Volume 3 of 3

EBMUD WATER TREATMENT AND TRANSMISSION IMPROVEMENTS PROGRAM

Draft Environmental Impact Report
SCH # 2005092019

East Bay Municipal
Utility District

June 2006

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225 Bush Street
Suite 1700
San Francisco, CA 94104
415.896.5900
www.esassoc.com

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CHAPTER 4
Growth-Inducement Potential and Secondary Effects of Growth

This chapter contains the following sections:

4.1 Approach to Analysis

The California Environmental Quality Act (CEQA) Guidelines require that an environmental impact report (EIR) evaluate the growth-inducing impacts of a proposed action. A growth-inducing impact is defined as follows:

> [T]he ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are [public works] projects which would remove obstacles to population growth.... It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.[1]

The environmental effects of induced growth from a project of this nature are secondary or indirect impacts. Growth can result in significant increased demand on community and public service infrastructure; increased traffic, noise, degradation of air and water quality; and conversion of agricultural land to urban uses.

Based on the CEQA definition above, assessing the growth-inducement potential of the Water Treatment and Transmission Improvements Program (WTTIP) involves answering the question: Will construction and/or operation of planned improvements proposed as part of the WTTIP remove an obstacle to growth and thus directly or indirectly support more economic or population growth or residential construction? Implementation of the WTTIP would provide additional water service capacity, which would in part assist in serving additional planned and predicted residential and business customers in the Walnut Creek/Lamorinda area; therefore, the program would be growth inducing by this definition. The proposed capacity improvements also address existing capacity deficiencies.

1 CEQA Guidelines Section 15126.2(d).

A variety of factors influence new development or population growth in the Lamorinda/Walnut Creek area, including economic conditions of the region, adopted growth management policies in the affected communities, and the availability of adequate infrastructure (including public schools and roadways as well as water service and sewer service). Water service is one of the chief public services needed to support urban development, and a service capacity deficiency could constrain future development.

Growth inducement may constitute an adverse impact if the growth is inconsistent with the land use and growth management plans and policies of the affected communities. Local land use plans (e.g., general and specific plans) of the cities served by the project provide land use development patterns and set forth growth policies that allow for the orderly expansion of urban development supported by adequate public services, including water supply, roadway infrastructure, sewer service, and solid waste service. A project that would induce “disorderly growth” (growth that is inconsistent with local land use plans) could indirectly cause adverse environmental impacts, as well as impacts to other public services, that were not previously envisioned by local jurisdictions and evaluated in the CEQA review of their land use plans and development proposals. Consequently, the level of growth accommodated by implementation of the WTTIP is evaluated for consistency with future planned growth outlined in applicable plans and policies. Even planned growth can result in significant environmental effects, and the WTTIP could indirectly contribute to such impacts by removing an obstacle to the occurrence of this development.

This chapter compares the growth assumptions that underlie current water demand forecasts for the Lamorinda/Walnut Creek area with population forecasts of the Association of Bay Area Governments (ABAG) and local planning agencies, and discloses the impacts associated with forecasted growth.[2]

4.2 Growth-Inducement Potential

4.2.1 EBMUD Planning Context

Requirements for Coordination between Land Use and Water Supply Planning Agencies

To ensure the provision of water services to support planned development, state law requires close coordination and consultation between local land use and water supply planning agencies on issues pertaining to such planned development. Each city and county is required to adopt a comprehensive, long-term general plan for the physical development of the jurisdiction (California Government Code Section 65300). The general plan is a statement of development policies and is required to include land use, circulation, housing, conservation, open space, noise, and safety elements. As specified in the Government Code, the land use element designates the

2 Existing water treatment capacity serving EBMUD’s West of Hills service area—supplied by the Orinda, Sobrante, and Upper San Leandro WTPs—is sufficient to accommodate existing and future demand. The WTTIP projects at these WTPs involve upgrading existing infrastructure (the ozonation systems at Sobrante and Upper San Leandro), improving water quality, and improving backwash water processing, and are not intended to add additional capacity.

proposed general distribution, location, and extent of land uses and recommends population density and building intensity for the various districts and other territory covered by the plan. The conservation element is required to address the conservation, development, and utilization of natural resources, including water. The water section of the conservation element is required to be developed in coordination with any countywide water agency and with all districts and/or city agencies that develop, serve, control, or conserve water for the county or city for which the general plan is prepared. Coordination with the water agencies is required to include a discussion and evaluation of water supply and demand information contained in any applicable urban water management plan that has been submitted to the city or county by a water agency (California Government Code, Sections 65302 et seq.).

Urban Water Management Planning Act

Every urban water supplier is required to prepare an urban water management plan (UWMP) for the purpose of "actively pursu[ing] the efficient use of available supply" (California Water Code, Section 10610.2). In preparing the UWMP, the water supplier is required, to the extent practicable, to coordinate with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies. When a city or county proposes to adopt or substantially amend a general plan, the water agency is required to provide the planning agency with the current version of the adopted UWMP, the current version of the water agency's capital improvement program or plan, and other specified information about the system's sources of water supply. The Urban Water Management Planning Act requires urban water suppliers, as part of their long-range planning activities, to make every effort to ensure the appropriate level of reliability in their water service sufficient to meet the needs of their various categories of customers during normal, dry, and multiple dry water years (California Water Code, Section 10610 et seq.).

