Chapter 8—Hydrology and Water Quality

8.1 Introduction

This chapter describes the existing surface water and groundwater hydrology, use, and quality in the project area. It also describes the potential impacts from development and operation of the project. With implementation of the recommended mitigation measures, construction and operation of all phases of the project are expected to have less than significant impacts on hydrology and water quality.

8.1.1 Methodology

Surface water and groundwater in the project area were evaluated by inspecting water bodies and drainages, by reviewing studies completed by and for state and local water agencies, and by obtaining information from city, regional, county, and state water agencies. The potential impacts of the project on surface water and groundwater were evaluated by considering the initial construction activities and the long-term operation of the proposed substations and transmission lines. When evaluating the potential project impacts, it was assumed that PG&E would comply with all applicable federal, state, and local regulatory requirements that protect surface water and groundwater.

Areas of existing soil and water quality degradation were identified by searching federal and state regulatory agency databases that track sites with known, suspected, or potential hazardous substance contamination (for example, underground storage tanks or landfills). For sites that were identified in these databases, local regulatory agencies were contacted and files were reviewed for specific information regarding existing soil and groundwater conditions.

8.2 Existing Conditions

8.2.1 Watersheds and Regulatory Issues

The proposed project is located in two major watersheds that drain into separate basins: the Livermore / Amador Valley basin (Livermore basin), which comprises most of the project area; and the Central Valley basin, which comprises the eastern portion of Phase 2 of the project. These two watersheds are separated by the Altamont Hills, which provide a topographic and hydrologic divide. Surface water and groundwater west of the divide flow to the Livermore basin.

The Livermore basin and the Central Valley basin are under jurisdiction of the San Francisco Bay and Central Valley Regional Water Quality Control Boards (RWQCBs), respectively.

Furthermore, both basins are under jurisdiction of Alameda County except for the north-westernmost portion of the project area in the Livermore basin, which is located in Contra Costa County. Water quality in the project area is regulated by the following overlapping authorities:

- Contra Costa County and San Francisco Bay RWQCB
- Alameda County and San Francisco Bay RWQCB
- Alameda County and Central Valley RWQCB

Applicable federal, state, and county requirements are described subsequently.

Alameda County

The majority of the proposed project is located within Alameda County (see Figure 2-6 in Chapter 2). Surface water and groundwater quality and use in Alameda County are under the jurisdiction of the Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7). Zone 7 monitors water quality at a network of stream stations and supply wells and manages flood protection in the Cities of Livermore, Dublin, and Pleasanton and in the surrounding unincorporated areas.

Zone 7 administers the Alameda County Watercourse Protection Ordinance, which was enacted in 1982 to restrict discharge of polluted materials into watercourses and to restrict encroachment of new development into the watercourse area. It prohibits discharges into the watercourses and establishes a 20-foot minimum setback from the top of the bank to contain flow from a 100-year storm event and to avoid impacts of new developments on waterways. The County's Storm Water Management Plan addresses most surface water quality issues by requiring strict measures to control erosion and sedimentation and non-point source pollution from urban runoff. New development may be required to construct permanent retention basins and infiltration trenches. The retention basins, if required, must be designed such that they are safe, do not pose a threat to groundwater quality, and do not create nuisance issues (for example, increased mosquito habitat) (East County Area Plan, 1993). An erosion control and sediment transport control plan may be required by the county for the project.

Zone 7 does not monitor surface water or groundwater east of the Altamont Hills because the water is not presently an important supply source. This portion of the project area will be included in the Storm Water Pollution Prevention Plan (SWPPP) for the entire project.

Contra Costa County

The proposed Dublin Substation is in Contra Costa County. Water quality and flood control issues in this area are under the jurisdiction of the San Francisco Bay RWQCB and the Contra Costa County Flood Control District (CCCFCD)**.** Drainage and flood plain permits are required by the CCCFCD before construction of certain facilities can begin. The plans are required to contain measures that keep peak 200-year storm flows at pre-development levels. The CCCFCD identifies flood control improvements required of new

development and applies fees to make such improvements based on the amount of new impervious surface created.

Federal and State Requirements

Storm Water Pollution Prevention Plan (SWPPP). The RWQCBs implement water quality regulations under the Federal Clean Water Act (CWA) and the State Porter-Cologne Act. The regulations require compliance with the National Pollutant Discharge Elimination System (NPDES). Construction activities for this project require a NPDES General Construction Permit for discharges of storm water runoff associated with construction activity. The project applicant must submit a Notice of Intent (NOI) to the State Water Resources Control Board (SWRCB) to be covered by the General Permit prior to initiating construction. The General Permit requires the implementation of a SWPPP, which must be prepared before construction begins. The SWPPP will include:

- Specifications for best management practices (BMPs) that will be implemented during project construction to minimize the potential for accidental releases and to minimize runoff from the construction areas, including storage and maintenance areas and building materials laydown areas.
- A description of a plan for communicating appropriate work practices to field workers.
- A plan for monitoring, inspecting, and reporting any release of hazardous materials.

During construction, the RWQCBs will oversee and inspect the project for the SWRCB.

