Initial Study

Environmental Checklist Form

B.1 Project Description

B.1.1 Project Title

Delta Distribution Planning Area (DPA) Capacity Increase Substation Project

B.1.2 Project Sponsor's Name and Address

Pacific Gas & Electric Company (PG&E)
245 Market Street
San Francisco, California 94177

B.1.3 Lead Agency Name and Address

California Public Utilities Commission
Energy Division
505 Van Ness Avenue, Fourth Floor
San Francisco, California 94102

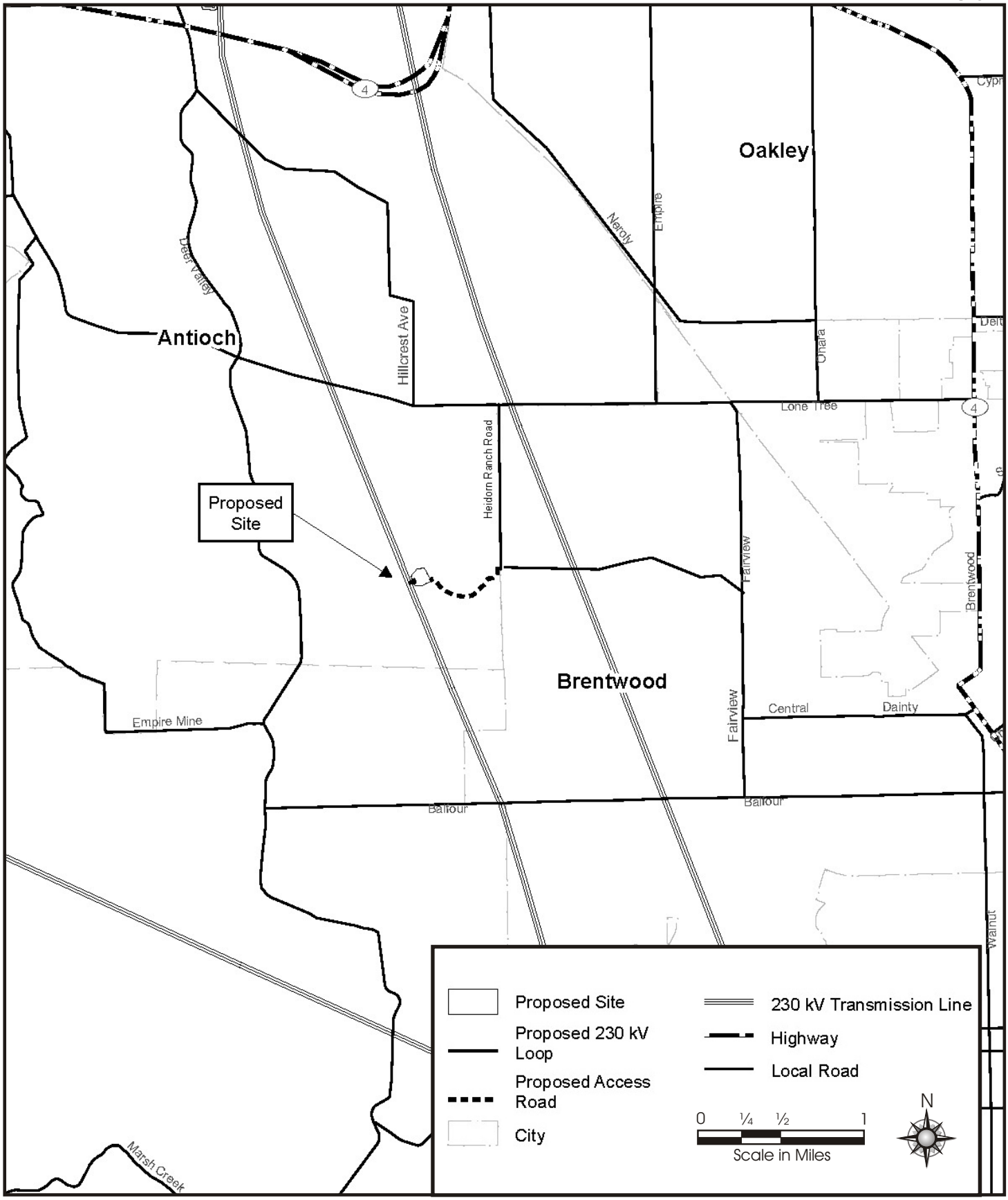
B.1.4 Lead Agency Contact Person and Phone Number

Junaid Rahman, Project Manager
Energy Division
California Public Utilities Commission
(415) 355-5492

B.1.5 Project Location

The Delta Distribution Planning Area Capacity Increase Substation Project (Proposed Project) includes a proposed electric substation site, a new loop segment of an existing 230 kV transmission line, a temporary asphalt road, and a temporary bridge over Sand Creek in eastern Contra Costa County, within the limits of the City of Antioch, California. The proposed substation would relieve a projected electric system deficiency and improve the reliability and safety of electric service to southern Antioch, Brentwood, Oakley, and portions of rural eastern Contra Costa County. The location of the project is shown on Figures B.1-1 and B.1-2.

The proposed substation would occur on 5.1 acres of generally flat and sloping, rural land in the City of Antioch adjacent to the existing transmission line corridor for the Contra Costa–Cayetano 230 kV circuit. Sand Creek generally meanders from west to east approximately 100 feet north of the proposed site. South of the site, a hill rises to an elevation of approximately 100 to 150 feet above the site.



PREPARED BY Aspen Environmental Group

Source: PG&E, 2006

Delta DPA Capacity Increase Substation Project

Figure B.1-1
Project Area Map

Figure B.1-2. Site Drawing
CLICK HERE TO VIEW

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The proposed substation site is approximately one mile south of the intersection of Lone Tree Way and Hillcrest Avenue, and approximately 0.4 miles west of the intersection of the nearest paved roads, Heidorn Ranch Road and Sand Creek Road. Figure B.1-2 shows how the western edge of the substation would be shared with the right-of-way for the Contra Costa–Cayetano 230 kV circuit, where it would interconnect to the ISO-controlled transmission grid.

B.1.6 Surrounding Land Uses and Setting

The proposed substation site and surrounding parcels are presently being used for agriculture or open space. The substation site would be adjacent to and east of the existing transmission line corridor for the Contra Costa–Cayetano 230 kV circuit, and would be about 100 feet south of Sand Creek.

The nearest ~~residence~~ structure is one isolated single-family dwelling that is being used as a commercial office located approximately 2,400 feet to the northeast along Heidorn Ranch Road. A new Kaiser Medical Center is located approximately 4,400 feet to the northwest along Deer Valley Road. Currently, the nearest urban development is a residential neighborhood and city park located approximately 2,700 feet to the north, where Hillcrest Avenue presently terminates. The City of Antioch's Chaparral Park is approximately 3,000 feet north of the project site along the existing 230 kV line, near Candlewood Way and Stagecoach Way.

New developments that are planned along the future extension of Hillcrest Avenue will bring residences to the north side of the future Sand Creek Road, 800 feet from the proposed substation. Preliminary land use plans for development north of Sand Creek also presently specify allocating approximately 10 acres for a future school site approximately 2,000 feet west-northwest of the proposed substation site. No known plans have been established by the City of Antioch south of Sand Creek, east of the future Hillcrest Avenue extension.

A small private dirt road provides the only vehicle access within about 2,000 feet of the proposed site from the intersection of Heidorn Ranch Road and Sand Creek Road. This road crosses Sand Creek over a steel pipe culvert that was washed out and replaced by the farmer in early 2006. There is evidence of earlier and ongoing oil and gas operations including an underground gas pipeline that traverses Sand Creek near Heidorn Ranch Road. Other immediate surroundings are tilled agriculture or open space with native and non-native vegetation.

B.1.6.1 Proposed Delta Substation Site

The proposed Delta Substation site would be adjacent to the existing transmission line corridor for the Contra Costa–Cayetano 230 kV circuit. Since 1991, PG&E has owned a 5.1-acre parcel (APN 057-050-006-6) that is approximately at the location of the proposed substation site. The Proposed Project would not occur entirely on this parcel, but it would occupy part of the parcel as well as adjacent land to the west. This would put the proposed substation boundary contiguous with the existing PG&E right-of-way for the transmission line, and provide space on the east side of the substation for the future extension of Hillcrest Avenue. Because the proposed substation site would not occur entirely within the existing PG&E parcel, PG&E would need to engage in a land swap with adjacent property owners to develop the proposed substation site. PG&E expects to enter into a land exchange with Pulte Homes, Inc., which has control of the land between the PG&E-owned site and the existing transmission line corridor, in order for the substation to be contiguous with the transmission line.

Land entitlement issues are not part of the regulatory proceeding considered by the CPUC. As such, the CPUC decision on whether to grant or deny PG&E's application for a Permit to Construct (A.05-08-022) would be unaffected by the current ownership.

B.1.6.2 Delta Distribution Planning Area

The Delta 21 kV Distribution Planning Area (DPA) consists of two distinct areas. The western portion includes Pittsburg, Bay Point, and the older portion of Antioch and consists of older residential communities with a high proportion of industrial loads, modest load growth, and a moderate climate due to its proximity to the Sacramento River. The central and eastern portion of the Delta DPA includes the rapidly growing southern and eastern portion of Antioch, the cities of Brentwood and Oakley, and much of the remainder of unincorporated eastern Contra Costa County. This portion of the Delta DPA has a significant number of recently built homes and associated commercial development. In addition, higher summer temperatures occur, increasing its electrical demands. PG&E expects the load in the central portion of the Delta DPA to increase by more than 11 megawatts (MW) per year, exceeding 266 MW by 2007.

The Delta DPA is comprised of 21 kV distribution circuits from three major existing substations and 12 kV and 4 kV distribution feeders from minor substations. PG&E's distribution planning criteria call for placing substations in suburban areas approximately four miles from each other to maintain support for adjacent substation outages. The three substations that presently supply the 21 kV distribution system are the Brentwood Substation (southeast of central Brentwood), the Contra Costa Substation (north of State Route 4 in Antioch), and the Kirker Substation (west of Railroad Avenue in Pittsburg). The Contra Costa and Kirker Substations are presently built out to maximum capacity, and the Brentwood Substation is planned for maximum capacity build-out in 2006. The Brentwood Substation circuit planned for 2006 is the last available addition to PG&E's existing Delta 21 kV DPA without the addition of the proposed Delta Substation. The proposed Delta Substation would be closer to the center of the most rapid load growth in the DPA than the existing Brentwood Substation.

