.8 miles) is located within the California Department of Forestry and Fire Protection (CAL FIRE) high fire hazard severity zones. Approximately 4 miles of the CC-Moraga Line is located within moderate fire hazard severity zones, and approximately 1.4 miles are located within very high fire hazard severity zones. The majority of the project is located within Critical Fire Weather Class II, meaning the area experiences 1 to 9.5 days a year of critical fire weather.

Heat or sparks from vehicles or equipment would have the potential to ignite dry vegetation and cause a fire. However, project activities would generally be confined to areas that have been cleared of vegetation, such as construction areas. Vehicles and equipment would primarily use existing roads to access the transmission structure sites, all of which would be cleared of brush to reduce the risk of accidental fire. Temporary overland access routes would also be mowed to protect against fires. As a result, the potential for fire from construction of the project would be low and potential impacts would be less than significant without implementation of APMs.

While the project would have less-than-significant impacts, there are measures that could be implement to reduce the project's potential impacts from wildland fires. APM-HAZ-01 requires that PG&E routinely implement BMPs as part of its fire prevention plan—such as allowing smoking only in designated areas and maintaining appropriate fire-fighting equipment on site.

Accordingly, less-than-significant impacts associated with wildland fires would be further minimized by APM-HAZ-01.

Operation and maintenance activities, which would include regular vegetation clearing to minimize the potential for fire, would continue in the same manner as before project construction. As a result, there would be no change in the fire potential in the area. Vehicles would use existing roads to access the project during operation and maintenance activities, which would reduce the potential for vehicle heat to ignite dry vegetation and start a fire. As a result, there would be no impact.

4.8 HYDROLOGY, WATER QUALITY, AND BENEFICIAL USES OF WATERS OF THE STATE

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?		✓		
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				✓
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?		✓		
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?		✓		
e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?		✓		
f) Otherwise substantially degrade water quality?			✓	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				✓
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				✓

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?				✓
j) Cause inundation by seiche, tsunami, or mudflow?			✓	

Several wetlands and ponds are present in the vicinity of the construction areas to be utilized as part of the project. These hydrological features are summarized in Table 8: Wetland and Water Features in the Vicinity of Construction Areas, and are shown in Attachment A: Detailed Route Map.

Question 4.8a – Water Quality Standards and Waste Discharge Violations – Less-Than-Significant Impact with Mitigation

Temporary use of pull sites, landing zones, work areas, and access roads could potentially result in increased erosion that could enter nearby waterways and diminish water quality. In order to avoid and minimize these impacts, PG&E would obtain coverage under the NPDES Construction General Permit for Storm Water Discharges from Construction Activities and implement a SWPPP, as required by law. Twenty-seven of the 30 water features identified in the project site area will be avoided during construction. Two unnamed ephemeral drainages (located between the two areas that compose Pull Site 63 and near Crossing Structure 111A) and one seasonal wetland (along the wet season overland access route to Tower 114) would be temporarily impacted by the project. Temporarily filling the unnamed ephemeral drainages could cause erosion and sedimentation of these features.

The unnamed ephemeral drainage located between the two areas that compose Pull Site 63 would be temporarily impacted by the installation of a temporary bridge, thus potentially causing sedimentation and erosion.

To avoid and minimize impacts associated with this unnamed drainage, PG&E would implement APM-HYD-01 through 04 and the project's SWPPP. APM-HYD-01 through 04 require that vegetation removal be confined to the minimum amount necessary, refueling occur at least 100 feet away from aquatic features, accidental spills are cleaned up, and installation of appropriate BMPs. PG&E's strategy for reducing the overall impacts at Pull Site 63 involve the installation of an approximately 14-foot-wide temporary bridge connecting the two pull site locations. The installation of the bridge would require the existing bank to be stabilized. After the work is completed, the bridge would be removed and the drainage returned to pre-construction conditions. Based on current estimates, approximately 14 feet of the drainage would be temporarily filled, resulting in less than 0.5 cubic yard of temporary fill, all of which would occur below the OHWM (less than 0.001 acre of impact). Impacts below the top of bank would be less than 0.005 acre of temporary fill. Installation of the temporary bridge would not require any excavation and all fill material would be removed upon completion of the project; therefore, there would be no permanent impact at this location.

Table 8: Wetland and Water Features in the Vicinity of Construction Areas

Identification Number	Water Type	Location	Notes
1	Potential wetland and drainage	South of Pull Site 7, Pull Site 8, and Tower 9	This feature would not be impacted by project activities.
2	Concrete drainage ditch	Along the access route to Work Area 17	Steel plates would be temporarily installed over the concrete drainage ditch so that vehicles may travel over it. This feature would not be impacted by project activities.
3	Concrete drainage ditch	Approximately 250 feet downhill and to the west of Work Area 24	This feature would not be impacted by project activities.
4	Concrete drainage ditch	Northern edge of Work Area 28	This feature would not be impacted by project activities.
5	Potential wetlands	West of Somersville Road, approximately 0.1 mile north of Landing Zone 35	These three small potential wetlands would not be impacted by project activities.
6	USGS-documented drainage and riparian area	West of Somersville Road, approximately 1,200 feet to the west of Landing Zone 35	This feature would not be impacted by project activities.
7	Pond	Approximately 0.25 mile south of Landing Zone 35	This feature would not be impacted by project activities.
8	Pond and USGS-documented drainage	Adjacent to the paved access route to Pull Site 41A North and South	These features would not be impacted by project activities.
9	Concrete drainage ditch	Northern edge of Pull Site 49	This feature would not be impacted by project activities.
10	Potential wetland	Adjacent to the paved park path at Pull Site 50	This potential wetland is very small and is likely caused by a broken pipe or sprinkler. This feature is avoidable and would not be impacted by project activities.
11	Concrete drainage ditch	Along the southern edge of the existing dirt access road to Work Area 52	This feature would not be impacted by project activities.

Identification Number	Water Type	Location	Notes
12	Ephemeral drainage	Crossing Structure 111A would be installed in this drainage	Crossing Structure 111A would be installed in this drainage, and removed following the completion of construction, thereby temporarily impacting this feature. However, it should be noted that this feature is currently heavily impacted by adjacent quarry activities.
13	USGS-documented drainage	Between the two areas that compose Pull Site 63	PG&E would install a temporary bridge at Pull Site 63 spanning the drainage for use during pulling activities, thereby temporarily impacting this feature.
14	Seasonal pond	To the west of Pull Site 63 and adjacent to Crossing Structure 112	This feature would not be impacted by project activities.
15	Potential wetland	Adjacent to Landing Zone 77 and northwest of Pull Site 77 North	This is a small feature that is the result of a faucet that is left open. This feature is avoidable and would not be impacted by project activities.
16	Drainage	Spanned by the existing dirt access road to Tower 77	This feature is spanned by the access road in three locations; however, culverts that are suitable for heavy equipment travel are located at each crossing. This feature would not be impacted by project activities.
17	USGS-documented drainage	Southwest of Pull Site 77 South and Crossing Structure 115	This feature is downhill from the pull sites and is on the other side of a paved road. It would not be impacted by project activities.
18	USGS-documented drainage	In the vicinity of Crossing Structures 124 through 131	This feature would not be impacted by project activities.
19	Drainage	In a culvert under the bike path in Pull Site 88	This is a small feature that would not be impacted by project activities.
20	USGS-documented drainage	Between Crossing Structures 141 and 142	This feature would not be impacted by project activities.
21	Concrete drainage ditch	Northern edge of Pull Site 98	This is a small, dry feature that would not be impacted by project activities.
22	USGS-documented drainage	Between Crossing Structures 166 and 167	This feature would not be impacted by project activities.

Identification Number	Water Type	Location	Notes
23	USGS-documented drainage	Between Crossing Structures 171 and 174	This feature would not be impacted by project activities.
24	USGS-documented drainage	Approximately 0.1 mile downhill and to the east of Landing Zone 110 and Pull Site 112	This feature would not be impacted by project activities.
25	Potential wetland	Downhill to the southwest of Landing Zone 110	This feature would not be impacted by project activities.
26	Covered reservoir	Northeast of Pull Site 112	This reservoir would not be impacted by project activities.
27	Potential wetland	Within Pull Site 112	This feature is likely the result of a leaky faucet. This feature is avoidable and would not be impacted by project activities.
28	Seasonal wetland	Along the wet-season overland access route to Work Area 114.	Pickup trucks would be driven through this seasonal wetland during the wet season in order to access Work Area 114.
29	USGS-documented drainage	Between Crossing Structures 179 and 180	This feature would not be impacted by project activities.
30	USGS-documented drainage and riparian area	Northeast of Pull Site 126 and south of Crossing Structure 189	This feature would not be impacted by project activities.

Note: Features that would be temporarily impacted during construction have been shaded grey. This table is preliminary and subject to change based on final engineering and other factors. For the purposes of identifying project impacts under CEQA, this table is adequate.

The drainage located at Crossing Structure 111A would be temporarily impacted during the installation of the structure within the bed and bank of the drainage. In order to install the crossing structure, PG&E would use a truck-mounted auger to dig a hole measuring approximately 2 feet in diameter and 8 feet deep. Soil from the excavation may fall within the drainage, potentially resulting in sedimentation of the drainage. The OHWM in this reach of the drainage is approximately 1 foot wide. Soil from the excavation may impact up to 20 linear feet of the drainage, resulting in less than 0.1 CY of fill below the OHWM (less than 0.005 acre). Temporary impacts below the top of bank of this drainage would be less than 0.01 acre.

To minimize impacts to water quality, PG&E would implement APM-HYD-01 through 03 and the project's SWPPP. Straw wattles would be temporarily installed downstream of the crossing structure. In addition, spoils would be placed outside the bed and bank of the drainage to the greatest extent feasible. Following construction, the crossing structure would be removed from the drainage, and the hole would be backfilled with the native soil, which would be stockpiled nearby, and the area would be restored to pre-construction conditions.

Two overland access routes to Tower 114 may be established during construction. The first route would be used during the dry season and would be located entirely outside the footprint of the seasonal wetland. The second, alternative route would be established only if work is required during the wet season and use of the first route would not feasible or safe due to conditions on site. This second route would require a crew truck to travel overland through a portion of the seasonal wetland, which may degrade the quality of the wetland. The overland route would travel through the wetland for approximately 116 feet and would be approximately 12 feet wide, potentially resulting in less than 0.1 acre of temporary impacts. If wet weather access is required across the wetland, some minor grading may be required to establish the overland access route and the appropriate BMPs will be utilized to minimize impacts such as compaction and rutting.

To minimize potential impacts to water quality associated with the wetland on the alternative access route, PG&E would implement APM-HYD-01 through 03 and the project's SWPPP. BMPs associated with the SWPPP would be implemented to reduce the risk of contaminates, such as petroleum, entering the wetland. Following construction, the temporarily impacted areas within these hydrological features would be restored by recontouring and reseeding with an appropriate seed mix, as necessary, to restore the area to pre-construction conditions. The revegetation approach would incorporate agency permit requirements and would be based on the type of vegetation disturbed, the intensity of the disturbance, and input from landowners, as applicable. In addition, a CDFW Lake and Streambed Alteration Agreement, State Water Board Section 401 Water Quality Certification, and USACE Section 404 Nationwide Permit would be obtained. PG&E would adhere to the measures specified in each of the permits in order to minimize potential erosion-related impacts to water quality.

Mount Diablo Creek, Pine Creek, and Walnut Creek are CWA Section 303(d)-listed waters located near the CC-Moraga Line. As the listing for these waters are not based on sediment, siltation, or turbidity, construction of the project would not contribute to the current listed pollutant loads. In addition, the SWPPP would consider the sensitivity of these waters in the development of appropriate BMPs, which would include a sampling and monitoring plan. Implementation of site-specific erosion and sediment control devices and proper handling of potentially hazardous materials during construction would ensure that the project would not contribute to the pollutant load for CWA Section 303(d)-listed water resources located within the vicinity of work areas. In addition, disturbed areas would be restabilized following construction, in accordance with permit requirements. With the implementation of APM-HYD-01 through 04,

the project SWPPP, avoidance and minimization strategies, and restoration, impacts to water quality would be less than significant with mitigation.

Operation and maintenance activities would not differ from activities currently being performed on the existing lines and substation facilities. Therefore, no new impacts to water quality would result from operation and maintenance of the project.

Question 4.8b – Groundwater Depletion or Recharge – No Impact

The project would not involve the use of groundwater. Water to be used during construction activities would be limited to the amount necessary to conduct dust control activities. This water would be obtained from municipal water supplies and/or existing potable water systems from adjacent PG&E substations. There would be no impacts to groundwater because surface disturbance would be limited, all areas would be restored following construction, and no significant excavation or dewatering activities would reach groundwater depth.

Because the project would involve an upgrade to existing PG&E facilities, operation and maintenance activities would not differ from those currently being employed on the transmission line and substations. Therefore, no impact would occur.

Question 4.8c – Drainage Patterns – Erosion/Siltation – Less-Than-Significant Impact with Mitigation

The amount of temporary ground disturbance would be relatively small—approximately 0.6 acre—at each of the pull sites, work areas, and landing zones, for a maximum of approximately 29 acres. In addition, a maximum of approximately 9.8 acres of grading and/or mowing is anticipated to occur along access roads and overland access routes.

To avoid and minimize potential alterations to the existing drainage pattern of the area, PG&E would implement APM-HYD-01 through 04 and the project's SWPPP. Also, as described in APM-BIO-39, areas of temporary disturbance would be actively revegetated by reseeding with an appropriate seed mix, as necessary, to restore the area to pre-construction conditions. The revegetation approach would incorporate any agency permit requirements and be based on the type of vegetation disturbed, the intensity of the disturbance, and input from landowners, as applicable. In addition, areas that require extensive cut and fill would be recontoured to allow the existing hydrologic conditions to be maintained. As previously discussed, PG&E would obtain coverage under the applicable permits and implement a SWPPP for construction of the project, which would provide BMPs to minimize sediment transport to adjacent drainages.

The use of Pull Site 63 and installation of Crossing Structure 111A could result in erosion and sedimentation to the unnamed ephemeral drainages described previously. In addition, the use of the overland access route to Work Area 114 could result in sedimentation of the wetland feature. With the implementation of APM-HYD-01 through 04, the project SWPPP, and the avoidance and minimization strategies detailed in the response to Question 4.8a, and restoration, impacts to drainage patterns and increases in erosion and/or siltation would be less than significant with mitigation.

Drainage patterns would be returned to pre-construction conditions upon completion of construction. Flow characteristics would remain the same as existing conditions during operation and maintenance activities and would not create long-term impacts. Therefore, no impact would occur as a result of operation and maintenance of the project.

Question 4.8d – Drainage Patterns – Runoff/Flooding – Less-Than-Significant Impact with Mitigation

No new permanent project components would be constructed or removed within drainages as part of the project. Two unnamed ephemeral drainages, located at Pull Site 63 and Crossing Structure 111A, would be temporarily impacted during construction. The drainage at Pull Site 63 would be temporarily filled and graded, and Crossing Structure 111A would be installed in the other drainage, but no change to downstream flows or alteration of drainage patterns would be expected. In addition, the temporary impacts would not substantially change the slope or drainage pattern of the waterways. The rate or amount of surface runoff through the drainage at Pull Site 63 would not be expected to increase, as PG&E would install a temporary culvert in the drainage during the dry season. Following construction, areas of temporary disturbance would be actively revegetated. In addition, areas that require extensive cut and fill would be recontoured to allow the existing hydrologic conditions to be maintained.

To avoid and minimize potential alterations to the existing drainage pattern of the area, PG&E would implement APM-HYD-01 through 04 and the project's SWPPP as detailed in the response to Question 4.8a. In addition these locations would be restored to pre-construction conditions to further minimize potential impacts to drainage patterns. Therefore; impacts to drainage patterns that could result in flooding would be less than significant with mitigation.

Operation and maintenance activities would continue to occur primarily in previously disturbed areas of the transmission line corridor, existing ROWs, and substation boundaries and would not change from the existing operation and maintenance activities. Therefore, the project would not result in the potential for increased runoff volumes and there would be no impact.

Question 4.8e – Stormwater Runoff – Less-Than-Significant Impact with Mitigation

Construction activities have the potential to contribute additional runoff water to existing or planned stormwater drainage systems temporarily during construction.

To avoid and minimize impacts from stormwater runoff, PG&E would implement APM-HYD-01 through 04 and the project's SWPPP. Specifically, PG&E would prevent the transport of hazardous materials in storm water by properly storing hazardous materials and preventing contact with rainwater in accordance with the SWPPP. Implementation of BMPs in the project SWPPP would reduce impacts to municipal storm water drainage facilities as a result of project activities to a less-than-significant level. No additional permanent paved surfaces would be constructed, and appropriate BMPs would be used during construction activities to control runoff. In addition, all areas of ground disturbance would be revegetated following construction. Grading a maximum of approximately 39 acres would have minimal effects on storm water runoff within a basin with the implementation of the above measures. Because grading activities would be temporary and short term, impacts due to increased storm water runoff would be less than significant with mitigation.

No increase in storm water runoff or polluted runoff would occur in comparison to the pre-construction conditions. Operation and maintenance activities would not introduce new, impermeable surfaces or increase runoff. Therefore, there would be no impact.

Question 4.8f – Water Quality Degradation – Less-Than-Significant Impact

Potential sources of pollutants and activities that could contribute to water quality degradation are discussed in detail in the responses to Questions 4.8a and 4.8e. Impacts to water quality would be minimized through implementation of the project's SWPPP. No other foreseeable

sources of pollution would be associated with construction of the project. As a result, impacts to water quality would be less than significant.

Question 4.8g – Housing in Flood Hazard Areas – No Impact

No housing would be constructed as part of the project. Therefore, no housing would be placed in flood hazard areas, and no impact would occur.

Question 4.8h – Structures in Flood Hazard Areas – No Impact

Crossing Structures 51, and 55 through 61 would be temporarily installed within a 100-year flood hazard area to ensure human safety during reconductoring activities. The size of the crossing structure poles would not be large enough to impede flows. Further, after removal of the crossing structures, the remaining holes would be backfilled, and the surrounding area compacted and restored to pre-construction conditions. No new permanent structures would be constructed within flood hazard areas. As a result, there would be no impact.

Question 4.8i – Flood Exposure – No Impact

Crossing structures would be the only components of the project to be installed in a flood zone or dam failure inundation area. Because these structures are relatively small in diameter (approximately 2 feet in diameter) and would be removed upon the completion of reconductoring activities, they would not contribute to flooding. Further, after removal of the crossing structures, the remaining holes would be backfilled, and the surrounding area compacted and restored to pre-construction conditions. Therefore, the project would have no impact related to exposure to flooding and dam failure.

PG&E would employ the same operation and maintenance activities of the transmission lines and substations as those employed prior to this project. Therefore, operation and maintenance of this project would have no impact on flood exposure.

Question 4.8j – Seiche, Tsunami, and Mudflow – Less-Than-Significant Impact

The project is not located within any tsunami inundation areas, and it is not located within—nor does not span—any lakes, pools, or other bounded water bodies. The majority of soil units spanned by the project contain steep slopes ranging from 15 to 50 percent. However, the project would not involve any changes to hillsides that would create the type of instability that could result in a landslide. The project would involve minor modifications to existing transmission towers and substations and no new transmission structures would be permanently installed; therefore, no significant ground disturbance or excavation would occur.

Operation and maintenance of the transmission line and substations would continue in the same manner as before the project. Thus, no increase in the risk of inundation by a seismic seiche, tsunami, or mudflow would be anticipated from operation and maintenance activities, and no impact would occur.

4.9 LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Physically divide an established community?				✓
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				✓
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				✓

Question 4.9a – Physical Division of an Established Community – No Impact

The project would not divide an established community as the scope of the project would upgrade already existing transmission line structures. No additional structures would be constructed that would create a division within the established community. Therefore, construction, operation, and maintenance activities would have no impact on established communities.

Question 4.9b – Plans and Policy Conflicts – No Impact

Because local discretionary plans, policies and regulations do not apply to this project, which is under the discretionary authority of the California Public Utilities Commission, there are no applicable local land use plans, policies or regulations of an agency with jurisdiction over the project.

Question 4.9c – Habitat Conservation Plan or Natural Community Conservation Plan Conflicts – No Impact

PG&E would obtain take coverage for listed species and habitat through Contra Costa County for all areas located within the boundaries of the ECCC HCP/NCCP; therefore, there would be no conflict with this plan. Impacts within the ECCC HCP/NCCP boundary are discussed further in Section 4.4 Biological Resources. There are also no other applicable conservation plans spanned by the project. Therefore, there would be no impact during construction or for ongoing operation and maintenance activities.

4.10 MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?		✓		
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?		✓		

Question 4.10a – Loss of Regional- or State-Valued Mineral Resources – Less-Than-Significant Impact with Mitigation

Clayton Quarry, located on Pine Hollow Road in Clayton, is spanned by the project between Towers 62 and 63. Reconductoring activities, including installation of Crossing Structures 111 and 111A, might inhibit access for the mining of sand and gravel from this quarry for approximately 7 to 14 days during the project's reconductoring process. During this period, the quarry nonetheless would be able to haul existing stockpiled material off site, and no construction activities would occur within the main portion of the quarry. Therefore, construction-period impacts would be less than significant without implementation of APMs.

While the project would have less-than-significant impacts, there are measures that could be implemented to further minimize the project's potential impacts on mineral resources. APM-MIN-01 requires PG&E to coordinate construction activities in advance with quarry operators. Accordingly, less-than-significant impacts to mineral resources would be further minimized by APM-MIN-01.

The project involves modification to an existing transmission line, including existing transmission towers, within an existing transmission corridor. Existing operation and maintenance activities would not change as a result of the project. Therefore, no impacts would occur as a result of operation and maintenance activities following construction.

Question 4.10b – Loss of Locally Important Mineral Resources – Less-Than-Significant Impact with Mitigation

As described previously, sand and gravel mining in Clayton Quarry would be inhibited for approximately 7 to 14 days during the reconductoring process. Impacts would be less than significant because no construction activities would occur within the quarry and existing stockpiled material could continue to be hauled. Therefore, construction-period impacts would be less than significant without implementation of APMs.

While the project would have less-than-significant impacts, there are measures that could be implemented to further minimize the project's potential impacts on mineral resources. APM-MIN-01 requires PG&E to coordinate construction activities in advance with quarry operators.

Accordingly, less-than-significant impacts to local mineral resources would be further minimized by APM-MIN-01.