Section 404 Permits

Waters of the United States (including wetlands) are subject to U.S. Army Corps of Engineers (Corps) jurisdiction under Section 404 of the CWA. Section 404 regulates the filling and dredging of U.S. waters. The limits of nontidal waters extend to the Ordinary High Water (OHW) line, defined as the line on the shore established by the fluctuation of water and indicated by physical characteristics such as a natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, presence of litter or debris, or other appropriate means. In general, ditches excavated on dry land that do not convey flows from historical streams are considered nonjurisdictional. This is determined by the Corps on a case-by-case basis. A Section 404 permit would be required for project construction activities involving excavation of, or placement of fill material into, waters of the United States. A Water Quality Certification pursuant to Section 401 of the CWA is required for Section 404 permit actions. If applicable, construction would also require a request for Water Quality Certification (or Waiver thereof) from the RWQCB.

Streambed Alteration Agreements

Section 1601 of the California Fish and Game Code protects the natural flow, bed,

channel and bank of any river, stream, or lake designated by the California Department of Fish and Game (CDFG) in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. General project plans must be submitted to CDFG that are sufficient to indicate the nature of a project for construction if the project would:

- Divert, obstruct, or change a streambed
- Use material from the streambeds
- Result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a stream

8.2.2 Precipitation and Infiltration Rates

Average annual precipitation in the project area is approximately 16 to 24 inches, generally occurring between November and April. Typically, all precipitation is in the form of rain. In undeveloped areas, less than 10 percent of the rainfall appears as runoff in the creeks. The remainder is absorbed by the soil, or is transpired by the grassy and woody vegetation (EIP Associates, 1989; Alameda County, 1993).

8.2.3 Surface Water Bodies

Creeks

Most of the project area lies within the Alameda Creek Watershed which encompasses about 633 square miles and extends from Altamont Pass and Livermore, north to Mount Diablo and Dublin, south to Mount Hamilton, and west to its outlet to San Francisco Bay in Union City. The upper basin of the watershed covers three counties: Alameda, Contra Costa, and Santa Clara. Five incorporated cities are completely or partially located in the watershed: Livermore, Pleasanton, Dublin, and the southeastern portions of Danville and San Ramon. The upper basin is divided into the Livermore and Sunol drainage units. The project area is located within the 388-square mile Livermore drainage unit that occupies the northern and eastern portion of the watershed and includes the Orinda, Dublin, Altamont, and Livermore uplands, the Livermore Valley, and the Livermore Highland. The major streams in this drainage unit are Arroyo Valle, Arroyo Las Positas, Arroyo Mocho, Alamo Canal, and South San Ramon and Tassajara Creeks. These creeks, plus a number of smaller creeks including Alamo, Cottonwood, Collier Canyon, Cayetano, Altamont, Arroyo Seco, and Dry Creek, drain the Livermore drainage unit.

Cottonwood Creek, Collier Canyon Creek, Cayetano Creek, and Altamont Creek drain south and west to Arroyo Las Positas. South San Ramon Creek, Alamo Creek, Tassajara Creek, and Arroyo Las Positas drain south and west to Alamo Canal. Alamo Canal flows southeast and drains to Arroyo de la Laguna (Zone 7's Line F)—a major tributary of Alameda Creek—in Sunol. Arroyo Valle and Arroyo Mocho flow north and west, and also drain to Arroyo de la Laguna. Alameda Creek drains west through Niles Canyon to the San Francisco Bay.

Arroyo de la Laguna originates at the confluence of Alamo Canal and Arroyo Valle. This channel flows south below Pleasanton to its confluence with Alameda Creek in Sunol. The proposed project is located several miles from Alameda Creek at its nearest point.

On the Central Valley Basin side of the Altamont Hills, three tributaries of Mountain House Creek flow east to the Old River. In addition, an unnamed stream directs runoff past the existing Tesla Substation and east to the Central Basin, where it dissipates before it enters another surface water body.

The creeks in the project area are ephemeral or intermittent and are supplied by precipitation runoff and springs (USGS, 1985). However, in recent years most of the main channels draining to Alameda Creek have experienced perennial flow due to above-average precipitation. The natural stream channels tend to be deeply incised with vertical banks. The principal features of the major creeks relevant to the project are described subsequently.

Arroyo Las Positas, Altamont Creek, and Arroyo Seco. Arroyo Las Positas is the northernmost of three east-west trending creeks that pass through the Livermore basin. It is considered a major source of recharge to the Livermore basin groundwater supply. Arroyo Las Positas originates at the confluence of Altamont Creek and Arroyo Seco, just north of Interstate 580 near Springtown Boulevard. It flows approximately 9 miles west, parallel to Interstate 580, until it discharges into Arroyo Mocho. Portions of Arroyo Las Positas are channeled to control flooding, and the channel is deeply incised. Arroyo Las Positas is usually dry in summer months. The nearest point of the proposed project, the North Livermore Substation, is approximately 2 miles north of Arroyo Las Positas.

Altamont Creek originates in the Altamont Hills east of the Livermore basin, and flows approximately 3 miles west through the basin until it discharges into Arroyo Las Positas. In the Altamont Hills section, the creek channel is flanked by railroad tracks and Altamont Pass Road, and is locally channeled to accommodate intersections with these structures. In the Livermore basin, it is channeled through residential areas (Springtown) to control flooding. The Phase 2 transmission line would cross Altamont Creek near Milepost C5.6.