B.1.7 General Plan Designation

Local land use plans and zoning are considered in order to assist the CPUC in determining the Proposed Project's consistency with local policies. However, local discretionary permits (e.g., conditional use permits) and an evaluation of local plan consistency are not required for the Proposed Project because the CPUC has preemptive jurisdiction over the construction, maintenance, and operation of public utilities.

The proposed Delta Substation site and access road are located within a planning study area (focus area) of the 2003 City of Antioch General Plan. A specific plan for the focus area was under development but has not been adopted and work on the plan has stopped. The adopted 2003 General Plan designation for the parcel presently owned by PG&E, as reflected in the un-adopted plan for the Sand Creek Focus Area, is "Public/Quasi Public." Subsequent to PG&E's initial substation planning in 2005, it was proposed by an adjacent property owner to realign the planned extension of Hillcrest Avenue somewhat west of its originally projected location in order to accommodate the angle of the road's crossing over Sand Creek. The realignment would intrude upon the PG&E property to be used for the proposed substation. As a consequence, at the request of the City and with the concurrence of all parties, the proposed substation site was shifted west to accommodate the proposed road's new alignment.

B.1.8 Zoning

The proposed Delta Substation site and the corridor of the related access road are currently unzoned. The substation site and surrounding agricultural uses occur within the Sand Creek Focus Area established by the City of Antioch as part of the Future Urbanization Area (FUA) #1. This area is covered by a specific plan that was being developed by the City of Antioch. However, in 2004, the Antioch City Council halted preparation of the specific plan. The City of Antioch will consider development proposals for the area on a project-by-project basis, as landowners submit requests for land use entitlements. However, as noted above, local discretionary approvals are not required because the CPUC has preemptive jurisdiction over the construction, maintenance, and operation of public utilities.

Guidance on the siting of utility substations is provided in the City of Antioch zoning ordinance (Title 9, Chapter 5, Article 38). Utility substations are identified as an allowable use in all zoning districts.

B.1.9 Project Overview

PG&E proposes to construct and operate a three-bank, 230/21 kV distribution substation and related facilities listed below, known as the Delta Distribution Planning Area Capacity Increase Substation Project (Proposed Project). The Proposed Project would relieve a projected electric system deficiency in eastern Contra Costa County and ensure safe and reliable electric service to existing and approved development in the eastern part of Contra Costa County. The DPA includes southern Antioch, Brentwood, Oakley, and portions of rural eastern Contra Costa County.

The Proposed Project consists of:

- installing a new, three-bank 230/21 kV distribution substation;
- installing a new transmission tower in the existing ROW and adjacent to the substation with approximately 400 feet of loop circuits;
- installing approximately 400 feet of loop circuits from the new tower to the dead-end structures located in the substation;
- installing six to nine distribution circuits (at ultimate build-out)[1] as a combination of overhead conductors and underground cable in conduit; and
- constructing a temporary bridge and temporary asphalt access road to the substation from the end of existing paved roads (Heidorn Ranch Road and Sand Creek Road).

The project's study area includes the proposed substation site, the transmission tower site, and the temporary road and bridge between the intersection of Heidorn Ranch Road and Sand Creek Road and the project site

Section B.1.10, Project Components, provides additional description of the project and the facilities to be constructed.

[1] The distribution lines do not require formal approval from the CPUC under General Order 131-D. They are included in the project description of this CEQA document for informational purposes.

B.1.9.1 Project Objectives

PG&E's primary objective with the Delta DPA Capacity Increase Substation Project is to relieve the projected electric system deficiency and to improve reliability and safety of meeting projected electrical loads in this part of Contra Costa County. The basic objectives defined in the Proponent's Environmental Assessment (PEA, filed as A.05-08-022, Exhibit A) are to:

- **Meet Immediate Capacity Needs.** Provide the necessary electric distribution capacity to serve existing and new customers in the central portion of the Delta 21 kV DPA, including the new 150-bed, 570,000-square-foot Kaiser Permanente Medical Center on Deer Valley Road, which PG&E expects to require 7.3 megawatts by the summer of 2007.
- **Meet Long-Term Capacity Needs.** Eliminate electric distribution capacity deficiencies expected to occur beyond 2007.
- **Locate New Substation To Reinforce Existing System.** Maximize system efficiency and increase future flexibility by constructing a new distribution substation within the limits of the DPA and approximately three to five miles from the existing distribution substations.
- **Locate New Substation Near Load Growth.** Minimize ratepayer costs and environmental impacts, and maximize system efficiency and reliability, by locating the new substation as close as possible to the center of the load growth so that feeder routes are as short as possible.
- **Locate New Substation on Undeveloped Site.** Minimize ratepayer costs by selecting a site for the new substation that avoids or minimizes the relocation of residences and businesses or the purchase of high-cost land.

B.1.9.2 Purpose and Need

The need for the Proposed Project is driven by significant projected load growth in the Delta 21 kV DPA.[2] PG&E forecasts that the ability of the electric system to safely and reliably serve the area will be exceeded as early as summer 2007 unless the new substation is built. Load growth statistics and analysis demonstrating project need are available in the application filed with the CPUC (A.05-08-022).

Increased electric demand can cause service disruptions. As demand increases, powerline conductors and power transformers eventually reach and exceed their rated capacities. When the demand on the equipment exceeds its rated capacity, the equipment becomes overheated and the electrical and mechanical properties of materials in the equipment can irreversibly degrade. For example, prolonged overheating of powerline conductors can cause the conductors to lose elasticity and eventually fail mechanically or irreversibly sag. The electric system is designed with protective and control equipment to prevent this type of damage. Circuit breakers remove equipment from service during equipment failures or when preset design limits are reached, but removing equipment from service leads to power outages in the areas served by the affected facilities.

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[2] PG&E has determined that the Delta Substation Project is needed, and the basis for this conclusion is beyond the scope of this CEQA document. The CPUC has previously recognized that "need" issues are beyond the scope of the Permit to Construct (PTC) process. This is in contrast to the CPUC's Certificate of Public Convenience and Necessity (CPCN) process which considers the need for and economic cost of a proposed facility. As such, this CEQA document focuses solely on environmental concerns. The present discussion of the purpose and need is for informational purposes.

The Proposed Project would meet the projected electric demand with a new three-bank substation and new 21 kV distribution circuits. PG&E believes this would relieve the electric system deficiency that is projected to occur in the Delta 21 kV DPA and ensure the ability of the system to safely and reliably serve the area without interruptions or emergency conditions. Because of limited capacity and physical space in existing distribution substations at other locations, PG&E determined that a new distribution substation must be constructed at the proposed site from which to extend the necessary 21 kV distribution circuits.

B.1.10 Project Components

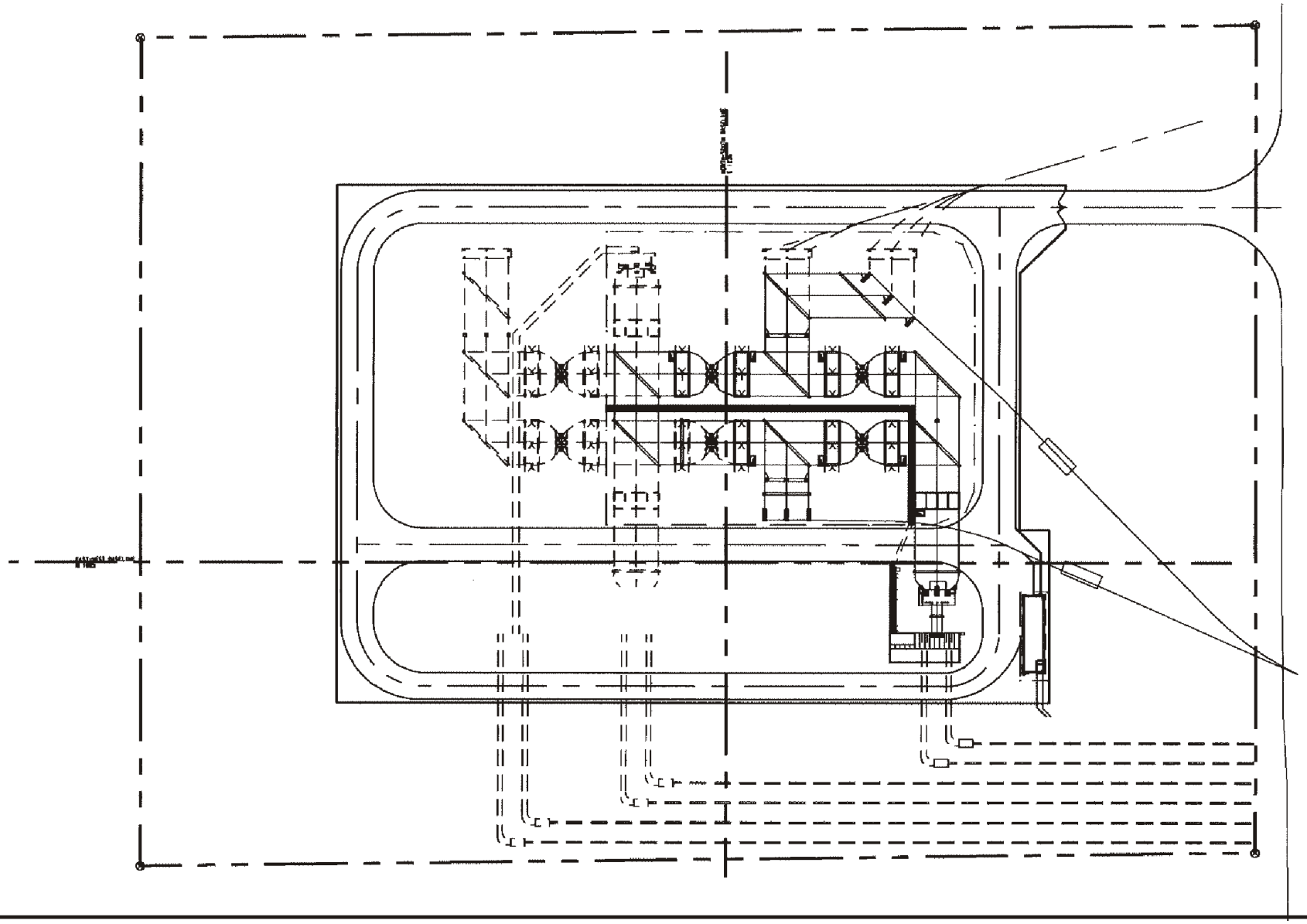
B.1.10.1 Delta Distribution Substation

The proposed substation property would occupy approximately 5.1 acres with a substation footprint (fenced area) of approximately 3.5 acres. A typical three-bank substation layout is provided as Figure B.1-3, and a corresponding profile of a typical three-bank substation is provided as Figure B.1-4. The present generation model for 230/21 kV substations having three 45 MVA transformers includes low-profile bus bar equipment to aid aesthetics. The substation would include steel bus support racks, high voltage breakers, power transformers, and switchgears. The major substation equipment would include the following:

- 230 kV bus structures for an initial ring bus connection and arranged for an ultimate configuration for three 230 kV transmission circuits and three 230/21 kV power transformers,
- six 230 kV circuit breakers (for switching and protecting three transmission lines and three 230/21 kV power transformers),
- three 230/21 kV power transformers,
- three 21 kV metal-clad switchgears,
- six to nine 21 kV distribution circuits at ultimate build-out, and
- digital microwave communications equipment.