Water Supply Analysis Requirements (Senate Bills 221 and 610)

In 2001, the California legislature adopted two bills that also pertain to the need for coordination between land use and water supply planning and decision-making. Under amendments to the Subdivision Map Act[3] contained in Senate Bill (SB) 221, an applicant for a subdivision of 500 or more dwelling units must demonstrate to local land use agencies, at the time the subdivision map is considered for approval, that sufficient water supply is available to support the proposed development. Proof of available supply is to be based on the written verification from the applicable public water system. Written verification must be supported by substantial evidence, which may include, but is not limited to, the public water system's most recently adopted UWMP. Under amendments to the Urban Water Management Planning Act contained in SB 610,[4] the CEQA review for most large projects must include an assessment of water supply. SB 610 applies to large residential, retail, office, industrial, and mixed-use projects, and specifies the size (in terms of area and/or number of units) of projects in each category to which the requirement applies.

3 SB 221 amended the Subdivision Map Act by adding Sections 66455.3 and 66473.7 to the California Government Code, and also amended Government Code Section 65867.5 and Business and Professions Code Section 11010.

4 SB 610 amended California Water Code Sections 10631, 10656, 10910, 10911, 10912, and 10915, repealed Water Code Section 10657, and amended Public Resources Code Section 21151.9.

EBMUD Role in Water Supply and Land Use Planning

As a municipal utility district, the District does not have authority to make land use decisions within its service area. It cannot approve or deny development proposals; that is the responsibility of the land use planning agencies of the jurisdictions the District serves. However, as discussed above, the District is required by state law to make every effort to ensure the appropriate level of water service for the areas it serves. Because implementation of major water projects can take many years, planned facilities must be based on projected future demand rather than existing demand. Due to the time it takes to construct water system improvements needed to meet future demand, coupled with the expectation of a long service life, water agencies' planning documents typically have longer planning horizons than many of the general plans of the jurisdictions they serve. As described below, the District's water demand projections are based on the amount of development allowed under currently approved general plans and were developed in consultation with planning agencies of the jurisdictions served.

EBMUD Service Area

Figure 2-1 (in Chapter 2) shows the District's existing service area based on the most recent Ultimate Service Boundary (USB). WTTIP projects needed to meet future demand would serve Lafayette, Moraga, and Orinda (Lamorinda), western Walnut Creek, and adjacent unincorporated areas. As indicated in Chapter 2, improvements proposed under the WTTIP are sized to address existing capacity deficiencies as well as serve buildout in the Lamorinda/Walnut Creek area through the year 2030. Proposed facility improvements have not been sized to accommodate growth beyond the USB established by the District, or the District's sphere of influence established by the Contra Costa County Local Agency Formation Commission (LAFCO). The EBMUD Board of Directors has adopted policies to oppose annexation of territory outside the USB, based on the District's limited water supply and on the precedence of obligations to existing and future customers within the USB/sphere of influence.

Districtwide Update of Water Demand Projections

EBMUD's current water demand projections are based on the *Districtwide Update of Water Demand Projections* Study (Demand Study) (EBMUD and Montgomery Watson, 2000), which extends projections through 2030. The Demand Study projections are based on current and future land uses, rather than on population projections (which were the principal basis for previous demand projections in the 1993 *Water Supply Management Program*). To project future demand, the land-use-based approach utilizes geographic information system (GIS) technology, existing data on water demand for various land use categories, and future changes in land use categories based on adopted general and specific plans. This approach enables the District to develop demand projections for each pressure zone[5] in the system. The methodology used by the District to develop these land-use-based projections is described below. Specific water demands projected

5 As described in Chapter 2, Project Description, a pressure zone is an area within a specified elevation range (e.g., 250 to 450 feet) where storage and distribution facilities are designed to deliver water at a pressure range suitable for customer use. EBMUD's service area is divided into 123 pressure zones, ranging in elevation from sea level to 1,450 feet.

for the pressure zones serving the Lamorinda/Walnut Creek area are discussed under “Project Area Demand Projections,” below.

Existing Demand and Development of Land Use Unit Demands

Projecting future water demands based on future land uses first entails determining existing land uses and the water demand associated with each land use category. To determine the location and type of each land use category for 1996 (the base year for the study) and future years, the District relied on the adopted general plans and specific plans of the cities and counties within the service area and consulted with city and county planners, who provided input on future growth data for general plans and the phasing of new growth (Johnson and Loux, 2004). Polygons for each land use category were digitized over a 1996 aerial photograph to create a GIS land use coverage for the District’s entire service area. Future land use categories based on the adopted general and specific plans were also created and stored in the land use database (EBMUD and Montgomery Watson, 2000). To determine existing water demand for each land use category, the digitized 1996 land use coverage was linked, using GIS technology, to the District’s metered water use database. The water used for each land use category was calculated by summing the actual demand for the taps within each polygon. The total actual demand for each land use polygon was then divided by the area of the polygon to calculate an average “land use unit demand” (LUD), expressed in units of gallons per day per acre (gpd/acre), for each land use category. Average LUDs were calculated separately for the District’s East of Hills and West of Hills areas, since the two areas have different climates and landscape requirements. Adjustments to normalize the data (e.g., to account for lower-than-normal water use in 1996 due to higher-than-usual precipitation that year, and lower use as a consequence of continued water savings following the 1988 to 1993 drought) and to factor in unaccounted-for water[6] were applied to the base 1996 LUDs to calculate adjusted 1996 LUDs (EBMUD and Montgomery Watson, 2000). The Demand Study assumed an unaccounted-for water value of 10 percent of the normalized metered demand.[7]