Existing operation and maintenance activities would not change as a result of the project. Therefore, no impacts would occur as a result of operation and maintenance activities following construction.

4.11 NOISE

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		✓		
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			✓	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				✓
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		✓		
e) If located within an airport land use plan or within two miles of a public airport or public use airport for which such a plan has not been adopted, would the project result in exposure of persons residing or working in the project area to excessive noise levels?				✓
f) If located within the vicinity of a private airstrip, would the project result in exposure of persons residing or working in the project area to excessive noise levels?				✓

To characterize the existing environment at the project site, ambient sound measurements were taken for a 12-hour period (7:00 a.m. to 7:00 p.m.) on May 3 and 4, 2011 at seven locations along the project alignment. A more detailed discussion of the noise monitoring results has been included in the project's Technical Noise Study Report.

Question 4.11a – Noise in Excess of Standards – Less-Than-Significant Impact with Mitigation

The project area would include multiple residential locations; some residences could be temporarily exposed to noise levels in excess of 80 A-weighted decibels (dBA) from ground-based construction crew activities. One tower work area—Work Area 22—would be located within 80 feet of a school (Sutter Elementary School in Antioch). The students at Sutter Elementary School could be temporarily exposed to noise levels in excess of 80 dBA during the installation of cage extensions at two towers. In addition, helicopters would be used to assist with tower modifications and reconductoring activities where the use of a crane would not be possible. In addition, helicopters may be used to cut and sleeve spliced portions of conductor as

otherwise dictated by construction needs or efficiencies. There are approximately 20 towers that are currently identified to require helicopter work, and one of these towers—Tower 98—is within 130 feet of residences. Residences within approximately 130 feet of helicopter activities could be exposed to noise levels in excess of 80 dBA.[24] To perform the tower modifications and reconductoring work, helicopters would be required to hover near the work area for a total of 15 minutes or less at a height of approximately 50 feet. In this capacity, the helicopters would spend limited time hovering at each tower.

To reduce the noise exposure to residential areas and Sutter Elementary School, or other potential sensitive receptors along the line, PG&E would implement APM-NOI-01, which limits construction activities to those hours permitted by the local noise ordinances except as necessary in limited circumstances to address safety or clearance concerns. In addition, PG&E would implement APM-NOI-02 through 05, which include locating construction equipment as far from sensitive receptors as possible; maintaining all construction equipment in good condition; and placing temporary noise barriers between sensitive receptors and stationary construction equipment when cage extension activities are conducted within 80 feet of sensitive receptors. In addition, APM-AIR-05 limits vehicle idling time for vehicles and construction equipment, which is described in Section 4.3 Air Quality and Greenhouse Gas Emissions. To reduce the number of sensitive noise receptors that would be exposed to helicopter noise, PG&E would implement APM-NOI-05. Due to the short-term nature of these activities and the implementation of APMs, impacts would be less than significant.

The Black Diamond Mines Regional Preserve Park Office would be located approximately 230 feet from the nearest boundary of Landing Zone 35 and 400 feet from the center of Landing Zone 35. Landing Zone 35 would also be located approximately 400 feet from River Loop Trail. Helicopters are anticipated to generate a maximum noise output of approximately 102 dBA at a distance of 50 feet. Because the helicopter would spend limited time hovering, landing, and refueling at the landing zone (cumulatively about 2 hours per day, broken into several landings across an 8-hour period), the anticipated hourly noise average during helicopter activities at the landing zone would be approximately 86.9 dBA at a distance of 50 feet. Assuming that the noise emissions from helicopter activities would attenuate at a rate of 6 dBA for each doubling of distance from the source, the equivalent 8-hour noise level at the Black Diamond Mines Regional Preserve Park Office and River Loop Trail would be approximately 73.6 dBA, which is below the recommended threshold by U.S. DOT. Further, the noise exposure at the office uses would be temporary and intermittent. Helicopters would be active at the landing zone during refueling and to pick up and drop off materials. As such, noise emissions from helicopter use would have a less-than-significant impact at the Black Diamond Mines Regional Preserve Park Office and River Loop Trail. Nonetheless, in order to alert recreational users of the construction activities within the Black Diamond Mines Regional Preserve, APM-REC-01 would be implemented. This APM would require that PG&E coordinate with the EBRPD at least 2 weeks in advance of construction activities to develop a plan for work within the Black Diamond Mines Regional Preserve.

Corona noise is not usually an issue for lines rated at 230 kV and lower. In addition, the increased height of the conductors associated with the installation of cage extensions would slightly reduce any perceptible corona noise at the ground level. No new noise-generating equipment would be installed at any of the substations; therefore, current noise levels associated with the operation and maintenance of these facilities would not change. Because

[24] This is based upon a 10-hour average, although helicopters would hover only briefly near the residences.

operation and maintenance activities would not change from the existing practices, there would be no change in noise levels and therefore no impact.

Question 4.11b – Groundborne Vibration and Noise – Less-Than-Significant Impact

Construction activities can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Vibration from construction activities becomes distinctly perceptible at a level of 0.24 peak particle velocity (PPV). Typical construction activities generate a PPV of 0.24 at a distance of approximately 10 feet. Because no residences are located within 10 feet of any of the tower locations, landing zones, crossing structures, pull sites, or any other temporary work areas, no such receptors would be exposed to significant groundborne vibrations due to the project.

Intermittent vibration sources with amplitudes greater than 0.5 PPV and 1.0 PPV have the potential to significantly affect older residential structures and newer residential structures, respectively. A PPV of 0.5 would be generated by construction activities at a distance of approximately 10 feet or less. Because no structures are located within 10 feet of the work areas where these activities would occur, there would be no impact.

Vibration and groundborne sources associated with operation and maintenance of the project would include vegetation-clearing activities and annual inspections and maintenance procedures. Because the facilities that would be modified as part of the project are currently in use, and the transmission line would be reconductored within an existing ROW, operation and maintenance activities required for the upgraded lines would not change from existing practices. In addition, none of the project facilities would generate vibration as a result of their operation. Thus, no impact due to vibration from operation and maintenance would occur.

Question 4.11c – Substantial Permanent Ambient Noise Increases – No Impact

Construction activities would occur over a finite period; therefore, no permanent increase in noise would occur, and there would be no impact. As described in response to Question 4.11a, the new conductors would not cause a perceptible increase in corona hum and no new sources of continuous operational noise would be installed at the substations. In addition, the existing operation and maintenance activities would not increase in frequency or duration following construction. As a result, no permanent ambient noise increases would occur and there would be no impact.

Question 4.11d – Substantial Temporary or Periodic Ambient Noise Level Increases – Less-Than-Significant Impact with Mitigation

The construction phase of the project would last approximately 12 months within an 18-month window. During that time, sensitive receptors would be subject to temporary increases in ambient noise levels associated with the operation of heavy equipment, such as cranes, trucks, and generators. However, due to the phasing and linear nature of the project, no single receptor would be subjected to this impact for the entire construction schedule.

In order to reduce the potential for impacts to sensitive receptors, APM-NOI-01 through 06 would be implemented, ensuring that equipment is properly tuned and fitted with muffling devices; using temporary noise barriers where applicable; and placing equipment as far from sensitive receptors as practical. In addition, APM-AIR-05 would limit vehicle idling time. Two potential overland access routes have been identified to access WA 98. These overland access routes may be utilized to deliver materials and/or install the cage extension at Tower 98 in addition to or in lieu of utilizing a helicopter to conduct these activities. As described in APM-

NOI-07, PG&E will coordinate with the local landowners to determine the preferred method of tower modification in this location with respect to the temporary ambient noise profile from construction. Due to the short-term nature of construction activities and the implementation of APMs, increases in ambient noise levels due to construction activities would be less than significant with mitigation.

As described previously, PG&E's existing operation and maintenance activities in the area would not be expected to change after project construction. Routine inspections and preventive maintenance would continue with approximately the same crew sizes and frequency. Therefore, no additional noise impacts would occur.

Question 4.11e – Air Traffic Noise from Public Airports – No Impact

Buchanan Field Airport is located approximately 6 miles northwest of the project and is the nearest airport to the CC-Moraga Line. The project would not be located within this airport's 60 dBA Community Noise Equivalent Level contour. Therefore, no impact would occur.

Question 4.11f – Air Traffic Noise from Private Airstrips – No Impact

The project site is not located within the vicinity of a private airstrip. The nearest private airstrip is the Little Hands Airport, which is approximately 4 miles southeast of the project. The project is not located within any noise contours associated with the Little Hands Airport. Therefore, no impact would occur.

4.12 POPULATION AND HOUSING

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				✓
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				✓
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				✓

Question 4.12a – Population Growth – No Impact

The project would not include new housing or businesses, or land use changes that would induce population growth in the area. The project would accommodate existing and planned growth within the service area and would not alter the location, distribution, density, or growth rate of the population. The project would have no impact on the population growth in the area during construction or operation and maintenance activities.

Question 4.12b – Displacement of Existing Housing – No Impact

Project construction would be conducted within an existing ROW and construction areas would not displace existing housing. In addition, no replacement housing would be constructed and there would be no impact. Operation and maintenance activities would not differ from the existing activities in scale or scope. Therefore, there would be no impact.

Question 4.12c – Displacement of People – No Impact

The project would require a small number of workers (approximately 12 workers on a crew with a maximum of 30 workers on the project at any given time). The majority of construction workers would come from the local area or commute from neighboring counties and cities, or would be from regular and existing contractors of PG&E. As such, it is not expected that the construction workforce would relocate to the area, which could cause a displacement of housing or people. In addition, the operation and maintenance activities would not require any additional workers. Since the project would not be expected to cause a displacement of housing or people, there would be no impact.

4.13 PUBLIC SERVICES

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?		✓		
Police protection?		✓		
Schools?				✓
Parks?				✓
Other public facilities?				✓

Question 4.13a – Adverse Impact to Public Services – Less-Than-Significant Impact with Mitigation

Due to the temporary nature of construction and the availability of a local workforce, construction of the project is not expected to result in direct population increases. For this reason, construction of the project would not increase demands on parks, schools, utilities, or other government services. Furthermore, as a result of construction practices and precautions, construction of the project would not place undue demands on fire protection or law enforcement services. The project would increase reliability of power delivery to these facilities for continued function of these public services. A review of potential impacts to public services is described in the following subsections.

Fire and Police Protection

Emergency vehicle access would not be directly impacted during construction because all streets would remain open to emergency vehicles at all times. As a result, impacts to fire or police protection services would be less than significant without implementation of APMs.

While the project would have less-than-significant impacts, there are measures that could be implemented to further minimize the project's potential effect on public services. APM-PS-01 requires PG&E to coordinate with local emergency service providers to minimized impacts to emergency response times. Accordingly, less-than-significant impacts to public services during construction would be further minimized by APM-PS-01.

Once constructed, the project would provide additional electricity to accommodate existing and planned growth within the PG&E service area and would not alter the location, distribution, density, or growth rate of the population. Therefore, the project would not impact service ratios, response times, or other performance objectives for fire or police protection services. Therefore, no impacts to public services would occur.

Schools, Parks, and Other Public Facilities

The project would not create additional demand for schools, parks, or other public facilities because it would not increase the local population during the project's short construction phase. In addition, no schools, parks, or other public facilities would be permanently closed or removed as part of construction. As a result, there would be no impact related to schools, parks, or other public facilities.

Operation and maintenance activities would take place within the existing transmission line corridor and within the existing substations. These activities would continue in the same manner as prior to the construction of the project, and would not require additional personnel. Therefore, there would be no impact related to public services.

4.14 RECREATION

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?		✓		
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				✓

Question 4.14a – Recreational Facilities Use – Less-Than-Significant Impact with Mitigation

As summarized in Table 9: Recreational Facilities Spanned by the Project, the project spans 12 recreational facilities. Temporary closure of a recreational facility due to safety reasons or jurisdictional requirements may be required during construction. Specifically, portions of parks would need to be close when construction is underway in those areas. Also, during the reconductoring process, portions of the parks that are spanned by the line may need to be closed. Closure of park facilities where project construction would occur could increase the use of surrounding recreational facilities. In order to reduce the potential impacts to recreational users from park closures, PG&E would implement APM-REC-01 and APM-REC-02. These measures would require that PG&E coordinate with recreational facilities in advance of construction activities within these facilities, including posting notices at key entrances to the preserve and clearly demarcating the boundary of construction areas. Any increase in use of nearby parks due to the project would be brief and temporary, and would have a negligible effect on the condition of nearby parks. Existing recreation facility use would not significantly increase because several recreational areas exist within the vicinity; construction activities would be limited in duration; and most construction crew members would commute to the project. As such, potential temporary closures would not result in increased park deterioration. With the implementation of APMs, there would be a less-than-significant impact on recreational facilities.

The project would also accommodate existing and planned growth within the PG&E service area and would not alter the location, distribution, density, or growth rate of the population. Once constructed, the project would not create any new demand for existing public parks or recreational facilities, or for new recreation facilities; therefore, no impacts would occur.

Table 9: Recreational Facilities Spanned by the Project

Recreational Facility Name	Associated Agency
Harbour Park	City of Antioch
Mountaire Park	City of Antioch
Chichibu Park	City of Antioch
Black Diamond Mines Regional Preserve	EBRPD
Mangini Ranch	Save Mount Diablo
Diablo Foothills-Land Bank	EBRPD
Diablo Foothills Regional Park	EBRPD
Shell Ridge Open Space	City of Walnut Creek
Rudgear Park	City of Walnut Creek
Sugarloaf Recreational Area	City of Walnut Creek
Las Trampas Regional Wilderness	EBRPD
Orinda Oaks Park	City of Orinda

Question 4.14b – Recreational Facilities Changes – No Impact

The project would not involve the construction of new, or the expansion of existing, recreational facilities. In addition, construction of this project would occur within PG&E's existing ROW, would use existing roads and temporary overland access routes, and would not involve the creation of a new utility corridor through recreational facilities. Therefore, there would be no new permanent impacts to recreational facilities associated with these activities during construction or operation and maintenance activities.

4.15 TRANSPORTATION AND TRAFFIC

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?		✓		
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			✓	
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?			✓	
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		✓		
e) Result in inadequate emergency access?		✓		
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?		✓		

Question 4.15a – Traffic Plan or Policy Conflicts – Less-Than-Significant Impact with Mitigation

During construction, project-related traffic would result in a minor and temporary increase in daily traffic, but would not cause changes in the acceptable level of service (LOS) in Contra Costa County. Traffic flow could also be temporarily disrupted during conductor pulling, tower modification, or during installation and removal of crossing structures, or if flaggers were used during pulls instead of temporary crossing structures. Roads could be closed for 10 to 15 minutes during the pull of each conductor, for a total of up to six closures at each crossing. Roads that would be closed for tower modifications would experience longer closures that could last approximately 1 to 2 days. Accordingly, the project could potentially conflict with an

applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system.

To avoid and minimize the project's potential impacts on traffic, the required ministerial encroachment permits would be obtained and APM-PS-01 and APM-TRA-04 would be implemented. These APMs would require PG&E to coordinate with local agencies as required prior to conducting the pulls and to install traffic controls, as appropriate. As a result, impacts would be less than significant with mitigation.

PG&E currently operates and maintains the transmission line within an existing ROW. Operation and maintenance activities, which include occasional visits to maintain the transmission line, would continue in the same manner as prior to construction of the project. There would be no changes to existing operation and maintenance activities following construction; therefore, there would be no impact.

Question 4.15b – Level of Service Changes – Less-Than-Significant Impact

As previously stated, project-related traffic during construction would result in a temporary and minor increase in daily traffic, but would not cause changes in the acceptable LOS in Contra Costa County. Road closures would occur during non-peak traffic times to the extent possible. The temporary project-related traffic increase and periodic, short-term road closure impacts to existing LOS standards would be less than significant.

As previously stated, operation and maintenance activities would not change following construction and no increases in daily traffic or LOS changes would occur during operation and maintenance of the project. Therefore, there would be no impact.

Question 4.15c – Air Traffic Changes – Less-Than-Significant Impact

The project would not be within the vicinity of a public or private airstrip. The closest military airport to the project is Travis Air Force Base, located approximately 20 miles north of Contra Costa Power Plant Substation. Buchanan Airport, located approximately 6.5 miles northwest of Tower 64, is the closest public airport to the project. Construction activities at individual towers would be carried out by helicopter to minimize ground disturbance. Helicopter construction activities would be based from the pull sites and helicopter landing zones. The helicopter contractor would coordinate flight patterns with local air traffic control and the FAA prior to construction to prevent any adverse impacts due to increased air traffic. PG&E would also prepare a Helicopter Lift Plan, if required by federal law. While the use of helicopters could temporarily increase air traffic during construction, PG&E would coordinate this traffic with the applicable agencies; therefore, impacts would be less than significant.

The FAA limits construction or alteration of any project more than 200 feet tall; work within 10,000 feet of a public or military-use airport; and/or work within 5,000 feet of a public-use heliport. The height of the existing transmission line structures would be increased from a current maximum of approximately 168 feet to a proposed maximum of approximately 184.5 feet. Thus, these modifications would not violate any of the restrictions.

Question 4.15d – Increase in Hazards – Less-Than-Significant Impact with Mitigation

Temporary overland access routes may be constructed to allow access to certain portions of the project; however, these routes would be restricted to construction personnel use only. No new permanent roads would be constructed as part of the project.

To avoid and minimize potential hazards from the project's design, APM-TRA-03 would require all overland access routes to be demarcated and that travel within construction areas and project-specific access roads/routes to be limited to project-personnel only, if warranted for safety. PG&E would also obtain applicable encroachment permits and coordinate with local agencies by implementing APM-PS-01 prior to conducting the pulls. With the implementation of APM-TRA-03, APM-TRA-04, and APM-PS-01, impacts would be less than significant with mitigation.

Question 4.15e – Emergency Access Effects – Less-Than-Significant Impact with Mitigation

The project spans multiple roadways that may be used during an evacuation. Road closures could indirectly impact emergency access response times. The crossing structures themselves would serve as a safety feature to prevent roadway obstruction during construction. Thus, impacts would be less than significant without implementation of APMs.

While the project would have less-than-significant impacts, there are measures that could be implemented to further minimize the project's potential impacts on emergency access. Implementation of APM-PS-01 would require PG&E to coordinate with emergency providers prior to implementing closures. Accordingly, less-than-significant impacts to emergency access would be further minimized by APM-PS-01.

Question 4.15f – Alternative Transportation Conflicts – Less-Than-Significant Impact with Mitigation

The existing line spans Amtrak tracks in two locations in the City of Antioch. Crossing structures with nets would be installed on either side of these crossings under the direction of a railroad representative prior to pulling activities. The existing line also spans various bus routes that could be indirectly impacted as a result of increased traffic and temporary road closures. The line would also span municipal bike trails and roads with designated bike lanes along the project alignment; however, these trails and roads are not anticipated to be closed during construction, except as necessary during conductor removal and installation activities. If crossing structures are not in place, flaggers may hold traffic for brief periods of time while the conductors would be installed. Construction would typically occur within an existing transmission corridor and would not involve any activities that would conflict with transportation policies, plans, or programs. Construction of the project would not conflict with any policies supporting alternative transportation. As a result, impacts would be less than significant without implementation of APMs.

While the project would have less-than-significant impacts, there are measures that could be implemented to further minimize the project's potential impacts on increased hazards. APM-TRA-01 would require PG&E to coordinate with Amtrak to schedule the crossing so that service would not be interrupted by construction. In addition to obtaining the required encroachment permits, PG&E would conduct additional coordination with local agencies, as needed, by implementing APM-PS-01 prior to conducting the pulls. Accordingly, less-than-significant impacts to alternative transportation would be further minimized by APM-TRA-01, APM-TRA-04, and APM-PS-01.

As previously stated, PG&E currently operates and maintains the transmission line within an existing ROW. While lane closures may be needed in some instances to maintain the poles and conductor, these activities would not differ from existing operation and maintenance activities.

Operation of the project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. Therefore, there would be no impact.

4.16 UTILITIES AND SERVICE SYSTEMS

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				✓
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities (the construction of which could cause significant environmental effects)?				✓
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities (the construction of which could cause significant environmental effects)?			✓	
d) Have sufficient water supplies available from existing entitlements and resources to serve the project from existing entitlements and resources, or are new and expanded entitlements needed?				✓
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				✓
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				✓
g) Comply with federal, state, and local statutes and regulations related to solid waste?				✓

Question 4.16a – Wastewater Treatment Requirement Exceedances – No Impact

Wastewater disposal would not be required, because the water used during dust suppression activities would be minimal. Further, this water would evaporate or be absorbed into the ground. In addition, portable restrooms would be provided and maintained by a licensed sanitation contractor for on-site use by construction workers. The licensed contractor would dispose of the wastewater at a sewage treatment plant and in compliance with standards established by the Regional Water Quality Control Board (RWQCB). Therefore, the project would not exceed wastewater treatment requirements and would have no impact.

Operation and maintenance activities generally would be conducted the same manner as for the existing facilities. No additional sewage would be generated beyond what is currently required and no additional wastewater would require treatment. Therefore, operation and maintenance of the project would not exceed wastewater treatment requirements and no impact would occur.

Question 4.16b – Water and Wastewater Treatment Facility Expansion – No Impact

During construction, the small amount of water used would be obtained from existing municipal sources, and wastewater generated would be serviced by existing facilities. Construction of the project would not require additional capacity to existing municipal water or wastewater treatment systems and, therefore, would have no impact on these systems.

Operation and maintenance activities would not require extending a sewer trunk line to serve new development, and no new or expanded water treatment facilities would be needed. Therefore, there would be no impact.

Question 4.16c – Storm Water Drainage Facility Expansion – Less-Than-Significant Impact

Increased runoff resulting from vegetation removal or soil compaction could occur at temporary work areas and along overland access routes. These activities would be widely scattered across the approximately 27-mile-long project, thus having temporary and minimal effects on storm water runoff within the water basin. Construction activities would not result in a net increase in impervious surfaces because all work areas, pull sites, landing zones, and access routes would be restored to pre-construction conditions once the project has been completed. Therefore, impacts would be less than significant.

The project would involve reconductoring an existing transmission line within an established corridor and performing minor modifications to existing substations without an increase in impermeable surface area. The reconductored transmission line and substations would require operation and maintenance activities similar to existing ones. The project would not require or result in the need for new storm water drainage facilities or the expansion of existing facilities. Therefore, there would be no impact.

Question 4.16d – Water Supply Availability – No Impact

Potable water is available for PG&E to conduct standard dust- and fire-suppressant activities, as well as for crew consumption during construction. The reconductored transmission line and substations would continue to be operated and maintained in the same manner following construction. Therefore, the project would have no impact on water supplies or entitlements.

