

Final Report
for the
PG&E Jefferson-Martin
230 kV Transmission Line Project
Mitigation Monitoring Program

Prepared by:
Aspen Environmental Group

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1. Introduction and Project Overview

The Final Construction Completion Report has been developed to summarize the monitoring activities conducted for the Pacific Gas and Electric (PG&E) Jefferson-Martin 230 kV Transmission Project. The Jefferson-Martin Project included the installation of approximately 27 miles of 230 kV transmission line, a rebuild of PG&E's existing Jefferson-Martin 60 kV double-circuit transmission line, and modification of the existing Jefferson and Martin Substations to accommodate the new 230 kV transmission line. The California Public Utilities Commission (CPUC) as the Lead Agency for the project conducted the environmental review process and granted final approval of the project. Aspen Environmental Group implemented the Mitigation Monitoring Program to ensure compliance with project mitigation measures, compliance plans, and permit conditions during all phases of construction.

Chapter 1, Introduction/Project Overview, provides a brief overview of the Jefferson-Martin Project and project approvals granted by the CPUC. In addition, Chapter 1 outlines the role and responsibility undertaken by Aspen Environmental Group as the mitigation monitoring team, including pre-construction compliance review. The methods established for addressing non-compliance issues, changes in the project description or mitigation implementation, and extra workspace requirements are also discussed.

The Jefferson-Martin Project was constructed as eight distinct pieces: the five underground 230 kV transmission line segments and the overhead 230 kV/60 kV transmission line segment discussed in Chapter 2, the Jefferson Substation modifications discussed in Chapter 3, and the Martin Substation modifications discussed in Chapter 4. Black & Veatch (B&V) was awarded the contract for engineering and construction of the transmission line installation, and subcontracted companies for the transmission line installation. InfraSource was awarded the subcontract for construction of the underground 230 kV transmission line for Segments 1 and 5; Underground Construction was awarded the subcontract for construction of the underground 230 kV transmission line for Segments 2 and 4; ARB, Inc., was awarded the subcontract for construction of the underground 230 kV transmission line for Segment 3; and International Line Buildings (ILB) was awarded the subcontract for construction for the overhead 230 kV/60 kV transmission line for Segment 2 Overhead. B&V assisted PG&E with the Jefferson Substation and Martin Substation modifications.

Chapter 5 provides a comprehensive summary of post-construction requirements for the project, and Chapter 6 presents monitoring issues and recommendations for future mitigation monitoring plans.

Mainline construction of the Jefferson-Martin Project took place between January 2005 and May 2006, while final clean-up and restoration will continue into the Fall and Winter of 2006.

1.1 Overview of the PG&E Jefferson-Martin Project

The transmission system serving northern San Mateo County and the San Francisco area is part of the electric grid that is owned by PG&E and operated by the California Independent System Operator. The Jefferson Martin Project was needed to meet the electric demand in northern San Mateo County and San Francisco, and to create a more diverse transmission system in the area. The project was located within the Cities of Hillsborough, Burlingame, Millbrae, San Bruno, South San Francisco, Colma, Daly City, and Brisbane, and included areas of unincorporated San Mateo County.

The Jefferson-Martin Project involved the installation of a new approximately 27-mile 230 kV transmission line from the existing Jefferson Substation (in San Mateo County near the City of Woodside) to the existing Martin Substation (in the City of Brisbane). Approximately 24 miles of the 230 kV transmission line was constructed underground and approximately three (3) miles was constructed overhead. For the overhead portion, construction involved the dismantling of the existing Jefferson-Martin overhead 60 kV double-circuit tower line and rebuilding the towers to enable the east side to operate at 60 kV and the west side at 230 kV. Modifications of the existing Jefferson and Martin Substations were made to accommodate the new 230 kV transmission line. Modifications to equipment at the existing San Mateo, Ralston, Millbrae and Monta Vista Substations and the Hillsdale Junction switching station were also completed.

The Jefferson-Martin Project was approved by the CPUC who issued a Certificate of Public Necessity and Need and certified the Final EIR on August 19, 2004 (Application number 02-09-043, State Clearinghouse Number 2003012066). The EIR was prepared by Aspen Environmental Group under contract to the CPUC in accordance with the California Environmental Quality Act (CEQA) to inform the public and to meet the needs of local, state, and federal permitting agencies in considering the project proposed by PG&E.

1.2 Role of Aspen Monitoring Team

The Aspen Monitoring Team was composed of the Program Manager (Susan Lee), Project Manager (Vida Strong), and the following Environmental Monitors (EM):

- Jody Fessler (EM)
- Jenny Slaughter (EM)
- Anne Sweet (EM)

Aspen's Program Manager, Susan Lee, had the authority to commit Aspen Team resources and was responsible for all contractual matters.

Aspen's Project Manager, Vida Strong, supervised all project monitoring activities. She was responsible for direct communication with the CPUC, including preparation of weekly reports. Other responsibilities included managing the field monitoring team, reviewing non-compliance documentation, overseeing the issuance of Project Memoranda and Non-Compliance Reports, and preparing recommendations for CPUC consideration on Project Notices to Proceed and Variance Requests.

The CPUC EMs reviewed pre-construction compliance materials for completeness and performed in-field monitoring for compliance with mitigation measures, approved plans, and agency requirements during all construction activities. In the field, they served as the main point of contact for PG&E, as well as for a variety of federal, State, and local agencies. CPUC EMs prepared and submitted daily and weekly compliance reports to the Aspen Project Manager. The CPUC EMs also provided field input on Variance Requests and attended meetings held by PG&E and its contractors. The CPUC EMs have been trained in a number of disciplines including environmental science, biology, and chemistry and are experienced in compliance monitoring. CPUC EM Jody Fessler conducted the majority of the monitoring on a full-time basis for most of the project period. CPUC EM Jenny Slaughter conducted monitoring on a part-time basis. CPUC EM Anne Sweet conducted the majority of the pre-construction compliance review.

1.3 Pre-Construction Compliance Review and Notices to Proceed

PG&E submitted an Environmental Compliance Monitoring Plan (ECMP), which outlined the Company's approach to implementing the Mitigation Monitoring, Compliance, and Reporting Plan mitigation measures applicable to the Jefferson-Martin Project. In addition, several specific compliance plans were submitted to satisfy Federal and State agency requirements, including:

- Biological Resources Summary
- Special Status Wildlife Protection Plan
- Avian Protection Plan
- Tree Replacement Plan
- Habitat Restoration Plan
- Landscape Restoration Plan
- Storm Water Pollution Prevention Plan
- Erosion Control Plan
- Worker Environmental Awareness Program Plan
- Hazardous Substance Control and Emergency Response Plan
- Spill Prevention, Countermeasure, and Control Plan
- Asbestos Dust Mitigation Plan
- Traffic Management Plans
- Cultural Resources Treatment Plan
- Final Paleontologic Report

These compliance plans were reviewed by Aspen prior to the start of construction to ensure that appropriate environmental protection would take place. In addition, Aspen tracked the necessary permitting requirements to ensure that all the applicable agency permits had been issued prior to construction. Permits issued for the project included:

Federal:

- U.S. Fish and Wildlife Service (USFWS): Biological Opinion
- U.S. Army Corps of Engineers (USACE): Clean Water Act, Section 404/10 Permit (Nationwide)

State:

- CPUC: EIR Certification; Certificate of Public Convenience and Necessity; Notices to Proceed
- California Department of Fish and Game (CDFG): California Endangered Species Act Compliance, MOU for San Francisco dusky-footed woodrat impacts, 1600 Lake and Streambed Alteration Agreement
- California Department of Transportation (Caltrans): Encroachment Permits
- San Bruno Mountain State and County Park: Compliance with the Habitat Conservation Plan

Regional:

- Regional Water Quality Control Board (RWQCB): National Pollutant Discharge Elimination System (NPDES) – Storm Water Pollution Prevention Plan; Section 401 Water Quality Certification or Waiver of Waste Discharge Requirements
- San Francisco Public Utilities Commission (SFPUC): Consultation and Permission to Operate within SFPUC Watershed
- Bay Area Air Quality Management District (BAAQMD): Authority to Construct/Permit to Operate

Local:

- San Mateo County: Encroachment, Welding, Grading, and Building Permits
- Cities of Hillsborough, Burlingame, Millbrae, San Bruno, South San Francisco, Colma, Daly City, and Brisbane: Encroachment Permits

Reconnaissance-level surveys for plant communities and wetlands and aquatic resources were conducted in July 2002 by PG&E’s biologists. Focused biological surveys for special-status plants and their habitats were conducted within a 100-foot-wide survey corridor during the spring and summer of 2001 and 2002. Reconnaissance field surveys and habitat assessments to determine the potential occurrence for each of the special-status species in the project area were completed (Appendix 5C, Final EIR). During these surveys, nine special status plants, 27 vertebrate species, and 10 invertebrate species were observed as potentially occurring within the project area. This list includes two fish, three amphibians, three reptiles, 12 birds, and seven mammals, some of which have very restricted and specialized habitat requirements. Special surveys were conducted for both the threatened California red-legged frog and the endangered San Francisco garter snake because both species are in the area. For Segments 1 and 2 Overhead, where the project passed through the SFPUC Watershed and CDFG Refuge land, PG&E was required to have Biological Monitors and Environmental Inspectors on-site during all construction. Environmental Inspectors representing PG&E were present throughout the whole project during all construction activities.

Several areas within the corridor of the 230 kV Transmission Line were identified as Environmentally Sensitive Areas (ESA) for archaeological resources. However, since the underground construction of the 230 kV Transmission Line occurred within existing roadways, the likelihood of a discovery was low. A Cultural Resource Treatment Plan was submitted to the CPUC in the event of an unanticipated discovery of cultural resources. All construction personnel were trained regarding the potential for presently unknown cultural resources and the procedures to treat unexpected discoveries. An archeologist representing PG&E was present during all of the underground excavation and construction. No significant unanticipated discoveries of cultural resources occurred.

As part of the PG&E Jefferson-Martin Environmental Compliance Monitoring Plan, all employees working on the project were required to attend an environmental training session before they could begin work. PG&E’s environmental representatives presented the training session, which covered environmental and cultural resource issues, state and federal laws, and reporting procedures.

When necessary pre-construction compliance documentation was satisfactorily submitted, recommendations for Notices to Proceed (NTPs) were prepared by Aspen for CPUC consideration. A total of nine (9) NTPs for Construction were issued by the CPUC for the Jefferson-Martin Project (see Table 1-1). A final NTP for the permanent Crystal Springs Dam crossing will be issued at a later date. Once approvals from other agencies were received, construction could commence in accordance with the NTPs for Construction and issued permits.