Future Demand

Future demand was calculated by applying a future adjustment factor to the adjusted 1996 LUDs. If the existing land use is the same for future years, the adjustment factor reflected changing water usage due to infill development, lower vacancy rates in commercial buildings, and the replacement of low-density nonresidential buildings with higher density buildings, as allowable under current general plan designations. Infill development refers to the development of unused parcels within developed areas; it does not include development of vacant or open space land use categories, which is categorized as new development. New development occurs when the existing land use category changes in future years. The water demand for new development is calculated using the 1996 adjusted average LUD for the new land use designation with a factor applied for future adjustments. As with the land use categories that do not change in future years, the future adjustment factors for new development account for increased densities of certain residential and

[6] Unaccounted-for water is the difference between the total water produced at the water treatment plants and the total water consumption billed; it includes leaks in the distribution system, water treatment plant process uses, meter errors, unmetered construction uses, firefighting, and hydrant flushing.

[7] Average historical unaccounted-for water percentages range from approximately 7 to 8 percent; the Demand Study conservatively used the 10 percent value to ensure that facilities are sized to handle worst-case demands.

nonresidential buildings (EBMUD and Montgomery Watson, 2000). Therefore, due to new development and changes in land use categories according to approved general and specific plans, the size and shape of some polygons will change in future years.

Planned conservation programs and water recycling projects will offset a portion of total future demand; these projected savings from conservation and water recycling for each land use category were also factored in to determine the adjusted future demand. Adjustments to the LUDs for conservation reflect the conservation goals of the 1994 EBMUD *Water Conservation Master Plan*, which projected total conservation savings of 33 million gallons per day (mgd) in 2020. More recently, the projected 2030 demand used for the 2005 *Urban Water Management Plan* shows a slight adjustment in assumed conservation savings (to 35 mgd in 2020) (EBMUD, 2005a). Table 4-1 presents systemwide average-day demand[8] within the USB, with adjustments for conservation and water recycling.

TABLE 4-1
DISTRICTWIDE PROJECTED AVERAGE-DAY DEMANDS (2005–2030)
ADJUSTED FOR CONSERVATION AND RECYCLING
(mgd[a])

	2005	2010	2015	2020	2025	2030	2005–2030 Change (mgd)	Percent Change 2005–2030
Customer Demand	241	258	267	277	279	281	40	16.6%
Adjusted for Conservation	-13	-21	-27	-35	-35	-35		
Adjusted for Recycled Water	-6	-12	-14	-14	-14	-14		
Planning Level of Demand	**222**	**225**	**226**	**228**	**230**	**232**	**10**	**4.5%**

[a] mgd = million gallons per day.

SOURCE: EBMUD, 2005a.

Project Area Demand Projections

As noted above, the land-use-based approach used in the Demand Study allows the District to project future water demands for each pressure zone in the system. Subsequent to the Demand Study, Lamorinda/Walnut Creek demands were updated based on consultations with city planners about rates of buildout. Figure 2-3 in Chapter 2 shows the pressure zones serving the Lamorinda/Walnut Creek area. Table 4-2, below, lists the pressure zones, the elevation range of each zone, and the communities served by each zone. Project-level and program-level planning for the WTTIP has been undertaken for each pressure zone. Table 4-3 indicates current average-

[8] Average-day demand, usually expressed in gallons per day, is the total annual demand (in million gallons) divided by 365 (days per year). In contrast, Chapter 2, Project Description, discusses the *maximum* daily demand that the WTTIP needs to address to ensure adequate service during peak demand periods. This chapter considers average demand, as it better reflects the scale of growth anticipated to be served by the proposed WTTIP than does maximum daily demand.