The tallest element of the substation would be approximately 50 feet for the dead-end structures that support the 230 kV looped lines and the future dead-end structures that would support the connection from the ring bus to the required 230 kV line and 230/21 kV power transformer. Each of the three 21 kV switchgears would be furnished with an outdoor enclosure for weather protection. The initial 21 kV switchgear enclosure would be approximately 12 feet high with a footprint of 67 feet by 18 feet . It would house the protection, instrumentation, and communication equipment, including the 21 kV circuit breakers for the initial distribution circuits. The other two 21 kV switchgear enclosures would be available for future installation, with each being approximately 12 feet high with footprints of 44 feet by 17 feet . The switchgear enclosure would be covered in steel sheeting with a sloped roof. This structure and all the equipment in the substation would be neutral gray in color. All structures would be painted or finished with a nonreflective treatment.

A digital microwave tower for protection of personnel, equipment, and coordination with adjacent transmission lines would be needed. This would involve a steel pole approximately 40 feet tall, with a microwave dish 6 feet in diameter set on top.

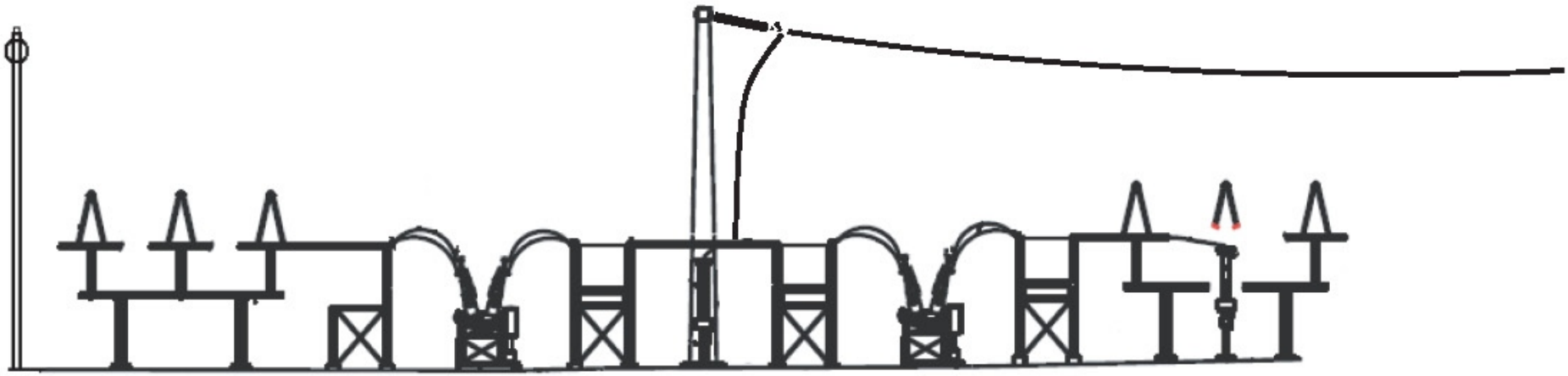


PREPARED BY Aspen Environmental Group

Source: PG&E, 2005
Preliminary drawing, subject to change as a result of the CPUC permit process, final engineering, and necessary adjustments during construction.

Delta DPA Capacity Increase Substation Project

Figure B.1-3
Typical Three-Bank Substation (Plan View)



PROFILE

Not to Scale

PREPARED BY Aspen Environmental Group

Source: PG&E, 2005
Preliminary drawing, subject to change as a result of the CPUC permit process, final engineering, and necessary adjustments during construction.

Delta DPA Capacity Increase Substation Project

Figure B.1-4
Typical Three-Bank Substation (Profile View)

The substation would have three 45-MVA transformers with two to three distribution circuits per transformer. A single transformer contains 12,200 gallons of mineral oil, for a total of 36,600 gallons of mineral oil for the three-bank configuration. The mineral oil would be free of polychlorinated biphenyls (PCBs). A 60-cell NiCad battery would be located in the switchgear enclosure, and lead-acid batteries would be used to provide backup power for monitoring, alarm, instrumentation, and lighting during power outages. A spill basin would be installed to contain spills in the unlikely event of a mineral oil release. The basin would be designed with a capacity sufficient to contain 110 percent of the oil volume of the largest oil filled equipment, a 45-MVA transformer.

The substation would be equipped with automated features and remote control capabilities. The substation would include related electric equipment, including 230 kV disconnecting switches, electrical reactors, instrument transformers, protective relaying, metering and control equipment, remote supervisory control and data acquisition equipment, telemetering equipment, an auxiliary alternating current (AC) and direct current (DC) power system, an electric grounding system, and underground conduits or trench systems.

To provide visual screening, earthen berms would be constructed on the north, west, and east sides of the substation. The berms and surrounding areas would be landscaped in accordance with a landscaping plan. PG&E expects to use landscaping appropriate for future adjacent land uses. For security purposes, a chain link fence would be constructed around the substation pad within the landscape berm.

PG&E proposes to design security and exterior lighting features to minimize visual impact. Security lighting for the substation would consist of sodium vapor lamps, and exterior lighting would include the use of non-glare light bulbs. Lighting fixtures would be located and designed to avoid casting light or glare toward off-site locations. The light poles would be 10 feet tall, hot-dipped, galvanized steel posts. These poles would be erected at each corner of the substation. Substation outdoor lighting would be controlled by photocell that will automatically turn on the lights at night and turn them off during the day.

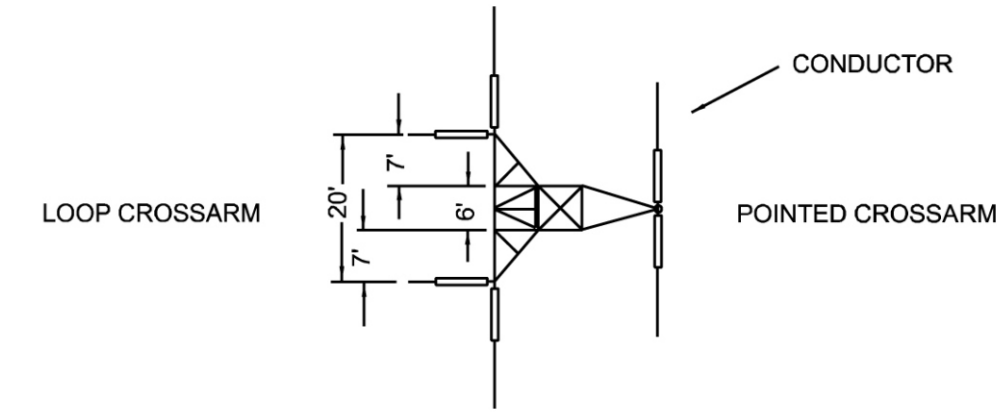
B.1.10.2 Transmission Tower and Loop Circuits

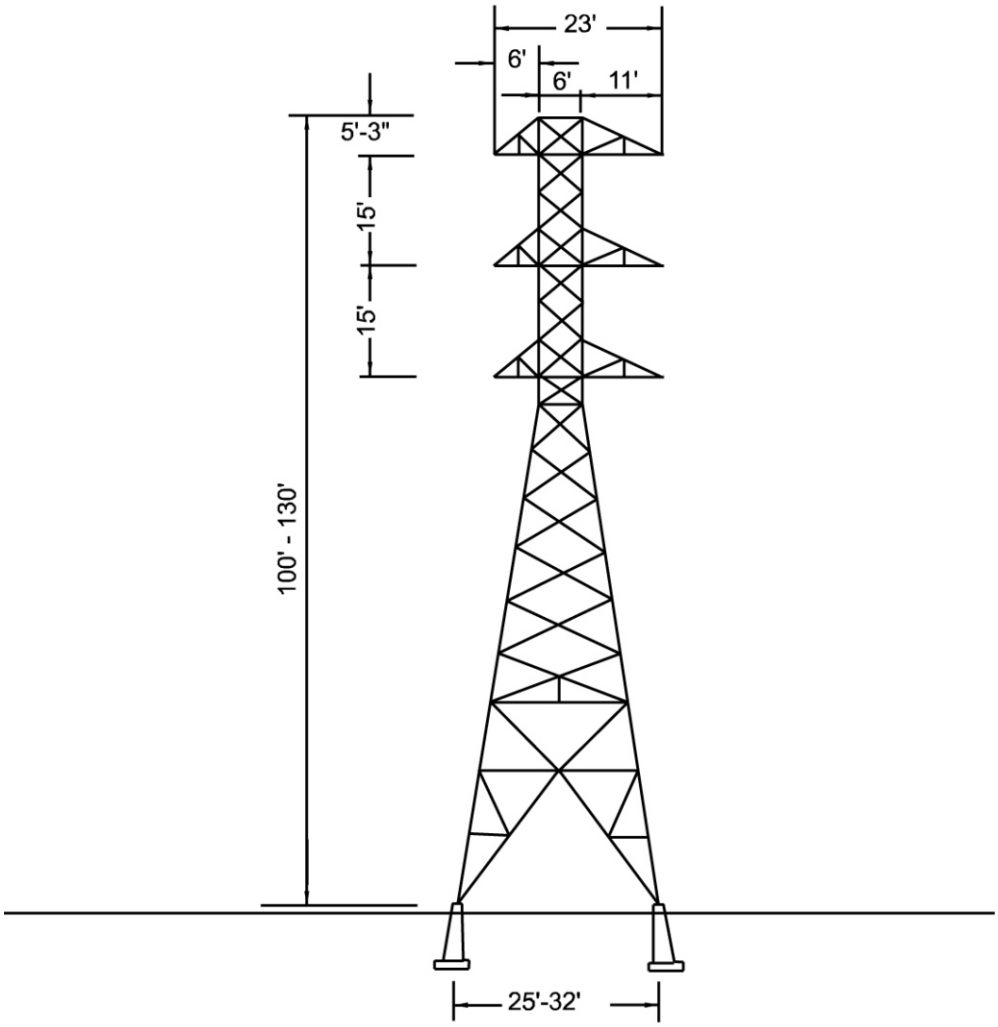
The project would require looping the existing Contra Costa – Cayetano 230 kV circuit into and out of the proposed Delta Substation. One new tower with loop arms would be installed within the existing transmission line ROW, approximately 380 feet north of an existing tower on the slope of the hill ~~south~~ west of the proposed substation site. The new tower would be approximately 200 feet west-southwest of the bus structures within the proposed substation. Figure B.1-5 shows a schematic of the tower design.