Table 1-1. NTPs for Construction

NTP No.	Date Issued	Description
#1	1-10-05	Segment 1, underground only Segment 5, unincorporated San Mateo County only
#2	3-08-05	Segment 2, underground only, not including SFPUC lands
#3	3-11-05	Segment 5, incorporated
#4	3-11-05	Segment 3
#5	3-30-05	Segment 4
#6	8-03-05	Segment 2 Underground in the SFPUC Watershed
#7	8-10-05	Martin Substation
#8	8-26-05	Segment 2 Overhead
#8 Amendment	12-21-05	Segment 2 Overhead; remove additional trees between Towers #70A and #71 for line clearance purposes.
#9	9-01-05	Jefferson Substation expansion area and construction of the temporary Lower Crystal Springs Overhead Dam Crossing

1.4 Compliance Monitoring

Compliance monitoring by the CPUC EMs was intended to chronicle and document PG&E's compliance with project mitigation measures, compliance plans, and permit conditions. Compliance monitoring was implemented to minimize or eliminate potential significant impacts and to protect environmental resources. A Non-Compliance was defined as "any deviation from applicable mitigation measures, applicant-proposed measures and project parameters, permit conditions or requirements, and approved plans." A Project Memorandum was a written warning of a non-compliance activity. Non-Compliance Reports were issued when chronic non-compliance activity occurred or a blatant disregard for project mitigation measures, compliance plans, or permit conditions was demonstrated. Project Memoranda and Non-Compliance Reports were typically issued after an initial verbal warning. The compliance record for each Jefferson-Martin Project component is discussed in Chapters 2 through 4.

1.5 Coordination and Communications

In field communications were conducted by the CPUC EMs with PG&E's Environmental Inspectors and other project personnel. Verbal warnings and written communications (Project Memoranda or Non-Compliance Reports) were utilized to notify PG&E and its contractors of non-compliance activities. Field observations were logged daily by the CPUC EMs. Weekly reports were submitted to the CPUC and other agencies documenting compliance, requested project changes, construction progress, and interactions with other agencies.

1.6 Variance Requests

Variance Requests were submitted by PG&E to the CPUC for changes in the approved project description, including changes in construction technique, additional extra workspace needs, or reduction in mitigation requirements. Each Variance Request submitted by PG&E was first reviewed by Aspen for completeness. If incomplete, a request for information was prepared by Aspen and sent to PG&E. When complete, each request was analyzed, including field verification and resource/local agency consultation, to determine if new impacts or an increase in significant impacts would result. After analysis of the request, Aspen prepared a written recommendation of approval or denial for the CPUC. As appropriate, mitigation measures or other agency conditions were required by the CPUC to avoid, or reduce to a less than significant level, any identified impacts. The Variance Requests submitted for the Jefferson-Martin Project are presented in Chapters 2 through 4.

2. 230 kV Transmission Line Segments

Figure 2-1 presents the alignment of the Jefferson Martin 230 kV transmission line. The new 27-mile 230 kV Transmission Line begins at the existing Jefferson Substation in San Mateo County near the City of Woodside and follows a northern route underground along Cañada Road to Highway 92 where the line turns west. At the Highway 35 junction, the line turns north again and continues on Skyline Boulevard until it encounters Black Mountain Road/Golf Course Drive in the City of Hillsborough, at which point it turns east, crossing under Highway 280, and turning north again on Skyline Boulevard. At Trousdale Drive in the City of Burlingame, the line turns west again, crossing under Highway 280, and enters the SFPUC Watershed and CDFG Refuge lands. At this point the underground line transitions to the overhead line and heads north until Glenview Drive in the City of San Bruno where it returns to underground. The underground line heads north along Glenview Drive until San Bruno Avenue, where it turns east and continues until Huntington Drive where it turns north again. It follows Huntington Drive until it meets the BART right-of-way and continues north through the Cities of Millbrae, South San Francisco and into the City of Colma along the BART right-of-way, where at the Colma BART station, the line heads east again on Lawndale Boulevard. At Hillside Boulevard, the line turns north again until East Market Street where it turns east. The line follows East Market Street, which turns into Guadalupe Canyon Parkway and goes over San Bruno Mountain. At Bayshore Boulevard in the City of Brisbane, the line turns north until it reaches the southeast corner of the Martin Substation and turns east into the substation. All of the construction of the underground 230 kV Transmission Line was completed within existing roadways in order to avoid impacts to biological resources. Most of the construction of the overhead 230 kV Transmission Line was within an existing 60 kV transmission line corridor and existing access roads were utilized to access some of the pole sites.

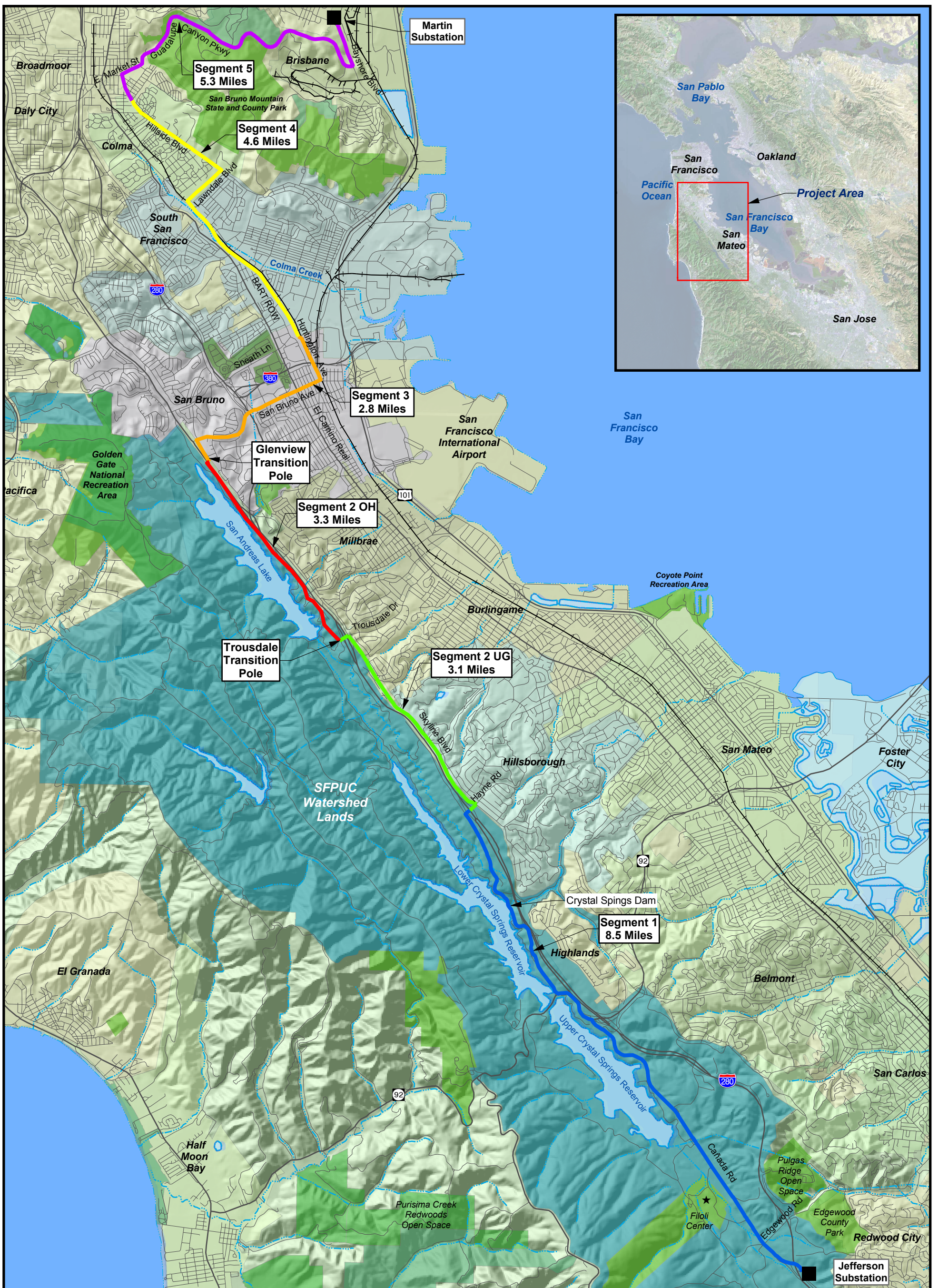
The underground transmission line required a trench approximately 2 feet wide and 7 feet deep, to hold nine (9) pvc conduits (six for transmission lines, two for communications lines and one extra). Manhole vaults were installed approximately every 1000 feet along the transmission line and allowed access for the transmission cable to be pulled through the conduit and then spliced. Communications boxes were also installed adjacent to some of the manhole vaults to allow access for the fiber optic cable to be pulled through the conduit and then spliced.

Approximately 3 miles of overhead transmission line was installed requiring the installation of 23 tubular steel poles, approximately 100 to 120 feet tall, and four transition structures.

2.1 Description and Construction of 230 kV Transmission Line Segments

Once PG&E received its Notice to Proceed (NTP) for a segment and prior to construction, PG&E notified other utility companies (via the Underground Service Alert [USA]) to locate and mark existing underground structures along the proposed alignment.

For the underground segments of the project, once the route was marked and encroachment permits obtained, traffic controls were set up around the work areas, which included signs, cones, and flaggers. Once traffic controls were set up, the roadway pavement above the trench and manhole vault pits was broken into pieces for removal. This was done with either an excavator or an asphalt-grinding machine. The trench was then excavated to a width of approximately two (2) feet and a depth of approximately seven (7) feet; because of existing utilities, a deeper trench depth was excavated in some areas. The trench spoils were hauled away to proper disposal facilities. The trench was then shored to meet Cal OSHA



- Segment 1 - Jefferson Substation to Hayne Rd.
- Segment 2 UG - Hayne Rd. to Trousdale Dr.
- Segment 2 OH - Trousdale Dr. to Glenview Dr.
- Segment 3 - Glenview Dr. to BART ROW via San Bruno Ave.
- Segment 4 - BART ROW to Hoffman St.
- Segment 5 - Hoffman St. to Martin Substation



0 3,250 6,500
 Feet
 1 inch equals 6,500.0 feet



PG&E JEFFERSON-MARTIN 230KV TRANSMISSION LINE PROJECT

**Figure 2-1
 Transmission Line Route
 September 2004**

safety requirements. Conduit (duct bank) was installed on racks in the trench in pieces and glued together. Once the conduit was installed, engineered cement slurry was poured over the conduit in the trench for insulation purposes. After the cement slurry had enough time to set, the trench was paved over with asphalt. The manhole vault pits were also excavated and shored. The vaults came in two pieces (bottom and top) and were lowered into the pit with a large crane. Communication boxes were installed next to some of the manhole vaults for the fiber optic lines.

Once all of the manhole vaults and conduit was installed on a segment, the transmission cable was pulled through the conduit from manhole to manhole. Fiber optic cable was also pulled from communication box to communication box. Splicing of cable was then done from within the manhole vaults and fiber optic cable from within the communication boxes. Construction was hampered at times by the many utilities and unmarked culverts that were encountered during underground activities. Flaggers and signage were used to ensure the public safety in accordance with approved Traffic Management Plans. Provisions for emergency vehicles and local access was provided at all times. Residents were notified prior to the commencement of construction in a given area.

For the overhead segments of the project (Segment 1, Crystal Springs Dam crossing, and Segment 2 Overhead), construction included drilling foundation pits, setting foundations, attaching steel pole towers, and stringing conductor. Transition structures were installed at the northern and southern ends of the overhead segments.