Arroyo Seco originates in the mountains southeast of the Livermore basin, where it drains a watershed approximately 14 square miles in size. It flows northwest, parallel to a portion of Tesla Road, crosses over the South Bay Aqueduct, through Lawrence Livermore National Laboratory and residential property, and under Interstate 580 before it discharges into Arroyo Las Positas. The upper reaches are contained in a natural creek bed, while portions of the lower reaches have been channeled for flood control. Another flood control channel (Zone 7 Line P-1) collects surface runoff from central portions of eastern Livermore Valley, and feeds it to Arroyo Seco near its intersection with Patterson Pass Road. The nearest point of the proposed project, the North Livermore Substation, will be approximately 2.5 miles north of Arroyo Seco.

Arroyo Mocho. Arroyo Mocho is the central of the three east-west trending creeks in the Livermore basin. It is considered a major source of recharge to the Livermore basin groundwater supply. Flow in Arroyo Mocho is expected to be perennial, at about 4 to 5 cubic feet per second, for the next several years due to discharge from de-watering gravel mines (ESA, 1998).

Arroyo Mocho originates in the mountains southeast of the Livermore basin, where it drains a watershed of nearly 40 square miles. It flows northwest parallel to Mines Road, over the South Bay Aqueduct, through residential portions of Livermore, parallel to Stanley Boulevard, past gravel mines, through the City of Pleasanton, and ultimately discharges into the Alamo Canal near Interstate 680. The upper reaches are contained in a natural creek bed, and the lower reaches in the Livermore basin are confined in a flood control channel (Zone 7 Line G). Within the Livermore basin, the active stream bed is incised about 15 to 20 feet below the top of the banks, with levees along most of its length. Three flood control channels (Zone 7 Line G-3, Line K / Tassajara Creek, and Line G-1 / Chabot Canal) contribute surface runoff to Arroyo Mocho as it passes through the City of Pleasanton. The nearest point of the proposed project, the existing Vineyard Substation, is approximately 1.4 miles southwest of Arroyo Mocho.

Arroyo Valle and Dry Creek. Arroyo Valle is the southernmost of the three east-west trending creeks that pass through the Livermore basin. It is considered a source of significant groundwater recharge to the Livermore basin groundwater supply. It is the most consistently flowing creek in the Livermore basin because it is primarily controlled by releases from Lake Del Valle. Additional ephemeral flow is provided just north of Lake Del Valle, where Dry Creek contributes surface runoff from a small watershed.

Arroyo Valle drains an undeveloped area of nearly 150 square miles in size south of the Livermore Valley, representing the largest watershed of the major creeks. From Lake Del Valle, it flows northwest across the Livermore basin, parallel to Arroyo Road, through the Livermore Regional Park District's Veterans and Sycamore Grove Parks, parallel to East Vineyard Avenue and ultimately to Arroyo de la Laguna west of Pleasanton. Within the Livermore basin, most of Arroyo Valle is contained in a flood control channel (Zone 7 Line E). The "Chain of Lakes" quarry reclamation facility is currently being constructed by various quarry operators in the section of Arroyo Valle parallel to East Vineyard Avenue, to provide surface water from the arroyo to groundwater recharge areas in eastern Pleasanton for long-term storage and use. The South Area transmission line would cross Arroyo Valle near Milepost M5.1.

Alamo Creek, Tassajara Creek, Cottonwood Creek, Collier Canyon Creek, and Cayetano Creek. These five creeks drain the hills north of the Livermore basin and discharge into Arroyo Las Positas, Arroyo Mocho, and the Alamo Canal. The creeks flow south from the hills, where their drainage channels are primarily natural. Portions of these creeks have been severely affected by cattle, with the banks denuded of native vegetation, and with highly eroded and disturbed creek bottoms. The lower reaches are contained within flood control channels (Zone 7 Line F, Tassajara Creek, Line L, Line M, and Line N), most of which are deeply incised.

Alamo Creek drains Dougherty Valley. It becomes the Alamo Canal in the vicinity of Dublin Boulevard. Water drains to the canal from creeks to the west (for example, Dublin Creek) and north (for example, South San Ramon Creek). The channeled creek is incised 15 to 20 feet. The active stream bed is about 20 feet wide. Alamo Canal flows into Arroyo de la Laguna near the southwest border of the City of Pleasanton.

The proposed transmission line would cross Cottonwood Creek, Collier Canyon Creek, and Cayetano Creek near Mileposts B16.1, B14.8, and B12.7-13.2 (three tributary crossings), respectively.

South San Ramon Creek. South San Ramon Creek originates in Watson Canyon north of the project area, and drains the southern San Ramon and Dublin areas. The creek receives storm water runoff from developed areas in the San Ramon Valley. It flows through urbanized areas east of and parallel to Interstate 680, and discharges into the Alamo Canal near Dublin Boulevard. It is completely contained within an artificial drainage channel designed for flood control. The nearest point of the proposed project, the Dublin Substation, will be approximately 4 miles east of South San Ramon Creek.

Mountain House Creek. East of Altamont Pass, three tributaries of Mountain House Creek flow east toward the Central Valley, where they converge and drain to the Old River. Interstate 580 is adjacent and parallel to one of the creek tributaries, and the natural creek bed has been re-routed and contained in many places to accommodate highway structures. At times, water from Mountain House Creek is pumped to the California Aqueduct system for Central Valley irrigation.