B.1.10.3 Distribution Circuits

Initially, two distribution circuits[3] would carry the 21 kV electric service from the proposed substation to end-users. The distribution lines would leave the substation site as a temporary 0.5-mile overhead line on wood poles 50 feet tall, with an average spacing of 225 feet. Initially, the new poles would be double-circuit to replace existing poles south of Hillcrest Avenue. The distribution poles would be along public roads and rights-of-way, until they reach the existing surrounding distribution system. After the City of Antioch extends the four-lane Hillcrest Avenue past the east side of the substation, the temporary overhead distribution lines would be replaced by underground lines, and all subsequent new distribution line extensions would be constructed underground. At the present rate of growth in electric demand, the seven distribution circuits remaining in the substation plan would be installed roughly every other year.

[3] Information on distribution circuits is informational only. These circuits are not considered part of the project and are not analyzed.





PREPARED BY Aspen Environmental Group

Source: PG&E, 2005
Preliminary drawing, subject to change as a result of the CPUC permit process, final engineering, and necessary adjustments during construction.

Delta DPA Capacity Increase Substation Project

Figure B.1-5
Proposed Transmission Tower and Loop Circuits

B.1.10.4 Access Road and Bridge

The project would include a temporary paved access road, necessary for connecting the substation site to the southern end of Heidorn Ranch Road at Sand Creek Road. PG&E would construct the access road with a paved surface width of 18 feet plus two feet of gravel and road base on each side, totaling 22 feet, with drainage ditches which may involve additional disturbance of up to 10 feet on either side. The temporary easement width would likely be 50 feet, and its total length would be about 3,050 feet. The first 1,400 linear feet of the proposed road from Heidorn Ranch Road would largely coincide with an existing dirt farm road except where it crosses Sand Creek on the proposed new bridge. South of Sand Creek, the access road would diverge from the dirt road and turn west for approximately 1,650 linear feet to the substation site. Directly east of the proposed substation site, PG&E would provide a temporary construction parking area (20 feet by 100 feet) for all construction personnel.

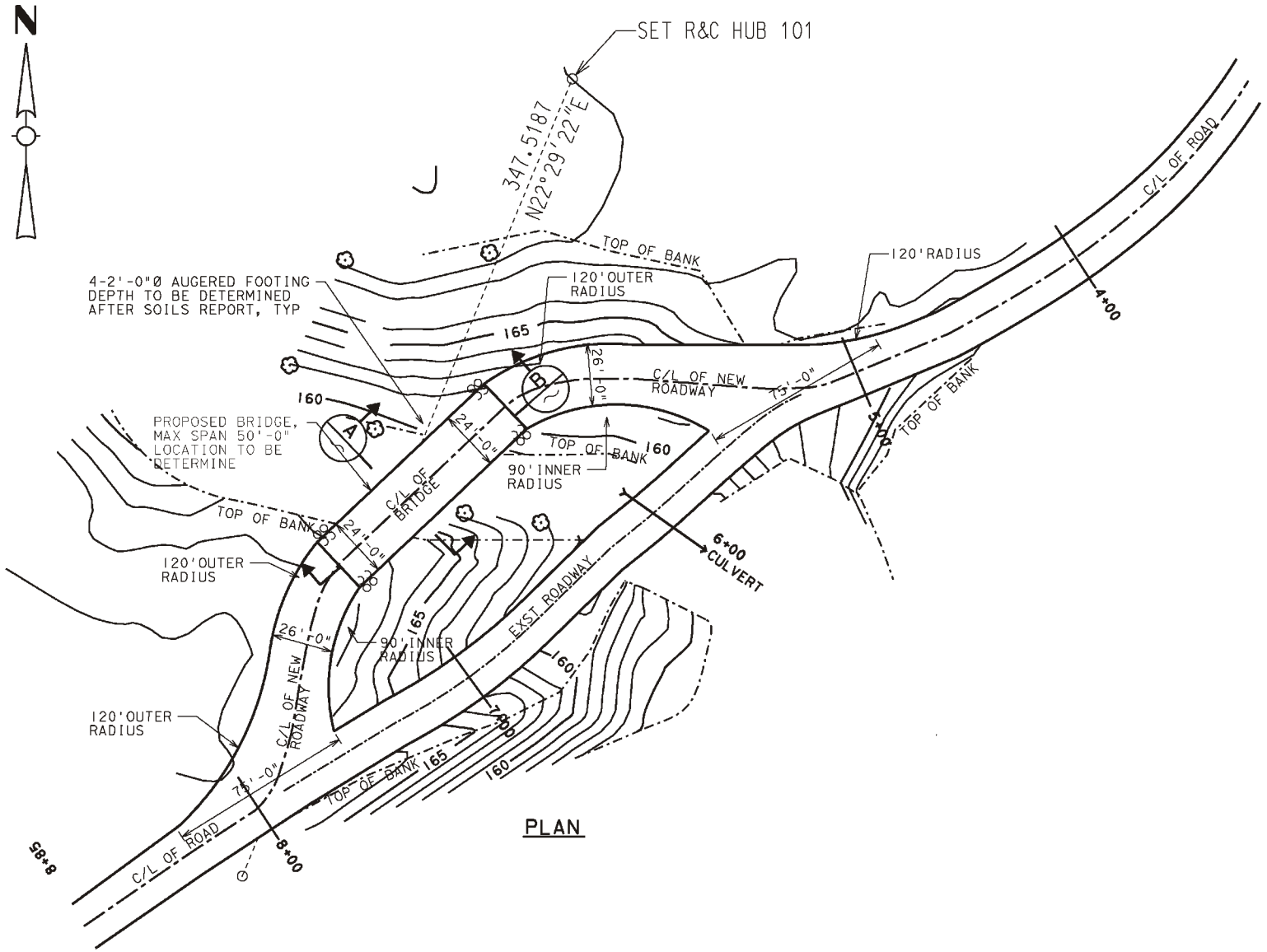
Crossing Sand Creek would be accomplished by spanning the creek with a temporary bridge, preliminary plans suggest that a pre-fabricated steel-deck plate design may be suitable. The existing dirt farm road crosses Sand Creek approximately 300 feet from the end of Heidorn Ranch Road over a 72-inch galvanized-steel culvert that replaced an older culvert washed out by storms in early 2006. Although the farmer replaced the culvert, the integrity of the replacement with regard to use by construction vehicles is uncertain. Because the existing conditions cannot support heavy equipment traffic, PG&E proposes to span the creek with a bridge approximately 50 feet in length and 24 feet in width. Footings would be installed by auger outside of Sand Creek on either side of the bridge to avoid the need for work in the creek channel.

Figure B.1-6 shows how the proposed bridge would span Sand Creek, and Figure B.1-7 provides preliminary details on the potential design for the bridge. Based on preliminary estimates, approximately 40 cubic yards of earth would be removed and backfilled to place the supports, and an additional 50 cubic yards of material would need to be imported to build bridge approach and departure ramps. By using a bridge, PG&E would not need to replace or repair the existing culvert, unless required by permitting agencies as project mitigation.

Current development plans for the City of Antioch indicate that Hillcrest Avenue will eventually be extended southerly to connect with Balfour Road. This new road extension would run along the eastern boundary of the proposed substation site. After the extension is complete, PG&E proposes to connect the substation to the Hillcrest Avenue extension via a curb cut entering the southbound lanes. After that time, access to the substation would occur via Hillcrest Avenue. With Hillcrest Avenue in place, the temporary access road from Heidorn Ranch Road to the final Hillcrest Avenue alignment and the bridge would be removed by PG&E, unless the property owner requests otherwise.

B.1.10.5 Drainage

Drainage along the proposed access road would percolate from adjacent earthen ditches constructed alongside the roadway, allowing infiltration of the runoff. Stormwater runoff from the paved portion of the substation would pass through the substation's Spill Prevention, Countermeasure, and Control (SPCC) retention pond, which would allow for settlement of suspended solids and removal of any oil that might be present. A surface discharge system would be provided and designed to minimize the potential for erosion or enhanced sedimentation. Figure B.1-8 shows how the substation would be located in relation to the Sand Creek 100-year flood zone.

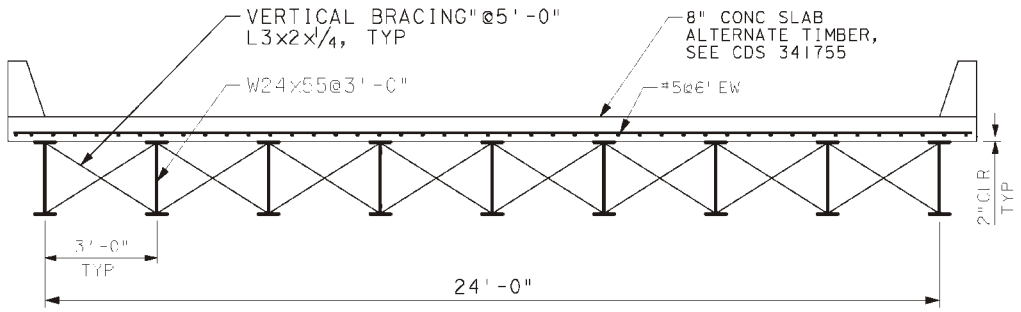


PREPARED BY Aspen Environmental Group

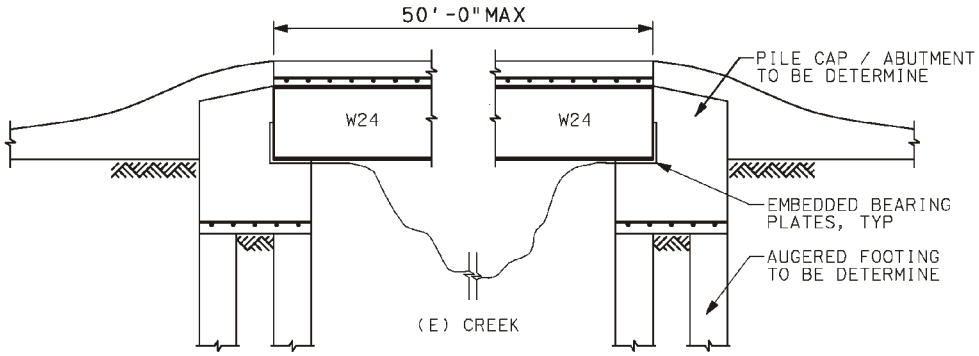
Source: PG&E, 2006
Preliminary drawing, subject to change as a result of the CPUC permit process, final engineering, and necessary adjustments during construction.