2.1.1 Segment 1

Segment 1 is approximately 8.63 miles long and begins at the Jefferson Substation (see Figure 2-1). Segment 1 heads west out of the northwestern corner of the Jefferson Substation in San Mateo County near the City of Woodside and follows a northern route underground along Cañada Road to Highway 92 where the line turns west. At the Highway 35 junction, Segment 1 turns north again and continues on Skyline Boulevard until it encounters Black Mountain Road/Golf Course Drive in the City of Hillsborough, the termination point for Segment 1. The line along Segment 1 is all underground except at Crystal Springs Dam where there is a temporary overhead crossing. There are 28 manhole vaults located along Segment 1 from Manhole Vault #1 through Manhole Vault #27 (including Manhole Vaults #22A and #22B). The underground line along this segment crossed under many culverts and utilities. At Crystal Springs Dam, transition towers were installed at the northern and southern ends of the dam to allow the overhead installation across the dam.

The environment along the segment is rural and the majority of the segment is in the SFPUC Watershed and CDFG Refuge. The natural landscape consists of oak woodlands, riparian corridors, grassland habitat, and serpentine soils. Several special status species live in the area, including San Francisco garter snake (SFGS), California red-legged frog (CRLF), and dusky-footed woodrat (woodrat). Many different species of native birds also use the area for migration and nesting purposes. An informal consultation with United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) was required before construction of this segment could begin. USFWS and CDFG required specific conditions to avoid impacts to these special status species and nesting birds. Some of these conditions included: having environmental inspectors and biological monitors on site during all construction, installing a snake fence on the west side of Cañada Road to keep San Francisco garter snakes from entering into the work zone in the road, conducting traffic controls and vehicle checks before moving parked vehicles to avoid running over any San Francisco garter snakes, conducting bird surveys (Feb. 1–Sept. 1), and conducting loud construction work during certain daytime hours to avoid disturbing nesting birds. It was required that all work along Segment 1 be kept within paved roads and the non-vegetated roadway shoulder because PG&E did not want to do biological surveys of the whole segment.

PG&E received NTP #1 on January 10, 2005 for construction of Segment 1 underground (excluding the temporary dam crossing at Crystal Springs Dam) and began construction on January 18, 2005. Construction took place in two shifts, 24 hours per day, starting Sunday night and continuing until Friday evening, through November 2005. PG&E received NTP #9 on September 1, 2005, for construction of the temporary dam crossing at Crystal Springs Dam. Construction of the temporary dam crossing did not begin until the second week of December 2004 and was not complete until April 29, 2006. Work was conducted both during the day and at night in two 12-hour shifts. Most of the work along Segment 1 was completed by the end of December 2005; however, some final work along the line and the dam crossing continued until the line was energized on April 29, 2006.

At the beginning of the project, PG&E believed, based on previous data collected from the area, that there were San Francisco garter snakes (SFGS) along Segment 1 only near the Pulgas Water Temple and California red-legged frogs (CRLF) only at the Crystal Springs Dam. USFWS and CDFG assumed presence of SFGS and CRLF all along Segment 1. Before construction could begin in January 2005, a biological exclusion fence was to be installed on the west side of Cañada Road adjacent to construction activities. The CPUC EM inspected the biological exclusion fencing and found it to be inadequate, as it was not keyed into the ground at the base and reptiles and amphibians could crawl under it into the construction zone (see Figure 2-2). The CPUC EM informed PG&E that it was inadequate and non-functional and that the installation was not how USFWS and CDFG intended the fence to be installed. PG&E was reluctant to consult with USFWS and CDFG on this issue, and so the CPUC EM informed the resource agencies of the problem and Dave Johnston, CDFG, came out to the site to look at the biological exclusion fence. He agreed with the CPUC EM and new details about how the fence was to be installed were given to PG&E. PG&E contacted Dave Johnston on February 24, 2005, to discuss concerns raised by PG&E's project biologist about excess fence fabric from the biological exclusion fence lying on the ground that had the potential to attract reptiles and amphibians as a place they could use as cover. Several California slender salamanders had been found under the excess fabric using it as cover. Mr. Johnston agreed that it would be a good idea to roll up the excess fabric and staple it into the ground.



Figure 2-2. Biological exclusion fence (Segment 1, 1-20-05)

On Monday, March 14, 2005, a PG&E Environmental Inspector (EI) found a dead SFGS on the west side of Cañada Road in the bike lane around 1:45 PM near where trench activities were taking place north of Edgewood. The snake was in a traffic control area near an active construction zone that had biological exclusion fencing installed and biological monitors watching for snakes and frogs. The CPUC EM was immediately informed of the situation by a phone call from Opus Environmental and Sheila Byrne, PG&E Biologist, drove out to the site to positively identify the snake. Ms. Byrne confirmed that it appeared to be a SFGS. The snake had apparently been hit by bicycle traffic. Dave Johnston, CDFG, gave Bill Zukosky, Opus Environmental, permission to remove the snake from the road and store it in a freezer until he could pick it up. On Tuesday, Dave Johnston made a site visit to the area where the snake was hit on Segment 1. He spoke with Sheila Byrne and a biological monitor about the snake and how it was found. Mr. Johnston then took the snake into his possession. During the site visit, Mr. Johnston met with representatives from PG&E, Opus Environmental, Garcia and Associates, B&V, and the CPUC EM to discuss the biological exclusion fence and possible additional mitigation measures to protect the SFGS. Mr. Johnston instructed that no new trench be opened on Cañada Road until

consultation was completed, but that all excavation that had already started could be completed. Mr. Johnston discussed the snake issues with Mary Hammer of USFWS, and they proposed new mitigation measures for the protection of the SFGS to PG&E. The biological exclusion fencing was upgraded along the segment throughout the week by adding rebar to the bottom of the fabric to weight it down and by adding more staples to keep the fabric tight to the ground. An agreement was made on March 24, 2005, about the implementation of the new mitigation measures. The new mitigation measures included having escort vehicles for traffic (a golf cart was used to keep traffic under 10 miles an hour through the construction zone and allow a biologist to watch out for SFGS and CRLF from the cart), and positioning biological monitors on the west side of the road every 150 feet. On April 6, 2005, a SFGS was hit and killed by a car south of Manhole #13 (see Figure 2-3). It was determined that the snake was outside of the construction and traffic control zones. Both CDFG and USFWS were informed of the take, but declined to take action because it was outside of the construction and traffic control zones.

During March and April 2005 there were several SFGS sightings along Segment 1.

On March 30, 2005, the CPUC EM was informed, by Garcia and Associates, that one of their biologists performing bird surveys picked up a potential SFGS and showed it to a biologist who informed that person that it was illegal to handle that species. The snake was placed back where it was found in the SFPUC watershed. CDFG and USFWS were notified of the incident.



Figure 2-3. Sam McGinnis holding San Francisco garter snake showing bottom (Segment 1, 4-6-05)

On April 1, 2005, around 6:15 PM, a Western pond turtle was found dead in the road just north of Manhole #13 that had been hit by a car. Crews had not been working in that area for some time and that was to install biological exclusion fencing only. The incident did not seem to be construction-related. Opus notified CDFG of the find. On April 4th, a traffic control flagger found a Western pond turtle trying to cross the road from the east side to the west side just south of Manhole #13 in the construction zone. He notified a biologist, and a permitted biologist came and moved the turtle to the west side of the road. Western pond turtles were seen in various locations throughout that week.

On October 5, 2005, a San Francisco dusky-footed woodrat was found dead in Manhole #17. It was a young woodrat that was small enough to get through one of the two holes in the manhole cover. An unidentified garter snake was also found dead on Highway 92. The garter snake appeared to have been dead for a long period of time. The snake was collected by Dr. Sam McGinnis to determine whether it might be a SFGS.

During the months of September, 2005 through April, 2006 CRLF were observed along Segment 1.

On February 28, 2005, a nesting hummingbird was found near Manhole #5. The CPUC EM and CDFG were not informed about the nest until several days later. A Project Memorandum was issued by the CPUC on March 4th, regarding immediate notification of any nesting birds.

As approved, construction activities were only to occur in the road bed and unvegetated shoulder. However, vehicles and equipment leaving the approved work area was an ongoing problem throughout the length of the project. On February 8, 2005, the CPUC EM observed that trenching activities from approx-

imately Station #106+00 to 106+50 had breached the road, and un-vegetated roadside and spilled muddy spoils into the vegetated drainage along the east side of Cañada Road. On February 9th, the CPUC issued a Project Memorandum regarding this incident. On February 10th, PG&E responded to the Project Memorandum and described how it would address the situation. On June 1, 2005, the CPUC EM issued a Project Memorandum when a vehicle left the approved right-of-way on May 31st (paved roadbed and disturbed shoulder) and traveled within adjacent vegetation for a distance of approximately 200 feet. On June 15th, the CPUC EM learned that a track-hoe had gone off the road and into some vegetation during the night shift on the night of June 13th. The CPUC EM was not informed until June 15th of this incident. On June 20, 2005, the PG&E EI notified the CPUC EM that a project vehicle was parked on the vegetated road shoulder near the contractor yard along Highway 92. Approximately 60-feet of vegetation was disturbed and a CPUC Project Memorandum was issued. On July 11, 2005, a truck was parked off of the road and in the vegetation near Station #287+00. The CPUC EM issued a Non-Compliance Report for this incident due to the many times similar incidents have occurred on this segment. A Non-Compliance Report was issued by the CPUC EM for off right-of-way damage caused by the accident on July 18, 2005, during cable pulling operations near Manhole #3. A truck hauling the cable on a trailer was staged on the road and rolled off the east side of the road because the parking brake was not set and hit some vegetation and a section of the SFPUC Watershed fence. A section of vegetation measuring 10-feet by 20-feet was damaged and the truck spilled approximately 16 gallons of oil and coolant in the area. The impacted soil was removed on July 20th.

Groundwater was also an issue on Segment 1 due to the saturated soils in the area. During early 2005, trenches were inundated with groundwater. On February 10, 2005, the CPUC EM contacted the RWQCB to get clarification on the requirements for the discharge of groundwater. PG&E contacted RWQCB regarding groundwater discharge requirements. After consultation with RWQCB, groundwater was pumped into baker tanks and tested for contaminants and pH levels before it was disposed of at a proper water treatment facility. During the second week of November, 2005, water from the manholes on Segment 1 was tested for pH levels on several occasions. All of the test results had a pH higher than 9, so the water was pumped into baker tanks and discharged into the City of South San Francisco's sewer in accordance with their discharge permit.

On the night of July 6, 2005, the CPUC EM observed that there seemed to be a lot of construction activity going on in the County area and Caltrans area for just two PG&E Environmental Inspectors to handle. This issue was brought up in the Thursday morning Weekly Conference Call with PG&E and CPUC representatives. On the night of July 7th, the CPUC EM observed that the PG&E EIs were very busy and that they could not be everywhere at once because construction was so spread out. Following this, an additional EI was placed on this segment at night until construction slowed down. The CPUC EM also observed two end dumps leave the County work area on Skyline Boulevard without having their trucks watered down and without putting tarps over their loads.