The Phase 2 transmission line would cross Mountain House Creek near Milepost C3.5.

Reservoirs, Ponds, and Wetlands

Lake Del Valle. Arroyo Valle is dammed approximately 1 mile south of the Livermore basin. The dam forms Lake Del Valle, which has a capacity of about 77 million acre-feet. The dam and reservoir, completed in 1969, comprise a combined water supply and flood control project of the Department of Water Resources (DWR) and the U.S. Army Corps of Engineers (Corps), respectively. Zone 7 owns the water supply and the DWR operates the dam, releasing water when requested by Zone 7. The reservoir is used to regulate South Bay Aqueduct flows, provide flood control storage, and for recreation. The discharge volume is determined by CDFG stream flow requirements, reservoir storage capacity, flow into the reservoir, and groundwater recharge requirements. The Corps regulates discharges during periods of downstream flood conditions. The nearest point of the proposed project, the south area transmission line, will be approximately 4 miles from Lake Del Valle.

Gravel Mining Pits. Gravel mining in the central Livermore basin south of Interstate 580 has resulted in numerous excavations that are partially filled with groundwater. One of these gravel pits, Shadow Cliffs Regional Park, has been converted into a man-made lake. The City of Livermore has plans to convert more gravel pits into lakes (that is, the "Chain of Lakes" project associated with Arroyo Valle) for the purpose of recreation and groundwater recharge. The Vineyard Substation is located about 0.5 miles from the nearest gravel mining pit.

Stock Ponds. Many stock ponds have been constructed to provide water for cattle in the rural areas of the project. Stock ponds are typically constructed near springs or seeps, and water is piped to the pond impoundment. The impoundments are normally earthen dams built across swales or small tributary valleys. (See Chapter 7, Biological Resources, Tables 7-5, 7-10, 7-11, and 7-13 for the location of stock ponds crossed.)

Natural Ponds and Wetlands. Natural depressions accumulate runoff and hillslope seepage during wet periods, forming seasonal ponds. Wetlands occur in the project area adjacent to some of the surface water bodies described above and near isolated springs. There are no perennial natural ponds or natural lakes in the project area. Chapter 7, Biological Resources, describes these wetland areas in more detail and lists the locations of wetlands.

South Bay Aqueduct. The South Bay Aqueduct is the only perennial waterway in the project area. It is part of the State Water Project, which is controlled by the DWR. Water

is pumped from the Banks Pumping Plant, located in the Sacramento-San Joaquin Delta, to the Bethany Reservoir. A portion of this water is diverted to the South Bay Aqueduct, which transmits water across the project area to Del Valle Reservoir. The water is used to supply Alameda and Santa Clara Counties. The aqueduct is completely contained within an artificial channel. The proposed project would not cross the aqueduct.

8.2.4 Storm Water Management System and Flooding Potential

Urbanized portions of the project area have flood control channels and piped storm drain systems to contain and direct storm water runoff associated with impervious surface areas, such as roads and buildings. Most of these pipes and channels feed water to the largest of the natural creeks, which have been partially improved to accommodate flood flows. Where they pass through urbanized areas, all of the major stream channels are improved as flood control facilities or, in the case of Arroyo Mocho near El Charro Road, are planned for improvement in the near future. Most of the flood control channels, which are described in Section 8.2.1, are operated and maintained by the county flood control agencies. The storm drain systems are typically maintained by the cities. In rural portions of the project area, precipitation that exceeds infiltration rates flows over the ground surfaces toward natural swales or channels. The project is located near improved flood control channels at the Vineyard Substation and at Milepost M5.1 of the South Area transmission line where it crosses Arroyo Valle. The north bank of Arroyo Valle has been raised with levees to control local flooding in this area.

In the past, flooding is known to have occurred within the Livermore-Amador Valley at the confluence of Arroyo Las Positas and Arroyo Mocho (particularly near El Charro Road). Additional areas have been impacted by flooding or channel damage, including Alamo Canal in the City of Dublin, and the reach of Arroyo de la Laguna from above its confluence with Arroyo Mocho to the San Francisco Water Department's Bernal Property. These impacts have been limited primarily to channel damage and repair.

The Federal Emergency Management Agency (FEMA) has estimated areas subject to flooding in most of the project areas in the Livermore basin and Contra Costa County. FEMA's Flood Insurance Rate Maps define the predicted boundaries of 100-year (Zone A) floods. Areas designated by FEMA to be within the predicted 100-year flood zone are shown in Figure 8-1. In the South Area project vicinity, predicted flood zones include the southern boundary of the existing Vineyard Substation (Arroyo Valle).

8.2.5 Dam Failure Inundation Area

To help local jurisdictions develop evacuation plans for areas below dams, the State Office of Emergency Services and the DWR have identified areas of potential inundation in the event of dam failures throughout California and have estimated when flood waters would arrive at downstream locations should a failure occur. Projected inundation limits are approximate and assume severe hypothetical failures, thus showing all potential flooded areas in the improbable occurrence of failure and resulting flooding. Inundation

maps for Del Valle Dam indicate that land up to the approximate 500-foot elevation on both sides of Arroyo Valle could be flooded should Del Valle Dam fail (see Figure 8-1). The South Area transmission line between Mileposts M5.1 and M5.3 is within the predicted inundation area. The Vineyard Substation is also within the predicted dam inundation area.