Delta DPA Capacity Increase Substation Project

Figure B.1-6
Map of Sand Creek with Proposed Temporary Bridge



SECTION A



SECTION B

GENERAL NOTES

1. LOAD LIMIT SIGNS SHALL BE POSTED AT EACH END OF BRIDGE INDICATING AS FOLLOWS: MAX. GROSS VEHICLE WEIGHT = 50 TONS.
2. STRUCTURAL STEEL: ASTM A36, FABRICATION AND ERECTION PER AISC.
3. BOLTS: GALVANIZED ASTM A307, 5/8" DIAMETER.
4. TIMBER: DOUGLAS FIR SELECT STRUCTURAL.
5. THE TEMPORARY STRUCTURE SHALL HAVE AN ADEQUATE WATERWAY OPENING, BUT GENERALLY NOT LESS THAN 75 PERCENT OF THE EFFECTIVE WATERWAY OPENING OF THE PROPOSED STRUCTURE OR MAY BE DESIGNED TO PROVIDE FOR A FIVE-YEAR FREQUENCY FLOOD AS A MINIMUM. THE CONTRACTOR SHALL BE RESPONSIBLE, HOWEVER, FOR ANY DAMAGES CAUSED BY UPSTREAM FLOODING DUE TO INSUFFICIENT TEMPORARY STRUCTURE SIZE OR THE ACCUMULATION OF DEBRIS OR SEDIMENT IN THE CHANNEL. A CLEAR ROADWAY WIDTH OF AT LEAST 7.0 M (23 FEET) FACE TO FACE OF GUARDRAILS SHALL BE PROVIDED.
6. THE TEMPORARY STRUCTURE SHALL BE DESIGNED FOR THE GREATER OF LOADING OF HS20-44 OR WEIGHT OF EQUIPMENT SUCH AS TRANSFORMERS AND REGULATORS AT UNIT STRESSES OF THOSE SPECIFIED BY PERTINENT SECTIONS OF AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES". TRANSFORMERS MAY BE UP TO 150 TONS, CONTACT PG&E FOR ACTUAL EQUIPMENT WEIGHTS.
7. PILING SHALL BE DRIVEN TO SUFFICIENT PENETRATION TO CARRY THE SUPERIMPOSED LOADS IN ACCORDANCE WITH AASHTO BEARING PILE SPECIFICATIONS, BUT NOT LESS THAN 12 METRIC TONS (12 TONS) PER PILE.
8. THE CONTRACTOR SHALL MAINTAIN ALL PORTIONS OF THE TEMPORARY STRUCTURE IN GOOD CONDITION WITH RESPECT TO BOTH SAFETY AND SMOOTHNESS FOR TRAVEL AS LONG AS IT IS NEEDED FOR MAINTENANCE OF TRAFFIC. THE CHANNEL AND WATERWAY OPENING SHALL ALSO BE SATISFACTORILY MAINTAINED.
9. REMOVAL. WHEN THE TEMPORARY STRUCTURE IS NO LONGER NEEDED, IT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE BY HIM ACCORDINGLY.

APPROX. SLAB CONCRETE VOL.= 800 CUBIC FT
APPROX. STEEL WEIGHT = 25,000 LBS
APPROX. REBAR WEIGHT = 5,000 lbs

REFERENCES

1. STANDARD SINGLE LANE BRIDGE _____ CDS 341755

PREPARED BY Aspen Environmental Group

Source: PG&E, 2006
Preliminary drawing, subject to change as a result of the CPUC permit process, final engineering, and necessary adjustments during construction.

Delta DPA Capacity Increase Substation Project

Figure B.1-7
Typical Temporary Steel Deck-Plate Bridge

Figure B.1-8. Map of 100-year Flood Zone and Proposed Substation
CLICK HERE TO VIEW

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B.1.10.6 Landscaping

PG&E's proposes to landscape the substation site to screen it from future motorists on the planned Hillcrest Avenue extension. The proposed landscape plan would include trees and shrubs lining the northwestern edge of the site on 10-foot berms and on 10- to 15-foot berms on the north and northeastern edge. The proposed berm is shown in Figure B.1-9 although its exact configuration may vary depending on the grading permit approval process. The aesthetic landscaping would be in addition to the chain link fence that would be installed around the substation within the berm for security. The landscaping plan would be developed by PG&E and submitted for review and approval by the City of Antioch. A conceptual landscape plan is shown in Figure B.1-9.

Water for landscaping would be provided from either a water well permitted and constructed by PG&E (likely to be necessary during initial years of substation operation), or a connection to the municipal water system, if it is extended as part of a future adjacent development. A holding tank would be installed if the water well fails over the initial years, and it would be refilled by truck as needed to maintain landscaping during the dry season.

B.1.11 Project Construction Methods

B.1.11.1 Construction Access

Construction access would be provided by State Route Highway 4 (SR 4), Hillcrest Avenue, Deer Valley Road, Lone Tree Way, and Heidorn Ranch Road. The existing dirt road extending from Heidorn Ranch Road would be replaced with a paved access road and bridge to cross Sand Creek. The new temporary asphalt access road would travel about 3,050 feet into the substation site, and it would be about 22 feet wide. This would be the only access to the construction area.

The proposed access road, bridge, and substation site all would be located on private property, accessible through a gate located at the intersection of Heidorn Ranch Road and Sand Creek Road. PG&E would lock the gate to secure the access road and bridge from unauthorized access. PG&E would clear work areas of brush to reduce the fire potential and direct personnel to park away from dry vegetation. Workers' vehicles would carry water and shovels or fire extinguishers in times of high fire hazard.

Generally, parking, laydown, and staging areas for construction materials and equipment would be within the substation site and the existing adjacent 200-foot transmission line right-of-way. Additional staging may occur at the PG&E Antioch Service Center, on Hillcrest Avenue north of Highway 4. In addition to these areas, an area (~~100~~ 200 feet by 200 feet) would be staked in the field to identify the construction work limits around the proposed tower site.

B.1.11.2 Typical Construction Equipment

Typical construction equipment and machinery that would be used during construction of the substation, access road, transmission loop, and distribution lines are listed in Table B.1-1.

B.1.11.3 General Construction Sequence

Construction would begin ~~as early as October 2006~~ in early 2007 to meet an in-service date of ~~June~~ November 1, 2007, depending on CPUC approval. Substation construction would require approximately eight months ~~of activity over a 10- to 12-month period~~. To complete grading and road construction

before the onset of winter, those particular activities would begin as soon as permits and agency approvals have been granted.

Construction activities would be scheduled in the following order:

- Bridge and access road construction
- Rough grading and compaction of the substation subgrade
- Construction of the security fence and all buswork structure, transmission tower, and building foundations
- Construction of the overhead lattice for the buswork, and the switchgear enclosure with the system control and data acquisition equipment
- Construction of the SPCC retention pond
- Construction of the first 230/21 kV transformer, the 21 kV switchgear, the 230 kV circuit interconnection, and the microwave tower
- Construction of distribution feeders
- High voltage connection and testing
- Cleanup and landscaping
- Substation commissioning

Table B.1-1. Typical Construction Equipment – Access Road, Substation, and Tower Construction Activities

Equipment	Use
1/2-ton pickup trucks (2)	Transport construction personnel
3/4-ton pickup trucks (8)	Transport construction personnel
Crew-cab trucks (3/4 to 1 ton) (3)	Transport construction personnel
Road grader, six wheel	Grade road
Dozer with sheepsfoot	Road grading/shaping
Powered road roller	Subgrade compaction
Water trucks	Dust and fire control
Oiler trucks	Road construction
Motorized asphalt layer	Road construction
Finish road roller	Asphalt lift compaction
Boom truck (2)	All construction activities
2-ton flat bed trucks	Haul materials
Flat-bed boom truck	Haul and unload materials
Dump trucks (5 to 10 ton)	Haul spoil and import materials
Semi-tractor trailer	Haul structure components
Construction trucks and trailers (2 to 60 ton)	Haul materials
Tiltbed and lowboy trailers	Haul equipment
Rigging truck (2)	Haul tools and equipment
Stinger crane/flatbed (10 to 20 ton)	Material placement and form removal
40-ton crane	Material placement
Small mobile cranes (< 12 tons) (2)	Load and unload materials
15-, 30-, and 80- ton mobile cranes	Erect structures/install transformers
Mechanic truck	Service and repair equipment
Shop vans	Store tools
Crawler-mounted auger	Excavate foundations

Figure B.1-9. Proposed Landscape Plan
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Table B.1-1. Typical Construction Equipment – Access Road, Substation, and Tower Construction Activities

Equipment	Use
Truck-mounted digger (2)	Excavate foundations
Track-mounted backhoe	Excavation
Rubber tired backhoe	Excavation
D6 and D8 Bulldozer	Excavation
Crawler backhoe (2)	Excavate foundations
Puller	Pull conductor wire
Tensioner	Pull conductor wire
Wire reel trailer	Haul wire
Air compressor	Operate air tools
Air tampers	Compact soil around poles
Portable generators	Power tools
Concrete trucks (4)	Transport concrete
Concrete mixer trucks	Haul concrete
Concrete pump truck	Pumps concrete to foundations
Fuel trucks	Refuel equipment
Aerial lift trucks	String conductor wire

Source: PG&E, 2005.

B.1.11.4 Bridge and Access Road Construction

The proposed access road and temporary bridge would be engineered and constructed to allow use by heavy equipment for construction and maintenance purposes. Unless the property owner requests otherwise, the road and bridge would be removed after Hillcrest Avenue is extended, thereby providing permanent access to the substation from a public street. PG&E does not propose to dedicate the bridge and access road to public use.