Question 4.16e – Wastewater Treatment Capacity – No Impact

During project construction, portable restrooms would be used. In addition, water use would be minimal and limited to dust control activities and crew consumption. The reconductored transmission line and substations would require operation and maintenance activities similar to existing ones. No wastewater treatment would be required as part of the project, and there would be no impacts to wastewater treatment providers or their capacities.

Question 4.16f – Landfill Capacity – No Impact

Construction waste, including unusable conductors, would be recycled to the maximum extent possible. Existing landfill capacity is available to accommodate any non-recyclable materials.

Further, existing landfill capacity levels would be sufficient for the continuation of operation and maintenance activities. As a result, there would be no impact.

Question 4.16g – Solid Waste Statutes and Regulations – No Impact

During and following project construction, PG&E would dispose of all waste in accordance with published national, state, or local statutes relating to solid waste. The project would have no impact on solid waste disposal because the project would generate only a small volume of waste material on a short-term basis and would comply with federal, state, and local statutes.

4.17 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		✓		
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)			✓	
c) Does the project have environmental effects that which will cause substantial adverse effects on human beings, either directly or indirectly?			✓	

Question 4.17a – Environmental Quality – Less-Than-Significant Impact with Mitigation

As discussed in Section 4.4 Biological Resources, although project construction activities have the potential to temporarily degrade the quality of the environment and/or reduce the habitat of the 24 special-status wildlife species, and have the potential to temporarily reduce the habitat or result in the permanent individual loss of the 72 special-status plant species, with potential to occur within 5 miles of the project, the project has been designed to minimize impacts to these species. Other temporary impacts could occur to USFWS-designated critical habitat for Alameda whipsnake, central coast riparian scrub near Pull Site 63, an additional drainage near Crossing Structure 111A, and one seasonal wetland, located along the wet-season overland access route to Tower 114.

These temporary disturbances would not substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal. Moreover, temporary disturbances to habitat would be addressed with measures to return disturbed sites to pre-project conditions, as described in the APMs included in Section 4.4 Biological Resources. The project includes a variety of APMs to address water quality, nesting birds, and protection of wildlife habitat. In addition, PG&E would

implement BMPs and coordinate with and obtain any necessary authorizations from the USACE, CDFW, RWQCB, and ECCC HCP/NCCP Administrator. Therefore, potential impacts to plant and wildlife species, critical habitat, drainages, and wetlands would be less than significant with mitigation.

Surveys of the project alignment did not identify any known archaeological resources within the project ROW. However, approximately 15 percent of the project alignment—comprised of nine construction areas—was evaluated to have a moderate- to high-sensitivity for buried sites. With implementation of the APMs identified in Section 4.5 Cultural Resources, potential impacts to archaeological resources would be less than significant. One historical resource—the Moraga Substation Transformer Handling House—is located within Moraga Substation. At Moraga Substation, the project would replace three switches; replace existing structures with new structures; and replace indoor relays with standard integration protection, automation, and control equipment. However, no modifications would be made to the Moraga Substation Transformer Handling House itself and no impact would occur. Therefore, the project would not eliminate important examples of the major periods of California history or prehistory.

Following construction, there would be no changes to existing operation and maintenance activities. Therefore, no new impacts to biological or cultural resources would be anticipated during the continuing operation and maintenance of the CC-Moraga Line and substations.

Question 4.17b – Cumulative Impacts – Less-Than-Significant Impact

Impacts associated with the project include short-term disturbances associated with construction activities and minor changes to the existing landscape setting due to height increases associated with the installation of cage extensions on existing towers. During construction, temporary disturbance of habitat would occur, along with minor visual changes to the landscape. PG&E would obtain coverage under the NPDES Construction General Permit for Storm Water Discharges from Construction Activities and implement a SWPPP, as required by law, to minimize temporary impacts to water quality within the two drainages. In addition, a CDFW Lake and Streambed Alteration Agreement, State Water Board 401 Certification, and USACE Section 404 Nationwide Permit would be obtained. PG&E would adhere to the measures specified in each of the permits in order to minimize potential erosion-related impacts to water quality. Project construction would generate short-term emissions of GHG and pollutants regulated by the local air quality management district. However, with implementation of APMs, net emissions would pose a negligible increase over existing conditions and would not contribute substantially to an existing or projected air quality violation or non-attainment for a monitored criteria pollutant. The modification of existing towers and replacement of conductors represent relatively minor, incremental changes to the existing landscape setting.

The incremental impact of the project, when added to other closely related past, present, and reasonably foreseeable, probable future projects, would not constitute a cumulatively considerable contribution to cumulative impacts on project-related resources. A list of existing, planned, and proposed projects located within 5 miles of the project is included in Table 10: Existing, Planned, and Proposed Projects within 5 Miles. PG&E anticipates that construction of the Contra Costa-Moraga 230 kV Reconductoring Project would begin between the fourth quarter of 2014 and the first quarter of 2015, with energization of the reconductored circuits occurring in mid-2016 or sooner, depending on completion of construction. As shown in Table 10: Existing, Planned, and Proposed Projects within 5 Miles, most of the other projects identified as potentially occurring within the same timeframe are located at a distance of 0.5 mile or greater from the project alignment. One project, the Trembath Basin Project, would occur

directly adjacent to the Contra Costa-Moraga 230 kV Reconductoring Project; however, the construction timing of this project is undetermined. PG&E's Pittsburg-Tesla 230 kV Reconductoring Project is spanned by the Contra Costa-Moraga 230 kV Reconductoring Project and is currently being constructed. Construction of this project may overlap with the construction of the Contra Costa-Moraga 230 kV Reconductoring Project. Two separate PG&E projects—Contra Costa-Delta Switching Station 230 kV Reconductoring Project and Oakley Generating Station 230 kV Transmission Line Project—could potentially occur in approximately the same timeframe as the Contra Costa-Moraga 230 kV Reconductoring Project; however, their construction schedules are undetermined at this time. The California Department of Transportation State Route 4 Widening: Hillcrest Project, for which construction is scheduled to occur from fall or winter of 2012 until spring of 2015 is the only other project located within 0.5 mile of the CC-Moraga Line that would have a potentially overlapping construction schedule. These projects would be expected to implement minimization measures similar to those incorporated into the project, as listed in Section 3.5 Applicant-Proposed Measures, including meeting air quality requirements, coordinating work activities with the responsible agencies, and implementing applicable best management practices and APMs. As a result, these projects are not expected to result in significant cumulative impacts.

Future operation and maintenance activities for the project would not differ from those currently associated with operation of the existing CC-Moraga Line. No cumulative impacts would result from operation of the project.

Question 4.17c – Human Beings – Less-Than-Significant Impact

During project construction, APMs would be implemented to manage impacts associated with air quality and GHG emissions, biological resources, cultural resources, hazards and hazardous materials, hydrology and water quality, noise, public services, and transportation and traffic. These measures would ensure worker and public safety and minimize construction-related disturbances. PG&E would also comply with federal, state, and local regulations and abide by permit conditions issued for this project. Therefore, project impacts on human beings would be limited to short-term, minor construction disturbances, which would be within the range of conditions allowed by federal, state, and local regulations. Consequently, project impacts on human beings would be less than significant.

Operation and maintenance activities would not differ following construction and no adverse impacts on human beings would occur. As a result, the project's potential to cause adverse effects on human beings would be less than significant during operation and maintenance.

Table 10: Existing, Planned, and Proposed Projects within 5 Miles

#	Project Name	Location	Proximity to Project	Project Type	Approximate Size	Status	Anticipated Construction Schedule	
							Begin	End
1	PG&E Contra Costa-Delta Switching Station 230 kV Reconductoring Project	Antioch and Alameda County	0.1 mile	Transmission Line Reconductoring	18 miles	Proposed	Unknown	Unknown
2	State Route 4 Widening: Hillcrest Project	Antioch	Spanned	Caltrans Road Improvements	6 miles	Approved	Fall/Winter 2012	Spring 2015
3	Trembath Basin Project	Antioch	Spanned	Dam and outlet works construction and basin excavation	13.5 acres	Approved	Unknown	Unknown
4	PG&E Pittsburg-Tesla 230 kV Transmission Line Reconductoring Project	Pittsburg and Alameda County	Spanned	Transmission Line Reconductoring	31 miles	Under construction	August 2013	December 2014
5	PG&E Oakley Generating Station 230 kV Transmission Line Project	Contra Costa County	Spanned	Transmission Line Construction	2.4 miles	Proposed	Unknown	Unknown
6	I-680 Pavement Rehabilitation & Southbound HOV Lane Extension	San Ramon, Danville, Alamo, and Walnut Creek	Spanned	Caltrans Road Improvements	12.8 miles	Complete	Winter 2011	Spring 2012
7	Viera Avenue Bike Lanes	Antioch	Spanned	Road Improvements	0.5 mile	Complete	Summer 2012	Summer/Fall 2012

#	Project Name	Location	Proximity to Project	Project Type	Approximate Size	Status	Anticipated Construction Schedule	
							Begin	End
8	State Route 4 Bypass Authority	Antioch, Brentwood, and Oakley	0.3 mile	Caltrans Road Improvements	12.4 miles	Complete	2008	2010
9	Antioch Bridge Seismic Retrofit	Contra Costa County/ Sacramento County	0.5 mile	Caltrans Road Improvements	2 miles	Complete	Summer 2010	Spring 2012
10	Kirker Pass Road Overlay	Pittsburg	1.2 miles	Road Improvements	1.5 miles	Complete	August 2012	September 2012
11	Caldecott Fourth Bore Project	Oakland and Orinda	2.9 miles	Caltrans Road Improvements	0.6 mile	Under Construction	Winter 2010	Summer 2014
12	Marsh Creek Road Safety Improvements	Clayton	3.2 miles	Road Improvements	2 miles	Proposed	2013	Unknown
13	Contra Costa Centre Infrastructure Improvements	Pleasant Hill	3.7 miles	BART Station Upgrades	57.6 acres	Approved	Summer/Fall 2013	Unknown
14	Contra Costa Centre Wayfinding System	Pleasant Hill	3.7 miles	BART Station Area Improvements	57.6 acres	Complete	Summer 2012	Summer/Fall 2012
15	Marsh Creek Detention Facility Bridge Replacement	Clayton	4.6 miles	Road Improvements	0.1 mile	Proposed	2014	Unknown

Sources: Caltrans, 2012; Contra Costa County, 2012

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Mandatory Findings of Significance

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Caltrans. Caltrans District 4 Bay Area Projects. Online. http://www.dot.ca.gov/dist4/projects_list.htm#contracosta. Site visited July 10, 2012.

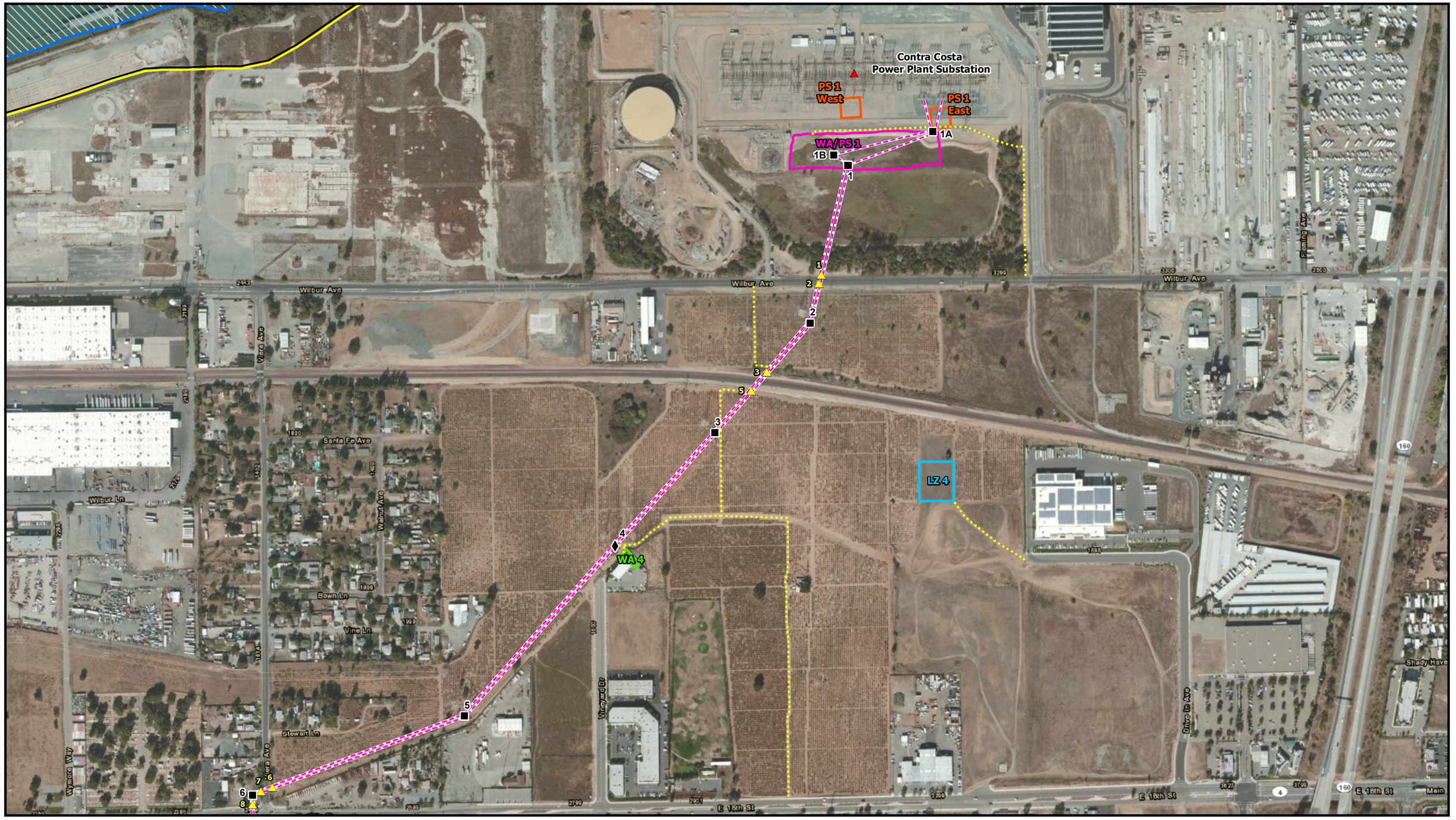
Contra Costa County. Advertised & Upcoming Construction Projects. http://www.co.contra-costa.ca.us/index.aspx?NID=261. Site visited July 13, 2012.

Metropolitan Transportation Commission. Antioch Bridge Seismic Retrofit Project. http://www.mtc.ca.gov/tolls/Antioch_and_Dumbarton_Details.pdf. Site visited July 16, 2012.

ATTACHMENT A: DETAILED ROUTE MAP

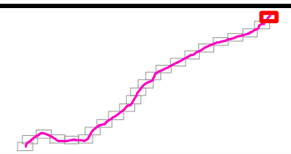
Attachment A: Detailed Route Map 1 of 23

Contra Costa-Moraga 230 kV Reconductoring Project



- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
- Crane Work Area (CWA)
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
- A description of each numbered wetland or water feature is provided in Table 8: Wetland and Water Features in the Vicinity of Construction Areas.
- The center point of each Crane Work Area has been shown in its approximate location. Work within each Crane Work Area would be limited to the existing paved roadway, shoulder, and/or sidewalk. Each Crane Work Area would be approximately 200 feet long.



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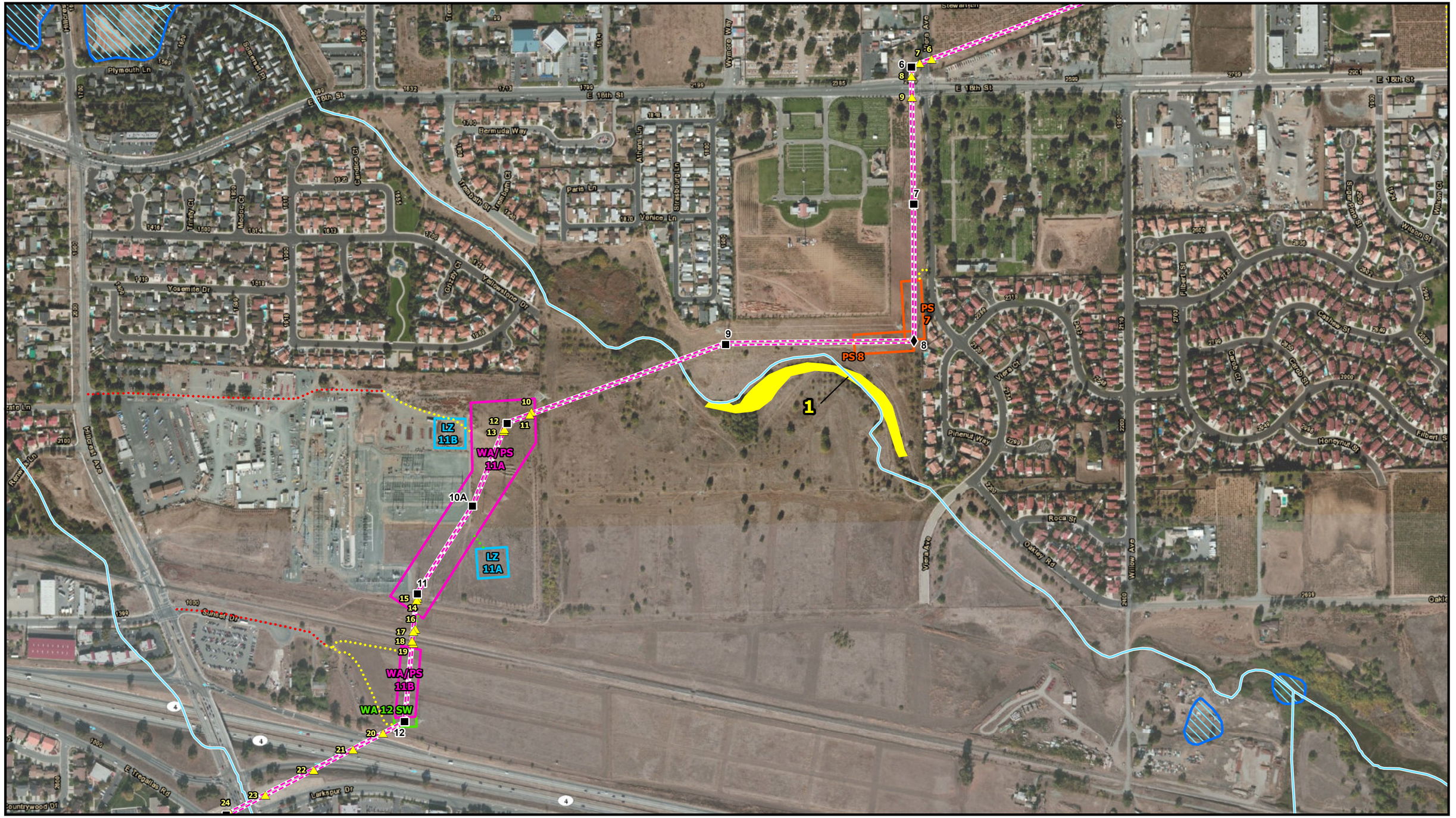
Attachment A: Detailed Route Map 2 of 23

Contra Costa-Moraga 230 kV Reconductoring Project



Contra Costa-Moraga 230 kV Line
Existing Substation
Existing Tower
Modified Tower
Crossing Structure

Paved Access Road
Gravel/Dirt Access Road
Overland Access Route

Landing Zone (LZ)
Pull Site (PS)
Work Area (WA)
Crane Work Area (CWA)
Work Area/Pull Site (WA/PS)

Observed Water Feature
Drainage
National Wetlands Inventory Feature
ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
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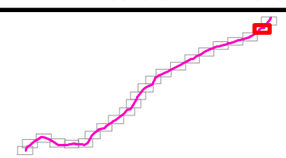

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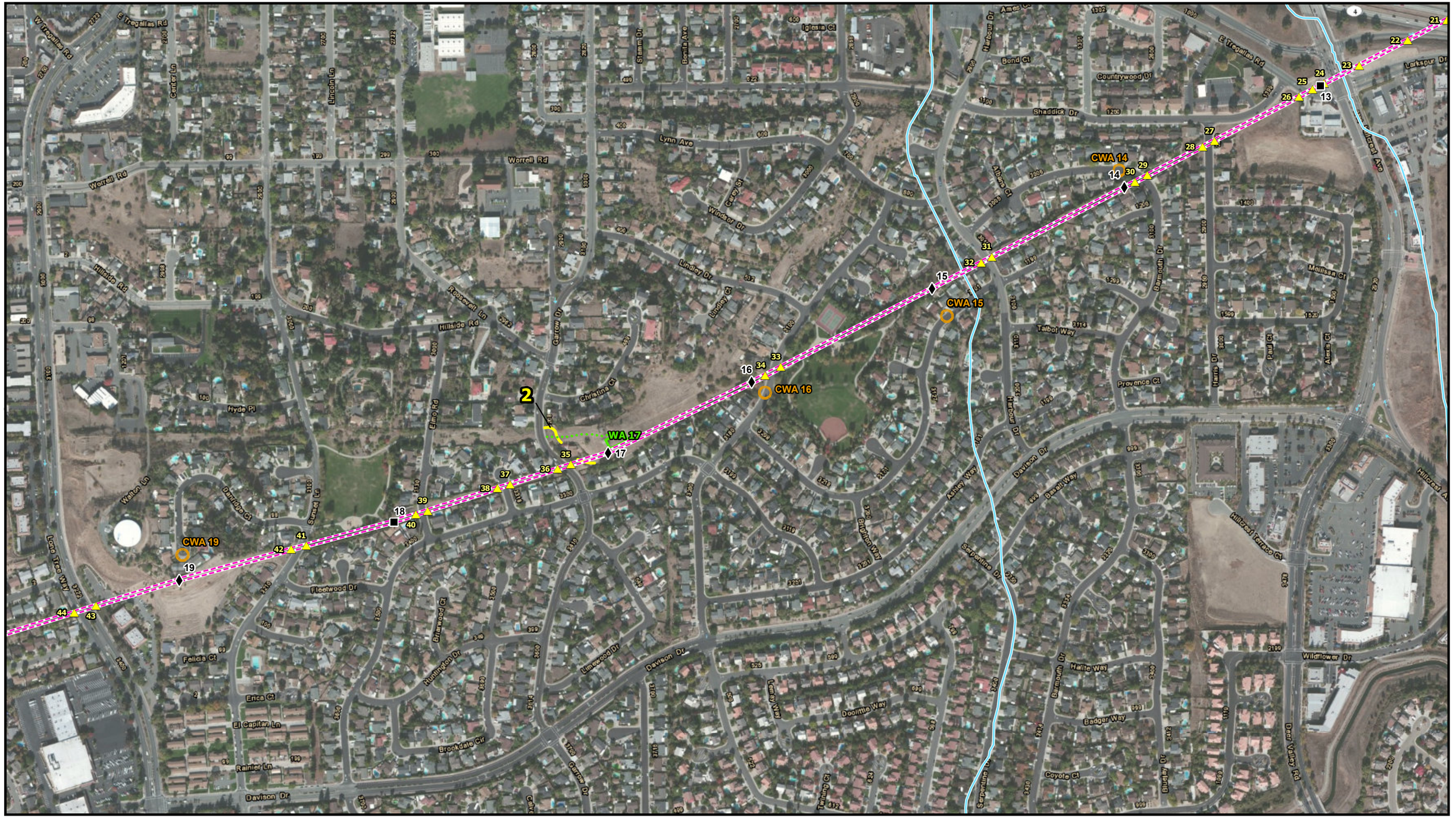
Attachment A: Detailed Route Map 3 of 23

Contra Costa-Moraga 230 kV Reconductoring Project



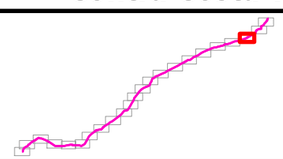
Contra Costa-Moraga 230 kV Line
Existing Substation
Existing Tower
Modified Tower
Crossing Structure

Paved Access Road
Gravel/Dirt Access Road
Overland Access Route

Landing Zone (LZ)
Pull Site (PS)
Work Area (WA)
Crane Work Area (CWA)
Work Area/Pull Site (WA/PS)

Observed Water Feature
Drainage
National Wetlands Inventory Feature
ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
- A description of each numbered wetland or water feature is provided in Table 8: Wetland and Water Features in the Vicinity of Construction Areas.
- The center point of each Crane Work Area has been shown in its approximate location. Work within each Crane Work Area would be limited to the existing paved roadway, shoulder, and/or sidewalk. Each Crane Work Area would be approximately 200 feet long.