TABLE 4-2
COMMUNITIES SERVED BY PRESSURE ZONES WITH WTTIP PROJECTS

Pressure Zone	Elevation Served (feet above mean sea level)	Area Served[a]
Leland	100–250	Parts of Alamo, Lafayette, Pleasant Hill, and most of Walnut Creek
Colorados	250–450	Parts of Contra Costa County, Lafayette, Moraga, Pleasant Hill, and Walnut Creek
Cherry	300–500	Lafayette
Reliez Valley	350–550	Lafayette
Brookwood	450–650	Parts of Contra Costa County, Lafayette, and Walnut Creek
Reliez	450–570	Contra Costa County
Knight	615–815	Parts of Contra Costa County and Lafayette
Echo Springs	650–850	Lafayette
Hink	790–990	Lafayette
Bryant	450–650	Parts of Lafayette, Moraga, Orinda, and Walnut Creek
Baseline	700–900	Parts of Lafayette, Moraga, and Orinda
Camino Sobrante	450–650	Orinda
Carter	650–850	Moraga
Crossroads	650–850	Orinda
Dos Osos	1,050–1,250	Orinda
Encinal	650–850	Orinda
Fay Hill	650–850	Parts of Lafayette and Moraga
Hill Mutual	575–775	Alamo
Holly	645–845	Parts of Alamo and Walnut Creek
Laguna	900–1,100	Orinda
Las Aromas	650–850	Parts of Lafayette and Orinda north of Highway 24 and east of Camino Pablo
Mulholland	900–1,100	Parts of Orinda and Moraga
Orchard	540–740	Orinda
Ridgewood	450–650	Alamo
Saturn	600–800	Lafayette
Valencia	550–665	Orinda
Valley View	850–1,050	Parts of Lafayette and Orinda north of Highway 24 and east of Camino Pablo
Via Farallon	500–700	Orinda
Westside	850–1,050	Orinda
White Oak	550–750	Orinda

NOTE: Base pressure zones are shown in **bold**; pressure zone cascades, which are pressure zones at higher elevations served through the base pressure zones at lower elevations, are shown in unbolded text.

[a] Refer to Figure 2-3 in Chapter 2 for a map of these pressure zones.

SOURCE: EBMUD, 2003a, 2003b, 2004, and 2005b–2005f.

TABLE 4-3
PROJECTED WATER DEMANDS BY PRESSURE ZONE (2005–2030)[a]

Pressure Zone	Projected Demand (mgd[b]) 2005	2010	2020	2030	2005–2030 Change (mgd[b])	Percent Change 2005–2030
Leland	8.74	8.86	9.15	9.50	0.76	9%
Colorados	5.69	5.87	6.01	6.08	0.39	7%
Included with Colorados						
Brookwood					–	
Cherry					–	
Echo Springs					–	
Hink					–	
Knight					–	
Reliez					–	
Reliez Valley					–	
Bryant	7.20	7.44	7.93	8.42	1.22	17%
Baseline	1.83	1.88	1.87	1.89	0.06	3%
Baseline (Montanera Development)	0.15	0.15	0.15	0.15	0	0%
Included with Baseline						
Crossroads					–	
Mulholland					–	
Camino Sobrante	0.04	0.04	0.04	0.04	0.00	0%
Carter	0.31	0.35	0.36	0.36	0.05	16%
Dos Osos	0.03	0.05	0.05	0.06	0.03	100%
Encinal	0.08	0.08	0.08	0.08	0.00	0%
Fay Hill	0.56	0.60	0.60	0.61	0.05	9%
Hill Mutual	0.03	0.04	0.04	0.04	0.01	33%
Holly	0.06	0.53	0.57	0.58	0.52	867%
Laguna	0.06	0.07	0.07	0.07	0.01	17%
Laguna (Montanera Development)	0.14	0.14	0.14	0.14	0	0%
Las Aromas	1.21	1.26	1.27	1.28	0.07	6%
Orchard	0.13	0.13	0.13	0.13	0	0%
Ridgewood	0.01	0.01	0.01	0.01	0.00	0%
Saturn	0.02	0.02	0.02	0.02	0.00	0%
Valencia	0.07	0.07	0.07	0.07	0	0%
Valley View	0.36	0.38	0.37	0.38	0.02	6%
Via Farallon	0.02	0.02	0.02	0.02	0.00	0%
Westside	0.03	0.04	0.04	0.05	0.02	67%
Whiteoak	0.03	0.03	0.03	0.03	0.00	0%
TOTAL	**26.80**	**28.06**	**29.02**	**30.01**	**3.21**	**12%**

[a] Demands have been adjusted for normalization, unmetered water, and conservation. Demand does not include reclamation.
[b] mgd = million gallons per day.

SOURCE: EBMUD, 2003a, 2003b, 2004, and 2005b–2005f.

day demand projections from the EBMUD Pressure Zone Planning Program (PZPP) studies for the pressure zones serving the Lamorinda/Walnut Creek area (EBMUD, 2003a, 2003b, 2004, and 2005b–2005f).

Projected growth-related trends identified in the PZPP studies for the pressure zones serving the Lamorinda/Walnut Creek area, and the potential for using recycled water in the respective pressure zones, are summarized below. Pressure zones are grouped as presented in the PZPP studies.

Leland Pressure Zone

Most of the growth in the Leland Pressure Zone is expected to occur as infill development, with relatively minor increases in water demand projected (EBMUD, 2005b).

Recycled Water. The largest water users in the Leland Pressure Zone include the John Muir Hospital and numerous apartment complexes. These uses, in addition to several large irrigated park areas in the pressure zone, provide some limited opportunities for using recycled water. However, the District has not identified any recycled water projects in this pressure zone (EBMUD, 2005b).

Colorados Pressure Zone

Approximately 5,900 water customers are located in this pressure zone. More than 50 percent of the pressure zone is residential, approximately 33 percent is vacant and open space, and the remaining land is commercial, office, industrial, or other land use. By 2030, the area designated as residential is projected to increase from 50 percent to about 60 percent of the pressure zone area (EBMUD, 2005c).