8.2.6 Surface Water Quality

Water quality objectives for surface water in the project area are described in the San Francisco Bay Region Basin Plan and the Central Valley Region Basin Plan. The narrative and numerical water quality objectives have been established to protect the existing and potential beneficial uses of surface water, which for Alameda Creek and its tributaries include agricultural supply, fish migration and spawning, groundwater recharge, recreation, and wildlife habitat.

Insert Figure 8-1 Waterbodies, Floodplains, and Flood Innudation

(11 x 17 color)

Insert Figure 8-2 Location of Potential Hazardous Materials Sites

(11 x 17 color)

Zone 7 monitors surface water quality at several stations in the Livermore basin. Zone 7 monitoring results indicate that water quality is generally better in the larger creeks originating south of the basin than in the creeks originating north and east of the basin.

The poorer water quality in the northern and eastern creeks has been attributed to the chemistry of native soils and bedrock, accumulation of salts (particularly boron and chloride) from irrigated farming, and heavy cattle grazing over time. Development and improper land use have increased soil erosion rates in some areas, which has resulted in excessive sediment loads in surface runoff and increased turbidity levels in streams and reservoirs. Rainy season flow in all creeks is generally highly turbid because of higher bedload capacity and upstream erosion during peak flow periods. Stream flow outside of the rainy season is typically spring fed and has lower suspended solids. No water quality information was available from the public agencies for surface water east of Altamont Pass.

The heavily urbanized portions of the Livermore basin have non-point sources of pollution (for examples, oily runoff from parking lots and roads, sediment from construction sites), some of which enters the creeks and flood canals in the area. Additionally, accidental releases have been recorded in agency databases in many places within the basin. Consequently, surface water quality varies depending on local activities.

8.2.7 Groundwater Hydrology, Use, and Quality

The Livermore basin can be characterized as a bedrock-rimmed, sediment-filled bowl. However, geologic conditions and the character of groundwater within the basin are quite variable. In recognition of these conditions, the basin has been subdivided by the DWR and Zone 7 into a series of 12 sub-basins that are grouped for planning purposes as the central subbasin and surrounding fringe subbasins.

The central subbasin has a greater production capacity than the fringe subbasins, which generally have thinner aquifers with less storage capacity, low well yield, and poor water quality. Management concerns for the fringe subbasins focus on the potential for poor quality water to migrate into and adversely affect the central subbasin. The central subbasin is characterized by abundant well yields and generally high groundwater quality. It is used to supply numerous municipal wells, for irrigation, and to store and distribute high quality imported water. Groundwater is recharged by a network of facilities including creeks, percolation ponds, and releases from Lake Del Valle.

Groundwater throughout the project area is generally found at depths greater than 30 feet, except in areas adjacent to local recharge sources (surface water bodies) or springs. The primary water-bearing formations are found in the valley floor deposits, at depths ranging from 30 to 400 feet below grade (East County Area Plan, 1993).

Groundwater quality in the central subbasin is generally good. The fringe subbasins have lower groundwater quality with higher dissolved solids. High sodium chloride and sodium sulfate levels have been found in groundwater in portions of the eastern

Livermore basin and in an area southeast of Dublin. Elevated concentrations of nitrates, boron, chloride, and total dissolved solids are found at various sites throughout the Livermore Valley and frequently are high enough to render groundwater undesirable for domestic, industrial, or agricultural use (East County Area Plan, 1993).

Groundwater in the fringe subbasins beneath the hills north, south, and east of the Livermore basin is used to water stock, but other uses are limited due to low productivity and poor water quality. The hills are composed of claystones and siltstones of the Orinda Formation, and are reported to have low permeability and be generally unproductive water supplies. Groundwater quality in these hills is generally reported to be unsuitable for domestic or irrigation purposes because of naturally high dissolved salt concentrations. The small alluvial deposits adjacent to creeks may produce higher quality groundwater (USGS, 1985).

8.2.8 Sites with Known or Potential Existing Contamination

Three properties on or adjacent to proposed transmission line routes were identified in regulatory databases of sites with known, suspected, or potential contamination and are shown in Figure 8-2.

Leland E. Stanley Farm

The Leland E. Stanley farm (Site 1 in Figure 8-2) is located at 4270 North Livermore Road, adjacent to and south of the proposed North Livermore Substation site and the North Area transmission line near Milepost V1.1. The California State Underground Storage Tank database identifies a 1,000-gallon gasoline underground storage tank (UST) on the property, status unknown. The farm yard is unpaved and contains a large collection of abandoned vehicles and farm equipment, many of which are in various stages of being dismantled. No releases have been identified at this property, but there is a potential for releases from vehicle fueling and maintenance and from the UST.

J. Silva Farm

The J. Silva farm (Site 2 in Figure 8-2) is located at 4871 North Livermore Avenue, adjacent to the North Area transmission line near Milepost V0.9. The UST database identified a 286-gallon gasoline UST on the property, status unknown. No releases have been identified at this property, but the existence of the UST creates a potential for a fuel release.