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Attachment A: Detailed Route Map 4 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
- Crane Work Area (CWA)
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
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- The center point of each Crane Work Area has been shown in its approximate location. Work within each Crane Work Area would be limited to the existing paved roadway, shoulder, and/or sidewalk. Each Crane Work Area would be approximately 200 feet long.

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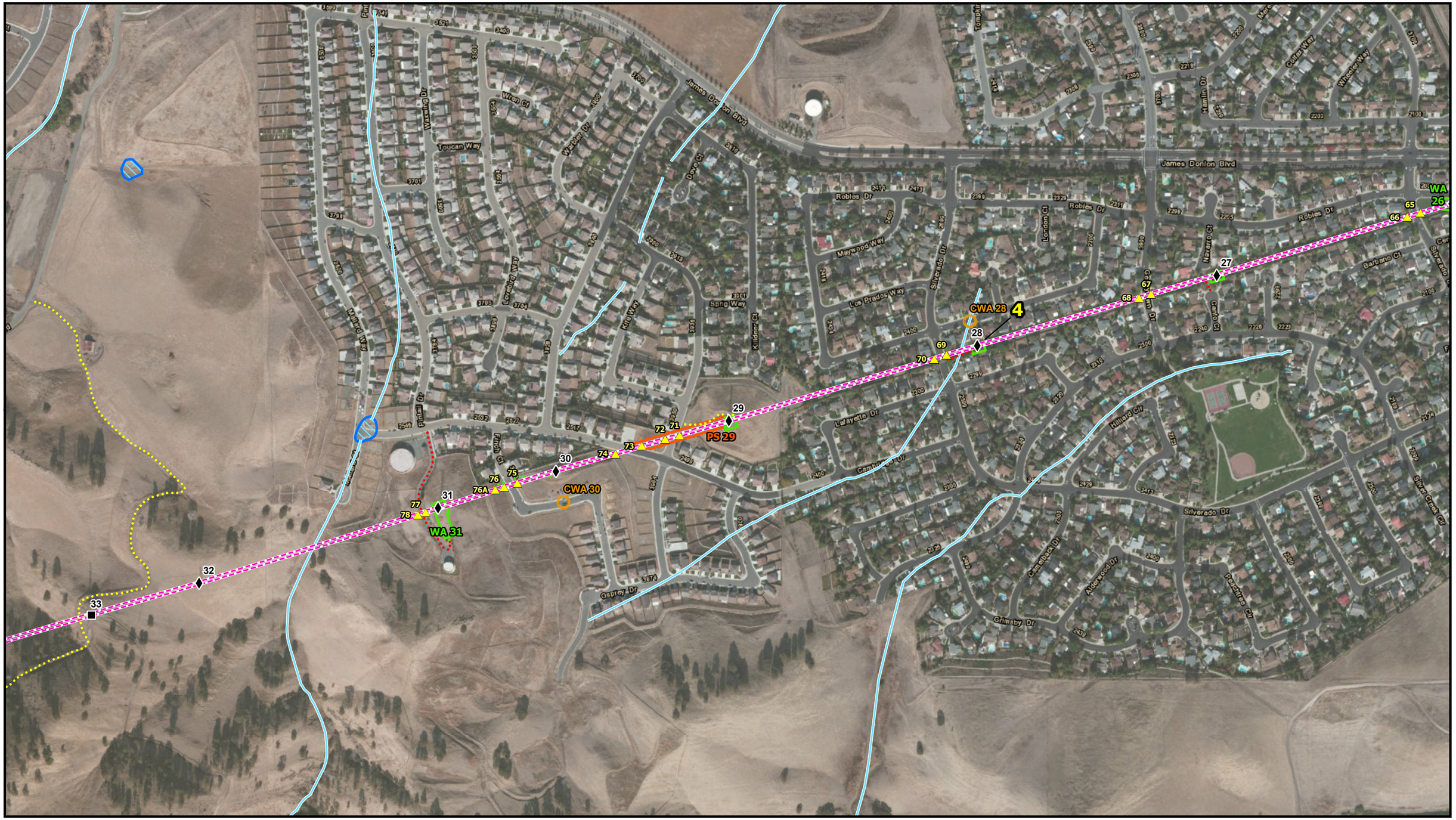
Attachment A: Detailed Route Map 5 of 23

Contra Costa-Moraga 230 kV Reconductoring Project



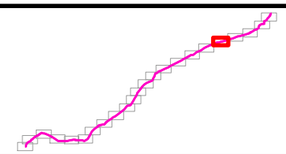
Contra Costa-Moraga 230 kV Line
Existing Substation
Existing Tower
Modified Tower
Crossing Structure

Paved Access Road
Gravel/Dirt Access Road
Overland Access Route

Landing Zone (LZ)
Pull Site (PS)
Work Area (WA)
Crane Work Area (CWA)
Work Area/Pull Site (WA/PS)

Observed Water Feature
Drainage
National Wetlands Inventory Feature
ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
- A description of each numbered wetland or water feature is provided in Table 8: Wetland and Water Features in the Vicinity of Construction Areas.
- The center point of each Crane Work Area has been shown in its approximate location. Work within each Crane Work Area would be limited to the existing paved roadway, shoulder, and/or sidewalk. Each Crane Work Area would be approximately 200 feet long.



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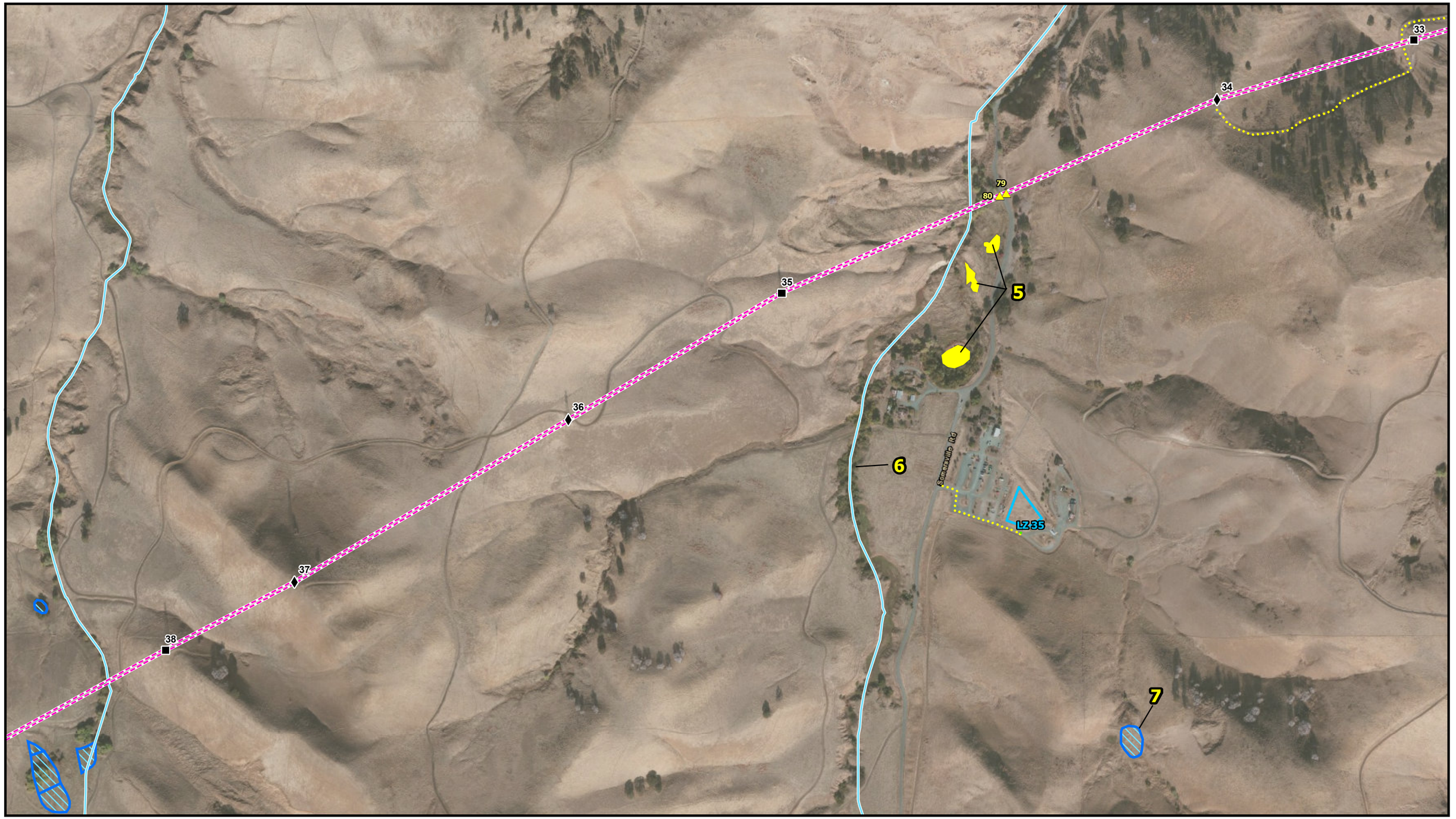
Attachment A: Detailed Route Map 6 of 23

Contra Costa-Moraga 230 kV Reconductoring Project



- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
- Crane Work Area (CWA)
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
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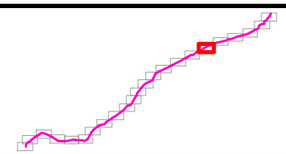

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Attachment A: Detailed Route Map 7 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
- Crane Work Area (CWA)
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
- A description of each numbered wetland or water feature is provided in Table 8: Wetland and Water Features in the Vicinity of Construction Areas.
- The center point of each Crane Work Area has been shown in its approximate location. Work within each Crane Work Area would be limited to the existing paved roadway, shoulder, and/or sidewalk. Each Crane Work Area would be approximately 200 feet long.

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Attachment A: Detailed Route Map 8 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
- Crane Work Area (CWA)
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
- A description of each numbered wetland or water feature is provided in Table 8: Wetland and Water Features in the Vicinity of Construction Areas.
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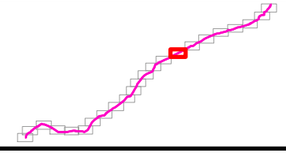

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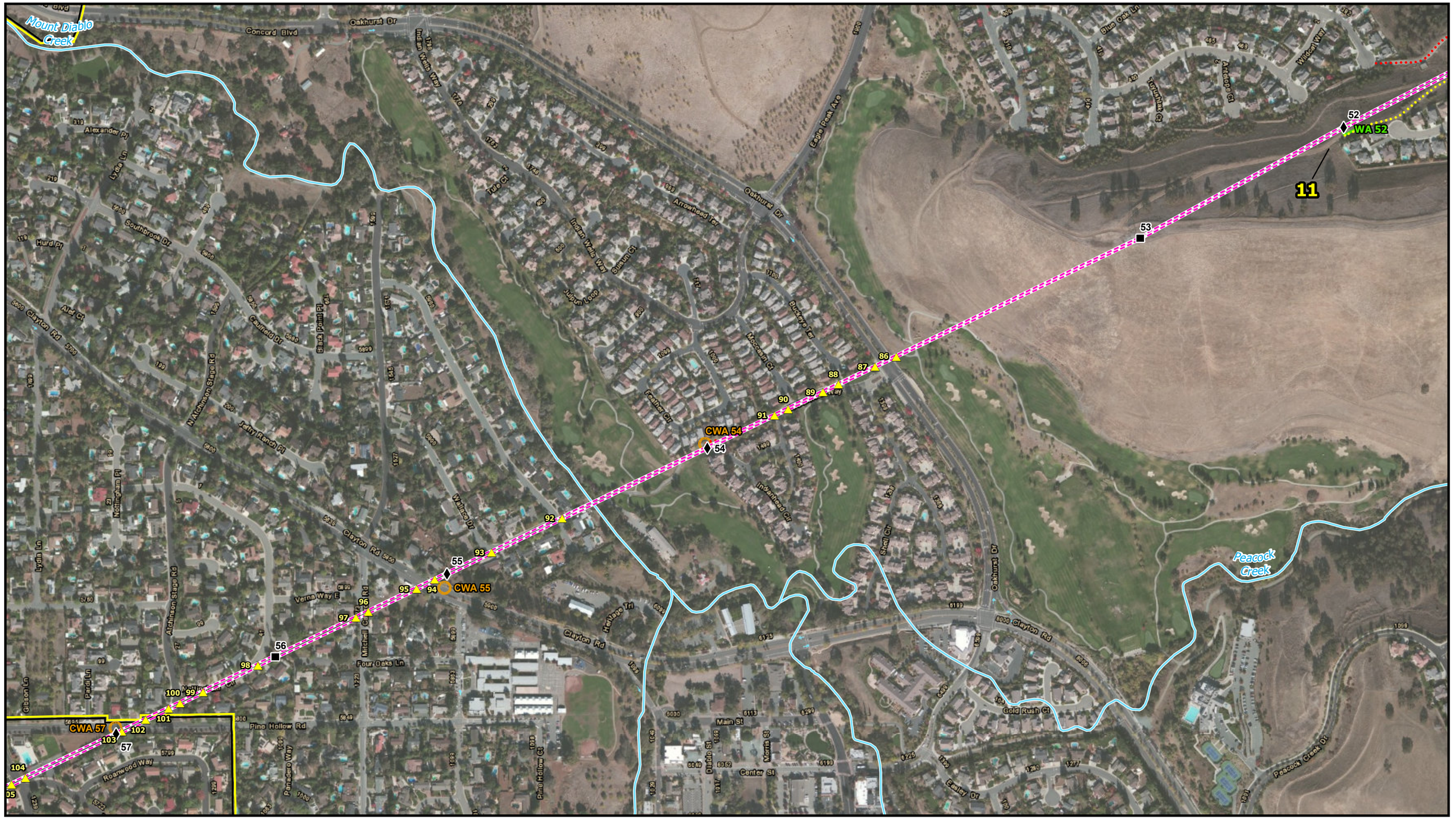
Attachment A: Detailed Route Map 9 of 23

Contra Costa-Moraga 230 kV Reconductoring Project



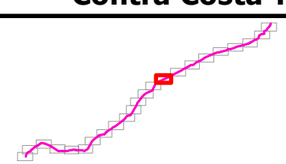
Contra Costa-Moraga 230 kV Line
Existing Substation
Existing Tower
Modified Tower
Crossing Structure

Paved Access Road
Gravel/Dirt Access Road
Overland Access Route

Landing Zone (LZ)
Pull Site (PS)
Work Area (WA)
Crane Work Area (CWA)
Work Area/Pull Site (WA/PS)

Observed Water Feature
Drainage
National Wetlands Inventory Feature
ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
- A description of each numbered wetland or water feature is provided in Table 8: Wetland and Water Features in the Vicinity of Construction Areas.
- The center point of each Crane Work Area has been shown in its approximate location. Work within each Crane Work Area would be limited to the existing paved roadway, shoulder, and/or sidewalk. Each Crane Work Area would be approximately 200 feet long.



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Attachment A: Detailed Route Map 10 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
- Crane Work Area (CWA)
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
- A description of each numbered wetland or water feature is provided in Table 8: Wetland and Water Features in the Vicinity of Construction Areas.
- The center point of each Crane Work Area has been shown in its approximate location. Work within each Crane Work Area would be limited to the existing paved roadway, shoulder, and/or sidewalk. Each Crane Work Area would be approximately 200 feet long.

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Attachment A: Detailed Route Map 11 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
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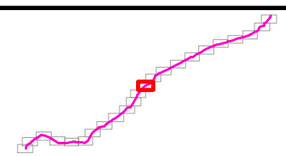
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
- A description of each numbered wetland or water feature is provided in Table 8: Wetland and Water Features in the Vicinity of Construction Areas.
- The center point of each Crane Work Area has been shown in its approximate location. Work within each Crane Work Area would be limited to the existing paved roadway, shoulder, and/or sidewalk. Each Crane Work Area would be approximately 200 feet long.



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Attachment A: Detailed Route Map 12 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
- Crane Work Area (CWA)
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
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Attachment A: Detailed Route Map 13 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
- Crane Work Area (CWA)
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
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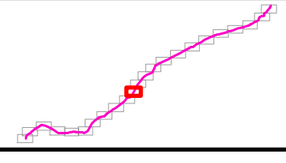

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Attachment A: Detailed Route Map 14 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
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- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
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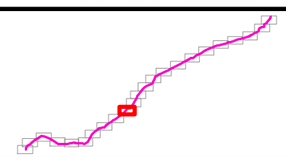

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Attachment A: Detailed Route Map 15 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
- Crane Work Area (CWA)
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
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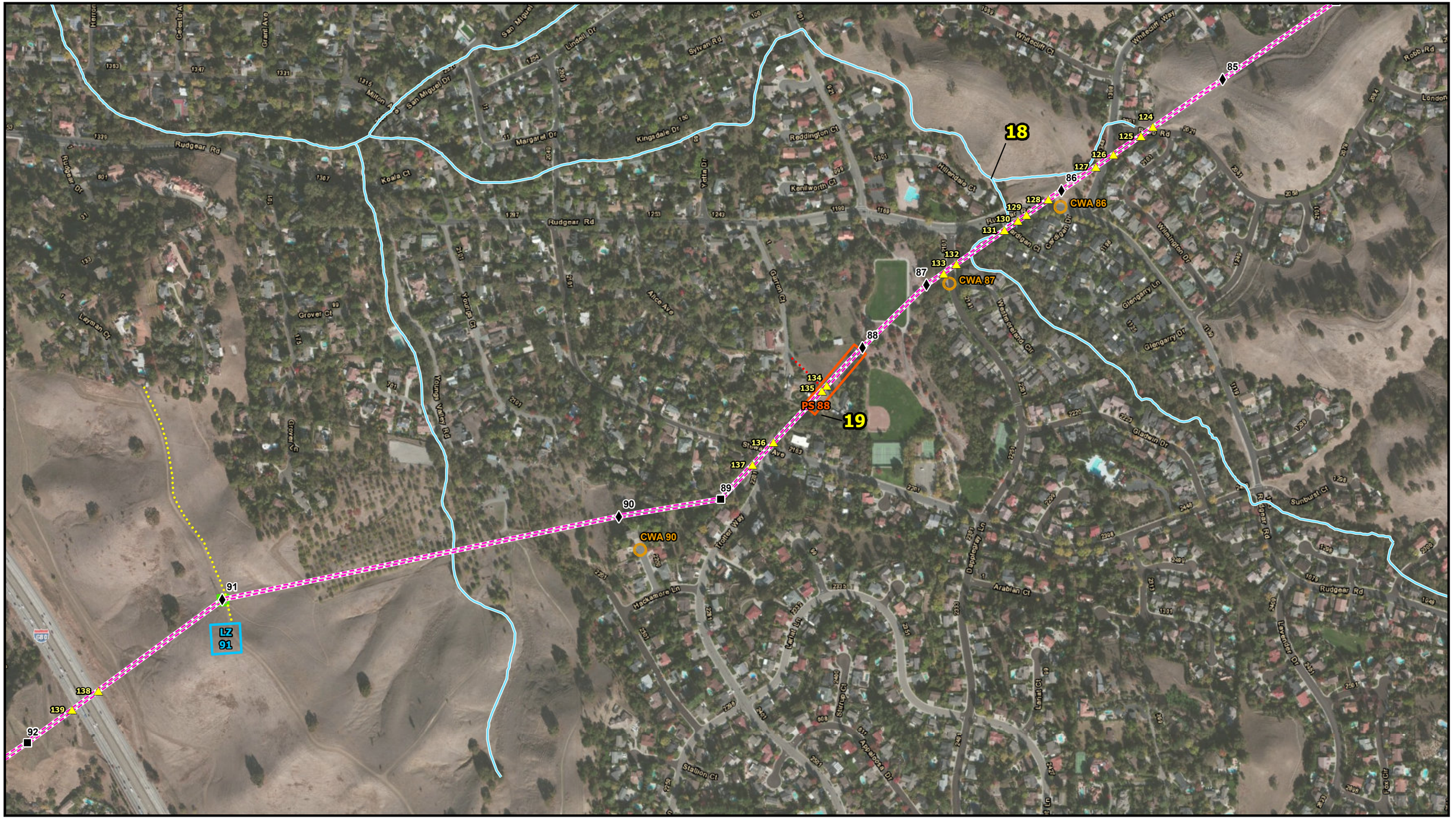
Attachment A: Detailed Route Map 16 of 23