Traffic controls were set up around the work areas allowing one lane to be open at all times except for when manhole vaults were delivered and had to be lifted off of trucks by large cranes. During these times, traffic had to wait approximately 20 to 40 minutes in both directions for the manhole vaults to be offloaded off of the trucks. Signs, cones, and flaggers were used to facilitate ingress and egress in the construction zone. On several occasions in March 2005, the CPUC EM observed that proper traffic controls were not being observed by workers. The Construction Segment Manager gave his sub-contractor a final warning about proper traffic control procedures and stated that he would shut the project down if they did not come into compliance with the proper traffic procedures. On June 17, 2005, the CPUC EM observed a cement truck heading south on Skyline Boulevard just north of the Sawyer Camp Trail going over the speed limit. Construction management was informed of the incident.

Even with traffic controls in place, there were four accidents on Segment 1. One was at a traffic control stop just south of Edgewood Drive on Cañada Road in the evening. A vehicle rear-ended another vehicle at the traffic stop; no construction related vehicles were involved. Another accident occurred during night construction along Skyline Boulevard/Highway 35 near the exit ramp off Highway 280 for Half Moon Bay. The driver seemed to be confused about where he was going and ran his vehicle into a construction vehicle. The damage to his car was extensive, but he was not injured. There was another car accident near Manhole #19 on Skyline Boulevard/Highway 35, where a large truck was heading southbound along the curvy road too fast, came to the traffic controlled area, could not stop in time, and crashed into a car waiting at the traffic control stop. A County Sheriff officer came out to the site and determined that the proper signage warning of a construction zone ahead was in place and that the truck was just going too fast. On March 16, 2005 the CPUC EM was informed that a full cement truck operated by RMC had tipped over on its side along the east side of Cañada Road at approximately Station #93+00. The truck landed in the middle of a roadside drainage that had standing water. The truck was partly in the SFPUC watershed lands and partly in the San Mateo County right-of-way. The truck spilled about 1 cubic yard of red concrete slurry over a sparsely vegetated area. Some hydraulic fluid also leaked out of the truck and onto the ground. The CPUC EM observed the cement truck being towed away and the clean-up effort that ensued (see Figure 2-4). RMC sent out its environmental representative to assess the situation and take water and soil samples. Absorbent material was placed over the hydraulic spills. Crews shoveled concrete into two trucks as the CPUC EM inspected each shovel of concrete and soil for amphibians and reptiles. None were observed. The concrete supplier took the spilled concrete back to their yard for disposal. Sheila Byrne, PG&E, was at the site doing snake surveys south of the cement spill, and came by the spill site in the late afternoon to do an assessment of the damage to the habitat at that location. The RMC cement truck driver had not been through the B&V Safety training or PG&E's Environmental Training for the project. RMC was removed from the project and a new cement supplier was used for Segment 1.



Figure 2-4. Crews cleaning up concrete spill (Segment 1, 3-16-05)



Figure 2-5. Fire area west of Manhole #1 (Segment 1, 10-25-05)

On Tuesday, October 25, 2005, a fire was started in an adjacent grassland from a spark generated by grinding the welding off of steel plates on the west side of Cañada Road at Manhole #1 (see Figure 2-5). The fire was put out by the crew and PG&E EIs. Approximately 0.25 acres of grasses and ruderal species were burned in the island between Cañada Road and Highway 280. This area has been considered non-sensitive habitat by the resource agencies due to its isolation from the SFPUC Watershed because of Highway 280.

2.1.2 Segment 2 Underground

Segment 2 Underground is approximately 3.13 miles long and begins at the intersection of Skyline Boulevard and Black Mountain Road/Golf Course Drive in the City of Hillsborough (see Figure 2-1). Segment 2 Underground heads east on Black Mountain Road/Golf Course Drive crossing under Highway 280 until Skyline Boulevard, where it turns north. At Trousdale Drive in the City of Burlingame, the line turns west and crosses back under Highway 280 where it then enters the SFPUC Watershed and CDFG Refuge lands where it transitions to overhead at the transition tower. There are 11 manhole vaults located along Segment 2 Underground from Manhole Vault #28 through Manhole Vault #38. The underground line along this segment crossed under several culverts and utilities.

The environment along the majority of Segment 2 Underground is residential on the east side of the right-of-way and Highway 280 on the west side of the right-of-way. When the line enters the SFPUC Watershed and CDFG Refuge, the environment is rural upland oak woodland and pine forest. As on Segment 1, several special status species live in the area, including SFGS, CRLF, and dusky-footed woodrat. Many different species of native birds also use the area for migration and nesting purposes. An informal consultation with United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) was required before construction of the underground segment within the SFPUC Watershed and CDFG Refuge could begin. USFWS and CDFG required specific conditions to avoid impacts to these special status species and nesting birds. Some of these conditions included having environmental inspectors and biological monitors on site during all construction, installing a snake fence on the west side of the access road into the SFPUC Watershed to keep San Francisco garter snakes from entering into the work zone in the road, conducting vehicle checks before moving parked vehicles to avoid running over any San Francisco garter snakes, conducting bird surveys (Feb. 1–Sept. 1), and conducting loud construction work during certain daytime hours to avoid disturbing nesting birds.

PG&E received NTP #2 on March 8, 2005, for construction of Segment 2 underground (excluding the underground portion in the SFPUC Watershed and CDFG Refuge) and began construction on April 7, 2005. Construction took place during the day and was restricted to the hours of 9:00 a.m. to 3:00 p.m. for most of the segment. PG&E received NTP #6 on August 3, 2005, for construction of Segment 2 underground in the SFPUC Watershed and CDFG Refuge and began construction on August 15, 2005. Work in this area took place during daytime hours (see Figure 2-6). Work on Segment 2 underground continued until the end of April 2006.



Figure 2-6. San Francisco Public Utilities Commission watershed, Manhole #38 (Segment 2 underground, 11-16-05)

Per USFWS and CDFG requirements, all vehicles and equipment had to be checked for mud and weeds prior to entering the SFPUC Watershed. If there were mud or weeds, the vehicle or equipment had to be taken off site to be cleaned. Crew members boots were washed in a bleach solution to prevent the transport of invasive species into the SFPUC Watershed.

Clean-up efforts on Segment 2 Underground were an ongoing problem. On April 21, 2005, the CPUC EM observed that the areas around the manholes were dirty and that the asphalt placed around the manhole pit plates was not compacted. Also, straw wattles along the east side of Skyline were not anchored firmly to the ground. The CPUC EM informed PG&E's EI of this and the issues were brought

up with construction management. On April 29th, the CPUC EM observed that the areas around Manhole #34 and Manhole #35 were dirty. On May 3, 2005, the CPUC EM observed that the trenching areas and the area around Manhole #34 were dirty from dried slurry created by saw-cutting the asphalt in that location. Also, the cold patch used around the trench plates was loose and cars were driving over it and kicking up small rocks. PG&E's EI had issued three non-compliances the week before regarding these issues and they had not been taken care of by the May 3rd site visit. The CPUC EM spoke with construction management about the issues and informed them that the CPUC may issue a Non-compliance Report. Construction management told the CPUC EM that they would take care of the issues. On May 4th, the CPUC EM conducted a site visit of the segment and noted that the site was much cleaner than previously. There were still a few areas where the road needed cleaning from saw-cutting activities. Construction management requested that crews do more cleaning of the road in the areas the CPUC EM pointed out. Construction crews promptly cleaned-up the areas noted. On May 10th, PG&E Inspectors, B&V Construction Managers, Underground Construction Managers, Opus Environmental Inspectors, and the CPUC EMs inspected the trenching site as clean-up activities took place. The crews did a good job cleaning up the area, street sweeping and compacting the cold patch around the trench plates. Everyone agreed that this would be the standard for clean-up activities from now on.

On May 16th, the CPUC EM observed water entering an unprotected storm drain about 1000 feet away from construction activities. Water was being used by a crew member to wash the road off. The CPUC EM spoke with the PG&E EI who had already told construction management that too much water was being used at that location and that water should be used to wet down the road to help the street sweeper pick up soil on the road, not wash it off the road. The over-watering of the road was stopped immediately. A verbal warning was issued by the CPUC EM and construction management removed the crew member from the project who was over-watering the road.

On May 25th, there was a cement slurry spill of about 50 gallons of cement on the west side of the road on the asphalt. The CPUC EM watched as crews cleaned-up the spill. Crews were about an hour and a half past their Burlingame Encroachment Permit time limit for getting construction off the road for the day. On May 26th, the CPUC EM was informed of another cement slurry spill of a few gallons in the same area as the day before. The CPUC EM observed clean-up activities. Crews were about two and a half hours late getting off the road. On May 27th, the CPUC EM issued two Project Memoranda for crews going past their Burlingame Encroachment Permit time deadline and traffic control violations.

On June 13, 2005, the CPUC EM noted that crews did not thoroughly clean up the area around Manhole #31. Also, crews went past their 5:00 p.m. deadline in the City of Hillsborough on Monday. The CPUC EM notified the PG&E EI of these incidents and gave a verbal warning.

On June 7, 2005, the CPUC EM noted that the cold patch around the trench plates could have been compacted more thoroughly. The CPUC EM informed the PG&E EI and construction management of this issue. Also, the CPUC EM noted that the street sweeper let too much water run while not moving; thereby, causing water to run across the road and into a V-ditch. The water did not reach any storm drains. Construction management told the street sweeper operator to be aware of how much water was being released.

Traffic controls were set up around the work areas allowing one lane to be open at all times except for when manhole vaults were delivered and had to be lifted off of trucks by large cranes. During these times, traffic had to wait approximately 20 to 40 minutes in both directions for the manhole vaults to be offloaded off of the trucks. Signs, cones, and flaggers were used to facilitate ingress and egress in the construction zone. However, even with the traffic controls in place, public safety was an issue along Segment 2 Underground when the segment first began construction. On April 29, 2005, near Manhole #35, the CPUC EM noticed an elderly gentleman from the public walking in the Controlled Access

Zone (CAZ) while heavy equipment was operating around the manhole. The CPUC EM asked the man to step out of the construction zone and then escorted him to the other side of the road outside of the CAZ area. No construction personnel stopped the man from entering the CAZ area. The CPUC reported the incident to the Construction Segment Manager and B&V's Safety Manager. During a site visit to the trenching area on May 12, 2005, the CPUC EM observed some safety issues concerning construction equipment moving through active public traffic lanes and improper flagging. The CPUC EM informed the B&V Safety Manager about the concerns and he passed these concerns on to the subcontractor, Underground Construction, and requested information from them on how they would remedy the safety issues. Underground Construction responded to these concerns in an email on May 13th. The CPUC EM conducted a site visit of the trenching area on May 13th and did not observe any safety violations. The CPUC EM witnessed several traffic control violations on May 26th, which could have caused traffic accidents with the public.