Recycled Water. The Lamorinda Recycled Water Project, which is planned to serve a portion of the Colorados Pressure Zone, is currently on hold. The District has identified customers in the Diablo Vista Subzone and Tice Subzone for recycled water use in this pressure zone (EBMUD, 2005c).

Bryant Pressure Zone

The Bryant Pressure Zone is about 50 percent residential and 40 percent vacant or open space; the remainder is a mix of commercial and public uses. Several vacant areas throughout the pressure zone are projected to be developed as low-density housing (EBMUD, 2004).

Recycled Water. The Lamorinda Recycled Water Project planned to serve a portion of the pressure zone is currently on hold (EBMUD, 2004).

Baseline, White Oak, Orchard, Valencia, and Laguna Pressure Zones

These pressure zones are mostly residential. Several vacant areas throughout these pressure zones are expected to be developed as low-density housing. The proposed Montanera Development would add 245 new homes, a swim center, and sports fields (EBMUD, 2005d; City of Orinda, 2006).

Recycled Water. Because the predominant land uses in these pressure zones are residential and open space, there are no significant opportunities to use recycled water. A golf course originally planned to be included in the Montanera Development (which could have used recycled water) has been removed from the development plan (EBMUD, 2005d).

Encinal, Westside, and Dos Osos Pressure Zones

These pressure zones are expected to remain completely residential through 2030, with no significant increase in demand. As shown in Table 4-3, the increases in average-day demands in 2030 for the three pressure zones range from 0 (for Encinal) to 0.02 and 0.03 mgd for Westside and Dos Oso, respectively (EBMUD, 2005e). (Because existing demand for these zones is so small, the projected increases nevertheless represent a sizeable increase in percent demand—a 67 percent increase for the Westside Pressure Zone and a 100 percent increase for the Dos Osos Pressure Zone over 2005 demand.)

The PZPP study for the Encinal, Westside, and Dos Osos Pressure Zones also indicated the possibility of three new pressure zones: the Lomos Cantadas, Chaparral, and Vollmer Peak Pressure Zones. The new pressure zones would be located directly above the Dos Osos Pressure Zone and would serve elevations between 1,250 and 1,850 feet. Growth in these zones was expected to occur at an extremely slow rate, if at all. Because the likelihood is low that these pressure zones will be developed in the next 30 years, the PZPP study concluded that planning for these pressure zones was speculative and beyond the scope of the current planning study (EBMUD, 2005e).

Recycled Water. Because the predominant land uses in these pressure zones are residential and nonirrigated open space, there are no significant opportunities to use recycled water; in addition, recycled water is not easily available to these pressure zones (EBMUD, 2005e).

Fay Hill and Carter Pressure Zones

The Fay Hill and Carter Pressure Zones could serve several potential new development projects. In addition, water service was recently requested by seven customers in the vicinity that currently receive nonstandard water service. Two proposed development projects are the Palos Colorados, a 123-unit housing development with an 18-hole golf course, and Rancho Laguna, a 36-unit development. Recycled water is proposed to be used to water the Palos Colorados golf course. Development in the two pressure zones through the year 2030 is expected to continue to be residential, except for the golf course and St. Mary’s College. In the Carter Pressure Zone, approximately five acres of vacant land were projected to change to low-density residential (0 to 2.9 dwelling units per acre) by 2005, and approximately 340 acres are projected to change from vacant land to low-density residential by 2010. In the Fay Hill Pressure Zone, approximately 430 acres of vacant land are projected to change to low-density residential, approximately one acre from vacant land to medium-density housing (3 to 3.9 dwelling units per acre), and approximately 190 acres from vacant land to irrigated parks (including parks, school yards, playfields, and large landscaped street medians) by 2010. In the area above the Carter Pressure Zone, at elevations above 850 feet, approximately 107 acres are projected to change from vacant land to very low-density residential (minimum five-acre lots) by 2010, resulting in upper zone demand and possible creation of a new pressure zone. Because demand associated with these speculative developments was included to size future facilities, the facilities could be oversized if the development does not occur. The PZPP study for these pressure zones therefore recommended that storage tank and pumping plant sizes be reevaluated at the time of the upgrades (EBMUD, 2003a).

Recycled Water. Approximately 0.2 mgd of recycled water is projected to be used for the Palos Colorados golf course; construction and timing of the recycled water project depends on approval and timing of the proposed development. No recycled water supply is easily available for St. Mary's College, and the college would need the proper infrastructure in order to receive recycled water (EBMUD, 2003a).

Holly, Hill Mutual, Ridgewood, and Crest Pressure Zones

The land use in these three pressure zones is dominated by very low-density residential, which is typical for difficult terrain. Land use in these pressure zones is projected to remain completely residential through the year 2030. The Holly Pressure Zone is expected to experience the most substantial increase in demand. Approximately 428 acres of vacant land in this pressure zone is projected to change to low-density residential (1 to 2.9 dwelling units per acre) by 2010. Part of this land would be part of the Alamo Summit Development, which would include 37 single-family homes. The Hill Mutual and Ridgewood Pressure Zones are expected to remain low-density residential (EBMUD, 2003b).