Contra Costa-Moraga 230 kV Reconductoring Project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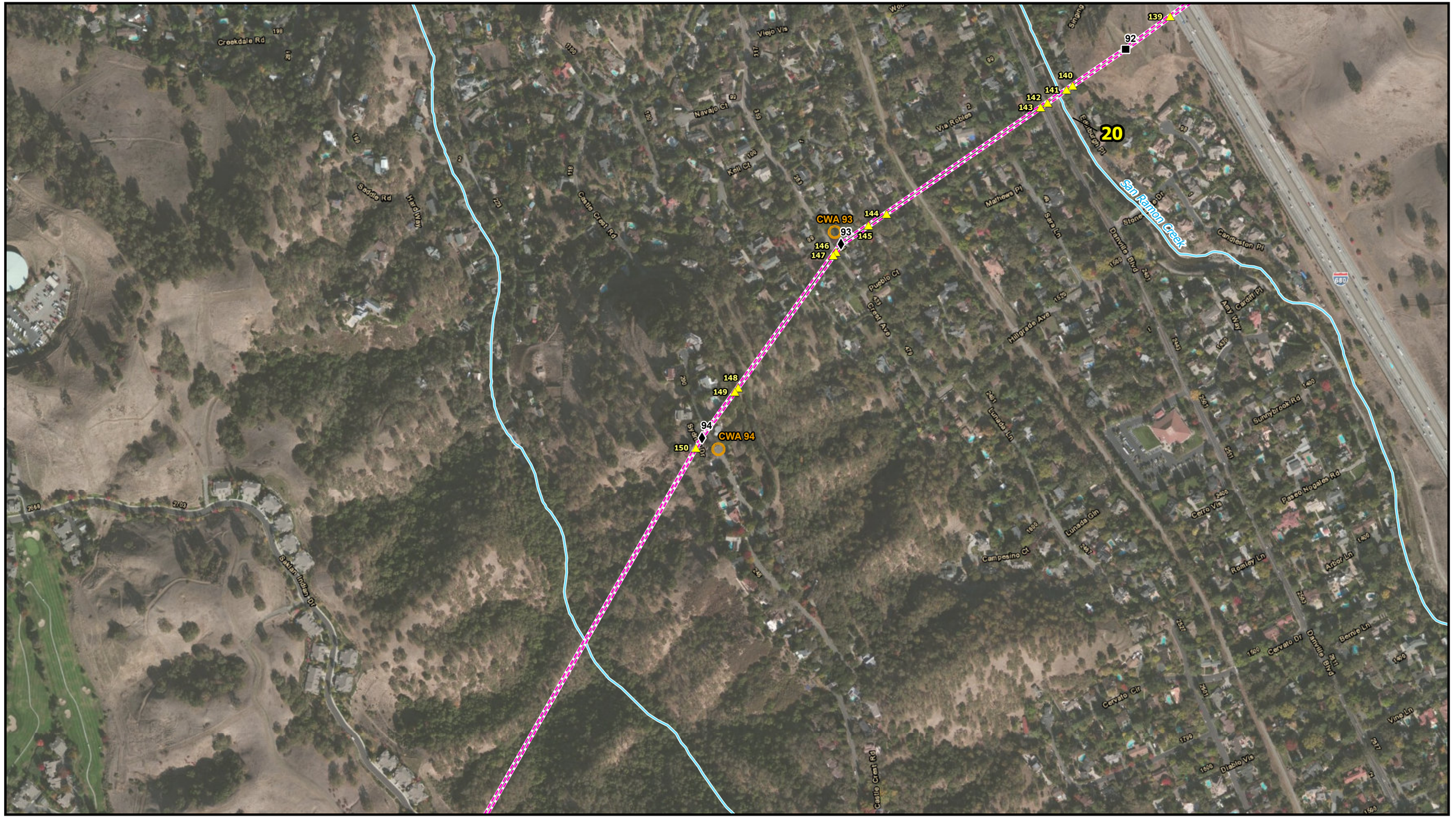
CWA 87
CWA 90
PS 88
LZ 91
Rudgear Rd
Kingsdale Dr
Margaret Dr
San Miguel Dr
Lindell Dr
Sylvan Rd
Milton Ave
Celeste Ave
Grant Ave
Reddington Ct
Millendale Ct
Kenilworth Ct
Yerba Dr
Koala Ct
Alice Ave
Guaron Ct
Youngs Ct
Youngs Valley Rd
Grover Ct
Layman Ct
Rudgear Dr
Whitecliff Ct
Whitecliff Way
Robb Rd
London
Arabian Ct
Dappleway Ln
Hackamore Ln
Lariat Ln
Stirrup Ct
Appaloosa Dr
Stallion Ct
Lariat Ct
Roller Way
Glengarry Ln
Glengarry Dr
Wilmington Dr
Westmoreland Ct
Gladwin Dr
Sunburst Ct
Lavender Dr
Fox Ct
Cardigan Dr
Rudgear Rd
Rudgear Rd
Rudgear Rd

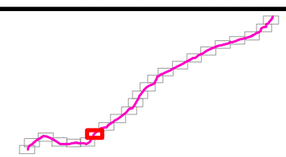
Attachment A: Detailed Route Map 17 of 23

Contra Costa-Moraga 230 kV Reconductoring Project



- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
- Crane Work Area (CWA)
- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
- ECCC HCP/NCCP Boundary

Notes:
- Map pages 2 through 9 are completely within the ECCC HCP/NCCP Boundary.
- A description of each numbered wetland or water feature is provided in Table 8: Wetland and Water Features in the Vicinity of Construction Areas.
- The center point of each Crane Work Area has been shown in its approximate location. Work within each Crane Work Area would be limited to the existing paved roadway, shoulder, and/or sidewalk. Each Crane Work Area would be approximately 200 feet long.



Pacific Gas and Electric Company

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Attachment A: Detailed Route Map 18 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

Contra Costa-Moraga 230 kV Line
Existing Substation
Existing Tower
Modified Tower
Crossing Structure

Paved Access Road
Gravel/Dirt Access Road
Overland Access Route

Landing Zone (LZ)
Pull Site (PS)
Work Area (WA)
Crane Work Area (CWA)
Work Area/Pull Site (WA/PS)

Observed Water Feature
Drainage
National Wetlands Inventory Feature
ECCC HCP/NCCP Boundary

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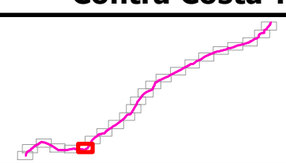

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Attachment A: Detailed Route Map 19 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
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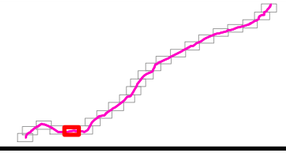

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Attachment A: Detailed Route Map 20 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
- Pull Site (PS)
- Work Area (WA)
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- Work Area/Pull Site (WA/PS)
- Observed Water Feature
- Drainage
- National Wetlands Inventory Feature
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Notes:
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Attachment A: Detailed Route Map 21 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

Contra Costa-Moraga 230 kV Line
Existing Substation
Existing Tower
Modified Tower
Crossing Structure

Paved Access Road
Gravel/Dirt Access Road
Overland Access Route

Landing Zone (LZ)
Pull Site (PS)
Work Area (WA)
Crane Work Area (CWA)
Work Area/Pull Site (WA/PS)

Observed Water Feature
Drainage
National Wetlands Inventory Feature
ECCC HCP/NCCP Boundary

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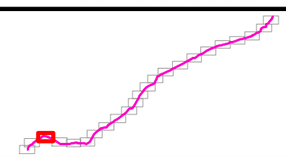

Pacific Gas and Electric Company

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Attachment A: Detailed Route Map 22 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

- Contra Costa-Moraga 230 kV Line
- Existing Substation
- Existing Tower
- Modified Tower
- Crossing Structure
- Paved Access Road
- Gravel/Dirt Access Road
- Overland Access Route
- Landing Zone (LZ)
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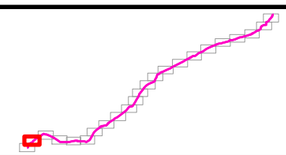

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Attachment A: Detailed Route Map 23 of 23

Contra Costa-Moraga 230 kV Reconductoring Project

Contra Costa-Moraga 230 kV Line
Existing Substation
Existing Tower
Modified Tower
Crossing Structure

Paved Access Road
Gravel/Dirt Access Road
Overland Access Route

Landing Zone (LZ)
Pull Site (PS)
Work Area (WA)
Crane Work Area (CWA)
Work Area/Pull Site (WA/PS)

Observed Water Feature
Drainage
National Wetlands Inventory Feature
ECCC HCP/NCCP Boundary

Notes:
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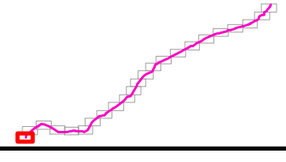

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ATTACHMENT B: CONSTRUCTION EQUIPMENT SUMMARY

ATTACHMENT B: CONSTRUCTION EQUIPMENT SUMMARY

Project Component	Schedule Activity Category	Equipment	Use	Approximate Project-Wide Quantity	Approximate Project-Wide Operating Hours	Approximate Site-Specific Quantity	Approximate Site-Specific Operating Hours	Vehicle Type
Site Development	Project Wide	¾-ton or 1-ton pickup truck	Transport and support construction personnel	1	2	1	0.25	On Road
Site Development	Project Wide	2-Ton Flatbed Truck	Deliver equipment to the site	1	2	1	0.25	On Road
Site Development	Develop Work Areas and Landing Zones	Backhoe	Prepare work area	1	6	1	3	Off Road
Site Development	Develop Work Areas and Landing Zones	Water truck	Suppress dust	1	6	1	1	Off Road
Site Development	Develop Crossing Structure Areas and Pull Sites	Bulldozer	Grade access roads	1	6	1	1	Off Road
Site Development	Develop Crossing Structure Areas and Pull Sites	Road grader	Construct, maintain, and upgrade roads	1	6	1	1	Off Road
Site Development	Develop Crossing Structure Areas and Pull Sites	Haul truck	Transport aggregate	1	6	1	0.25	On Road
Site Development	Develop Crossing Structure Areas and Pull Sites	Vibrating roller	Compact soil	1	8	1	4	Off Road
Site Development	Develop Crossing Structure Areas and Pull Sites	Loader	Load haul trucks and transport material	1	6	1	1	Off Road
Site Development	Develop Crossing Structure Areas and Pull Sites	¾-ton or 1-ton pickup truck	Transport and support construction personnel	1	2	1	0.25	On Road
Site Development	Develop Crossing Structure Areas and Pull Sites	Water truck	Suppress dust	1	4	1	2	Off Road
CC-Moraga Line	Cage Extension (aerial)	¾-ton or 1-ton pickup truck	Transport construction personnel	2	8	2	0.25	On Road
CC-Moraga Line	Cage Extension (aerial)	2-Ton Flatbed Truck	Deliver material to site	2	6	2	0.25	On Road
CC-Moraga Line	Cage Extension (aerial)	Portable Generator	Power work areas	3	8	3	2	Off Road
CC-Moraga Line	Cage Extension (aerial)	Bell 207 Helicopter	Deliver crew and materials	1	8	1	0.2	- -
CC-Moraga Line	Cage Extension (aerial)	Hughes 500 Helicopter	Deliver crew and materials	1	6	1	0.2	- -
CC-Moraga Line	Cage Extension (ground)	¾-ton or 1-ton pickup truck	Transport construction personnel	2	8	2	0.25	On Road
CC-Moraga Line	Cage Extension (ground)	2-Ton Flatbed Truck	Deliver material to site	2	6	2	0.25	On Road

Project Component	Schedule Activity Category	Equipment	Use	Approximate Project-Wide Quantity	Approximate Project-Wide Operating Hours	Approximate Site-Specific Quantity	Approximate Site-Specific Operating Hours	Vehicle Type
CC-Moraga Line	Cage Extension (ground)	Portable Generator	Power work areas	3	8	3	2	Off Road
CC-Moraga Line	Cage Extension (ground)	100-ton crane	Place extension/move materials	1	8	1	4	Off Road
CC-Moraga Line	Foundation Reinforcement	2-Ton Flatbed Truck	Deliver material to site	2	6	2	0.25	On Road
CC-Moraga Line	Foundation Reinforcement	¾-ton or 1-ton pickup truck	Transport construction personnel	1	8	1	0.25	On Road
CC-Moraga Line	Foundation Reinforcement	Water truck	Suppress dust	1	4	1	2	Off Road
CC-Moraga Line	Foundation Reinforcement	Drill Rig	Install foundation reinforcement screws	1	6	1	6	Off Road
CC-Moraga Line	Foundation Reinforcement	Portable Generator	Power work areas	1	8	1	2	Off Road
CC-Moraga Line	Switch Installation	100-ton crane	Place switches/move materials	1	8	1	4	Off Road
CC-Moraga Line	Switch Installation	Boom Truck	Place switches/move materials	1	8	1	4	Off Road
CC-Moraga Line	Switch Installation	Aerial Lift Truck	Provide access to towers	1	6	1	6	Off Road
CC-Moraga Line	Switch Installation	¾-ton or 1-ton pickup truck	Transport and support construction personnel	1	2	1	0.25	On Road
CC-Moraga Line	Switch Installation	2-Ton Flatbed Truck	Deliver material to site	1	6	1	0.25	On Road
CC-Moraga Line	Switch Installation	Portable Generator	Power work areas	1	8	1	2	Off Road
CC-Moraga Line	Install Crossing Structures	¾-ton or 1-ton pickup truck	Transport construction personnel	1	8	1	0.25	On Road
CC-Moraga Line	Install Crossing Structures	5-Ton Line Truck	Install Crossing Structures	1	8	1	1	On Road
CC-Moraga Line	Reconductoring	Small Mobile Crane	Transport materials	1	6	1	1	Off Road
CC-Moraga Line	Reconductoring	Three-reel Puller	Install conductor	1	6	1	6	Off Road
CC-Moraga Line	Reconductoring	Dual Bull Wheel Tensioner	Install conductor	1	8	1	6	Off Road
CC-Moraga Line	Reconductoring	Wire Reel Trailer	Store and feed conductor	1	No Engine	1	No Engine	Off Road

Project Component	Schedule Activity Category	Equipment	Use	Approximate Project-Wide Quantity	Approximate Project-Wide Operating Hours	Approximate Site-Specific Quantity	Approximate Site-Specific Operating Hours	Vehicle Type
CC-Moraga Line	Reconductoring	Helicopters	Assist with conductor installation	1	6	1	0.1	- -
CC-Moraga Line	Reconductoring	Hydraulic Press	Splice conductors	1	6	1	1	Off Road
CC-Moraga Line	Reconductoring	Aerial Lift Truck	Provide access to towers	1	6	1	Not at Pull Site	Off Road
CC-Moraga Line	Reconductoring	Rigging/Line Truck	Assist with conductor installation	1	6	1	2	Off Road
CC-Moraga Line	Reconductoring	Portable Generator	Power work areas	1	8	1	0.25	Off Road
CC-Moraga Line	Reconductoring	¾-ton or 1-ton pickup truck	Transport construction personnel	1	8	1	0.25	On Road
CC-Moraga Line	Reconductoring	Portable Generator	Supply power to distribution facilities during reconductoring activities	1	8	1	8	Off Road
Additional Tasks	Restoration (tower)	¾-ton or 1-ton pickup truck	Transport and support construction personnel	1	2	1	0.25	On Road
Additional Tasks	Restoration (tower)	Flatbed Truck	Deliver equipment to the site	1	2	1	0.25	On Road
Additional Tasks	Restoration (tower)	Bulldozer	Grade access roads	1	6	1	2	Off Road
Additional Tasks	Restoration (tower)	Road grader	Construct, maintain, and upgrade roads	1	6	1	2	Off Road
Additional Tasks	Restoration (tower)	Haul truck	Transport aggregate	1	6	1	0.5	Off Road
Additional Tasks	Restoration (tower)	Loader	Load haul trucks and transport material	1	6	1	2	Off Road
Additional Tasks	Restoration (tower)	Water truck	Suppress dust	1	4	1	1	Off Road
Additional Tasks	Restoration (Line)	¾-ton or 1-ton pickup truck	Transport and support construction personnel	1	2	1	0.25	On Road
Additional Tasks	Restoration (Line)	Flatbed Truck	Deliver equipment to the site	1	2	1	0.25	On Road
Additional Tasks	Restoration (Line)	Bulldozer	Grade access roads	1	6	1	2	Off Road
Additional Tasks	Restoration (Line)	Road grader	Construct, maintain, and upgrade roads	1	6	1	2	Off Road
Additional Tasks	Restoration (Line)	Haul truck	Transport aggregate	1	6	1	0.5	On Road

Project Component	Schedule Activity Category	Equipment	Use	Approximate Project-Wide Quantity	Approximate Project-Wide Operating Hours	Approximate Site-Specific Quantity	Approximate Site-Specific Operating Hours	Vehicle Type
Additional Tasks	Restoration (Line)	Loader	Load haul trucks and transport material	1	6	1	2	Off Road
Additional Tasks	Restoration (Line)	Water truck	Suppress dust	1	4	1	1	Off Road

Note: This table is preliminary and subject to change based on final engineering and other factors.

ATTACHMENT C: VISUAL SIMULATIONS

Existing view from Viera Avenue at Brazil Drive looking northwest (VP 2)

Existing View: Viera Avenue (VP 2)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Visual simulation of proposed project (VP 2)

Visual Simulation: Viera Avenue (VP 2)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Existing view from Somersville Road looking west (VP 7)

Existing View: Somersville Road (VP 7)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Visual simulation of proposed project (VP 7)

Visual Simulation: Somersville Road (VP 7)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Existing view from Pine Hollow Road near Pardi Lane looking east (VP 12)

Existing View: Pine Hollow Road (VP 12)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Visual simulation of proposed project (VP 12)

Visual Simulation: Pine Hollow Road (VP 12)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Existing view from Rudgear Park looking north (VP 14)

Existing View: Rudgear Park (VP 14)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Visual simulation of proposed project (VP 14)

Visual Simulation: Rudgear Park (VP 14)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Existing view from southbound Interstate 680 near Rudgear Road looking southeast (VP 15)

Existing View: Interstate 680 (VP 15)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Visual simulation of proposed project (VP 15)

Visual Simulation: Interstate 680 (VP 15)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Existing View from Tice Creek Drive near Avenida Sevilla in Rossmoor looking northeast (VP 17)

Existing View: Tice Creek Drive (VP 17)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

Visual simulation of proposed project (VP 17)

Visual Simulation: Tice Creek Drive (VP 17)
Contra Costa-Moraga 230 kV Reconductoring Project

ENVIRONMENTAL VISION
120211

ATTACHMENT D: SPECIAL-STATUS PLANT SPECIES AND POTENTIAL TO OCCUR

ATTACHMENT D: SPECIAL-STATUS PLANT SPECIES AND POTENTIAL TO OCCUR

Species Name	Federal, State, and California Native Plant Society Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology/ Life Form	Habitat Suitability and Local Distribution	Potential to Occur
Federally and/or State Endangered or Threatened Species and California Rare Species					
Large-flowered fiddleneck *Amsinckia grandiflora*	FE CE 1B.1	Occurs in cismontane woodland and valley and foothill grassland in the foothills of the Diablo Range. Known from fewer than five natural occurrences at elevations between 902 and 1,804 feet; however, reintroductions have also occurred but those populations are declining. Known from Alameda, Contra Costa, and San Joaquin counties.	April-May annual herb	Suitable vegetation associations are present. The nearest recorded California Natural Diversity Database (CNDDB) occurrence is a non-specific location within 0.5 mile south of tower along Lougher Ridge in Black Diamond Mines Regional Preserve.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Pallid manzanita *Arctostaphylos pallida*	FT CE 1B.1	Occurs on siliceous shale, sandy, or gravelly sites in broadleaf upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub. Known only from Alameda and Contra Costa counties at elevations between 607 and 1,525 feet.	December-March evergreen shrub	Suitable vegetation associations and substrates are present. The nearest recorded CNDDB occurrence is a specific location approximately 1.15 miles southwest of Moraga Substation on East Bay Municipal Utility District lands.	Absent Would have been detectable during 2010 and 2011 surveys.
Robust spineflower *Chorizanthe robusta* var. *robusta*	FE CEQA 1B.1	Occurs on sandy or gravelly substrates in maritime chaparral, openings in cismontane woodland, coastal dunes, and coastal scrub. Known from only six extended occurrences in Monterey, Santa Cruz, and San Francisco counties at elevations between 10 and 984 feet. Possibly occurs in Marin County. Presumed extirpated from Alameda, Santa Clara, and San Mateo counties. Recognized as *C. robusta* in The Jepson Manual.	April-September annual herb	Although suitable vegetation associations are present, the preferred substrate is absent. This taxon has also never been recorded in Contra Costa County and is presumed extirpated from Alameda and Santa Clara counties. The nearest confirmed CNDDB occurrence is approximately 40 miles south along Cox Road in Santa Cruz County.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Presidio clarkia *Clarkia franciscana*	FE CE 1B.1	Occurs in coastal scrub and in serpentinitic valley and foothill grassland. Known from fewer than five occurrences in Alameda and San Francisco counties at elevations between 82 and 1,099 feet.	May-July annual herb	Although suitable vegetation associations are present, the preferred substrate is absent. This species is also highly restricted in its distribution to Oakland and San Francisco. The nearest CNDDB occurrence is a specific location approximately 3 miles southwest at Skyline Serpentine Prairie.	Not Expected Would have been detectable during 2010 and 2011 surveys.

[1] Explanation of state and federal listing codes:

Federal listing codes:

-FE: Federally listed as Endangered
-FT: Federally listed as Threatened
-FPE: Federally proposed for listing as Endangered
-FPT: Federally proposed for listing as Threatened
-FPD: Federally proposed for delisting
-FC: Federal candidate species

California listing codes:

-CE: State-listed as Endangered
-CT: State-listed as Threatened
-CR: State-listed as Rare
-CCE: Candidate for State-listing as Endangered
-CCT: Candidate for State-listing as Threatened
-CEQA: Not a state-listed species, but protected under the California Environmental Quality Act.