On June 22, 2005, the CPUC EMs observed the following issues: (1) Three construction vehicles were parked on a side street off Skyline Boulevard and the right-of-way. The CPUC EM spoke with B&V's Assistant Segment Construction Manager and reminded him for the second time that no construction vehicles were to be staged off the right-of-way; (2) A front-loader was observed depositing soil in an end-dump that was parked outside of the construction zone across an active lane of traffic. The CPUC EM spoke with B&V's Assistant Segment Construction Manager about the activity. The Assistant Segment Construction Manager had the end-dump move into the active construction zone; and (3) In the trenching area, the CPUC EM observed a construction worker set a can of gasoline on a straw wattle along the road adjacent to a wet drainage

There was an accident at the corner of Black Mountain Road/Golf Course Drive and Skyline Boulevard, where a drunk driver, during the middle of the day, was not following traffic controls. A policeman was stationed at that corner and immediately pulled the drunk driver over and had him arrested.

2.1.3 Segment 2 Overhead

The Segment 2 overhead segment is located within SFPUC Watershed and CDFG Refuge within San Mateo County just west of Highway 280. The Segment 2 overhead portion of the project consisted of the removal of 3.12 miles of the existing double-circuit 60 kV transmission line and its replacement with a new double-circuit transmission line consisting of a single 230 kV circuit and a single 60 kV circuit. The Segment 2 overhead portion begins at Structure 11/70 just west of Trousdale Drive. A transition structure referred as the Trousdale Transmission Structure was constructed just to the west of Structure 11/70 in the SFPUC Watershed on the west side of Highway 280. The line then proceeds overhead 3.12 miles to Structure 14/93. At Structure 14/93, the line crosses Skyline Boulevard overhead to a new transition structure at Glenview Drive. The rebuilt line utilizes PG&E's standard tubular steel pole (TSP) 230 kV structure standing approximately 100 to 120 feet tall, which is approximately 10 to 15 feet taller than the previous lattice structures. Approximately 24 of the lattice structures were replaced with 23 new structures, most adjacent to their existing locations (see Figure 2-7). In addition to the replacement of the existing lattice steel towers



Figure 2-7. Foundation #70A (Segment 2 overhead, 10-17-05)

with the TSP structures along the Segment 2 overhead alignment, an additional communication line was added along approximately 3.12 miles of an existing 115 kV transmission pole line. Approximately 2.6 miles of this line was installed on existing distribution pole lines and the remainder was installed on underground conduits from the Jefferson Substation via the San Mateo Substation.

The natural environment consists of oak woodlands and Monterey cypress and Monterey pine forest (non-native), coyote brush scrub, eucalyptus forest (non-native), foothill riparian, freshwater marsh, open water habitats (SFPUC reservoirs), and seasonal wetlands. Several special status species live in the area, including SFGS, CRLF, and dusky-footed woodrat. Many different species of native birds also use the area for nesting purposes. A Biological Opinion from USFWS (August 12, 2005) and a formal Consultation Letter from CDFG (August 15, 2005) were required before construction of this segment could begin. Conditions similar to those on Segment 1, Segment 2 Underground and at the Jefferson Substation were implemented for Segment 2 Overhead. There were also mitigation requirements for the permanent and temporary loss of wetland habitat. The U.S. Army Corps of Engineers Nationwide Permit and Regional Water Quality Control Board (RWQCB) permit were also issued for this segment.

PG&E received NTP #8 on August 26, 2005 for construction of Segment 2 overhead in the SFPUC Watershed and CDFG Refuge. Before the line construction could begin, tree clearing had to be done for access and line safety reasons (see Figure 2-8). Planned tree removal counts and details were provided by PG&E in its “Jefferson Martin 230 kV Transmission Line Project, Revised Tree Removal Letter” dated July 11, 2005. The majority of the tower sites are accessible from existing paved and dirt roads; however, some tower sites required establishment of cross-country access roads or reestablishment of existing roads that had been out of service and were overgrown by vegetation (see Figure 2-9). Existing access roads were reestablished by grading when necessary. Access roads were covered with a geotextile fabric overlain by rock as outlined in the USFWS Biological Opinion. Temporary work pads were installed at each tower location. Temporary work pads consisted of a geotextile fabric covered with rock. Temporary disturbance around each structure site was limited to an area ranging from 50 to 100 feet in radius. Permanent disturbance resulted from the placement of the tower foundations and range from 20 to 50 square feet per tower.



Figure 2-8. Tree trimming between Pole #74 and Hillcrest (Segment 2 overhead, 11-29-05)



Figure 2-9. Access road to Tower #86, re-rocked (Segment 2 overhead, 2-2-06)

Once the access roads and work pads were in place, the pole construction began. The pole foundation construction consisted of drilling pits about 7 feet in diameter and as deep as 45 feet, installing the supporting structure foundations, placing concrete forms that extend 2 or 3 feet above the natural ground level over the hole, pouring concrete up to the top of the form and allowing them to dry (see Figure 2-10). The pole erection consisted of erecting the supporting structure body (steel poles) in sections by the use of a crane and then attaching the arms with a lift bucket truck (see Fig-

ure 2-11). Conductor stringing consisted of attaching insulators, stringing the electrical conductor cables by helicopter, and terminating cables (see Figure 2-12). Construction took place during the day, Monday through Friday and some weekends.



Figure 2-10. Pouring slurry for Foundation #93 (Segment 2 overhead, 11-29-05)



Figure 2-11. Setting top of Tower #82A (Segment 2 overhead, 2-07-06)

A Notice to Proceed had not been issued for Segment 2, Overhead. However, on January 31, 2005, when the CPUC EM was receiving a tour of the right-of-way, PG&E's biological consultants were observed preparing to remove woodrat nests. Neither the CPUC nor CDFG were consulted regarding this activity as stated in Mitigation Measure B-8a of the Final EIR. On February 1st, the CPUC issued a Non-Compliance Report level 3 for the unauthorized removal of woodrat nests. PG&E then coordinated with CDFG on a plan for woodrat nest removal.

As outlined in the USFWS Biological Opinion and the CDFG consultation letter, two retention basins on the west side of Highway 280 within the SFPUC Watershed and a wetland area adjacent to San Andreas Reservoir were required to be fenced with plywood biological exclusion fencing (see Figure 2-13). The fence was to keep CRLF and SFGS in those areas while construction was taking place in adjacent areas. The fences had one way doors into the enclosed areas so that animals could go into the ponds and wetland areas, but could not come out unless some of the plywood panels were opened at appropriate times when construction was not taking place nearby. The staging yard in Segment 2 Overhead was also required to be fenced with plywood biological exclusion fencing with one-way doors going out of the staging yard, allowing an escape for animals (see Figure 2-14).

During the months of October and November, 2005, and January and March, 2006, SFGS were observed along Segment 2 Overhead. Appropriate agencies were notified after each sighting. When SFGS started being seen along the segment, USFWS and CDFG implemented additional mitigation measures to avoid take of SFGS. A couple of these mitigation measures included having biologists escort on foot vehicles and equipment, and adding additional biologists around areas of high potential for SFGS.

On October 18, 2005, two San Francisco dusky-footed woodrat nests were observed and avoided near Pole #79. On October 19th, a permitted biologist disassembled two woodrat nests near Poles #74 and #78. A woodrat was also seen in the right-of-way near Pole #79, after which it retreated to a nest outside of the right-of-way.

During the month of November, CRLF were observed along Segment 2 Overhead.



Figure 2-12. Helicopter starting to fly sock line from Tower #77 (Segment 2 overhead, 1-11-06)



Figure 2-13. Biological exclusion fence around wetland looking northwest (Segment 2 overhead, 10-20-05)



Figure 2-14. Crews building fence around staging yard (Segment 2 overhead, 10-5-05)

Bird surveys were conducted from February 1st to September 1st. Segment 2 Overhead had the most nesting birds observed on the entire project since it is a mostly undisturbed CDFG Refuge. Nesting birds were mapped by GPS and survey reports were submitted to the resource agencies and the CPUC EM. PG&E coordinated with CDFG on reducing buffer zones around nesting birds if it was appropriate based on the species of bird. On January 13th and 31st, 2005, an adult bald eagle was observed flying over the watershed reservoir. On January 18th, a juvenile bald eagle was observed flying over the watershed.

During the third week of October, 2005, speed limit signs were installed along the segment and additional signs designating approved access roads, unapproved access roads, sensitive resource areas, and no-parking areas were ordered and installed.

Work on Segment 2 overhead continued until the day the line was energized on April 29, 2006. Some clean-up work took place during the months of May and June. On June 27, 2006, PG&E requested Variance #17 to permanently leave some of the access roads and work pads in place. Restoration for the temporary access roads and work pads began in the beginning of July and will continue through August 2006. Some revegetation of grasses and acorn plantings was done in the Winter of 2006 (see Figure 2-15). The

rest of the restoration work will be completed in the Fall of 2006. Based on a multi-agency site visit conducted in June 2006, PG&E is preparing a Landscaping/Visual Plan for the segment. As of July 31, 2006, the plan had not been submitted to the CPUC for review and approval.

2.1.4 Segment 3

Segment 3 is approximately 2.83 miles long and begins at the transition tower on Glenview Drive where the line transitions from overhead back to underground (see Figure 2-1). Segment 3 heads north on Glenview Drive in the City of San Bruno and turns east at San Bruno Avenue. Segment 3 continues on San Bruno Avenue until Huntington Drive where it turns north again to the BART right-of-way; the termination point for Segment 3. There are nine (9) manhole vaults located along Segment 3 from Manhole Vault #39 through Manhole Vault #47. The underground line along this segment crossed under several culverts and utilities. The environment along the segment is residential and urban with both homes and businesses along the route (see Figure 2-16).



Figure 2-15. Restoration between Towers #83 and #84 (Segment 2 overhead, 1-5-06)



Figure 2-16. Setting Manhole #46 on Huntington Drive (Segment 3, 7-1-05)

Bruno Avenue. The CPUC EM spoke with B&V's Safety Manager and he informed her that they are supposed to have k-rail around the manhole pits per their approved traffic control plans. This is to keep cars from plummeting into the manhole pits. K-rail was placed around the pit on Friday; however, the City of San Bruno had it removed because of fears the road would not support that much weight. After discussing the issue further, the City of San Bruno left the decision to use k-rail up to B&V to determine. If the subcontractor thought k-rail could not be used in a specific location, then B&V was to be notified and another option for traffic protection around the manhole pits would be explored.

On September 21, 2005 the CPUC EM observed a backhoe/front loader entering and exiting the active construction zone and into an active lane of traffic without a flagger. No public traffic was impeded, but this was a public safety issue. The CPUC EM spoke with construction management regarding the issue and a flagger was put in place at that location to flag for equipment needing to move out of the active construction zone and into the active lane of traffic.

PG&E received NTP #4 on March 11, 2005 for construction of Segment 3 underground. Construction took place during the day and some nights. Many utilities were encountered along San Bruno Avenue and Huntington Drive. Also, a void under the road was encountered along Huntington Drive and BART, and the City was consulted about how to proceed, which prolonged construction. Work on Segment 3 continued through April 2006.

Bird surveys were conducted on a spot-check basis since it was a very urban area.

On Thursday, July 14, 2005, the CPUC EM noted that there was no k-rail surrounding Manhole #41 pit on San

Traffic controls were set up around the work areas allowing two lanes to be open at all times. Signs, cones, and flaggers were used to facilitate ingress and egress in the construction zone. At locations where there was open trench near public access areas and foot traffic, barriers were placed around the trench area and flaggers were positioned to keep pedestrians from encountering the open trench.