Grading for the access road would include the removal of existing vegetation within the road limits for access road construction. The road would be in an approximately 50-foot easement. The road would be 22 feet in width, including an 18-foot-wide paved surface and 2 feet of compacted road edges to either side. Ten feet on either side could be disturbed for placement of shoulders and drainage ditches. Engineered fill would be incorporated to stabilize and backfill the access road, and all cuts and fills will be 2:1 (50 percent) slope.

South of Sand Creek an unnamed tributary to Sand Creek parallels the existing dirt road. PG&E proposes to provide a minimum setback of 30 feet between the road and the top of the tributary bank. Where the temporary road departs for the existing farm road and heads west across agricultural land to the proposed substation site, PG&E would orient the road so that it would be setback from the edge of natural drainages. PG&E would use standard Best Management Practices (BMPs), including silt fencing and straw wattles between the line of disturbance and creek banks, to prevent erosion and sedimentation into the water bodies. Drainage swales through which the access road would pass may require installation of culverts to allow passage of flows that could occur as a result of storm events.

B.1.11.5 Substation Construction

The substation would be built on an undeveloped site. Site preparation would begin with vegetation clearing and grading to create a level surface for the substation pad. The expected cut and fill volumes for the proposed substation would be approximately 8,000 and 4,000 cubic yards, respectively. The underground grid for electrical grounding would require an excavation of approximately 18 inches. Most of the cut material would be from stripping of the existing site and excavation for the foundation of the electrical equipment. The foot of the hillside on the south side of the substation site would also need excavation up to a depth of 10 feet. This cut would be contoured so that it would not require shoring, a retaining wall, or similar support. Excess cut material would be used in the construction of the berm to be developed on the remaining three sides of the site. Additional fill material would need to be imported to the site to complete the earthen berm. PG&E estimates the total volume of the berm to be approximately 50,000 cubic yards. The amount of fill is a preliminary estimate and may change as a result of final engineering and adjustments during construction.

Substation grading and excavation would be followed by construction of subsurface footings and slabs for all aboveground structures and equipment. Next, the aboveground steel structures, circuit breakers, transformers, switchgears, buses, and other electrical equipment, including associated control system hardware, would be installed. Material from foundation excavation, grading of the southerly slope of the property, and imported material would then be placed and graded to create the landscape berm. PG&E has arranged to use fill from the nearby Kaiser Medical Center site for the earthen berm.

Structures would be erected to support buses, switches, overhead conductors, instrument transformers, and other electrical equipment, as well as to terminate incoming circuits. Low-profile supports for the aluminum bus structures would be fabricated from tubular steel structures.

Structures within the substation would be grounded to the subsurface station-grounding grid. Equipment would be placed on the previously constructed slabs and footings, and either bolted or welded securely in excess of the Uniform Building Code seismic requirements. Equipment to be installed includes high-voltage circuit breakers and air switches, tie structures and bus work, high-voltage instrument transformers and line traps, control and power cables, metering, relaying, and communication equipment. Gravel would be installed within the fenced substation site.

B.1.11.6 Transmission Interconnection Construction

Completing the transmission interconnection would be in two phases: installation of one new tower and conductor stringing.

Installation of Tower

A new steel lattice tower would be located adjacent to the substation within the 200-foot ROW for the existing Contra Costa–Cayetano 230 kV circuit. Prior to installation, a~~n~~ work area ~~100~~ 200 feet by 200 feet would be staked in the field to identify the construction work limits at the tower site. Installing the new tower would require installation of at least two temporary wood poles and appropriate guy wires to spread the existing conductors sufficiently to install the new structure. These temporary "shoo-fly" poles would be installed within the work area adjacent to the new tower position. The poles would be removed after the new tower is erected.

Placement of the steel lattice tower would require boring four holes, one for each structure leg. Each hole would be approximately five feet in diameter and between 10 to 16 feet deep. Workers would place

reinforcing steel in each hole along with stub angles of the tower leg itself. Concrete forms extending two to three feet above natural ground level would be placed over each hole and concrete would be placed around the reinforcing steel and stub angles up to the top of the form. The double-circuit lattice steel towers would have three vertical support levels, each supporting two conductors, one on each side of the tower. Steel tower components packaged in bundles would be delivered to the substation site and staged either at the substation or at the tower site. A crane would be set up within the tower construction area. The tower would be assembled immediately adjacent to the foundation and raised into place by the crane. After the structure is set on the foundation, crews would tighten all bolts, attach insulators to the cross arms, and prepare the tower for conductor stringing.

Conductor Stringing

If needed and before conductor installation begins, temporary clearance structures would be installed at any locations where the new conductors could accidentally come into contact with electrical or communication facilities and/or vehicular traffic during installation. These clearance structures would consist of one or two poles on either side of the feature being crossed. A V-shaped cargo net would be tensioned between the support structures. The existing conductor would be spliced to allow the circuit to enter and exit the proposed substation.

The actual conductor stringing operation would begin with the installation of sheaves or stringing blocks. Sheaves are rollers attached to the cross arm of the supporting structure. The sheaves would allow the individual conductor to be pulled through each structure until the conductor is ready to be pulled up to the final tension position. When the pull and tension equipment is set in place, a sock line (a small cable used to pull in the conductor) would be pulled across the spans using ground equipment. After the sock line is installed, the conductor would be attached to the sock line and pulled in, or strung, using the tension-stringing method. This involves pulling the conductor under a controlled tension to keep the conductor elevated. After the conductor is pulled into place, sags would be adjusted to a pre-calculated level. The conductor would then be clamped to the end of each insulator as the sheaves are removed. The final step of the conductor installation would be to install vibration dampers and other accessories.

B.1.11.7 Distribution Line Installation

The initial 21 kV distribution circuits to the existing distribution facilities would be installed on wood poles (height 50 feet) along the route of the future extension of Hillcrest Avenue on the east side of the substation. The proposed substation would include underground distribution outlets to risers adjacent to the substation site. From the risers, distribution lines would extend to the north and south with an average span of 225 feet. Typical construction sequencing would be to auger the pole holes, set the framed poles, and string the aluminum overhead conductors. This work would involve line trucks and boom trucks. These new facilities will be tied into the existing distribution facilities in the surrounding area. PG&E would replace the initial overhead distribution facilities with underground lines when the City of Antioch or developers build the future extension of Hillcrest Avenue.

B.1.11.8 Cleanup

Cleanup would involve final grading and contouring, as well as cleaning up all disturbed areas, including temporary workspaces and the paved access road. Landscaping, including irrigation, would be installed around the perimeter of the substation. PG&E would conduct a final inspection to ensure that cleanup activities have been completed as required.

B.1.11.9 Construction Workforce

The workforce would vary depending on the activities in progress and the particular phase of construction. During bridge and road construction and site grading, a workforce of approximately 12 workers would be needed over approximately six weeks. The security fence, substation foundation work, buswork structure, and transmission tower would require approximately 20 laborers and supervisors. During installation of the switchgear enclosure and overhead work, the number of workers on-site would range from 20 to 24. As phases of the work are completed, the workforce at the substation site would gradually decline. A small workforce of approximately four to six workers would remain at the substation site to complete required cleanup and landscape activities.

B.1.12 Operations and Maintenance

B.1.12.1 System Monitoring and Control

Operation of distribution equipment in the substation and the associated distribution lines would be controlled from the PG&E Diablo Control Center in Concord, California. Operation of transmission equipment in the substation and the associated transmission lines would be controlled from the PG&E Pittsburg Control Center in Pittsburg, California. Station and line alarms for the substation would be connected by phone lines to the control center. If an alarm is triggered, PG&E would dispatch personnel to the location of the alarm.

B.1.12.2 Facility Inspection

Regular inspection of electric lines, support systems, and instrumentation and control is necessary for the safe, efficient, and economical operation of an electric utility system. Annually, overhead structures would be inspected from the ground for corrosion, misalignments, and foundation conditions. The inspection would include inspection of hardware, insulator keys, and conductors. This inspection would check conductors and fixtures for corrosion, breaks, broken insulators, and bad splices. Electric lines would be inspected for sag. Inspections would be performed on poles, anchors, and right-of-way conditions. Trimming of landscaping trees would be conducted in accordance with the CPUC's General Order 95.

Under normal circumstances, the substation would be controlled remotely. Routine substation inspections would occur monthly or as needed under emergency conditions. Permanent parking for facility inspections, operations, and maintenance would be entirely within the substation site or on the access road at the entrance to the substation site.

B.1.13 Applicant-Proposed Measures

PG&E proposes to implement measures to ensure the project would occur with minimal environmental impacts and would be consistent with applicable rules and regulations. PG&E would implement these measures during the design, construction, and operation of the Proposed Project in order to avoid or minimize potential environmental impacts.

Applicant-Proposed Measures (APMs) listed in Table B.1-2 are considered part of the Proposed Project description, and have been considered in the evaluation of environmental impacts (see Section B.3, Environmental Analysis and Mitigation). CPUC approval would be based upon PG&E adhering to the Proposed Project as described in this document, including the project description and APMs, as well as any adopted mitigation measures identified by this Initial Study.

Table B.1-2 details each APM by environmental issue area. In some cases, the mitigation measures presented in Section B.3 either expand upon or add detail to the APMs presented in Table B.1-2 if necessary, to ensure that potential impacts would be reduced to less than significant levels.