Rare Plant Ranks:

-1A: Presumed extinct in California
-1B: Rare or Endangered in California and elsewhere
-2: Rare or Endangered in California, more common elsewhere
-3: Plants for which we need more information; a review list
-4: Plants of limited distribution; a watch list

California Rare Plant Rank Threat Codes:

-.1: Seriously Endangered in California (over 80 percent of occurrences Threatened/high degree and immediacy of threat)
-.2: Fairly Endangered in California (20 to 80 percent occurrences Threatened)
-.3: Not very Endangered in California (less than 20 percent of occurrences Threatened or no current threats known)

Note: CNPS List 1A and some List 3 plant species lacking any threat information receive no threat code extension.

Species Name	Federal, State, and California Native Plant Society Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology/ Life Form	Habitat Suitability and Local Distribution	Potential to Occur
Soft bird's-beak *Cordylanthus mollis* subsp. *mollis*	FE CR 1B.2	Occurs in coastal salt marshes and swamps. Known from fewer than 20 locations in Contra Costa, Napa, and Solano counties at elevations between sea level and 10 feet. Presumed extirpated in Marin, Sacramento, and Sonoma counties.	July-November annual herb (hemiparasitic)	No suitable vegetation associations or appropriate hydrologic characteristics are present. The nearest recorded CNDDB occurrence is a specific location approximately 6.5 miles north along the shore of Bay Point.	None
Mt. Diablo bird's-beak *Cordylanthus nidularis*	None CR 1B.1	Occurs in chaparral on serpentinite. Know only from Contra Costa County at elevations between 1,968 and 2,624 feet.	July-August annual herb (hemiparasitic)	Although suitable vegetation associations are present, the appropriate substrate is absent. The nearest recorded CNDDB occurrence is a specific location approximately 3 miles southeast on Mount Diablo.	None
Contra Costa wallflower *Erysimum capitatum* var. *angustatum*	FE CE 1B.1	Occurs on inland dunes at elevations between 10 and 66 feet. Known only from Antioch Dunes in Contra Costa County.	March-July perennial herb	No suitable vegetation associations or appropriate substrate are present. This taxon is only known from the Antioch Dunes, which are approximately 0.4 mile northwest.	None
Contra Costa goldfields *Lasthenia conjugens*	FE CEQA 1B.1	Occurs in cismontane woodland, alkaline playas, valley and foothill grassland, and vernal pools. Occurs on mesic sites. Known from Alameda, Contra Costa, Monterey, Napa, and Solano counties at elevations between sea level and 1,542 feet. Presumed extirpated from Mendocino, Santa Barbara, and Santa Clara counties.	March-June annual herb	Although marginally suitable vegetation associations are present, the study area lacks suitable alkaline and hydrologic characteristics. The nearest recorded CNDDB occurrence is a non-specific historic location from Antioch.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Mason's lilaeopsis *Lilaeopsis masonii*	None CR 1B.1	Occurs in brackish or freshwater marshes and swamps, as well as riparian scrub. Known from Alameda, Contra Costa, Napa, Sacramento, San Joaquin, and Solano counties at elevations between sea level and 33 feet.	April-November perennial herb (rhizomatous)	No suitable vegetation associations or appropriate hydrologic characteristics are present. The nearest recorded CNDDB occurrence is a specific location located approximately 0.4 mile north on the shoreline of the San Joaquin River.	None
Colusa grass *Neostapfia colusana*	FT CE 1B.1	Occurs in large vernal pools with adobe clay soils. Known from Glenn, Merced, Solano, Stanislaus, and Yolo counties at elevations between 16 and 656 feet. Presumed extirpated in Colusa County.	May-August annual herb	No suitable vegetation associations, substrates, or vernal hydrology are present. This taxon has also never been recorded in Contra Costa County. The nearest CNDDB occurrence is a specific location approximately 17 miles north on Solano Land Trust lands.	None
Antioch Dunes evening-primrose *Oenothera deltoides* subsp. *howellii*	FE CE 1B.1	Occurs on inland dunes at elevations between 10 and 66 feet. Known only from three native occurrences in Contra Costa County. An occurrence in Sacramento County is introduced.	March-September perennial herb	No suitable vegetation associations or appropriate substrate are present. The nearest CNDDB occurrence is a non-specific location approximately 0.25 mile southeast on 18th Avenue.	None
San Francisco popcorn-flower *Plagiobothrys diffusus*	None CE 1B.1	Occurs in coastal prairie and valley and foothill grassland. Known from Alameda, Santa Cruz, and San Mateo counties at elevations between 197 and 1,181 feet. Presumed extirpated from San Francisco County.	March-June annual herb	Although suitable vegetation associations are present, this taxon has never been recorded from Contra Costa County. The nearest CNDDB occurrence is a specific location approximately 3.5 miles southwest in the Oakland Hills.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Adobe sanicle *Sanicula maritima*	None CR 1B.1	Occurs in clay or serpentine soils in chaparral, coastal prairie, meadows and seeps, and valley and foothill grassland. Known from Monterey and San Luis Obispo counties at elevations between 98 and 787 feet. Presumed extirpated from Alameda and San Francisco counties.	February-May perennial herb	Although suitable vegetation associations are present, this taxon has never been recorded from Contra Costa and prefers coastal and bayside habitats. The nearest CNDDB occurrence is a specific historic location approximately 8 miles southwest in Alameda.	Not Expected Would have been detectable during 2010 and 2011 surveys.

Species Name	Federal, State, and California Native Plant Society Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology/ Life Form	Habitat Suitability and Local Distribution	Potential to Occur
Rock sanicle *Sanicula saxatilis*	None CR 1B.2	Occurs on rocky substrates in broadleafed upland forest, chaparral, and valley and foothill grassland. Known from fewer than 15 occurrences from Contra Costa and Santa Clara at elevations between 2,034 and 3,854 feet.	April-May perennial herb	Although suitable vegetation associations are present, the study area does not include the preferred rocky (talus) substrate and is outside of elevation range for this taxon. The nearest recorded CNDDB occurrence is a specific location approximately 2.15 miles southeast in Mount Diablo State Park.	Not Expected Would have been detectable during 2010 and 2011 surveys.
California Native Plant Society Ranked Species and Locally Rare Species					
Bent-flowered fiddleneck *Amsinckia lunaris*	None CEQA 1B.2	Occurs in coastal bluff scrub, cismontane woodland, and valley and foothill grassland. Many collections are old. Known from Alameda, Contra Costa, Colusa, Lake, Marin, Napa, Santa Cruz, San Mateo and Sonoma counties at elevations between 10 and 1,640 feet. May be present in Siskiyou and Shasta counties.	March-June annual herb	Suitable vegetation associations are present within the study area. The nearest recorded CNDDB occurrence is a non-specific location approximately 0.8 mile north at Lafayette Reservoir.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Slender silver moss *Anomobryum julaceum*	None CEQA 2.2	Occurs in broadleafed upland forest, lower montane coniferous forest, and North Coast coniferous forest on damp rock and soil outcrops, often on road cuts. Known from Butte, Contra Costa, Humboldt, Los Angeles, Mariposa, Santa Barbara, Santa Cruz, Shasta, and Sonoma counties at elevations between 328 and 3,281 feet.	Wet Season moss	No suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a non-specific occurrence approximately 4 miles southwest in Mount Diablo State Park.	None
Mt. Diablo manzanita *Arctostaphylos auriculata*	None CEQA 1B.3	Occurs in chaparral on sandstone substrate, and in cismontane woodland. Known only from Contra Costa County at elevations between 443 to 1,969 feet. Fewer than 20 known occurrences.	January-March shrub (evergreen)	Although suitable vegetation associations are present, the preferred substrate is absent. The nearest CNDDB occurrence is a specific location approximately 0.8 mile to the southeast in Black Diamond Mines Regional Preserve.	Absent Would have been detectable during 2010 and 2011 surveys.
Contra Costa manzanita *Arctostaphylos manzanita* subsp. *laevigata*	None CEQA 1B.2	Occurs in chaparral on rocky substrates. Known only from Contra Costa County at elevations between 1,640 and 3,609 feet.	January-February shrub (evergreen)	Although suitable vegetation associations are present, the preferred substrate is absent. The nearest CNDDB occurrence is a specific location approximately 0.8 mile to the southeast at Black Diamond Mines Regional Preserve.	Present
Alkali milk-vetch *Astragalus tener* var. *tener*	None CEQA 1B.2	Occurs on alkaline substrates in playas, valley and foothill grassland on adobe clay, and vernal pools. Known from Alameda, Merced, Napa, Solano and Yolo counties at elevations between 3 and 197 feet. Presumed extirpated from Contra Costa, Monterey, San Benito, Santa Clara, San Francisco, San Joaquin, Sonoma, and Stanislaus counties.	March-June annual herb	Although marginally suitable vegetation associations are present, the study area lacks suitable alkaline and hydrologic characteristics. The nearest recorded CNDDB occurrence is a non-specific historic location approximately 7 miles west from Emeryville.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Heartscale *Atriplex cordulata*	None CEQA 1B.2	Occurs in chenopod scrub, meadows and seeps, valley and foothill grassland on sandy, saline or alkaline substrates at elevations between 3 and 1,230 feet. Known from Alameda, Contra Costa, Butte, Fresno, Glenn, Kern, Madera, Merced, San Luis Obispo, Solano, and Tulare counties. Presumed extirpated from San Joaquin, Stanislaus, and Yolo counties.	April-October annual herb	Although marginally suitable vegetation associations are present, the study area lacks suitable alkaline characteristics. The nearest recorded CNDDB occurrence is a specific location approximately 14 miles southeast in Doolan Canyon.	Not Expected Would have been detectable during 2010 and 2011 surveys.

Species Name	Federal, State, and California Native Plant Society Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology/ Life Form	Habitat Suitability and Local Distribution	Potential to Occur
Brittlescale *Atriplex depressa*	None CEQA 1B.2	Occurs in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools on alkaline clay substrates. Known from Alameda, Contra Costa, Colusa, Fresno, Glenn, Merced, Solano, Stanislaus, Tulare, and Yolo counties at elevations between 3 and 1,050 feet.	May-October annual herb	Although marginally suitable vegetation associations are present, the study area lacks suitable alkaline characteristics. The nearest recorded CNDDB occurrence is a non-specific location approximately 4 miles southeast near Deer Valley.	Not Expected Would have been detectable during 2010 and 2011 surveys.
San Joaquin spearscale *Atriplex joaquinana*	None CEQA 1B.2	Occurs in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland on alkaline substrates at elevations between 3 and 2,740 feet. Known from Alameda, Contra Costa, Colusa, Fresno, Glenn, Merced, Monterey, Napa, San Benito, Solano, Yolo, and possibly San Luis Obispo counties. Presumed extirpated from Santa Clara, San Joaquin, and Tulare counties. Recognized as *A. joaquiniana* in The Jepson Manual.	April-October annual herb	Although marginally suitable vegetation associations are present, study area lacks suitable alkaline characteristics. The nearest recorded CNDDB occurrence is a specific location approximately 4 miles southeast near Dear Valley.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Big-scale balsamroot *Balsamorhiza macrolepis* var. *macrolepis*	None CEQA 1B.2	Occurs in chaparral, cismontane woodland, and valley and foothill grassland, sometimes on serpentinite. Known from Alameda, Butte, Colusa, Lake, Mariposa, Napa, Placer, Santa Clara, Solano, and Sonoma counties at elevations between 295 and 4,593 feet.	March-June perennial herb	Although suitable vegetation associations are present, the preferred substrate is absent. The nearest CNDDB occurrence is a specific location approximately 9 miles south on Fairmont Ridge.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Big tarplant *Blepharizonia plumosa*	None CEQA 1B.1	Occurs in valley and foothill grassland. Known from Alameda and Contra Costa, Kern, Monterey, San Benito, San Joaquin, San Luis Obispo, and Stanislaus counties at elevations between 98 and 1,657 feet. Presumed extirpated in Solano county. Recognized as *Blepharizonia plumose* subsp. *plumose* in The Jepson Manual.	July-October annual herb	Suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a non-specific location approximately 0.25 mile south in Black Diamond Mines Regional Preserve.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Round-leaved filaree *California macrophylla*	None CEQA 1B.1	Occurs in cismontane woodland, valley and foothill grassland on clay soils. Known from Alameda, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Stanislaus, Ventura, and Yolo counties at elevations between 49 and 3,937 feet. Presumed extirpated from Santa Cruz Island. Recognized as *Erodium macrophyllum* in The Jepson Manual.	March-May annual Herb	Suitable vegetation associations are present. The nearest known CNDDB occurrence is a specific location approximately 0.15 mile north of the access route to Tower 32 in Black Diamond Mines Regional Preserve.	Not Observed Within the Study Area but extant occurrence nearby.
Mt. Diablo fairy-lantern *Calochortus pulchellus*	None CEQA 1B.2	Occurs in chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland. Known from Alameda, Contra Costa, and Solano counties at elevations between 98 and 2,756 feet.	April-June perennial herb (bulbiferous)	Suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a specific location approximately 0.75 mile northwest in Lime Ridge Open Space.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Oakland star-tulip *Calochortus umbellatus*	None CEQA 4.2	Occurs often on serpentine sites in broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland. Known from Alameda, Contra Costa, Lake, Santa Clara, San Mateo, and Stanislaus counties at elevations between 328 and 2,297 feet. Presumed extirpated from Santa Cruz County.	March-May perennial herb (bulbiferous)	Suitable vegetation associations are present. This taxon was observed at Tower 103.	Present

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Chaparral harebell *Campanula exigua*	None CEQA 1B.2	Occurs on rocky sites, usually on serpentinite, in chaparral. Known from Alameda, Contra Costa, San Benito, Santa Clara, and Stanislaus counties at elevations between 902 and 4,101 feet.	May-June annual herb	Suitable vegetation associations are present but the preferred substrate is absent. The study area is also outside of elevation range for this taxon. The nearest CNDDB occurrence is a non-specific location approximately 2.5 miles southeast in Mount Diablo State Park.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Congdon's tarplant *Centromadia parryi* subsp. *congdonii*	None CEQA 1B.2	Occurs in alkaline valley and foothill grassland. Known from Alameda, Contra Costa, Monterey, Santa Clara, San Luis Obispo, and San Mateo counties at elevations between 3 and 755 feet. Presumed extirpated from Santa Cruz and Solano counties. Recognized as *Hemizonia parryi* subsp. *congdonii* in The Jepson Manual.	June-November annual herb	Although marginally suitable vegetation associations are present, the study area lacks suitable alkaline characteristics. The nearest recorded CNDDB occurrence is a non-specific location approximately 4 miles south in Danville.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Bolander's water hemlock *Cicuta maculata* var. *bolanderi*	None CEQA 2.1	Occurs in coastal, fresh or brackish water marshes and swamps. Known from Contra Costa, Marin, Sacramento, and Solano counties and from Arizona, New Mexico, and Washington at elevations between sea level and 656 feet. Presumed extirpated in Los Angeles, Santa Barbara, and San Luis Obispo counties.	July-September perennial herb	No suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a non-specific location approximately 4.5 miles north on Browns Island.	None
Hoover's cryptantha *Cryptantha hooveri*	None CEQA 1A	Occurs on inland dunes and sandy valley and foothill grassland at elevations between 30 and 492 feet. Known from Kern County. Presumed extirpated in Contra Costa, Madera, and Stanislaus counties. Last seen in 1939.	April-May annual herb	Although suitable vegetation associations are present, the preferred substrate is absent. The nearest recorded CNDDB occurrence is from Antioch and presumed extirpated.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Hospital Canyon larkspur *Delphinium californicum* var. *interius*	None CEQA 1B.2	Occurs in openings in chaparral and mesic cismontane woodland. Known from Alameda, Contra Costa, Merced, San Benito, Santa Clara, San Joaquin, and Stanislaus counties at elevations between 755 and 3,593 feet.	April-June perennial	Suitable vegetation associations are present. The nearest known occurrence is on Save Mount Diablo's Mangini Ranch immediately adjacent to the access route to Tower 69.	Present
Norris' beard moss *Didymodon norrisii*	None CEQA 2.2	Occurs on intermittently mesic rock in cismontane woodland and lower montane coniferous forest. Known from Butte, Contra Costa, Colusa, Humboldt, Lake, Madera, Monterey, Mariposa, Nevada, Plumas, San Benito, Santa Cruz, Sierra, Tehama, Tulare, and Tuolumne counties at elevations between 1,969 and 6,473 feet.	Moss wet season	Appropriate suitable vegetation associations with ecological conditions are absent. Study area is also outside of elevation range for this taxon. The nearest recorded CNDDB occurrence is a non-specific location approximately 2 miles to the southeast in Mount Diablo State Park.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Western leatherwood *Dirca occidentalis*	None CEQA 1B.2	Occurs on mesic sites in broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland. Known from Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma counties at elevations between 164 and 1,296 feet.	January-April deciduous shrub	Suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a specific location approximately 1.5 miles northwest in Gateway Valley.	Not Observed Vegetative material would have been detectable during 2010 and 2011 surveys.
Dwarf downingia *Downingia pusilla*	None CEQA 2.2	Occurs in mesic sites in valley and foothill grassland and vernal pools. Known from Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties at elevations between sea level and 33 feet.	March-May annual herb	Although suitable vegetation associations are present, the preferred vernal hydrology is absent. The nearest recorded CNDDB occurrence is a specific location approximately 8.25 miles north in vernal pools in Solano County.	Not Expected Would have been detectable during 2010 and 2011 surveys.

Species Name	Federal, State, and California Native Plant Society Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology/ Life Form	Habitat Suitability and Local Distribution	Potential to Occur
Brandegee's eriastrum *Eriastrum brandegeeae*	None CEQA 1B.2	Occurs on volcanic or sandy substrates in chaparral and cismontane woodland. Known from Colusa, Glenn, Lake, Santa Clara, Shasta, San Mateo, and Trinity counties at elevations between 1,001 and 3,379 feet. Identity of Contra Costa County occurrence needs confirmation.	April-August annual herb	Although suitable vegetation associations are present, the preferred substrate is absent. The nearest recorded CNDDB occurrence is a non-specific location approximately 1 mile northwest at Lime Ridge Open Space.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Tiburon buckwheat *Eriogonum luteolum* var. *caninium*	None CEQA 1B.2	Occurs on serpentinitic, sandy or gravelly sites in chaparral, cismontane woodland, coastal prairie, and valley and foothill grassland. Known from Alameda, Contra Costa, and Marin counties at elevations between sea level and 2,297 feet. Possibly occurs in Sonoma County. Not clearly distinguishable from var. *luteolum* north of Tiburon. *E. luteolum* is similar to *E. gracile* to the south and *E. vimineum* to the northeast.	May-September annual herb	Although suitable vegetation associations are present, the preferred substrate is absent. This taxon also has a narrow distribution that fringes the North and East Bay. The nearest CNDDB occurrence is a specific location approximately 3.5 miles southwest at Redwood Regional Park.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Antioch Dunes buckwheat *Eriogonum nudum* var. *psychicola*	None CEQA 1B.1	Occurs on inland dunes. Known from only a single occurrence in the Antioch Dunes in Contra Costa County at elevations between sea level and 66 feet.	July-October perennial herb	No suitable vegetation associations or appropriate substrate are present. This taxon is only known from the Antioch Dunes which are approximately 0.4 mile northwest.	None
Kings River buckwheat *Eriogonum nudum* var. *regirivum*	None CEQA 1B.2	Occurs on carbonate or rocky substrates in cismontane woodland. Known from Contra Costa and Fresno counties at elevations between 492 and 984 feet.	August-November perennial herb	Although suitable vegetation associations are present, the preferred substrate is absent. This taxon is only known from a 1958 collection from Antioch.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Mt. Diablo buckwheat *Eriogonum truncatum*	None CEQA 1B.1	Occurs on sandy sites in chaparral, coastal scrub, and valley and foothill grassland. Known from Alameda and Contra Costa counties at elevations between 10 and 1,148 feet. Presumed extirpated from Solano County. Rediscovered in May 2005, now known from one extant natural occurrence.	April-September annual herb	Although marginally suitable vegetation associations are present, this taxon occurs on the ecotone of listed associations. The nearest recorded CNDDB occurrence is an historic location approximately 0.25 mile on southeast knoll, west of Mt. Zion.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Diamond-petaled California poppy *Eschscholzia rhombipetala*	None CEQA 1B.1	Occurs on alkaline valley and foothill grassland at elevations between sea level and 3,199 feet. Known from Alameda, San Joaquin, and San Luis Obispo counties. Presumed extirpated from Contra Costa, Colusa, and Stanislaus counties.	March-April annual herb	Although marginally suitable vegetation associations are present, the study area lacks suitable alkaline characteristics. The nearest CNDDB occurrence is a non-specific historic location from Antioch.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Stinkbells *Fritillaria agrestis*	None CEQA 4.2	Occurs in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland, on clay or sometimes serpentinite. Known from Alameda, Contra Costa, Fresno, Kern, Mendocino, Merced, Monterey, Mariposa, Placer, Sacramento, Santa Barbara, San Benito, Santa Clara, San Luis Obispo, Stanislaus, Tuolumne, Ventura, and Yuba counties at elevations between 33 and 5,102 feet. Presumed extirpated from Santa Cruz and San Mateo counties.	March-June perennial herb (bulbiferous)	Suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a specific location approximately 2 miles southeast on Contra Costa Water District lands.	Not Observed Would have been detectable during 2010 and 2011 surveys.