Recycled Water. Existing and future land uses in these pressure zones are residential, and there are no large users. There are no significant opportunities to use recycled water in these pressure zones, nor is a recycled water supply easily available (EBMUD, 2003b).

Las Aromas and Valley View Pressure Zones

Demand for both the Las Aromas and Valley View Pressure Zones, which supply the Saturn, Via Farallon, and Camino Sobrante Regulated Pressure Zones, is expected to remain relatively stable through 2030 (see Table 4-3). No major future developments are planned in either the Las Aromas or Valley View Pressure Zones. At one time, three new pressure zones had been proposed to serve customers located above the current Las Aromas Pressure Zone. However, the land in this area is designated as open space and is expected to remain as such in the future (EBMUD, 2005f).

Recycled Water. Recycled water is not used in the Las Aromas cascade (Las Aromas, Camino Sobrante, and Via Farallon Pressure Zones), and there are no significant opportunities to use recycled water in the Los Aromas or Valley View Pressure Zones (or the other listed pressure zones, which are cascade pressure zones associated with Las Aromas and Valley View). Potential use of recycled water in these pressure zones has been studied, but to date has been considered impractical due to distance and elevational differences from the proposed pipelines as well as the lack of large irrigation users (EBMUD, 2005f).

4.2.2 Projections of Planning Agencies in the Project Area

ABAG Projections 2005

ABAG is the regional planning agency in the Bay Area and provides growth forecasts for the nine Bay Area counties; in the past, the District has used ABAG projections in the development of its water demand forecasts. This EIR reviews the population projections provided in *Projections 2005* (ABAG, 2004) for Lafayette, Moraga, Orinda, Walnut Creek, and unincorporated Contra Costa County as part of the assessment of District water demand projections. Because the District did not base the 2000 Demand Study on population forecasts, but rather on future approved land uses and land use densities, a direct comparison of the District's growth assumptions with the ABAG projections is not possible. However, comparing population growth projected for the planning period by ABAG with District water demand projections provides a means to consider the consistency of future water demands to be met by the WTTIP with ABAG assumptions about future growth in the Lamorinda/Walnut Creek area. Similarities or differences between the projected growth rates provide an indication of whether implementation of the WTTIP could indirectly result in more or less growth than anticipated by the regional planning agency.

ABAG provides projections for cities, limited to the area within jurisdictional boundaries (city limits), as well as projections for subregional areas that include the cities and their spheres of influence. Forecasts for unincorporated areas are also provided. The WTTIP projects to meet future demand would serve Lafayette, Moraga, Orinda, part of Walnut Creek, and adjacent areas of unincorporated Contra Costa County. Table 4-4 presents ABAG projections for 2005 and 2030 and the resultant percentage increase in population projected to occur between 2005 and 2030 for these cities and for the cities plus their spheres of influence. The increase in water demand projected by EBMUD for the pressure zones in the Lamorinda area (see Table 4-3) is also included for comparison purposes.

As shown in Table 4-4, the percent increase projected by EBMUD for water demand in the Bryant, Colorados, and Leland Pressure Zones (including their associated cascade pressure zones) is less than the percent increase in population projected by ABAG for the project area cities. The higher percent increase shown for the ABAG projections (approximately 15 percent, whether cities alone or subregional areas are considered, compared with EBMUD's 12 percent) is clearly influenced by Walnut Creek, which is larger than the other three cities combined and has a higher rate of growth than the other cities. Because only part of Walnut Creek (approximately two-thirds according to the Walnut Creek General Plan) is in the EBMUD service area, Walnut Creek would not be expected to have a commensurate influence on the District's projections.[9] Table 4-4 shows the projections for unincorporated Contra Costa County for information purposes only.

Although ABAG and District projections diverge somewhat, a comparison of the forecasts indicates that the WTTIP would not serve growth in excess of that projected by ABAG.

[9] Assuming two-thirds of the ABAG 2005 and 2030 projections for Walnut Creek results in a total change of 13.6 percent for cities within their jurisdictional boundaries, rather than the 14.6 percent shown in Table 4-4, and a change of 13.3 percent for cities including their spheres of influence rather than the 14.8 percent shown in Table 4-4. This estimate assumes a uniform growth rate over the entire area of the city.