Table B.1-2. Applicant-Proposed Measures (APMs)

APM Number	Air Quality
APM Air-1	PG&E will implement applicable standard best management practices (BMPs) identified in Table 2 of the BAAQMD CEQA Guidelines to reduce air quality impacts associated with PM10 as follows: • Streets will be cleaned daily with water sweepers if visible soil material is carried onto adjacent public streets. • All paved access roads, parking areas, and staging areas at construction sites will be swept daily (with water sweepers). • Soil stabilizers will be applied to inactive construction areas on an as-needed basis. • Exposed stockpiles of soil and other excavated materials will be enclosed, covered, watered twice daily, or applied with soil binders. • Vegetation will be replanted in disturbed areas as quickly as possible following construction completion. • All active construction areas will be watered at least twice daily. • All trucks hauling soil, sand, and other loose materials will be covered or will maintain at least two feet of freeboard. • All unpaved access roads, parking areas, and staging areas at construction sites will either be paved, watered three times daily, or receive a daily application of a non-toxic soil stabilizer. • Traffic speeds will be limited to 15 miles an hour on unpaved roads.
APM Air-2	PG&E will encourage carpooling among construction workers through contractor bid specifications and project orientation training for workers.
APM Air-3	PG&E will tune vehicles used in construction activities according to the manufacturer's recommended maintenance schedule, or at least annually thereafter.
APM Air-4	PG&E will minimize vehicle idling time when feasible.
	Biological Resources
APM Bio-1	An ongoing endangered species/sensitive habitat education program for construction crews will be conducted by a qualified biologist(s) prior to the commencement of the project and during construction activities. Sessions will include discussion of the FESA and CESA, the consequences of noncompliance with these acts, and identification and values of sensitive species and wetland habitats.
APM Bio-2	An educational brochure will be produced for construction crews working on the project. Color photos of threatened and endangered species (kit fox, burrowing owl, Swainson's hawk, CRLF, and CTS) will be included, as well as a discussion of protective measures agreed to by PG&E and the resource agencies.
APM Bio-3	Vehicles will be confined to existing roads or approved routes. In sensitive areas the speed limit will be 15 miles per hour.
APM Bio-4	A biological monitor will be on-site during any construction activity in sensitive habitat.
APM Bio-5	Photo documentation of all sensitive habitats before and after construction will occur and be part of the project report due to the resource agencies no later than 90 days following completion of construction.
APM Bio-6	Diligent efforts by PG&E will be used to protect the existing plant community and to keep temporary impacts to a minimum. However, if they occur, temporary impacts to habitat will be addressed through a revegetation/restoration plan prepared in conjunction with the resource agencies.
APM Bio-7	If appropriate, anti-perch devices will be applied to the horizontal surfaces of new tower structures to inhibit raptor perching and nesting.
APM Bio-8	The biological monitor will document monitoring activities in a daily project report and all daily reports will be summarized in a written report within 90 days of completion of construction.
APM Bio-9	Trash dumping, firearms, and pets will be prohibited in the project area.
APM Bio-10	A wetland delineation per the U.S. Army Corps of Engineers (ACOE) Wetlands Delineation Manual will be conducted prior to construction. The delineation will use a three-parameter approach that includes an examination of vegetation, soils, and hydrology to determine the presence of wetlands. A wetland report will be prepared and submitted to the ACOE for verification. Through this process, final calculations of wetland area present in the project area will be obtained for project permitting.

Table B.1-2. Applicant-Proposed Measures (APMs)

APM Bio-11	Wetlands and aquatic resources will be denoted as environmentally sensitive areas and will be avoided during construction to the degree practicable. The permanent loss of emergent and/or seasonal wetlands resulting from project construction will be mitigated at a minimum ratio of 1:1 through: • the purchase, restoration and protection of severely degraded similar wetlands in the vicinity of the project, • the creation of new emergent and/or seasonal wetland from upland habitat within the vicinity of the project, and/or • the purchase from a mitigation bank of similar wetlands in the vicinity of the project.
APM Bio-12	Following the completion of all special-status plant surveys, if it is determined that special-status plant species occur within any areas subject to impact, the project has the potential to impact these special-status plant species. • PG&E will acquire suitable habitat for identified species within the project vicinity, • PG&E will develop a long-term habitat enhancement plan for identified species, and/or • PG&E will monitor the implementation of and the compliance with mitigation measures outlined in the habitat enhancement plan.
APM Bio-13	Access to the construction site will be restricted to those routes identified in the project description. Access will be clearly marked in the field with appropriate flagging and signs.
APM Bio-14	Vehicle parking at the construction site will be restricted to previously disturbed areas or existing roads. Agricultural areas are not considered previously disturbed. Necessary vehicles belonging to the biological monitors and construction personnel will be parked at the nearest point to the work site on existing access roads.
APM Bio-15	Soil disturbance will be minimized to the greatest extent possible.
APM Bio-16	A fact sheet or other supporting materials will be prepared and distributed to project personnel regarding habitat sensitivity, identification of special-status species, and required practices within the project area. Upon completion of training, employees will sign a form stating that they attended the training and understood all of the conservation and protection measures.
APM Bio-17	A qualified biologist will monitor all construction activities within 300 feet of Sand Creek. If necessary, the monitor will inform the project foreman of any construction activities that compromise environmental integrity. The project foreman will have the authority to stop and/or redirect project activities to ensure protection of resources and compliance with all environmental permits and conditions of the project. The biologist will complete a daily report summarizing activities and environmental compliance.
APM Bio-18	A qualified biologist will oversee placement of orange safety/ exclusion construction fencing on either side of Sand Creek at the boundary to the work area to limit the area of disturbance during construction of the access road and bridge.
APM Bio-19	Sensitive species will not be handled without first obtaining the necessary authorizations from the U.S. Fish and Wildlife Service (USFWS).
APM Bio-20	A qualified biologist will conduct a preconstruction survey within the project area no earlier than two days before the start of ground-disturbing activities. From October 15 or the onset of the rainy season, whichever occurs first, until May 1, a qualified biologist will conduct daily visual surveys of all work areas within 100 feet of aquatic habitat prior to the start of any vehicle or equipment traffic. If a CRLF or CTS is encountered during the construction work, activities will cease until the species is removed and relocated by a USFWS-approved biologist. Any incidental take will be reported to USFWS ~~immediately~~ by telephone within 24 hours as required by USFWS.
APM Bio-21	Ground-disturbing activities within 30 feet of suitable CRLF or CTS breeding habitat will only occur during the dry season of April 15 to October 15. The bridge at Sand Creek will be installed during this time period to ensure breeding behavior is not disrupted.
APM Bio-22	Not applicable. Merged with Bio-20.
APM Bio-23	Mobile equipment will not be parked overnight within 100 feet of aquatic habitat. Stationary equipment (e.g., pumps, generators) used or stored within 100 feet of aquatic habitat will be positioned over secondary containment.
APM Bio-24	During the installation of the bridge at Sand Creek, surveys will be conducted each morning to ensure wildlife is not within the work area. Sediment control measures will be installed to minimize sedimentation downstream.
APM Bio-25	PG&E will purchase habitat for impacted San Joaquin kit fox (kit fox) foraging habitat at a ratio to be determined by the USFWS. Because this habitat is also suitable CRLF and CTS upland habitat, no additional habitat will be purchased. PG&E anticipates approximately 6 acres will be permanently impacted as a result of the project. The suitable kit fox, CRLF, and CTS upland habitat or credits will be purchased from an organization agreed upon by PG&E and the USFWS.

Table B.1-2. Applicant-Proposed Measures (APMs)

APM Bio-26	A preconstruction survey will be conducted in all areas providing suitable habitat at least 30 days prior to construction according to the most recent Burrowing Owl Survey Protocol and Mitigation Guidelines. Surveys will cover a 250-foot buffer around the substation and work areas. The survey will include checking for the burrowing owl and owl sign. If owls are found to be using the site and avoidance is not feasible, a passive relocation effort (displacing the owls from the site) may be conducted as stipulated by the California Department of Fish and Game (CDFG) guidelines. If an active burrow is inadvertently destroyed or an individual incidentally killed during construction, PG&E will take appropriate actions as recommended by current CDFG guidelines. However, PG&E does not anticipate an incidental take occurring.
APM Bio-27	If occupied burrowing owl habitat is found on or adjacent to the project area, the following measures to avoid, minimize, or mitigate impacts to burrowing owls will be incorporated into the project. • Confirmed unoccupied burrows in the area may be collapsed. • If occupied burrows are identified, reasonable protective buffer zones will be implemented. • All work will be coordinated with the CDFG.
APM Bio-28	Not applicable. Merged with Bio-29.
APM Bio-29	Suitable tricolored blackbird breeding habitat within the project area will be surveyed by a qualified biologist. Field surveys for the tricolored blackbird will occur prior to construction. If an active nest belonging to this species is located prior to construction and the nest cannot be avoided, PG&E will consult with the USFWS and CDFG to coordinate mitigation measures. Direct avoidance is possible by spanning suitable habitat.
APM Bio-30	If construction is scheduled during the tricolored blackbird breeding season, a buffer of a reasonable distance as determined by the on-site biological monitor, will be established around any active nests to protect breeding tricolored blackbirds.
APM Bio-31	A biological monitor will remain on-site in sensitive habitat during breeding season while construction activity occurs to assist construction crews with information relative to nesting tricolored blackbirds, to minimize disturbance to habitat, and to maintain a buffer of a reasonable distance around active nests. These measures will be implemented to lessen the chance of nest abandonment by this sensitive species.
APM Bio-32	During the spring breeding season (and prior to start of construction), a survey of the construction area for potential sensitive raptor habitat will be performed by a qualified biologist. It is expected that if construction occurs in suitable habitat before the onset of the breeding season, the construction disturbance will cause the raptors to seek alternate sites for breeding and nest construction.
APM Bio-33	If avoidance of active raptor nests is not practicable, a buffer of a reasonable distance will be maintained around any active raptor nest.
APM Bio-34	If construction activities do not start until the onset of the nesting season for raptors (generally March through September), a qualified biologist will conduct a raptor survey at the site and of the surrounding area within 500 feet.
APM Bio-35	In the event an active raptor nest is found within 500 feet of the work area, a qualified biological monitor will be provided by PG&E, and remain on-site during construction activities to ensure there is no nest abandonment.
APM Bio-36	During the spring breeding season (and prior to start of construction), the construction area will be surveyed for potential breeding passerine birds. If active nests or breeding species are located prior to construction, PG&E will consult with the USFWS and CDFG to coordinate avoidance if the active nests cannot be avoided.
APM Bio-37	If construction is scheduled during the passerine breeding season, a sufficient buffer will be observed around active nests.
APM Bio-38	A biological monitor will be present during passerine breeding season to ensure no construction activity results in nest abandonment.
APM Bio-39	Within 30 days prior to the commencement of construction activities, a qualified biologist will survey for kit fox dens within the area that will be disturbed, including an area of 100 feet surrounding the work area. Any potential den will be monitored for evidence of kit fox use by placing a tracking medium at den entrances for at least three consecutive nights. If an occupied den is found, progressive plugging of the den may be employed to discourage use, and the den closed after it is determined to be unoccupied for a minimum of three consecutive nights.
APM Bio-40	Not applicable. Merged with Bio-3.
APM Bio-41	Construction will be limited to the hours between 7 a.m. and 6 p.m., where construction methods allow.
APM Bio-42	Off-road traffic outside of the designated project area will be prohibited.