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Fragrant fritillary *Fritillaria liliacea*	None CEQA 1B.2	Occurs in cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland near the coast, on clay or serpentinite. Known from Alameda, Contra Costa, Monterey, Marin, San Benito, Santa Clara, San Francisco, San Mateo, Solano, and Sonoma counties at elevations between 10 and 1,345 feet.	February-April perennial herb (bulbiferous)	Suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a specific location approximately 1 mile southwest in Diablo Foothills Regional Park.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Diablo helianthella *Helianthella castanea*	None CEQA 1B.2	Occurs in broadleaved upland forest, chaparral cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. Known from Alameda, Contra Costa, and San Mateo counties. Presumed extirpated from Marin and San Francisco counties. Recorded at elevations between 197 and 4,265 feet.	March-June perennial herb	Suitable vegetation associations are present. This taxon was observed at Towers 103 and 104.	Present
Brewer's western flax *Hesperolinon breweri*	None CEQA 1B.2	Occurs in chaparral, cismontane woodland, and valley and foothill grassland usually on serpentinite at elevations between 98 and 2,953 feet. Known from Contra Costa, Napa, and Solano counties.	May-July annual herb	Although suitable vegetation associations are present, the preferred substrate is absent. The nearest recorded CNDDB occurrence is a non-specific location approximately 1 mile south in Black Diamond Mines Regional Preserve.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Woolly rose-mallow *Hibiscus lasiocarpos* var. *occidentalis*	None CEQA 2.2	Occurs in marshes and swamps. Known from Butte, Contra Costa, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter, and Yolo counties at elevations between sea level and 394 feet.	June-September perennial rhizomatous herb aquatic, emergent	Suitable vegetation associations and appropriate hydrologic characteristics are absent. The nearest recorded CNDDB occurrence is a specific location approximately 5.4 miles east in Dutch Slough.	None
Loma Prieta hoita *Hoita strobilina*	None CEQA 1B.1	Occurs usually on serpentinitic and mesic sites in chaparral, cismontane woodland, and riparian woodland. Known from Contra Costa, Santa Clara, and Santa Cruz counties at elevations between 98 and 2,822 feet. Presumed extirpated from Alameda County.	May-October perennial herb	Although suitable vegetation associations are present, the preferred substrate is absent. The nearest CNDDB occurrence is a specific location approximately 11 miles northwest on San Pablo Ridge.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Kellogg's horkelia *Horkelia cuneata* var. *sericea*	None CEQA 1B.1	Occurs on sandy or gravelly sites in openings of closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub. Known from Monterey, Santa Barbara, Santa Cruz, San Luis Obispo, and San Mateo counties at elevations between 33 and 656 feet. Presumed extirpated from Alameda, Marin, and San Francisco counties. Remaining individuals less distinct from var. *cuneata* than those formerly occurring near San Francisco.	April-September perennial herb	No suitable vegetation associations or substrates are present. The nearest CNDDB occurrence is a non-specific is historic location from Oakland.	None
Carquinez goldenbush *Isocoma arguta*	None CEQA 1B.1	Occurs in valley and foothill grassland, often on alkaline soils. Known only from Solano County at elevations between 3 and 66 feet.	August-December perennial shrub	Although marginally suitable vegetation associations are present, study area lacks suitable alkaline characteristics. The nearest recorded CNDDB occurrence is a non-specific location approximately 8 miles north in Solano County, in the Montezuma Hills. The species has not been recorded from Contra Costa County.	Absent Would have been detectable during 2010 and 2011 surveys.

Species Name	Federal, State, and California Native Plant Society Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology/ Life Form	Habitat Suitability and Local Distribution	Potential to Occur
Northern California black walnut *Juglans hindsii*	None CEQA 1B.1	Occurs in riparian forest and riparian woodland. Known from Contra Costa and Napa counties at elevations between sea level and 1,444 feet. Possibly occurs in Lake County. Presumed extirpated from Sacramento and Solano counties. Recognized as *J. californica* var. *hindsii* in The Jepson Manual. Individuals extant before 1840 considered native; all others considered waifs.	April-May deciduous tree	Suitable vegetation associations are present. The nearest CNDDB occurrence is a non-specific is historic location from Oakland.	Absent Would have been detectable during 2010 and 2011 surveys.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	None CEQA 1B.2	Occurs in freshwater and brackish marshes. Known from Alameda, Contra Costa, Napa, Sacramento, San Joaquin, and Solano counties at elevations between sea level and 13 feet. Presumed extirpated from Santa Clara County.	May-September perennial herb	No suitable vegetation associations or appropriate hydrologic characteristics are present. The nearest recorded CNDDB occurrence is a non-specific location approximately 1.5 miles northwest near Antioch Dunes.	None
Delta mudwort *Limosella subulata*	None CEQA 2.1	Occurs in marshes and swamps at elevations between sea level and 10 feet. Known from Contra Costa, Marin, Sacramento, San Joaquin, and Solano counties, Oregon, and elsewhere.	May-August perennial herb (stoloniferous)	No suitable vegetation associations or appropriate hydrologic characteristics are present. The nearest recorded CNDDB occurrence is a non-specific location approximately 1.5 miles northwest at Antioch Dunes National Wildlife Refuge.	None
Showy madia *Madia radiata*	None CEQA 1B.1	Occurs in cismontane woodland and valley and foothill grassland at elevations between 82 and 2,953 feet. Known from Fresno, Kern, San Benito, San Luis Obispo, and Stanislaus counties. Presumed extirpated from Contra Costa, Kings, Monterey, Santa Barbara, and San Joaquin counties.	March-May annual herb	Suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a non-specific historic location near Antioch.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Hall's bush mallow *Malacothamnus hallii*	None CEQA 1B.2	Occurs in chaparral and coastal scrub at elevations between 33 and 2,493 feet. Known from Contra Costa, Mendocino, Merced, Santa Clara, San Mateo, and Stanislaus counties.	May-October perennial shrub (evergreen)	Suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a non-specific historic location from the mouth of Pine Canyon.	Absent Would have been detectable during 2010 and 2011 surveys.
Oregon meconella *Meconella oregana*	None CEQA 1B.1	Occurs in coastal prairie and coastal scrub. Known from Contra Costa and Santa Clara counties at elevations between 820 and 2,034 feet.	March-April annual herb	No suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a non-specific location approximately 1 mile northwest from Gateway Valley.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Mt. Diablo cottonweed *Micropus amphibolus*	None CEQA 3.2	Occurs on rocky sites in broadleafed upland forest, chaparral, cismontane woodland, and valley and foothill grassland. Known from Alameda, Contra Costa, Colusa, Lake, Monterey, Marin, Napa, Santa Barbara, Santa Clara, Santa Cruz, San Joaquin, San Luis Obispo, Solano, and Sonoma counties at elevations between 148 and 2,707 feet. Can be confused with *M. californicus*.	March-May annual herb	Suitable vegetation associations and the species' preferred substrate are present. The nearest herbarium collection is recorded from Wildcat Canyon.	Not Observed Would have been detectable during 2010 and 2011 surveys.
San Antonio Hills monardella *Monardella antonina* subsp. *antonina*	None CEQA 3	Occurs in chaparral and cismontane woodland. Known from Monterey County. Possibly occurs in Alameda, Contra Costa, San Benito, and Santa Clara counties at elevations between 1,640 and 3,281 feet. Easily confused with *M. villosa* subsp. *villosa.*	June-August perennial herb (rhizomatous)	Although suitable vegetation associations are present, this taxon has never been recorded from Contra Costa County. The nearest herbarium collection is recorded from Morrison Canyon.	Not Expected Would have been detectable during 2010 and 2011 surveys.

Species Name	Federal, State, and California Native Plant Society Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology/ Life Form	Habitat Suitability and Local Distribution	Potential to Occur
Woodland woollythreads *Monolopia gracilens*	None CEQA 1B.2	Occurs on serpentinitic sites in openings of broadleafed upland forest, chaparral, cismontane woodland, North Coast coniferous forest, and valley and foothill grassland. Known from Alameda, Contra Costa, Monterey, Santa Clara, Santa Cruz, San Luis Obispo, and San Mateo counties at elevations between 328 and 3,937 feet.	March-July annual herb	Although suitable vegetation associations are present, the species' preferred substrate is absent. The nearest herbarium collections are all from Mount Diablo.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Little mousetail *Myosurus minimus* subsp. *apus*	None CEQA 3.1	Occurs in valley and foothill grassland and vernal pools on alkaline substrates. Known from Alameda, Contra Costa, Colusa, Lake, Merced, Riverside, San Bernardino, San Diego, Solano, Tulare, and Yolo counties, as well as Baja California and Oregon at elevations between 66 and 2,100 feet.	March-June annual herb	Although marginally suitable vegetation associations are present, the study area lacks suitable alkaline characteristics. The nearest herbarium collection is recorded from Antioch.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Lime Ridge navarretia *Navarretia gowenii*	None CEQA 1B.1	Occurs on chaparral. Known only from four occurrences in Contra Costa and Stanislaus counties at elevations between 591 and 1,001 feet.	May-June annual herb	Suitable vegetation associations are present. The nearest recorded CNNDB occurrence is a specific location approximately 1.2 miles northwest at Lime Ridge.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Adobe navarretia *Navarretia nigelliformis* subsp. *nigelliformis*	None CEQA 4.2	Occurs in vernally mesic valley and foothill grassland and vernal pools, on serpentine or clay substrates at elevations between 328 and 3,281 feet. Known from Alameda, Butte, Contra Costa, Colusa, Fresno, Kern, Merced, Monterey, Placer, Sutter, and Tulare counties.	April-June annual herb	Suitable vegetation associations and substrates are present. The nearest known observation for this taxon is an extirpated location from Brentwood (H. Bartosh, personal observation).	Not Observed Would have been detectable during 2010 and 2011 surveys.
Mt. Diablo phacelia *Phacelia phacelioides*	None CEQA 1B.2	Occurs on rocky substrates in chaparral and cismontane woodland. Known from Contra Costa, San Benito, Santa Clara, and Stanislaus counties at elevations between 1,640 and 4,495 feet.	April-May annual herb	Although suitable vegetation associations are present, the study area does not include the preferred rocky (talus) substrate and is outside of elevation range for this taxon. The nearest recorded CNNDB occurrences is a non-specific location approximately 2 miles southeast on the peak of Mt. Diablo.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Bearded popcorn-flower *Plagiobothrys hystriculus*	None CEQA 1B.1	Occurs often in vernal swales in mesic valley and foothill grassland and vernal pool margins. Known only from Solano County at elevations between sea level and 171 feet.	April-May annual herb	Although suitable vegetation associations are present, this taxon has never been recorded from Contra Costa County. The nearest recorded CNNDB occurrence is a specific location approximately 11.5 miles north in the Montezuma Hills.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Slender-leaved pondweed *Potomogeton filiformis*	None CEQA 2.2	Occurs in assorted shallow freshwater marshes and swamps. Known from Alameda, Butte, Contra Costa, El Dorado, Lassen, Merced, Modoc, Mariposa, Placer, Shasta, Sierra, San Mateo, Solano, and Sonoma counties at elevations between 984 and 7,054 feet. Possibly occurs in Santa Clara County.	May-July rhizomatous herb (aquatic)	No suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a non-specific location approximately 1 mile southeast of Pine Creek.	None
Rayless ragwort *Senecio aphanactis*	None CEQA 2.2	Occurs on coastal scrub, chaparral, and cismontane woodland on alkaline soils. Known from Alameda, Contra Costa, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, Santa Barbara, Santa Clara, San Diego, San Luis Obispo, Solano, and Ventura counties—as well as Santa Catalina Island, Santa Cruz Island, and Santa Rosa Island—at elevations between 49 and 2,625 feet.	January-April annual herb	Although suitable vegetation associations are present, the preferred substrate is absent. The nearest recorded CNDDB occurrence is a non-specific historic location approximately 1 mile southeast in Black Diamond Mines Regional Preserve.	Not Expected Would have been detectable during 2010 and 2011 surveys.

Species Name	Federal, State, and California Native Plant Society Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology/ Life Form	Habitat Suitability and Local Distribution	Potential to Occur
Most-beautiful jewel flower *Streptanthus albidus* subsp. *peramoenus*	None CEQA 1B.2	Occurs on serpentinite in chaparral, cismontane woodland, and valley and foothill grassland. Known from Alameda, Contra Costa, Monterey, Santa Clara, and San Luis Obispo counties at elevations between 308 and 3,281 feet.	March-October annual herb	Although marginally suitable vegetation associations are present, the preferred substrate is absent. The nearest recorded CNDDB occurrence is a non-specific location approximately 1 mile southeast in Mount Diablo State Park.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Mt. Diablo jewel-flower *Streptanthus hispidus*	None CEQA 1B.3	Occurs on rocky sites in chaparral and valley and foothill grassland. Known from fewer than 15 occurrences only in Contra Costa County at elevations between 1,198 and 3,937 feet.	March-June annual herb	Although marginally suitable vegetation associations are present, the preferred substrate is absent. The study area is also outside of the elevation range for this taxon. The nearest recorded CNDDB occurrence is a specific location approximately 1.5 miles southeast in Mount Diablo State Park.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Suisun Marsh aster *Symphyotrichum lentum*	None CEQA 1B.2	Occurs in brackish and freshwater marshes and swamps. Known from Contra Costa, Marin, Napa, Sacramento, San Joaquin, Solano, and Sonoma counties at elevations between sea level and 10 feet. Recognized as *Aster lentus* in The Jepson Manual. Intergrades into *A. chilensis*. United States Fish and Wildlife Service uses the name *A. chilensis* var. *lentus*.	May-November perennial herb (rhizomatous)	No suitable vegetation associations or hydrology are present. The nearest recorded CNDDB occurrence is a specific location approximately 0.5 mile north near the mouth of the San Joaquin River.	None
Saline clover *Trifolium depauperatum* var. *hydrophilum*	None CEQA 1B.2	Occurs on mesic and alkaline sites in marshes and swamps and valley and foothill grassland and vernal pools. Known from Alameda, Monterey, Napa, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, Solano, and Sonoma counties at elevations between sea level and 984 feet. Possibly occurs in Colusa County.	April-June annual herb	Suitable vegetation associations are present. The nearest CNDDB occurrence is a non-specific historic location from Oakland.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Coastal triquetrella *Triquetrella californica*	None CEQA 1B.2	Occurs on soil in coastal bluff scrub and coastal scrub. Known from Del Norte, Mendocino, Marin, San Diego, San Francisco, San Mateo, and Sonoma counties at elevations between 33 and 328 feet.	Moss wet season	Marginally suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a non-specific historic location from Mount Diablo.	Not Observed Would have been detectable during 2010 and 2011 surveys.
Caper-fruited tropidocarpum *Tropidocarpum capparideum*	None CEQA 1B.1	Occurs in valley and foothill grassland, often alkaline hills. Known from Fresno, Monterey, and San Luis Obispo counties. Presumed extirpated from Alameda, Contra Costa, Glenn, Santa Clara, and San Joaquin counties at elevations between 3 and 1,493 feet. Rediscovered in 2000 on Ft. Hunter Liggett.	March-April annual herb	Although suitable vegetation associations are present, the study area lacks suitable alkaline characteristics. The nearest recorded CNDDB occurrence is a non-specific historic location from Clayton.	Not Expected Would have been detectable during 2010 and 2011 surveys.
Oval-leaved viburnum *Viburnum ellipticum*	None CEQA 2.3	Occurs on chaparral, cismontane woodland, and lower montane coniferous forest. Known from Contra Costa, Fresno, El Dorado, Glenn, Humboldt, Mendocino, Napa, Shasta, and Sonoma counties at elevations between 705 and 4,593 feet.	May-June shrub (deciduous)	Suitable vegetation associations are present. The nearest recorded CNDDB occurrence is a non-specific location approximately 1 mile north of Rossmoor.	Not Observed Would have been detectable during 2010 and 2011 surveys.

ATTACHMENT E: SPECIAL-STATUS WILDLIFE SPECIES AND POTENTIAL TO OCCUR

ATTACHMENT E: SPECIAL-STATUS WILDLIFE SPECIES AND POTENTIAL TO OCCUR

Species Name	Listing Status[1]	Life History	Potential to Occur[2]
Invertebrates			
Lange's metalmark butterfly *Apodemia mormo langei*	FE	Found only at the Antioch Sand Dunes in Contra Costa County and primarily in the Antioch Dunes National Wildlife Refuge. Depends upon its host plant, naked-stem buckwheat (*Eriogonum nudum* ssp. *auriculatum*), as a site for egg deposition and source of food for larvae. Naked-stem buckwheat requires shifting sands for seed germination in its sand dune habitat. Adults have one flight season per year, typically between August and September.	The CC-Moraga Line is outside the range of this species and no suitable sand dune habitat exists in the vicinity of the construction areas. No Potential
Conservancy fairy shrimp *Branchinecta conservatio*	FE	Endemic to the vernal pools in the California Central Valley with one population observed along the Central Coast in Ventura County. Typically inhabits large and turbid vernal pools that are often referred to as playa pools. Playa pools can remain inundated until well into the summer, and are typically greater than 175 feet in diameter. Cysts within the soil substrate hatch during the first winter rains.	No California Natural Diversity Database (CNDDB) occurrences of this species have been documented within 5 miles of the Contra Costa-Moraga 230 kilovolt Transmission Line (CC-Moraga Line). The CC-Moraga Line is outside the known range of this species. No Potential
Longhorn fairy shrimp *Branchinecta longiantenna*	FE	Found in the vernal pools of the Carrizo Plain National Monument vicinity of San Luis Obispo County, San Luis National Wildlife Refuge Complex of Merced County, Brushy Peak Preserve of Alameda County, Vasco Caves Preserve in Contra Costa County, and the proposed Alkali Sink Conservation Bank in Fresno County. Adapted to variable vernal pool conditions, including the small, clear, sandstone outcrop vernal pools of Contra Costa and Alameda counties. Requires a minimum of 23 days, but an average of 43 days, to reach maturity in artificial pools.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. The CC-Moraga Line is outside the known range of the species. No Potential
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Inhabits vernal pools and swales during all stages of its life cycle. Can persist in grassland areas subject to low-intensity grazing.	Four occurrences have been documented within 5 miles of the eastern portion of the CC-Moraga Line, all of which are presumed extant. Suitable habitat for this species is present in the vicinity of the construction areas. Along the western portion of the CC-Moraga Line, one seasonal wetland located along the overland access route to Work Area 114 was assessed for the potential to support this species. However, the seasonal wetland is not vernal pool habitat and there are no CNDDB occurrences of this species within 5 miles of this seasonal wetland. Moderate Potential

[1] Explanation of state and federal listing codes:

Federal listing codes:

-FE: Federally Endangered Species
-FT: Federally Threatened Species
-DPS: Distinct Population Segment
-BGEPA: Bald and Golden Eagle Protection Act

California listing codes:

-CT: State-listed as Threatened
-FP: Fully protected species
-SSC: Species of Special Concern

[2] Potential to Occur refers to each species' potential to occur within the vicinity of the Contra Costa-Moraga 230 Kilovolt (kV) Transmission Line (CC-Moraga Line). However, the potential for several species' potential to occur within the construction areas has been clarified.

Species Name	Listing Status[1]	Life History	Potential to Occur[2]
San Bruno elfin butterfly *Callophyrs mossii bayensis*	FE	Lives only on north-facing slopes of the coastal mountains in San Mateo County. Lays eggs on the larval food plant stonecrop (*Sedum spathulifolium*). The adults have a flight period of late February through mid-April.	One occurrence has been documented within 5 miles of the CC-Moraga Line, near the summit of Mount Diablo. Because the USFWS has determined that all known locations of this species are restricted to coastal grassland and scrub vegetation in San Mateo County, this record is most likely that of a different subspecies of elfin butterfly. No stonecrop plants were seen during the plant surveys. No Potential
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	Occurs in California's Central Valley and associated foothills at the edges of the valley. Found almost exclusively on or close to its host plant—elderberry. Lives in elderberry bushes with a diameter at ground level of at least 1 inch. Lays eggs in the stems of elderberry bushes, which transform to the adult stage after up to 2 years. Is active between March and June for feeding and mating.	There are no CNDDB occurrences anywhere in Contra Costa County for this species, and the nearest occurrence appears to be approximately 20 miles southeast of the eastern end of the project near Union Island in San Joaquin County. In addition, no elderberry bushes have been observed in the construction areas. No Potential
Delta green ground beetle *Elaphrus viridis*	FT	Found along the margins of vernal pools and in bare areas along trails and roadsides of the Jepson Prairie in Solano County. Often finds cover within the cracks of mud and under low-growing vegetation. Strongly associated with vernal pool plants such as *Navarretia*, *Downingia*, and *Frankenia*. Females lay their eggs in winter and active adults emerge in the following winter.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. The CC-Moraga Line is outside the known range of this species. No Potential
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	Inhabits a wide variety of seasonal habitats, including vernal pools, seasonal wetlands, clay flats, alkaline pools, ephemeral stock tanks, and roadside ditches, during all stages of its life cycle. Known to prey upon vernal pool fairy shrimp, as well as small bits of detritus. Reproduces hermaphroditically or parthenogenically and produces cysts.	One occurrence has been documented within 5 miles of the eastern portion of the CC-Moraga Line, which is presumed extant. Marginal habitat for this species is present in the vicinity of the construction areas. Along the western portion of the CC-Moraga Line, one seasonal wetland located along the overland access route to Work Area 114 was assessed for potential to support this species. The seasonal wetland is not within the known range of the species, and does not contain vernal pool habitat. Furthermore, there are no CNDDB occurrences of this species within 5 miles of this seasonal wetland. Moderate Potential
Callippe silverspot butterfly *Speyeria callippe callippe*	FE	Found exclusively in grassy hills surrounding San Francisco Bay. Depends upon its host plant Johnny jump-up (*Viola pedunculuta*). Populations observed in San Bruno Mountain and Cordelia Hills. Adults feed on the nectar of a variety of native and non-native flowering plants. Adult flight period generally begins between mid-May and mid-July.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. The CC-Moraga Line is outside the known range of this species. No Potential
Fish			
Green sturgeon southern DPS *Acipenser medirostris*	FT SSC	Found in the coastal waters and inland bays and rivers from San Francisco Bay to British Columbia. Anadromous and requires both marine and estuarine environments to forage, and freshwater environments to spawn. Spawning habitat found in deep pools in large, turbulent, freshwater river mainstreams. Eggs commonly laid over large cobble substrates, and sometimes on clean sand or bedrock substrates. Spawning occurs from March to July, peaking in mid-April to mid-June.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. There is no aquatic habitat within the construction areas. No Potential
Sacramento perch *Archoplites interruptus*	SSC	Local to Salinas, Sacramento, and Pajaro rivers. Found in sluggish, vegetated waters of sloughs and lakes. Spawns during late May/early June. Lays eggs that are later fertilized by a male who protects them until they hatch.	Two occurrences have been documented within 5 miles of the CC-Moraga Line, one of which is within 1 mile of the CC-Moraga Line in the Delta, north of Antioch. Both occurrences are presumed extant. However, suitable aquatic habitat for this species does not exist within the construction areas. No Potential