TABLE 4-4
ABAG POPULATION PROJECTIONS

	2005	2030	Percent Change 2005–2030	Percent Change 2005–2030 EBMUD Water Demand Projections[a]
Cities – Jurisdictional boundaries				
Lafayette	24,100	26,100	8.3%	
Moraga	16,300	18,400	12.9%	
Orinda	17,700	19,100	7.9%	
Walnut Creek	65,200	77,700	19.2%	
Subtotal (Cities)	**123,300**	**141,300**	**14.6%**	
Unincorporated Contra Costa County	160,700	190,600	18.6%	
TOTAL (Cities and Unincorporated County)	**284,000**	**331,900**	**16.9%**	**12%**
Cities – Including Spheres of Influence				
Lafayette	25,500	27,600	8.2%	
Moraga	16,400	18,100	12.8%	
Orinda	17,700	19,100	7.9%	
Walnut Creek	80,200	95,000	18.5%	
Subtotal (Subregional Areas)	**139,800**	**160,200**	**14.6%**	
Unincorporated – Rural East Contra Costa County	17,600	20,400	15.9%	
Unincorporated – Remainder[b]	6,700	7,800	16.4%	
TOTAL (City Subregional Areas and Other Unincorporated)	**164,100**	**188,400**	**14.8%**	**12%**

[a] Percent change of projected water demands, 2005 to 2030, is based on the PZPP studies (see Table 4-3); shown here for comparison purposes.
[b] The "remainder" area is composed of unincorporated areas that are outside city spheres of influence or other specific ABAG subregional areas.

SOURCE: ABAG, 2004; EBMUD, 2003a, 2003b, 2004, and 2005b–2005f.

Local Planning Agency Projections

The information presented for local planning agencies is based on general plans and contacts with agency staff. As with the ABAG projections, a direct comparison of the District's assumed population growth with population projections contained in local general plans and related planning documents is not possible, because the District did not use population forecasts as the basis of the 2000 Demand Study (but instead used future land uses and land use densities). However, comparing annual average growth rates derived from the population projections with water demand projections provides a means to consider whether the projected water demands to be met by the WTTIP are consistent with growth projected and planned for in the adopted general plans of the affected jurisdictions. Similarities or differences between the projected growth rates provide an indication of whether implementation of the WTTIP could indirectly result in more or less growth than anticipated by local planning agencies.

Table 4-5 presents population projections for Lafayette, Moraga, Orinda, Walnut Creek, and unincorporated Contra Costa County from the adopted general plans of the respective jurisdictions. Differences between the datasets for each jurisdiction are noted in the table. In addition, ABAG jurisdictional projections for 2005 and 2030 are included for comparison purposes. Because the local jurisdictions have varying planning horizons (see table footnote b), the total projected change represented by the various projections cannot be directly compared for general consistency. Therefore, to provide a means of considering the general consistency of projections of jurisdictions having a variety of planning horizons, this table presents calculated annual average growth rates based on the respective projections. In actuality, neither population growth nor the growth in water demand is expected to occur at an average annual rate, and EBMUD planning does not assume an average annual growth rate.

TABLE 4-5
ABAG AND CITY/COUNTY POPULATION PROJECTIONS

	ABAG Projections 2005[a]					
Cities (jurisdictional boundaries)	**2005**	**2030**	**Average Annual Percent Growth (2005–2030)**	**Local Planning Projections[b]**	**Average Annual Percent Growth[c]**	**EBMUD Water Demand Projections Average Annual Growth[d]**
Lafayette[e]	24,100	26,100	0.32%	29,700	0.42%	
Moraga[f]	16,300	18,400	0.49%	19,116	1.6%	
Orinda[g]	17,700	19,100	0.30%	18,115	0.45%	
Walnut Creek[h]	65,200	77,700	0.70%	77,314	0.76%	
Unincorporated Contra Costa County[i]	160,700	190,600	0.68%	1,128,800	0.87%	
TOTAL[j]	**284,000**	**331,900**	**0.63%**	**1,273,045**	**–**	**0.48%**

a ABAG projections for cities are for the area within jurisdictional boundaries (i.e., they do not include the cities' spheres of influence).
b Local projections represent population projections made in general plans; projections are for the planning horizon of each plan. Orinda's population projection is for 2006; Moraga's is for 2010, Contra Costa County's is for 2020, and Lafayette's and Walnut Creek's are for 2025.
c Average annual percent growth was calculated based on information presented in the planning documents for the respective jurisdictions.
d Average annual percent change of projected water demands, 2005 to 2030, was calculated from the total projected increase of 12 percent (see Table 4-3) based on the PZPP studies, shown here for comparison purposes.
e Lafayette General Plan projections are for the city and its sphere of influence, based on ABAG *Projections 2002*. The general plan land use element includes projections to 2025. Calculated annual average growth is based on the 2005 population of 27,300, from Table 3 of the land use element.
f Local planning buildout for Moraga is the "estimated actual" development potential shown in Moraga General Plan Appendix C, Development Potential. The growth rate is based on a 2000 population of 16,290, per Appendix C, and 2010 as the forecast year, per the general plan EIR.
g The Orinda General Plan Housing Element (City of Orinda, 2004a) does not specify a buildout population. The buildout population and average annual growth rate shown above are based on the number of housing units, household densities, and vacancy rates reported for 2000 by the U.S. Census Bureau and California Department of Finance, and ABAG household demand projections to June 2006. The household densities and vacancy rate were assumed to remain the same as reported for 2000. The buildout year is assumed in this analysis to be 2006 based on the timeframe of the housing action plan included in the housing element.
h The average annual growth rate shown for Walnut Creek is based on the estimated population of 66,500 as of 2005 (California Department of Finance estimate cited in the general plan and general plan EIR) and the general plan EIR's estimated buildout population of 77,314 in 2025. (Note that the population of 66,500 is characterized as the 2005 population in the general plan EIR and Chapter 3 of the general plan, but as the 2004 population in Chapter 4 of the general plan; for purposes of calculating the annual average growth rate in this table, the year was assumed to be 2005.)
i Contra Costa County projections as presented in the general plan are for the entire county—including incorporated cities—based on ABAG *Projections 2002* for the year 2020.
j Since the local and county general plans had different planning horizons, a total annual average was not calculated.