Altamont Landfill

The North Area transmission line route passes by the southern and western boundaries of the active Altamont Landfill (Site 3 in Figure 8-2) near Milepost B10.1. This landfill is owned and operated by Browning-Ferris, Inc. as a Class II non-hazardous waste landfill. No releases have been identified at this site, but the existence of a landfill creates a potential for releases of chemicals of concern.

In addition to the sites that were identified in environmental databases, portions of the North Area Phase 2 transmission line would cross railroad rights-of-way. Although no specific sites along these rights-of-way were identified in the environmental databases, railroad routes have historically been linked to localized petroleum and metals contamination due to releases from materials that were transported by the railroad, as well as from fuel releases associated with railroad engine operations (USEPA, 1997).

8.3 Potential Impacts

8.3.1 Significance Criteria

Significance criteria were derived from Appendix G of the revised CEQA Guidelines. Impacts to surface water or groundwater quality would be considered significant if the project were to:

- Permanently decrease the capacity of drainages or alter drainage patterns
- Cause a detrimental increase in site erosion or downstream siltation
- Increase the potential for substantial flood damage
- Expose people or structures to flooding in the event of a dam failure
- Result in a substantial degradation of surface or groundwater quality to the extent that beneficial uses are impacted or water quality criteria are exceeded
- Substantially decrease the available groundwater supply or affect groundwater recharge

When evaluating the potential project impacts, it was assumed that PG&E would comply with all applicable federal, state, and local regulatory requirements that protect surface water and groundwater. For example, poles will not be placed within the waterway protection corridors that are defined by city and county codes, and therefore will not impact these waterways. In accordance with the Clean Water Act, PG&E will prepare and implement a SWPPP that will include BMPs to minimize construction impacts on surface water and groundwater quality. The SWPPP will be prepared once the project is approved and after project facilities are sited and designed. The SWPPP will then be approved by Alameda and Contra Costa Counties.

8.3.2 Construction Impacts

Impact 8.1. Accelerated Soil Erosion, Downstream Sedimentation, and Reduced Surface Water Quality. Accelerated soil erosion and subsequent downstream sedimentation and reduced surface water quality could potentially increase during construction of the proposed project as described subsequently.

Overhead Transmission Line

Overhead transmission line construction will require excavation, scraping and grading, and soil stockpiling. Proposed transmission lines and access roads would cross numerous ephemeral waterways. Soil erosion rates could potentially be accelerated and sedimentation of downstream waterways could occur. Surface water quality could be diminished as a result of (1) vehicular traffic and foundation excavation in the vicinity of pole locations; (2) vehicular traffic, scraping and grading, and material laydown at pull sites/laydown areas; (3) scraping and grading, construction of culverts in ephemeral waterways, and construction of new permanent gravel access roads; and (4) scraping, grading, and constructing the proposed North Livermore and Dublin Substations. If sediment-laden runoff entered nearby drainages, it could potentially increase turbidity, increase channel siltation, and reduce the flood-carrying capacity of waterways downstream. Construction activities conducted when the ground is wet also creates the potential for increased runoff. However, with implementation of Mitigation Measures 8.1 and 8.2, impacts will be less than significant.

Substations

The North Livermore Substation site and vicinity is flat, with no existing runoff channels or swales. Currently, storm water in this area sheet flows very slowly to the southeast or infiltrates into the soil. Minimal grading will be required during substation construction, and there is little potential for accelerated erosion or siltation at this location because of the flat terrain and lack of waterways in the vicinity. Erosion and sedimentation impacts will be less than significant at this site.

The Dublin Substation site is located at the base of a small watershed, adjacent to an ephemeral tributary of Tassajara Creek. Currently, runoff in this watershed (including the western edge of the substation site) flows to a swale that directs it south to the tributary. Runoff from a steep hill adjacent to and north of the substation site sheet flows southwest across the eastern portion of the site before entering the tributary. Extensive grading will be required during substation construction, and there is a potential for accelerated erosion and siltation in the tributary to Tassajara Creek. With implementation of Mitigation Measures 8.1 and 8.2, impacts will be less than significant.

Underground Transmission Line

One trench approximately 3 feet wide and 6 to 8 feet deep will be required for the underground segments, except at the Arroyo Valle crossing, which will be dry bored horizontally at a depth of about 30 feet below grade to avoid impacts to the creek. Arroyo Valle is the only surface water body that is near the underground section of the route. Pits for the dry bore stream crossing will be located outside the bed and bank of the creek. If water exits the pipe ends, the water will be collected and stored in a Baker tank and ultimately disposed of at approved locations. Impacts to water quality, such as an increase in turbidity, will only occur if the creek bed settles during construction and

sediments are loosened as a result of the settling. However, these impacts would be temporary and localized, and are therefore less than significant.

Impact 8.2. Water Quality Degradation Caused by Accidental Release of Environmentally Deleterious Materials. Surface water and groundwater quality could potentially be impacted during construction at pole locations, pull sites/laydown areas, or new substation sites by an accidental release from a vehicle or motorized piece of equipment (diesel, gasoline, lubrication oil, hydraulic fluid, antifreeze, transmission fluid, or lubricating grease), or from a release of materials during concrete preparation or pouring for the pole foundations. Such spills could wash into nearby drainages or infiltrate into the soil. Surface or groundwater quality could potentially be degraded. However, implementation of Mitigation Measures 8.2 through 8.4 will reduce impacts to a less than significant level.