On December 2, 2005, a minor accident occurred at the intersection of the Highway 280 freeway off-ramp and San Bruno Avenue on Segment 3. It involved a car bumping into the back of the water truck, causing a small dent in the car. The contractor and B&V construction management personnel were on site, and a report was filed by the San Bruno police.

2.1.5 Segment 4

Segment 4 is approximately 4.43 miles long and begins in the BART right-of-way and Huntington Drive (see Figure 2-1). Segment 4 runs north along the BART right-of-way through the Cities of Millbrae, South San Francisco, and Colma, where at the Colma BART station, the line heads east again on Lawndale Boulevard. At Hillside Boulevard, Segment 4 turns north again, where it terminates at Manhole #62. There are 15 manhole vaults located along Segment 4 from Manhole Vault #48 through Manhole Vault #62. The underground line along this segment crossed under Colma Creek, 12-Mile Creek, and several culverts and utilities

Most of Segment 4 is within the BART right-of-way and consists of highly disturbed ruderal vegetation with a few non-native trees along the edge of the right-of-way at various locations. Land uses adjacent to the BART right-of-way are residential and urban with the line passing by homes, schools, businesses, BART stations, and cemeteries. The Segment 4 alignment travels adjacent to a seasonal wetland just north of South Spruce Street in the City of South San Francisco within the BART right-of-way (see Figure 2-17). CDFG conducted a site visit of the wetland area prior to construction. The wetland was identified as an “Environmentally Sensitive Area” and was fenced in the field. Bird surveys were conducted in areas that were less urban along the BART right-of-way (Feb. 1–Sept. 1).



Figure 2-17. Silt fence around wetland (Segment 4, 6-24-05)

PG&E received NTP #5 on March 30, 2006 for construction of Segment 4 underground. Construction took place during the day for trenching, manhole installations, and bores. Several horizontal directional drills under streets were completed at night. Work on Segment 4 continued through April 2006.



Figure 2-18. Bore pit excavation in BART right-of-way (Segment 4, 7-15-05)

Two concrete lined channels, Colma Creek and 12-Mile Creek, which were crossed by the Segment 4 alignment along the BART right-of-way were crossed using a horizontal dry boring (jack and bore) process (see Figure 2-18). A Lake and Streambed Alteration Notification Package covering these crossings was submitted

to the California Department of Fish and Game (CDFG) in January 2005. In addition, PG&E submitted applications for Nationwide Permits 13, 33, and 39 with the U.S. Army Corps of Engineers (USACE).

Phase II soil studies found that there was potential soil contamination north of South Spruce Street along the BART right-of-way (see Figure 2-19). On June 1, 2005, proposed soil testing methods for contaminants for the BART right-of-way north of South Spruce Street were submitted by B&V. The proposed methods were reviewed by the Aspen technical expert and comments provided on June 1st. On June 24th, B&V submitted the finalized revised Personnel Monitoring Plan for the Northern Portion of Segment 4 (BART) based on Mr. Thurber's comments of June 21st. Conditions were implemented to mitigate the soil contamination and keep it from becoming airborne, including keeping the area well watered so the contaminants could not become airborne and regular air quality testing near excavation activities. On June 29th,



Figure 2-19. BART right-of-way north of South Spruce Street (Segment 4, 7-6-05)

the CPUC EMs conducted a site visit of Segment 4 north of South Spruce Street in the BART right-of-way and verified that the finalized revised Personnel Monitoring Plan for the Northern Portion of Segment 4 (BART) was being implemented. The CPUC EMs recommended that construction management have a calibrator on site and re-calibrate the Photo-ionization Air Monitor weekly. B&V has ordered a calibrator and it was on site by July 6th. No Class 1 contaminated materials were encountered during construction. Only Class 2 impacted and non-impacted soils were found. Class 2 impacted soils had to be disposed of at specific landfills that accepted Class 2 impacted soils.

On May 20, 2005, the CPUC EM observed a pile of backfill material that was not covered with plastic. The CPUC EM spoke with PG&E's Lead EI and construction management about the issue and they informed the CPUC EM that they would take care of the issue right away. On May 27th, the CPUC EM observed some plastic blowing off a pile of backfill material near Manhole #48. The CPUC EM also observed that two chain link fence sections were not fully covering the trench north of Manhole #48. This was a public safety concern because pedestrians and bicyclists use the BART right-of-way and could fall in an open trench. The CPUC EM spoke with a PG&E EI about these issues and they informed her that construction management would take care of them right away.

A non-compliance was issued by PG&E's EIs on June 8, 2005, for a cement spill that occurred near Manhole #55. Approximately 10 gallons of cement slurry spilled out of the chute of a cement truck while the driver was maneuvering around the manhole. Some of the slurry went over the silt fence and onto the concrete channel of Colma Creek; however, it was reported that no slurry reached the water. The PG&E EI noticed the spill approximately ½ hour after it had occurred and had noticed that it had not been cleaned up. No foreman was present at the work site and the CPUC EM was not notified for several hours. The crew was told to clean up the spill and reminded that spills need to be cleaned immediately. After the incident, a construction foreperson was present during cement pours at this site. PG&E EIs and construction management were reminded that all spills need to be immediately reported to the CPUC EM.

On June 22, 2005, a cement truck leaked red slurry onto Lawndale Drive for a distance of about 200 feet. The slurry was removed from the street using shovels and brooms, and a street sweeper finished cleaning the spill.

On June 30, 2005, the CPUC EM observed that fugitive dust was blowing across traffic on Lawndale due to construction activities and the moving around of soil by two front-loaders. The CPUC EM spoke with PG&E's EI who asked construction management to water the area. The CPUC EM noted that construction stopped until water was sprayed over the area.

On two occasions during the week of July 18th, 2005, the CPUC EM noted that a lot of dust was being stirred up near the bore pit construction. Both times, the PG&E EI was notified and the water truck was brought to that location.

On July 14, 2005, the CPUC EM noted that there were no k-rails around Manhole #59 pit on Hillside. This was a public safety issue because k-rail is needed to keep cars from plummeting into the manhole pits. The issue was discussed with B&V's Safety Manager and k-rail was installed around the manhole pits.

On October 27, 2005, a Project Memorandum was issued by the CPUC EM for inadequate clean-up on the roadway in several locations on Hillside Avenue (see Figure 2-20).

Traffic controls were not needed along the BART right-of-way, but were set up around the work areas along Lawndale Boulevard and Hillside Boulevard allowing two lanes to be open at all times. Signs, cones, and flaggers were used to facilitate ingress and egress in the construction zone. At locations where there was open trench near public access areas and foot traffic, barriers were placed around the trench area and flaggers were positioned to keep pedestrians from encountering the open trench.



Figure 2-20. Trenching activities very dirty on Hillside (Segment 4, 10-27-05)

2.1.6 Segment 5

Segment 5 is approximately 5.35 miles long and begins on the north side of Manhole #62 on Hillside Boulevard in the City of Colma where it continues north until East Market Street in Daly City (see Figure 2-1). At East Market Street, Segment 5 turns east and continues until East Market Street becomes Guadalupe Canyon Parkway. It continues along Guadalupe Canyon Parkway east over San Bruno Mountain. At Bayshore Boulevard, in the City of Brisbane, Segment 5 heads north and enters the south side of the Martin Substation. There are 12 manhole vaults located along Segment 5 from Manhole Vault #63 through Manhole Vault #79. The underground line along this segment crossed under several culverts and utilities.

The environment along the segment is both urban and rural. At the southern end of the segment the line is adjacent to several cemeteries and then enters an area where there are residences, businesses, and schools. As the line heads east up San Bruno Mountain on Guadalupe Canyon Parkway into the San Bruno Mountain State and County Park, the environment changes to rural and consists of coastal scrub, coastal prairie, needlegrass grassland, mixed willows, chaparral, riparian, and eucalyptus forest (non-native). Reaching 1,314 feet, San Bruno Mountain has many endemic plants and animals with special species status. The park's principal resources include 14 species of rare or endangered plant life, as well as five species known as host plants for endangered butterflies such as the San Bruno elfin, mission blue, and the Callippe silver-spot butterflies (see Figure 2-21). It was required that all work along Segment 5 within the San Bruno Moun-

tain State and County Park be kept within paved roads and the non-vegetated roadway shoulder. On the other side of San Bruno Mountain in the City of Brisbane, the line again enters an urban setting with residences and businesses.

PG&E received NTP #1 on January 10, 2005 for Segment 5, unincorporated San Mateo County. PG&E received NTP #3 on January 11, 2005 for Segment 5, incorporated. Work on Segment 5 continued through April 2006 with clean-up and final paving activities occurring in May and June.

In Daly City, crews were allowed to work during the day between the hours of 7:00 a.m. and 5:00 p.m. except near two schools, where their work hours were limited to 9:00 a.m. and 3:00 p.m. while school was in session. On San Bruno Mountain along Guadalupe Canyon Parkway, crews were allowed to work both day and night shifts. In the City of Brisbane, crews were also allowed to work both day and night shifts. Traffic controls were set up around the work areas allowing two lanes to be open at all times. Signs, cones, k-rails and flaggers were used to facilitate ingress and egress in the construction zone (see Figure 2-22).



Figure 2-21. Hummingbird sage and lupin on San Bruno Mountain (Segment 5, 4-12-05)



Figure 2-22. Trenching area along Bayshore blocked off by k-rail (Segment 5, 6-4-05)

The CPUC EM issued a Project Memorandum on February 16, 2005 regarding the dewatering of Manhole #67 vault pit of 3300 gallons of water without consulting with the RWQCB.

On March 9, 2005, PG&E's EI informed the CPUC EM that they had discovered some cuts in the vegetated hillside next to the trenching activity east of Manhole #68. No one knew where they came from, but PG&E's contractor decided right away that they would take responsibility for them. The CPUC EM observed that a few lupine plants had been uprooted. Several species of lupine plants on San Bruno Mountain are habitat to special status butterfly species. PG&E's Biologist, Sheila Byrne, came out and looked at the vegetation disturbance.

A botanist was also used to determine the kind of lupine sub-species that was disturbed. On March 14th, PG&E's EI informed the CPUC EM that some more vegetation was disturbed on the adjacent bank of the road to trenching operations on Guadalupe Canyon Parkway. The disturbance occurred from a backhoe that had accidentally swung its bucket into the bank. The CPUC EM inspected the disturbed vegetation and noted that it was minimal and no native plants appeared to have been disturbed. Sheila Byrne, PG&E, inspected the site for habitat damage. PG&E contacted the resource agencies regarding this disturbance.

On March 10, 2005, the CPUC EM inspected the dump trucks that were waiting to move into the active trenching area for oil leaks. No active leaks were noted, but there were some spots on the road from previous trucks dripping oil. Oil absorbent cloths had been put down on the road in several areas. PG&E's EI inspected the dump trucks on a regular basis and sent some away from the project to be repaired.