Species Name	Listing Status[1]	Life History	Potential to Occur[2]
Tidewater goby *Eucyclogobius newberryi*	FE SSC	Inhabits estuarine habitats along the California coast, ranging upstream slightly into fresh water and downstream in water of up to approximately 75 percent sea water. Typically found in salinities of less than 12 parts per thousand. Generally found in upper estuary habitat within the fresh-saltwater interface. Reproduces at all times of the year with peak spawning activity during the spring and again in the late-summer. Prefers to spawn in calm lagoon conditions afforded by sandbar closure.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. There is no aquatic habitat within the construction areas. No Potential
Delta smelt *Hypomesus transpacificus*	FT CE	Found in estuarine waters from the Sacramento-San Joaquin confluence to San Pablo Bay. Is tolerant of a wide salinity range and has been collected from estuarine waters with up to 14 parts per thousand salinity. Prefers waters with an average salinity concentration of 2 parts per trillion for a large portion of its life. Migrates upstream from the brackish-water habitat associated with the mixing zone and disperses widely into river channels and tidally influenced backwater sloughs. Generally spawns in tidally influenced backwater sloughs and channel edgewaters. Usually lives for 1 year and dies after first spawning.	Two occurrences have been documented within 5 miles of the CC-Moraga Line, both of which are presumed extant. No habitat exists for this species within the construction areas. A portion of the project is located within USFWS-designated critical habitat; however, none of the primary constituent elements (PCEs) for the designation are present in the construction areas. All work would occur in upland area. No Potential
Steelhead- central California Coast DPS *Oncorhynchus mykiss irideus*	FT	Found in coastal streams from the Russian River south to the Aptos Creek, the drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island, and tributary streams to Suisun Marsh. Individuals within this DPS spawn during the winter only, maturing in the ocean and then spawning in freshwater during late fall and winter. Requires cool, swift moving streams with clean, unsilted gravel beds for spawning and egg incubation.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. There is no aquatic habitat within the construction areas. No Potential
Chinook salmon- Central Valley spring-run ESU *Oncorhynchus tshawytscha*	FT CT	Found in the Sacramento River and its tributaries in California, including the Feather River, as well as the Feather River Hatchery spring-run program. Spawning habitat is restricted to the mainstream and a few tributaries to the Sacramento River.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. There is no aquatic habitat within the construction areas. No Potential
Chinook salmon- Sacramento River winter-run ESU *Oncorhynchus tshawytscha*	FE CE	Found in the Sacramento River and its tributaries. Utilizes off-channel rearing habitats within submerged zones of riparian areas. Prefers habitat in healthy riparian zones, characterized by vegetation that provides shade, stabilizes banks, and provides organic litter and large woody debris nutrients.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. There is no aquatic habitat within the construction areas. No Potential
Amphibians			
California tiger salamander *Ambystoma californiense* Central DPS	FT CT	Occurs in vernal pools and seasonal ponds, including stock ponds. Can inhabit a wide range of upland habitats, including woodlands and grasslands where there is dense vegetation, leaf litter, logs, and/or underground burrows large enough to provide cover. Spends most of the year underground in rodent burrows. Breeds after the first rains in late fall and early winter, when the wet season allows the salamander to migrate to the nearest pond, a journey that may be as far as 1 mile and take several days. Lays eggs in small clusters or singly, which hatch after 14 to 21 days.	Forty-six occurrences have been documented within 5 miles of the CC-Moraga Line, of which 6 are extirpated, 1 is possibly extirpated. Three of the presumed extant records are within 1 mile of the CC-Moraga Line. Suitable upland habitat is present in the construction areas. The closest occurrence to the construction areas was documented approximately 0.33 mile southeast of Landing Zone 35. High Potential
Foothill yellow-legged frog *Rana boylii*	SSC	Found only in stream habitats. When disturbed, this species will escape into deeper water and hide under cover. Lays between 100 and 1,000 eggs on rocks submerged in water between April and July. Hatches as a tadpole after approximately 1 week and usually undergoes metamorphosis by October.	One occurrence was reported in 1997 in a stream approximately 0.5 mile west-northwest of Pull Site 126, which is adjacent to Moraga Substation, and suitable habitat is present in the construction areas. There is a low potential for a frog to leave the stream corridor north of Pull Site 126 and enter the pull site. High Potential in the vicinity of the CC-Moraga Line Low Potential in the construction areas

Species Name	Listing Status[1]	Life History	Potential to Occur[2]
California red-legged frog *Rana draytonii*	FT SSC	Inhabits permanent and temporary pools, streams, freshwater seeps, and marshes in lowlands and foothills. Uses adjacent upland habitat for foraging and refuge. Breeds during the wet season from December through March. Lays 300 to 4,000 eggs in a large cluster, which is attached to plants near the water surface. Hatches after about 4 weeks and undergoes metamorphosis in 4 to 7 months. Found from sea level to 8,000 feet.	Thirty-eight occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. Eight of these occurrences are located within 1 mile of the CC-Moraga Line and California red-legged frogs were observed by Insignia biologists outside of the construction areas in a pond approximately 0.13 mile northwest of Landing Zone 35. Suitable upland habitat for this species is present within the construction areas. Low Potential during the dry season High Potential during the wet season
Reptiles			
Silvery legless lizard *Anniella pulchra pulchra*	SSC	Found in a wide variety of habitats with sandy or loose loamy soils. Tends to hide in leaf litter. Breeds in early spring through July and gives birth in September through November.	A total of eight occurrences have been documented within 5 miles of the CC-Moraga Line, one of which is possibly extirpated. Four of the presumed extant occurrences are located within 1 mile of the CC-Moraga Line. Marginal habitat for this species is present in the vicinity of the CC-construction areas. Moderate Potential
Western pond turtle *Emys marmorata*	SSC	Usually occurs in areas of calm, fresh water, but can also occur in brackish and salt water for short periods of time. Occupies a wide variety of aquatic habitats, including ponds, lakes, rivers, streams, marshes, sloughs, and wetlands. Digs nests and occupies upland habitats in woodlands and grasslands, usually close to water. Lays approximately 5 to 13 eggs from April through August up to 0.5 mile from water. Generally lays eggs once a year, but sometimes lays eggs twice in one year.	Eight occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. Suitable grassland and woodland nesting habitats exist in the vicinity of the construction areas. Moderate Potential
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT CT	Lives mainly in scrub and chaparral communities, but has also been seen in nearby grasslands and woodland habitats. Feeds primarily on lizards. Lays eggs in late spring or early summer. The eggs hatch in 2 to 3 months. Retreats from cold temperatures into burrows or other underground refuges to from November through February; though mostly inactive during this time, will occasionally venture out from refuges during winter.	Eighty-six occurrences are within 5 miles of the CC-Moraga Line, all of which are presumed extant. However, the records are in non-specific locations that cover the entirety of United States (U.S.) Geological Survey quadrangles. Therefore, it is likely that not all of the 86 occurrences are within 5 miles of the CC-Moraga Line. CNDDB suppresses the specific locations of Alameda whipsnake records to avoid abuse of the CNDDB for the purposes of illegal snake collecting. A portion of the project crosses through USFWS-designated critical habitat where PCEs of the listing are present. Suitable core and movement habitat is present within the construction areas. High Potential
Coast horned lizard *Phrynosoma blainvillii*	SSC	Tends to live in drier, warmer climates in open sandy areas with sparse vegetation. Eats small invertebrates, primarily ants. Lays 6 to 21 eggs (average of 12) from May through June. Able to lay two clutches in one year, which hatch from August through September.	Two occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. One of these occurrences is located within 1 mile of the CC-Moraga Line. Marginal habitat for this species exists within the construction areas. Moderate Potential
Giant garter snake *Thamnophis gigas*	FT CT	Occurs in a variety of aquatic habitats, including marshes, sloughs, irrigation and drainage canals, slow-moving streams, small lakes and ponds, and wetlands. Uses mats of emergent aquatic vegetation for thermoregulation and cover. Rarely found away from water. Uses upland habitats during the dormant season—October through April—and utilizes refuges such as small mammal burrows and soil cracks above flood elevations. May also use open and grassy upland banks near aquatic habitats for basking. Reproduces between March and May.	Three occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. One occurrence is located within 1 mile of the CC-Moraga Line; however, this occurrence is in the Sacramento-San Joaquin River Delta and there is no connectivity between the Delta and the northern end of the CC-Moraga Line. No suitable aquatic or upland habitat for this species is present within the construction areas. No Potential

Species Name	Listing Status[1]	Life History	Potential to Occur[2]
Birds			
Tricolored blackbird *Agelaius tricolor*	SSC	Found year-round in annual grasslands, wet and dry vernal pools and other seasonal wetlands, agricultural fields, cattle feedlots, and dairies, but may also forage in riparian scrub habitats along marsh borders. Most of its foraging occurs within 3 miles of the nesting colony site, but tricolored blackbird commute distances up to 8 miles have been reported. Often nests in wetland habitat characterized by cattails (*Typha* spp.) and tules (*Schoenoplectus* spp.), although nesting colonies have been found in willows, thistle (*Cirsium* spp.), nettles (Urticaceae family), and mustard (Brassicaceae family).	No occurrences of this species have been documented within 5 miles of the CC-Moraga Line; however, wetland features near the CC-Moraga Line may provide marginal nesting habitat for this species. This species has a low potential to forage in the construction areas. Due to lack of large wetland features in the immediate vicinity of the construction areas, no suitable nesting habitat for this species is located in construction areas. Low Potential
Grasshopper sparrow *Ammodramus savannaru*	SSC	Occurs in short to medium-height, moderately open grasslands with scattered shrubs. Often occupies habitat in an ecotone between grassland and sage scrub habitat. Is generally absent from areas with extensive shrub cover, although some shrubs are tolerated and perhaps preferred. Builds nests of grasses and forbs in small depressions on the ground.	No occurrences of this species have been documented within 5 miles of the CC-Moraga Line; however, grassland habitat in the construction areas may provide potentially suitable nesting and foraging habitat for this species. Moderate Potential
Golden eagle *Aquila chrysaetos*	FP BGEPA	Found from Mexico to Alaska, and mostly occurs in the western U.S., generally in open country, prairies, tundra, open coniferous forest, and barren areas, especially in hilly or mountainous regions. Up to 90 percent of prey consists of rodents and rabbits, but will also consume other mammals, birds, amphibians, fish, and reptiles. Nests in high locations, such as tall trees and cliffs.	Two occurrences have been documented within 5 miles of the CC-Moraga Line, both of which are presumed extant. Suitable nesting habitat is located within 1 mile of the construction areas, and foraging habitat is present within the construction areas. High Potential
Burrowing owl *Athene cunicularia*	SSC	Occurs in dry, open habitats, such as grasslands and prairies with low-growing or no vegetation, where it occupies underground burrows, typically those of the California ground squirrel (*Spermophilus beecheyi*). Can also occur in open areas of farmland, levee banks, and other disturbed or managed habitats where burrows or burrow-like refuges are present, such as small-diameter pipes, rock piles with voids, or similar hollow spaces. Breeds from February 1 through August 30.	A total of 32 occurrences have been documented within 5 miles of the CC-Moraga Line, of which only 1 is considered extirpated. Five of the presumed extant occurrences are located within 1 mile of the CC-Moraga Line. Suitable nesting and wintering habitat is located within the vicinity of the construction areas, and a burrowing owl was documented near Pull Site 11 during the Contra Costa-Las Positas 230 kV Transmission Line Reconductoring Project. Burrowing owl nesting pairs were present in 2012 in areas immediately surrounding Contra Costa Substation. High Potential
Ferruginous hawk *Buteo regalis*	SSC	Occurs in open grassland and sage scrub, but generally avoids cultivated fields. Also inhabits riparian areas and prefers rocky outcrops. Nests in willows, cottonwoods, and oaks, generally near water features.	No occurrences of this species have been documented within 5 miles of the construction areas; however, grassland habitat in the construction areas may provide suitable foraging habitat for this species in the winter. This species does not breed or nest in California, so there is not potential to occur. No Potential
Swainson's hawk *Buteo swainsoni*	CT	Occurs in open grasslands, prairies, and farmlands that have nearby trees for nesting. Nests in bushes and in several tree species, including oaks, willow, and eucalyptus. Usually nests in trees in riparian areas near open fields. Primarily hunts small rodents, rabbits, birds, and reptiles during the breeding season, and largely lives off insects, such as grasshoppers and beetles, during the non-breeding season. Reproduces from March through April, incubates for 34 to 35 days, and fledges 6 weeks later.	Three occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. A nesting attempt was identified approximately 0.7 mile east of the eastern end of the project during surveys in 2012. Suitable grassland habitat for this species exists within the construction areas, and suitable nesting habitat is located in the vicinity of the eastern end of the project. High Potential

Species Name	Listing Status[1]	Life History	Potential to Occur[2]
Belted kingfisher *Ceryle alcyon*	SSC	Nests and forages near inland bodies of water. Nests in burrows on the edge of a waterbody, often near trees, fence posts, or other suitable watch-posts for foraging.	No occurrences of this species have been documented within 5 miles of the CC-Moraga Line, and the construction areas do not provide suitable nesting or foraging habitat for this species. However, due to the presence of Contra Loma Reservoir, located approximately 0.3 mile south of a construction area, this species has a low potential to occur. Low Potential
Western snowy plover *Charadrius alexandrinus nivosus*	FT SSC	Occurs year-round in California, though seasonal status varies regionally. Breeds in California from March through September. Nests locally in the Central Valley; the Klamath Basin, Modoc Plateau, and Great Basin desert of northeastern and east-central California; and in the Mojave and Colorado deserts. Breeding habitat found on barren to sparsely vegetated flats and along the shores of alkaline and saline lakes, reservoirs, ponds, braided river channels, agricultural waste water ponds, and salt evaporation ponds. Adults and broods typically forage near shallow water and on dry flats up to 4 kilometers from their nest.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. The construction areas do not contain suitable breeding or foraging habitat for this species. No Potential
Northern harrier *Circus cyaneu*	SSC	Forages over meadows, grasslands, rangelands, desert sinks, and freshwater emergent wetlands. Nests in meadows and in both fresh and salt open marshlands. Typically nests on the ground from March through May.	No occurrences of this species have been documented within 5 miles of the CC-Moraga Line. In addition, due to a lack of meadows and salt and freshwater marshes in the construction areas, there is no suitable nesting habitat for this species. Grassland habitat in the construction areas may provide marginally suitable foraging habitat for this species. Low Potential
White-tailed kite *Elanus leucurus*	FP	Nests in trees that range from 10 to 160 feet in height and that are usually on the edge of open areas, including agricultural fields. Breeds from February through October. Lays three to five eggs, and incubates for 30 to 32 days, after which fledging occurs at 5 to 6 weeks of age.	Four occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. Suitable nesting and foraging habitats exist within the vicinity of the construction areas. A pair of white-tailed kites was noted nesting southwest of Pull Site 8 in 2012. High Potential
Saltmarsh common yellowthroat *Geothlypis trichas sinusoa*	SSC	Known to occur in or near salt marsh habitats. Breeds broadly from southeastern Alaska across Canada south through the U.S. (very local in the southwest) into northern Baja California and the Pacific slope and central highlands of Mexico. Nests in low vegetation in wet areas from April through September, and usually nests up to 2 feet off of the ground.	Four occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. No suitable habitat is present for this species is present in the vicinity of the construction areas. No Potential
Loggerhead shrike *Lanius ludovicianus*	SSC	Lives in trees near open plains and grassland habitats. Primarily eats large insects, with grasshoppers and beetles comprising the majority of its diet, but will also prey on mice, small birds, snakes, lizards, or frogs. Nests 8 to 15 feet above the ground. Incubates five to six eggs for 15 to 17 days in a bulky, cup-shaped nest made of twigs and grass. Broods young for the first 4 to 5 days post- hatching. Males bring food to the female and the young during this time. After this initial period, both parents feed the young, which leave the nest at 17 to 20 days and start to fly about 1 week later. Breeds from April through July.	One occurrence has been documented within 5 miles of the CC-Moraga Line, which is presumed extant. Suitable habitat is found within the construction areas. Moderate Potential
California black rail *Laterallus jamaicensis coturniculus*	CT FP	Largely restricted to the tidal salt marshes of San Pablo and Suisun bays, but rarely found in freshwater marshes. Prefers marshes that are close to open brackish or saline water and dominated by pickleweed (*Salicornia* spp.). Nests in dense vegetation on or near the ground, and generally lays eggs in early May.	Six occurrences have been documented within 5 miles of the CC-Moraga Line, and all are presumed extant. Five of these occurrences were located in protected marshes on Brown's Island or Sherman Island. The sixth occurrence was documented in 1981 in a marsh on the San Joaquin River, northwest of Oakley. No suitable habitat is present within the construction areas. No Potential

Species Name	Listing Status[1]	Life History	Potential to Occur[2]
Suisun song sparrow *Melospiza melodia maxillaries*	SSC	Occurs in most tidal marshes in Suisun Bay, but tends to be denser along upland edges or large marshes, especially where shrubs are present. Requires dense vegetation for nesting sites, song perches, and cover from predators. Associated primarily with fully tidal channels, especially in marshes where pickleweed (*Salicornia virginica*) dominates and gumplant (*Grindelia stricta*) lines the channels. Can occur along distribution ditches, permanent ponds, and other areas in diked wetlands of Suisun Marsh where required plant assemblages and brackish water conditions exist. Nests along the edges of sloughs and bays. Usually lays three to five eggs, which are incubated for 10 to 14 days. Leaves the nest after 7 to 14 days.	Six occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. No suitable habitat for this species is present within the construction areas. No Potential
Alameda song sparrow *Melospiza melodia pusillula*	SSC	Restricted to tidal salt marshes occurring only along the southern and eastern fringes of south San Francisco Bay. Lives at high densities averaging seven birds per acre in some salt marshes with significant shrub cover. Prefers tidally influenced habitat and requires exposed ground for foraging. Defends territories that are arranged linearly along sloughs, providing each pair with access to the slough and its overhanging banks for food and cover. Rarely found in diked areas with stagnant water and without tidal influence.	One occurrence has been documented within 5 miles of the CC-Moraga Line, which is presumed extant. No suitable habitat for this species is present within the construction areas. No Potential
California brown pelican *Pelecanus occidentalis californicus*	Delisted due to recovery FP	Inhabits estuarine, marine subtidal, and marine pelagic waters along the California coast. Typically found in Southern California along the coast from June to October and in Northern California from June to November. Finds cover on the water or inaccessible rocks, either offshore or on the mainland; also uses mudflats, sandy beaches, wharfs, and jetties. Breeding habitat found on the Channel Islands and breeding typically occurs from March to early August.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. There is no estuarine, marine, or beach habitat in the vicinity of the construction areas; therefore, no suitable nesting or foraging habitat for this species exists in the construction areas. No potential.
California least tern *Sternula antillarum browni*	FE CE	Nests along the West Coast of North America, from Baja California, Mexico, north to the San Francisco Bay area. Nests in colonies on relatively open beaches where vegetation is limited by natural scouring from tidal action. Has two nesting periods during one season. Typical egg-laying during the first period begins in early to mid-May. The second nesting period is slightly longer than the first, and hatching may continue throughout July and occasionally into August. Fall migration to southern latitudes generally commences during the last week of July and the first week of August.	No CNDDB occurrences of this species have been documented within 5 miles of the CC-Moraga Line. There is no suitable beach or mudflat habitat in the construction areas; therefore, no suitable nesting or foraging habitat for this species exists in the construction areas. No Potential.
Mammals			
Pallid bat *Antrozous pallidus*	SSC	Inhabits arid desert regions, pine-oak woodlands, and oak savannah. Roosts in caves, rock crevices, mines, hollow trees, buildings, and bridges. Breeds from October through February. Fertilization generally occurs in the spring. Gestates for approximately 2 months. Young are born in April through July and weaned in 6 to 8 weeks.	Ten occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. Four of these occurrences are located within 1 mile of the CC-Moraga Line. Suitable oak savannah and woodland habitats are present in the vicinity of the construction areas. High Potential
Townsend's big-eared bat *Corynorhinus townsendii*	SSC	Requires caves, mines, tunnels, buildings, or other man-made structures for roosting. Generally occurs in mesic habitats characterized by coniferous and deciduous forests. In California, known to occupy limestone caves, lava tubes, and man-made structures in coastal lowlands, cultivated valleys, and nearby hills covered with mixed vegetation.	No occurrences of this species have been documented within 5 miles of the CC-Moraga Line; however, wooded areas in the construction areas may provide suitable roosting and foraging habitat for this species. Moderate Potential
Western red bat *Lasiurus blossevillii*	SSC	Roosts primarily in trees, less often in shrubs. Often roosts in edge habitats adjacent to streams, fields, or urban areas. Lives in riparian forests and riparian woodlands. Mates from August through October, but fertilization occurs in the spring. Requires 65 days of gestation and 3 to 4 weeks of life outside the womb prior to flight.	Three occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. One of these occurrences is located within 1 mile of the CC-Moraga Line; however, the locality of this record is given only as "Antioch." Suitable habitat is present in the vicinity of the construction areas. High Potential
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	SSC	Lives in forest and shrub habitats. Builds large, conspicuous houses of sticks and twigs reaching up to 6 feet in height. The availability of suitably sized sticks may be a limiting factor.	No CNDDB occurrences reported within 5 miles of the CC-Moraga Line; however, a dusky-footed woodrat house was noted approximately 50 feet north of Pull Site 126. High Potential

Species Name	Listing Status[1]	Life History	Potential to Occur[2]
Salt-marsh harvest mouse *Reithrodontomys raviventris*	FE CE	Found in salt marshes and brackish wetlands and has low tolerance for freshwater. Depends on habitats dominated by dense stands of pickleweed (*Salicornia* sp.) that are adjacent to upland, salt-tolerant vegetation for escape during high tides. Breeding occurs from spring to fall.	No salt marsh habitat with associated pickleweed vegetation exists in the construction areas; therefore, no suitable habitat for this species is present in the construction areas. No Potential
American badger *Taxidea taxus*	SSC	Requires uncultivated ground with friable soils to facilitate the digging of burrows. Prefers meadows, open forests, and grasslands. Feeds primarily on small burrowing mammals, such as ground squirrels, gophers, and mice. Breeds in July and August. Gives birth to one to five babies the following March, and babies are weaned by June. May become torpid in the coldest part of winter, remaining in a nest chamber deep within its burrow for several days or weeks in the winter.	Five occurrences have been documented within 5 miles of the CC-Moraga Line, all of which are presumed extant. Suitable habitat exists within the construction areas. Moderate Potential
San Joaquin kit fox *Vulpes macrotis mutica*	FE CT	Found primarily in areas with short vegetation in the southern San Joaquin Valley. Targets kangaroo rats and other small rodent species, but will also consume insects, hares, mice, and lizards. Breeds between December and March. Up to five pups are born per litter.	Four occurrences have been documented within 1 mile of the CC-Moraga Line, and all of the occurrences are presumed extant. However, San Joaquin kit fox are often confused with coyotes (*Canis latrans*), so there is potential that not all of these known occurrences are of San Joaquin kit fox. Suitable foraging habitat for this species is found within the construction areas. No potential den sites were noted in the construction areas. Moderate Potential