Impact 8.3. Increased Runoff from Construction of Pole Foundations, Permanent Access Roads, Pull Site/Laydown Areas, and Substations. Construction of the proposed substations will require scraping and grading and the installation of concrete foundations and pavement in some areas. These activities will diminish the storm water infiltration capacity at the North Livermore and Dublin Substation sites and could result in increased runoff volumes and rates.

- Flood impact from construction of the North Livermore Substation would be less than significant because the site is flat and there are no waterways in the vicinity. Storm water will continue to infiltrate or sheet flow to surrounding undeveloped property. A storm drainage system has been designed by the City of Livermore for construction in the future to serve new development in this area. Once this system is constructed, runoff from the North Livermore Substation will be directed to it. These impacts will be less than significant.

- Flood impact from construction of the Dublin Substation is likely to slightly increase because the site slopes to an ephemeral tributary to Tassajara Creek. Increased runoff could contribute to increased flooding downstream in the tributary or in Tassajara Creek. However, because most of the substation will not be paved and runoff will pass through a retention pond before it is channeled to the creek, the impact will be less than significant.

Scraping and grading for new access roads will remove vegetation and disturb the soil surface, which will result in a reduction in the infiltration and absorption capacity of the impacted area. The potential impacts would be localized and temporary, and are therefore less than significant.

At each pole site, a concrete foundation approximately 6 feet in diameter and up to 28 feet deep will be constructed. Placement of impervious material will restrict storm water infiltration. However, this impact is considered less than significant because the total area impacted by pole foundations is small.

Impact 8.4. Construction in a Predicted Dam Inundation Area. Underground transmission lines will be constructed in a dam inundation zone between Mileposts M5.1 and M5.3. However, the project does not include development of any inhabited structures and would not increase exposure of people or structures to flooding. There would be no impact from construction in a predicted dam inundation area.

Impact 8.5. Project Construction in Existing Contaminated Sites. The information gathered from hazardous material databases identified three potentially contaminated sites adjacent to or within close proximity of the proposed transmission line route in the North Area. Two of the sites are associated with underground gasoline storage tanks, the status of which is unknown. Poles will not be erected near the tank locations. The underground transmission line in the South Area will not cross any known hazardous waste sites, but it is possible that unknown hazards could be encountered. The third site is an active landfill, which may contain or leach hazardous materials. The proposed transmission line route will avoid the landfill. However, it is possible that groundwater beneath the transmission line route near the landfill has been affected by landfill leachate. Construction in this area could potentially expose workers to contaminants or spread the contamination by disposing of soil or groundwater at other locations. Implementation of Mitigation Measures 8.5 and 8.6 would reduce impacts to less than significant levels.

8.3.3 Operation Impacts

Impact 8.6. Water Quality Degradation Caused by Accidental Releases of Mineral Oil. Surface water and groundwater quality could potentially be impacted by a mineral oil release from oil-filled electrical equipment at the proposed North Livermore and Dublin Substations. Such releases, either from slow leaks or catastrophic failure, could wash into nearby drainages or infiltrate to the water table. The Federal Clean Water Act and the State Porter-Cologne Water Quality Control Act prohibit the release of any oil to waters of the state. The City of Livermore requires that all necessary measures be taken to regulate runoff from urban uses to protect the quality of surface and groundwater from detrimental conditions. In the event of a release, surface or groundwater quality could be degraded.

PG&E will prepare Spill Prevention, Countermeasure, and Control (SPCC) plans for both of the proposed substations. The plans will include engineered and operational methods for preventing, containing, and controlling potential releases (for example, by constructing retention pond, motes, or berms), and provisions for a quick and safe cleanup. The plan will be submitted to the county for review. Existing SPCC plans for the Vineyard Substation will be revised to include new equipment.

Incorporation of SPCC measures into the project design will reduce impacts to a less than significant level. (Also see Chapter 14, Impact 14.4.)

8.4 Mitigation Measures

Mitigation Measure 8.1. An erosion control and sediment transport control plan will be submitted to Alameda County and Contra Costa County along with grading permit applications. This plan will be prepared in accordance with the standards provided in the Manual of Erosion and Sedimentation Control Measures (ABAG, 1981) and in compliance with practices recommended by the Natural Resources Conservation Service. Implementation of the plan will help stabilize graded areas and waterways, and reduce erosion and sedimentation. The plan will designate BMPs that will be adhered to during construction activities. Erosion minimizing efforts such as hay bales, water bars, covers, sediment fences, sensitive area access restrictions (for example, flagging), vehicle mats in wet areas, and retention/settlement ponds will be installed before extensive clearing and grading begins. Mulching, seeding, or other suitable stabilization measures will be used to protect exposed areas during construction activities. Revegetation plans, the design and location of retention ponds, and grading plans will be submitted to the CDFG for review in the event of construction near waterways.

The plan will incorporate stipulations of the Alameda County grading erosion and sediment control ordinance, which requires that "trenching and grading associated with the construction and installation of underground pipelines be backfilled and the surface restored to its original condition, including reseeding or otherwise restoring vegetation on all disturbed slopes exceeding 2 percent," as soon as possible after such grading work is completed.