On June 3rd and 4th, 2005, the CPUC EM noticed that there needed to be more dust control in the work area along Bayshore Boulevard. On June 3rd, dry saw-cutting residue on the road was blowing into traffic. The CPUC EM informed construction management that there needed to be dust controls implemented and they immediately sprayed water on the area. On June 4th, dust from a load of gravel that was being placed into the bottom of Manhole #77 was creating a lot of dust as the excavator moved the gravel from the dump truck to the pit. The CPUC EM spoke with PG&E's EI who informed construction management of the issue. Work was stopped at that location until a water truck was brought to the area and the gravel watered down. This solved the dust issue.

On June 14, 2005, the CPUC EM observed several oil and/or hydraulic spots along Main Street where construction vehicles have been parking. The CPUC EM informed PG&E's EI of the issue and he had construction crews clean-up the area. On June 15th, the CPUC EM observed that a refueling crew did not have a complete spill kit. When asked, the crew went and got two complete spill kits.

There was an accident on Guadalupe Canyon Parkway on October 26, 2005, where a non-project-related car flipped over in the construction area when crews were not working. They came upon the scene when they showed up for work. There was also another accident at the corner of Guadalupe and Bayshore Boulevard in the City of Brisbane where a drunk driver ran into the construction zone. A Brisbane police officer was staged there and immediately arrested the drunk driver.

During June and July, 2005, a Native American Monitor was on site to observe excavation on Bayshore Boulevard from Main Street north near the Martin Substation as it is a potential area for Indian sites.

2.2 Non-Compliance Events During 230 kV Transmission Line Construction

Three Non-Compliance Reports (NCR) and ten Project Memoranda (PMs) were issued by the CPUC EMs for the project (see Table 2-1). At the beginning of the project, there seemed to be a misunderstanding regarding the level of environmental compliance that PG&E would be held to by the CPUC. Therefore, a CPUC-sponsored meeting with CDFG, USFWS, RWQCB, and PG&E and its subcontractors to discuss non-compliance issues occurred on February 28, 2005.

During construction, the non-compliance issues encountered included construction breaching the vegetated areas along Segments 1 and 5, lack of reporting from PG&E's Environmental Inspectors to the CPUC Environmental Monitors, lack of consultation with the resource agencies, traffic control violations, inadequate clean-up of work areas, and lack of functional erosion controls. Verbal warnings were used by the CPUC EM to remind crews to follow the approved compliance plans and permit conditions before written Project Memorandum or Non-Compliance Reports were issued.

Table 2-1. Environmental Compliance Status Table

Project Memo or NCR	Date Issued	Description	Follow-up Activities
NCR (Level 3)	2-01-05	Segment 2 Overhead – Dismantling and removal of woodrat nests along the overhead route without consulting with CDFG.	PG&E consulting with CDFG on how to proceed.
PM	2-09-05	Segment 1 – Breach of trenching activities into vegetated drainage on east side of Cañada Road between MH #7 and MH #8.	PG&E consulting with CDFG and USFWS on how to proceed.
PM	2-16-05	Segment 5 – Dewatering of Manhole #67 vault pit without consulting with RWQCB on handling of water	PG&E consulting with RWQCB on how to proceed with storm water and groundwater.
PM	3-04-05	Segment 1 – Hummingbird nest found near Manhole #5 on Monday, Feb. 28 th , and not reported to CPUC or CDFG until Thursday, March 3 rd .	PG&E discussing better communication between PG&E and sub-contractors.
PM	5-27-05	Segment 2 Underground – Construction went past the City of Burlingame’s Encroachment Permit on May 25 th , and May 26 th .	PG&E response submitted 6-14-05.
PM	5-27-05	Segment 2 Underground – Several traffic control violations were observed. A traffic control flagger left his post several times, which endangered the public.	PG&E response submitted 6-14-05.
PM	6-01-05	Segment 1 – End dump parked on vegetation in the Caltrans right-of-way disturbing vegetation	PG&E response submitted 6-15-05.
PM	6-20-05	Segment 1 – Construction vehicle parked on vegetation near the Caltrans yard	PG&E response received 6-22-05
NCR	7-13-05	Segment 1 – Construction vehicle parked on vegetation at Station #287+00 on the night of July 11 th .	PG&E response received
NCR	7-22-05	Segment 1 – Cable pulling truck and trailer rolled off the road onto vegetation at Manhole #3 on July 18 th .	PG&E response received
PM	10-27-05	Segment 4 – Inadequate clean-up on the roadway in several locations on Hillside Avenue.	PG&E response received
PM	2-16-06	Segment 5 – Two construction vehicles parked off the road on the vegetation on February 14 th .	PG&E response received
PM	3-03-06	Jefferson Substation – Lack of functional erosion controls	PG&E response received 3-20-06

2.3 Variances Requested for 230 kV Transmission Line Construction

Table 2-2 presents the 14 Variance Requests submitted and approved for transmission line construction; Variance Requests #5, #10, and #14 were for Jefferson Substation modifications. Most of the variances were for staging yards for vehicles and equipment, extra work space, and minor changes to the project description.

Table 2-2. Variance Request Status Table

Variance Request No.	Date Submitted	Description	Status	CPUC Approval Date
1	1-14-05	40 Edwards Court, Burlingame – Paved parking lot that is fenced to be used as a staging yard	Approved	1-18-05
2	2-04-05	Staging yard, Airport Boulevard & North Access Road, South San Francisco	Approved	2-09-05
3	2-22-05	Change compliance timing for Mitigation Measure U-1c, corrosion, from pre-construction to during construction	Approved	3-04-05
4	4-28-05	Staging yard, Herman Street and Forest Lane, City of San Bruno	Approved	5-03-05
5	5-12-05	Jefferson Substation Expansion Area – Cap well, empty water out of tank into truck, and remove tank from property	Approved	5-20-05
6	5-24-05	Staging yard for Segment 4 construction, intersection of Antoinette Lane and Mission Road, City of South San Francisco	Approved	5-26-05
6 Modification	6-22-05	Additional staging yard for Segment 4, next to yard approved in Variance #6	Approved	6-28-05
7	06-06-05	Intrusion into vegetated areas at several locations along Segment 1	Approved	6-13-05
8	7-14-05	Modification of the trench depth along a 400-foot section of trench north of South Spruce Avenue (Segment 4)	Approved	7-19-05
9	7-15-05	Staging Yard for Segment 4 off of Hillside Drive in the City of Colma	Approved	8-17-05
10	7-22-05	Expansion of Jefferson Substation	Approved	8-31-05
11	8-04-05	Intrusion into vegetated shoulder at 7 locations along Segment 1	Approved	8-18-05
12	8-18-05	Additional workspace along road in Segment 2 underground in the SFPUC Watershed.	Approved	8-22-05
13	10-06-05	Staging Yard for Segment 3 at northeast corner of Skyline Boulevard and San Bruno Avenue in the City of San Bruno	Approved	10-06-05
14	1-05-06	Retention basin and associated drainages at the Jefferson Substation	Approved	1-09-06
15	1-10-06	Work in SFPUC watershed on a holiday (MLK Jr. Holiday) and close public trails	Approved	1-11-06
16	3-24-06	Install FaulSat system onto the JM 230 kV transmission circuit. Four GPS stations will be installed on existing poles. A bore from Tower #70A to a 12 kV line for power will also be needed.	Approved	4-17-06

2.4 Summary of 230 kV Transmission Line Activities

A total of eight NTPs for construction were issued by the CPUC for the 230 kV transmission line. PG&E had requested that authorization to construct the 230 kV line be conducted by sub-segment to allow construction to proceed while additional pre-construction compliance requirements were being satisfied. Construction was allowed to begin in January 2005, after PUC issued NTP #1 for Construction and documentation was received from other agencies regarding applicable permits. Construction was conducted from January 2005 through April 2006 and involved installation of approximately 24.37 miles of underground transmission line and approximately 3.12 miles of overhead transmission line.

2.5 Final Inspection of 230 kV Transmission Line

The CPUC EM conducted a final inspection of the 230 kV Transmission Line on July 19, 2006. Restoration of temporary access roads within the SFPUC Watershed (Segment 2 Overhead) were being completed at that time. This work is scheduled to be completed by the end of August 2006. Final restoration of Segment 2 Overhead and the Jefferson Substation are scheduled for Fall 2006. Revegetation of the Segment 2 Overhead right-of-way and landscaping of the Glenview transition structure will occur in Fall 2006. Installation of the permanent crossing of Crystal Springs Dam, Segment 1, is in the preliminary planning phases by PG&E in coordination with SFPUC and the County of San Mateo.

3. Jefferson Substation

3.1 Description of Jefferson Substation

The Jefferson Substation is located east of Highway 280 and is accessed by Cañada Road, about one mile south of Edgewood Road in San Mateo County. Previously, the transmission substation received 230 kV power from Monte Vista Substation in Cupertino, Santa Clara County. The new 230 kV single circuit for the Project originates at the Jefferson Substation. In addition, the existing double-circuit 60 kV line that was changed to a single circuit was replaced starting at the Jefferson Substation because only one 60 kV line circuit will be operated under the Project. Work necessary to accommodate the Project included equipment modifications within the substation and the relocation and addition of transmission poles.

The Jefferson Substation is surrounded by natural open space located within the Edgewood County Park and Natural Preserve. Cañada Road, a rural two-lane road, runs along the site's southwestern border. Highway 280 runs parallel to Cañada Road. On the other side of these roadways to the west lies forested open space lands owned and managed by the SFPUC for water storage. On the northwest side of the Jefferson substation property exists seasonal wetlands and riparian habitat. On the north, east and south sides of the substation outside the fenceline is oak woodland habitat. Several special status species potentially exist in the area, including San Francisco garter snake, California red-legged frog, and dusky-footed woodrat. Many different species of native birds also use the area for nesting purposes. A Biological Opinion from United States Fish and Wildlife Service (USFWS) and a Consultation Letter from California Department of Fish and Game (CDFG) was issued for the work at the Jefferson Substation.

3.2 Construction Activities at Jefferson Substation

NTP #9 was issued on September 1, 2005 for the modification and expansion of the Jefferson Substation. To prepare for the new 230 kV circuit, some of the existing equipment in the 230 kV yard had to be removed and new equipment added. The replacement and rearrangement required modification to the existing fenceline and substation perimeter road within the existing substation boundaries (see Figure 3-1). The existing Jefferson single bus was replaced by a ring bus configuration for higher service reliability. This arrangement allows for any circuit breaker to be removed from service for maintenance without an outage on the other equipment while maintaining the integrity of the ring bus. The bus includes four new 230 kV breakers with disconnect switches.



Figure 3-1. New fence at Jefferson Substation on eastern side (2-07-06)

The two existing Monta Vista lines that provide 230 kV service to the substation were relocated and terminated on the new 230 kV ring bus with dead-end structures. To be able to relocate the Monta Vista lines, one tower had to be relocated to the east of the existing tower location. The transmission tower was previously located near the edge of Cañada Road, at the edge of a willow riparian area. The tower was moved to a new location within the existing parking lot in a disturbed non-native grassland area. The new tower location is farther from the road and better screened from vision by the perimeter landscaping. The old tower next to the road was removed.