Table B.1-2. Applicant-Proposed Measures (APMs)

APM Bio-43	To prevent accidental entrapment of kit fox during construction, all excavated holes or trenches will be covered at the end of each workday with plywood or similar materials. Before such holes are filled they will be thoroughly inspected for trapped animals. In the event of a trapped animal, ramps or other structures will be installed immediately to allow the animal to escape, or the USFWS will be contacted for advice. PG&E will appoint a representative who will notify the USFWS and CDFG immediately in the event of an accidental death or injury to a kit fox during project-related activities and a follow-up letter will be submitted within three working days of the accident.
APM Bio-44	Not applicable. Merged with Bio-25.
APM Bio-45	Field surveys for the San Joaquin pocket mouse will be conducted by a qualified biologist before construction begins. If this species is located prior to or during construction, PG&E will consult with the USFWS to coordinate avoidance.
APM Bio-46	Before the spring breeding season for bats (and prior to start of construction), a survey of the construction area for roosting or maternity colonies will be performed by a qualified biologist. It is expected that if construction occurs near suitable roosting habitat before the onset of breeding season, the construction disturbance will cause the bats to seek alternate sites for breeding and nest construction.
APM Bio-47	If avoidance of active bat roosting or maternity colonies is not practicable, a sufficient buffer will be maintained around any bat roosting or maternity colony.
APM Bio-48	In the event that a roosting bat or maternity colony occurs within or near the project area, a qualified biological monitor will be provided by PG&E, and remain on-site during construction activities to ensure there is no nest abandonment.
	Cultural Resources
APM Cult-1	Prior to the initiation of construction or ground-disturbing activities, PG&E will train all construction personnel to understand the potential for exposing subsurface cultural resources and to recognize possible buried cultural resources. Training will inform all construction personnel of the anticipated procedures that will be followed upon the discovery or suspected discovery of archaeological materials, including Native American remains and their treatment.
APM Cult-2	Upon discovery of possible buried cultural materials (including potential Native American skeletal remains), work in the immediate area of the find will be halted and PG&E's archaeologist will be notified. Once the find has been identified and evaluated, PG&E's archaeologist will make the necessary plans for treatment of the find(s) and mitigation of impacts if the finds are found to be significant according to CEQA. State law will be followed in the event of the exposure of Native American skeletal remains.
	Geology and Soils
APM Geo-1	Surface disturbance will be minimized to the extent consistent with safe and efficient completion of the project scope of work.
APM Geo-2	Topsoil will be salvaged from areas where grading would otherwise result in loss of topsoil, and the salvaged soil will be used to reclaim areas of temporary construction disturbance. Once temporary surface disturbances are complete, areas that will not be subject to additional disturbance will be stabilized by landscaping. Cultivated areas will be tilled for seedbed preparation.
APM Geo-3	Erosion control BMPs will be used where grading occurs.
	Hazards and Hazardous Materials
APM Haz-1	A Hazardous Substance Control and Emergency Response Plan will be prepared for the project. It will prescribe hazardous material handling procedures to reduce the potential for a spill during construction or exposure of the workers or public to a hazardous material. The plan will provide a discussion of appropriate response actions in the event that hazardous materials are released or encountered during field activities. The plan will be submitted to Contra Costa County's Certified Unified Program Agency (CUPA), or another appropriate oversight agency, for approval prior to initiating field activities.
APM Haz-2	Emergency-spill supplies and equipment will be kept adjacent to all areas of work and in staging areas, and will be clearly marked. Oil-absorbent materials, tarps, and storage drums will be used to contain and control any minor releases. Detailed information for responding to accidental spills, and for handling any resulting hazardous materials, will be provided in the project's Hazardous Substances Control and Emergency Response Plan. An environmental training program will be established to communicate environmental concerns and appropriate work practices to all construction field personnel. The training program will emphasize site-specific physical conditions to improve hazard prevention, and will include a review of the Hazardous Substances Control and Emergency Response Plan and the Storm Water Pollution Prevention Plan.

Table B.1-2. Applicant-Proposed Measures (APMs)

	Hydrology and Water Quality
APM Hydro-1	PG&E will develop a SWPPP that will describe BMPs to prevent the acceleration of natural erosion and sedimentation rates. A monitoring program will be established to ensure that the prescribed BMPs are followed throughout project construction.
APM Hydro-2	PG&E will develop a Spill Prevention, Countermeasure, and Control (SPCC) plan that will describe BMPs for preventing, controlling, and cleaning up hazardous material spills.
APM Hydro-3	A worker-education program will be established for all field personnel prior to initiating fieldwork, to provide training in the appropriate application and construction of erosion and sediment control measures. This education program will also discuss appropriate hazardous materials management and spill response.
APM Hydro-4	The SPCC plan will include engineered methods for containing and controlling an oil release, including a water-collection system and retention pond equipped with an oil/water separator. This collection and retention system will also regulate the release of stormwater runoff from the paved portion of the substation. The retention pond will serve as a settling basin to reduce turbidity and sedimentation downstream. Oil-absorbent material, tarps, and storage drums will be present on-site to contain and control any minor releases.
	Noise
APM Noise-1	All construction equipment will use noise reduction features that are no less effective than those originally installed by the manufacturer.
APM Noise-2	Construction will be limited to the hours between 7 a.m. and 6 p.m., except for California Independent System Operator-mandated interconnection clearances and where construction methods require extended work.
APM Noise-3	The three 45 MVA, 230/21 kV transformers will meet a 74 dBA rating.
APM Noise-4	The substation will be designed to maintain a minimum 200-foot distance between the transformer back and the nearest sensitive receptors to maintain noise levels below the 55 dBA ordinance during day time full load operation.
APM Noise-5	Transformers will be operated at reduced loading and without fan cooling between the hours of 10 p.m. and 7 a.m. where operationally possible.

Note: Applicant-Proposed Measures appear in the Proponent's Environmental Assessment (A.05-08-022, Exhibit A).
Source: PG&E, 2005; Revised Noise-3, April 21, 2006.

B.1.14 EMF Summary

B.1.14.1 Electric and Magnetic Fields

Recognizing that there is a great deal of public interest and concern regarding potential health effects from exposure to electric and magnetic fields (EMF) from power lines, this document provides information regarding EMF associated with electric utility facilities and the potential effects of the Proposed Project related to public health and safety. Potential health effects from exposure to electric fields from power lines (effect produced by the existence of an electric charge, such as an electron, ion, or proton, in the volume of space or medium that surrounds it) are typically not of concern since electric fields are effectively shielded by materials such as trees, walls, etc., therefore, the majority of the following information related to EMF focuses primarily on exposure to magnetic fields (invisible fields created by moving charges) from power lines. However, this Initial Study does not consider magnetic fields in the context of CEQA and determination of environmental impact. This is because (a) there is no agreement among scientists that EMF does create a potential health risk, and (b) there are no defined or adopted CEQA standards for defining health risk from EMF. As a result, EMF information is presented for the benefit of the public and decisionmakers.

After several decades of study regarding potential public health risks from exposure to power line EMF, research results remains inconclusive. Several national and international panels have conducted reviews of data from multiple studies and state that there is not sufficient evidence to conclude that EMF causes cancer. Most recently the International Agency for Research on Cancer (IARC) and the California Department of Health Services (DHS) both classified EMF as a *possible* carcinogen.

Presently, there are no applicable regulations related to EMF levels from power lines or substations. However, following a decision from 1993 (D.93-11-013) that was reaffirmed on January 27, 2006 (D.06-01-042), the CPUC requires utilities to incorporate "low-cost" or "no-cost" measures to mitigate EMF from new or upgraded electrical utility facilities up to approximately 4% of total project cost. To comply, PG&E has incorporated such measures to reduce magnetic field levels in the vicinity of the transmission line and proposed substation.

B.1.14.2 EMF and the Delta DPA Capacity Increase Substation Project

The Preliminary Electric and Magnetic Field Management Plan for the Delta Distribution Planning Area Capacity Increase Project and Delta Substation (A.05-08-022, Exhibit H) provides EMF information regarding the proposed Delta DPA Capacity Increase Substation Project. The Field Management Plan includes a brief introduction to EMF characteristics and public policy. In addition, the Field Management Plan identifies PG&E's base case field levels and proposed field reduction methods based on a similar existing electrical facility.

PG&E's Field Management Plan for the Proposed Project aims to reduce the proposed substation's magnetic field levels by using a design that has been effective at another new facility. The field reduction measures are based on the Bantam Substation design, incorporating the following techniques.

- Compacting the equipment spacing within the substation, which would increase the distance of the equipment to the property boundary);
- Using low-side metal clad switchgear to reduce low-side bus phase spacing; and
- Using underground 21 kV feeder terminations to the property limit.

B.1.15 Other Public Agencies Whose Approval is Required

The CPUC is the lead state agency for CEQA review of this project. In accordance with CPUC General Order No. 131-D, PG&E prepared and submitted a Proponent's Environmental Assessment as part of its application for a Permit to Construct (PTC). The CPUC has exclusive authority to approve or deny PG&E's application; however, various permits from other agencies may also need to be obtained by PG&E for the Proposed Project. If the CPUC issues a PTC, it would provide overall project approval and certify compliance of the project with CEQA. In addition to the PTC, Table B.1-3 summarizes the permits from other federal, State, and local agencies that may be needed for the project.

Table B.1-3. Permits that May Be Required for the Delta Substation Project

Permits	Agency	Jurisdiction/Purpose
Federal Agencies		
Nationwide or Individual Permit (Section 404 of the Clean Water Act)	U.S. Army Corps of Engineers	Possible interaction with Sand Creek
Approval Required through Section 10 of the Rivers and Harbors Act	U.S. Army Corps of Engineers	Construction of a structure for crossing Sand Creek
Biological Opinion and Section 7 Consultation	U.S. Fish and Wildlife Service	Possible impacts to threatened and endangered species
State Agencies		
National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Associated with Construction Activity and Storm Water Pollution Prevention Plan (SWPPP)	Regional Water Quality Control Board, San Francisco Bay Region	Construction of substation and access road and bridge
State Water Quality Certification (Section 401 of the Clean Water Act)	State Water Resources Control Board	A Water Quality Certification would be required if a Section 404 permit is needed
Endangered species consultation	California Department of Fish and Game	Possible impacts to threatened and endangered species
Section 1601 Streambed Alteration Agreement	California Department of Fish and Game	Possible interaction with Sand Creek
Transportation Permit or Encroachment Permit	California Department of Transportation	Movement of vehicles that may qualify as an oversized or excessive load or encroachment onto State right-of-way by work or traffic control
Local Agencies		
Water Well Permit	County of Contra Costa	Ministerial approval to drill a water well
Roadway Encroachment and/or Transportation Permit	City of Antioch, City of Brentwood, and/or Contra Costa County	Ministerial approval for possible closure of roads for transportation of heavy or oversized equipment and construction of distribution facilities within public roadway right-of-way
Building and grading permits	City of Antioch	Ministerial approval for construction of new facilities