Non-hazardous trench spoils from the underground transmission line will be stockpiled and used to backfill the trench. Open portions of the trench will be covered when not under active construction. Standard erosion and dust control practices will be used during construction according to Best Management Practices to protect biological and hydrological resources.

Mitigation Measure 8.2. An environmental training program will be established to communicate environmental concerns and appropriate work practices, including spill prevention and response measures, to all field personnel. A monitoring program will be implemented to ensure that the plans are followed throughout the period of construction.

Mitigation Measure 8.3. PG&E will prepare a Hazardous Substance Control and Emergency Response Plan which will include preparations for quick and safe cleanup of accidental spills. This plan will be submitted with the grading permit application. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of accidental spills. The plan will identify areas where refueling and vehicle maintenance activities and storage of hazardous materials, if any, will be permitted.

Mitigation Measure 8.4. Oil-absorbent material, tarps, and storage drums will be used to contain and control any minor releases of transformer oil. In the event that excess water

and liquid concrete escapes from pole foundations during pouring, it will be directed to bermed areas adjacent to the borings where the water will infiltrate or evaporate and the concrete will remain and begin to set. Once the excess concrete has been allowed to set up (but before it is dry), it will be removed and transported to an approved landfill for disposal.

Mitigation Measure 8.5. Soil sampling and potholing will be conducted before construction begins, and soil information will be provided to construction crews to inform them about soil conditions and potential hazards. If hazardous materials are encountered in trench soils, work will be stopped until the material is properly characterized and appropriate measures are taken to protect human health and the environment. If excavation of hazardous materials is required, they will be handled, transported, and disposed of in accordance with federal, state, and local regulations.

Prior to initiating excavation activities at pole locations near the Altamont Landfill, soil borings will be advanced to ensure that groundwater will not be contacted. If groundwater is encountered within the depths of the proposed foundations, samples will be collected and submitted for laboratory analysis of metals and halogenated volatile organic compounds. If necessary, groundwater will be collected during construction, stored in Baker tanks, and disposed of in accordance with state and local regulations. Appropriate personal protective equipment will be used and soils management will be performed in accordance with state and county regulations.

Mitigation Measure 8.6. If groundwater is encountered while excavating or constructing the underground transmission line, it will be checked for contaminants, and if none are found, will either be released to one of Kaiser Sand and Gravel's sediment ponds (with approval), released to the City of Pleasanton's storm water drainage system (with approval), or contained in a tank and disposed of in accordance with all applicable federal, state, and local regulations.

8.5 References

Alameda County Flood Control District, Zone 7. 1999. *Letter from Gerald Gates of Zone 7 to David Harnish of PG&E with groundwater level contour map, groundwater quality contour map, surface water sample location map, surface water quality summary table.* Data from Zone 7 Alameda County Flood Control and Water Conservation District. January 29.

Alameda County Water District, Zone 7, 1999. Personal communication between Eric Johnson and Kenneth James of PG&E and David Lunn, Chief of Water Resources Engineering. March 9.

Alameda County Planning Department. 1993. *Draft East County Area Plan, Volume 2. Background Reports ¾ Setting, Trends and Issues.* February.

Alameda County Planning Department. 1993. *The Course at Wente Brothers. Environmental Impact Report for Conditional Use Permit Application C-6291.* December.

California Department of Water Resources. 1966. *Livermore and Sunol Valleys, Evaluation of Ground Water Resources, Geology*, Bulletin 118-2, Appendix A.

California Department of Water Resources. 1999. Department of Water Resources Web Site www.dwr.water.ca.gov

City of Livermore. 1976. *Community General Plan 1976-2000.*

City of Livermore. 1997. *South Livermore Valley Specific Plan and General Plan Amendment, Draft Environmental Impact Report.* May.

Dublin-San Ramon Services Department. 1996. *Dublin San Ramon Services District Clean Water Revival, Recycling for Groundwater Replenishment, Draft Environmental Impact Report.* State Clearinghouse No. 95103015. August 30. Prepared by Environmental Science Associates and CH2M HILL.

Dublin-San Ramon Services District-East Bay Municipal Utility District. 1996. *Draft Environmental Impact Report for the San Ramon Valley Recycled Water Program.* State Clearinghouse No. 96013028. Dublin-San Ramon Services District and East Bay Municipal Utility District. August.

EIP Associates. 1989. *Draft Environmental Impact Report. Ruby Hill Development, General Plan Amendment and 1837th Zoning Unit.* (SCH. No. 89020714). For the County of Alameda Planning Department. November.

EIP Associates. 1991. *Dougherty Valley Growth Management and Specific Plan.* City of San Ramon. September 13, 1991.

Environmental Science Associates. 1998. *Livermore-Amador Valley Water Agency Export Pipeline Facilities Project Draft Environmental Impact Report.* SCH#97072090. January.

U.S. Environmental Protection Agency. 1997. *Profile of the Ground Transportation Industry, Trucking, Railroad and Pipeline.* September.

U.S. Geologic Survey. 1985. *Water Quality Conditions and an Evaluation of Ground- and Surface-Water Sampling Programs in the Livermore-Amador Valley, California.* Water Resources Investigations Report 84-4352.