The existing Transformer Bank No. 1 230 kV cable termination was relocated from the existing 230 kV bus and terminated on the new 230 kV ring bus with a dead-end structure. This included removing the existing 230 kV tower within the substation, connecting bank No. 1 to the existing 230 kV bus, and replacing it with a new tubular steel pole near the existing location. The new tubular steel pole was located within the fenceline at the eastern edge of the developed substation area.

The existing station ground grid and conduit systems were expanded to include the new equipment. Four dead-end structures were installed, two for the 230 kV Monta Vista line, one for the 230 kV Jefferson-Martin line, and one for the 230 kV/60 kV transformer bank. These structures were located within an existing graded area.

For installation of the new 230 kV ring bus, PG&E relocated the existing fenceline and roadway and grade within the existing 230 kV yard. The fenceline was expanded on the west side of the substation into a wetland area and the parking lot within the substation property line to accommodate the new ring bus. Similarly, the existing interior substation road was expanded to the new fenceline to enable operations and maintenance vehicles to access the substation equipment. This required grading and ground compaction, including selective removal of trees for the fence and road relocation, in addition to the equipment installation.

At the 60 kV yard, a bus parallel breaker position was added. A new breaker was installed to facilitate line breaker maintenance. The modifications of the 60 kV yard took place within the existing substation fenceline.

Other modifications to the Jefferson Substation included upgrades to control and protection systems for reliability, which occurred within the existing substation fenceline.

Grading and ground compaction took place on the northwestern side of the Jefferson Substation where the fenceline was expanded. Reinforced concrete footings and slabs were constructed to support structures and equipment. Workers set the equipment on slabs and footings, and either bolted or welded the equipment securely to meet the applicable seismic requirements.

During September, 2005, crews cleared vegetation within the expansion area of the substation. Prior to clearing, the CPUC EM reviewed and approved resource flagging and the expansion area boundary. A plywood fence biological exclusion fence was installed along the expansion boundary (see Figure 3-2). In addition, prior to vegetation removal, woodrat nests were dismantled in accordance with the CDFG consultation. During clearing, several woodrats were sighted and one woodrat mortality occurred when the woodrat entered a piece of equipment. PG&E/Opus notified CDFG of the woodrat sightings and mortality; however, CDFG was not notified of the nest dismantling until a later date. On September 22nd, CDFG reviewed the plywood fencing installed along the expansion area boundary. On October 10th, a San Francisco dusky-footed woodrat was discovered within the Jefferson Substation when a brush pile was removed for chipping. The woodrat fled for cover. On October 25th, three San Francisco dusky-footed woodrats



Figure 3-2. Jefferson Substation, plywood fence installation around expansion area (9-15-05)



Figure 3-3. Tree removal for trench alignment into Jefferson Substation (10-25-05)

were seen outside of the Jefferson Substation during brush removal. On October 26th, three San Francisco dusky-footed woodrats were seen during the installation of the exclusion fencing for the trench alignment into the Jefferson Substation. The woodrats escaped unharmed.

Vegetation was also cleared in a riparian zone where the transmission line right-of-way entered the Jefferson Substation from Cañada Road (see Figure 3-3). The topsoil was stored on the side of the right-of-way, geotextile fabric placed down, and gravel placed on top of the geotextile fabric.

3.3 Non-Compliance Events During Jefferson Substation Construction

Drainage of the Jefferson Substation was a problem due to heavy rains and that PG&E started the construction of the new addition to the substation prior to drainage plans being completed and installed. During several heavy rain events, storm water ran to the northwest corner of the substation and flowed into the adjacent riparian and wetland areas. The storm water carried sediment with it, which ran into the creek at the northwestern edge of the property. A temporary sediment retention basin made out of straw bales and filter fabric was installed at the northwestern corner just outside the substation fence and within the transmission line right-of-way heading into the substation. However, the retention basin was not properly installed (plastic visquene should have been used to line the retention basin instead of filter fabric) and silty water continued to flow into the riparian and wetland areas. One Project Memorandum was issued on March 3, 2006 for the Jefferson Substation due to lack of functional erosion controls on the northwestern side of the property where the transmission line right-of-way enters the Jefferson Substation (see Figure 3-4 and Table 2-1). More straw bales were added to the area and water was pumped out of a permanent retention basin in the substation yard to retain most of the storm water and keep it from running out the northwest corner of the substation. Straw wattles and loose straw were placed along the transmission line right-of-way heading into the substation from Cañada Road.



Figure 3-4. Updated erosion controls on right-of-way into Jefferson Substation (4-13-06)

3.4 Variance Requests for Jefferson Substation Construction

Three variances were requested for the Jefferson Substation construction (see Table 2-2). Variance #5 was requested for the Jefferson Substation expansion area to cap a well, empty water out of an existing water tank into a truck, and remove the tank from the property. Variance #10 was requested for the expansion of Jefferson Substation. Variance #14 was requested for the retention basin and associated drainages at the Jefferson Substation that were not described in the Final EIR.

3.5 Summary of Jefferson Substation Activities

Mainline construction at the Jefferson Substation took place September 2005 through July 2006. The Jefferson Substation was modified and expanded to accommodate the new 230 kV transmission line. The fence-line on the western side of the property was expanded, the area cleared of vegetation, site graded and ground compacted for the new structures. Foundations were poured and steel tubular structures were bolted or welded to the foundations. The northwestern corner of the Jefferson Substation property outside the fence-line still needs to be restored by the removal of a temporary access road along the transmission line right-of-way and the replanting of appropriate native plants.

3.6 Final Inspection of Jefferson Substation

On August 8, 2006, the CPUC EM conducted a final inspection of the Jefferson Substation. All work at the Jefferson Substation has been completed except for putting a sealant on the road inside the substation, which will take place August 9 and 10, 2006, and the installation of a permanent steel biological exclusion fence around the two retention basins in the substation yard, which will take place the week of August 14, 2006. Restoration of the right-of-way coming into the substation from Cañada Road will take place during Fall 2006.

4. Martin Substation

4.1 Description of Martin Substation

The Martin Substation is located southwest of the intersection of Bayshore Boulevard and Geneva Avenue in the Cities of Brisbane and Daly City (see Figure 4-1). Relocation of a fence, roadway, existing wood poles, and tubular steel poles near the southern perimeter of the substation occurred to expand the existing 230 kV yard for a new 230 kV bus bay and a new 230 kV underground cable termination with series reactors.

4.2 Construction Activities at Martin Substation

A new, complete 230 kV breaker-and-a-half bus bay with three new breakers and disconnect switches was installed. This involved relocating three existing wood distribution poles approximately 50 to 75 feet south of their existing location to clear the area for the new 230 kV bay. PG&E replaced these wood poles with wood poles of similar height (approximately 60 to 65 feet). The wood distribution pole relocation occurred within the existing fenceline. Additionally, the existing San Mateo–Martin No. 2 transmission line was moved by relocating the two existing wood poles for the line approximately 50 feet west of the existing positions within the fenceline. The existing tubular steel poles were replaced with new tubular steel poles of the same height to accommodate the 230 kV line.

After the new 230 kV bay was constructed, the existing 230 kV Martin-Embarcadero underground cable was moved to one of the new bay positions. This arrangement allows the new 230/115 kV, 420 MVA, transformer bank to be placed next to the existing Transformer Bank No. 7. Termination of the new bank was located in the area vacated by the existing 230 kV cable. This work took place within the existing fenceline.



Figure 4-1. Martin Substation looking south (4-17-06)

At the 230 kV yard, new cable terminations and switchable series line reactors were installed. The fenceline was expanded within the existing property line to accommodate the installation. Expansion of the substation perimeter road outside of the existing fenceline to accommodate the expansion took place to allow access to the equipment.

With the addition of the new 230/115 kV transformer bank, the entire 115 kV bus needed to be reconducted to 4-inch aluminum tubing and bundled 2300 kcmil aluminum cable. Five new breakers were installed for the 115 kV yard. Three of these breakers replaced two sectionalizing breakers and one parallel breaker at the same height as the previous breakers. Two new breakers were also needed to accommodate the new bank connection to the 115 kV bus and were approximately 25 feet high.

Some grading and ground compaction took place at the southern end of the Martin Substation where the fenceline was expanded. Reinforced concrete footings and slabs were constructed to support structures and equipment. Workers set the equipment on slabs and footings, and either bolted or welded the equipment securely to meet the applicable seismic requirements.

Lampblack was discovered on January 27, 2006, at the Tower #123 (dead end structure) foundation pit. The material was handled by HazMat-trained personnel in protective gear and all of the equipment associated with working at the foundation pit was properly cleaned.

4.3 Non-Compliance Events During Martin Substation Construction

No non-compliance events at the Martin Substation were observed by the CPUC EM during substation expansion.

4.4 Variance Requests for Martin Substation Construction

No variances were requested for the Martin Substation during project construction.

4.5 Summary of Martin Substation Activities

Mainline construction of the Martin Substation took place from August 2005 through April 2006. The Martin Substation was modified and expanded to accommodate the new 230 kV transmission line. The fenceline on the southern side of the property was expanded, the site graded, and ground compacted for the new structures. Foundations were poured and steel tubular structures were bolted or welded to the foundations.

4.6 Final Inspection of Martin Substation

On August 8, 2006, the CPUC EM conducted a final inspection of the Martin Substation. All work has been completed at the Martin Substation. No restoration or revegetation work is required.

5. Post-Construction Requirements

The following tasks remain for the completion of the Jefferson-Martin 230 kV Transmission Line Project:

- CPUC review and approval of Segment 2 Overhead Landscaping/Visual Plan. Preparation of the plan is underway and PG&E will submit the draft plan for review by various agencies. Expected submittal date early-September 2006.
- The restoration and revegetation along Segment 2 Overhead has begun. Road and pad site restoration activities will continue until the end of August 2006. Final restoration and revegetation activities will occur in Fall 2006.
- The temporary road into the Jefferson Substation was completed the last week of July 2006. Restoration and revegetation at the Jefferson Substation will occur in Fall 2006.
- A Final San Francisco Dusky-Footed Woodrat Report still has to be submitted to CDFG.
- The Final Landscaping Plan for Visual Screening of Transition Tower on Glenview is under preparation. PG&E will submit the draft plan for review by various agencies. Expected submittal date is early September 2006
- Permanent installation of Crystal Springs Dam crossing will not take place for a minimum of two to three years. PG&E is working with the SFPUC and the County of San Mateo regarding their plans for a new bridge.

6. Conclusions and Recommendations

The intent of this section is to identify the shortcomings of mitigation and permit requirements approved for the Jefferson-Martin Project and recommend solutions to these shortcomings for future projects.

Agency Consultation

There were chronic problems on the part of PG&E and its subcontractors in their willingness to consult with applicable resource agencies (i.e., CDFG, USFWS, RWQCB) regarding potential impacts to resources. It was only after CPUC prodding and direct notification of the applicable resource agencies by the CPUC EM that consultation occurred. It is recommended that the mitigation measures regarding resources be clarified to require agency consultation even if there are resource questions or uncertainties regarding interpretation of resource presence, and until such consultation is conducted, no work shall occur in the area. Further, if resources are encountered in the field, mitigation measures should be clarified to reflect “immediate” notification of the resource agencies and CPUC EM.