SOURCE: ABAG, 2004; City of Lafayette, 2002a; Town of Moraga, 2001, 2002a; City of Orinda, 2004a; City of Walnut Creek, 2005, 2006; Contra Costa County, 2005a; EBMUD 2003a, 2003b, 2004, and 2005b–2005f.

City of Lafayette

The Lafayette General Plan cites ABAG's *Projections 2002* for the city and its sphere of influence as the source for projections presented in the plan (City of Lafayette, 2002a). The discussion of population growth trends and projections notes that the rate of population increase has slowed in recent decades, because most of the buildable land in Lafayette was developed by 1980. The majority of remaining vacant or underdeveloped land is located in environmentally constrained areas characterized by steep hillsides, oak woodlands, and unstable soil conditions. The general plan designates such land as Rural Residential.

According to the general plan, most new single-family residential construction will occur on infill lots scattered throughout the city's existing residential neighborhoods and in mixed-use developments located in downtown Lafayette (City of Lafayette, 2002a). The land use element of the general plan includes a summary of vacant and underutilized parcels with the potential to accommodate a mix of commercial and residential uses. The summary identifies the potential to accommodate 380,000 square feet of additional commercial space (for a total of 2,680,000 square feet of commercial space at buildout) and 1,026 additional housing units (for a total of 10,868 units at buildout). The general plan discussion of this potential notes that this projected buildout is less than the maximum potential that would be allowed by zoning standards (e.g., height and yard requirements), because the projection takes into account development constraints such as undersized parcels, underutilized parcels, parking and open space standards, and topographic limitations.

As shown in Table 4-5, the average annual population growth rate, based on projections for the city and its sphere of influence provided in the general plan, is slightly higher than the jurisdictional projection shown for Lafayette in ABAG's *Projections 2005* (0.42 percent compared with 0.32 percent) (ABAG, 2004). (The average annual growth rate based on the ABAG projections for Lafayette and its sphere of influence in 2005 and 2030 [25,500 and 27,600, respectively] is also 0.32 percent.) Both ABAG and the general plan project stronger future growth than the city has experienced in the recent past. According to census figures for 1990 and 2000, Lafayette grew at an average annual rate of 0.23 percent during that period. More recently, according to California Department of Finance (DOF) estimates, the city's population declined slightly in 2003, 2004, and 2005, resulting in an overall average annual growth rate of 0.14 percent for the 2000–2005 period. The growth rate indicated in the general plan is close to the average annual rate of increased water demand calculated from District projections for the Lamorinda area. Based on this comparison, implementation of the WTTIP projects would not induce growth at a rate beyond that projected by the City of Lafayette.

The growth management chapter of the Lafayette General Plan includes policies that address transportation and circulation issues, the maintenance of infrastructure and provision of public services, coordination with other agencies to ensure adequacy of utility services, review of development projects for conformance with adopted performance standards, and other policies designed to ensure that the rate of growth in the city is adequately supported by infrastructure and does not diminish the community's quality of life.

Town of Moraga

According to Appendix C, Development Potential, of the Moraga General Plan (Town of Moraga, 2002a), the town's population in 2000 was 16,290. The appendix includes projections for the maximum additional population increase that could be accommodated under the 2002 general plan (an increase of 3,187) and an "estimated actual" increase (an increase of 2,826); these represent increases of 20 percent and 17 percent, respectively. The maximum increase represents the town's maximum development potential based on the general plan, and the "estimated actual" projection is based on Town of Moraga experience, which indicates that the level of development typically results in fewer units than the maximum possible after site-specific review and other considerations are taken into account. General plan land use policies call for the development of several specific plans involving residential, commercial, and/or recreational developments.

According to the general plan EIR, the forecast year for the plan is 2010. The projected increase under the "estimated actual" scenario of 2,826 in 2010 represents an average annual residential growth rate from 2000 to 2010 of 1.6 percent (see Table 4-5). This growth rate is substantially higher than both ABAG's estimate and recent growth trends for the town, as reflected in census figures and DOF estimates. According to census figures, Moraga grew at an average annual rate of 0.19 percent from 1990 to 2000. According to DOF estimates, the city's population declined slightly in 2004 and 2005, resulting in a net 0.33 percent decline in population for the 2000–2005 period and an average annual growth rate of -0.08 percent. The unusually high growth rate shown in Table 4-5 is based on the town's population estimate of development potential (and population at buildout) under the general plan and the identification of 2010 as the forecast year in the general plan EIR; the general plan itself does not state when buildout is assumed to occur, nor does the document showing development potential and the population at buildout (Appendix C of the general plan). Appendix C also provides, as a point of comparison, the buildout projection (units and population) from the previous (1990) general plan, which indicates less expected growth in the current (2002) plan. Buildout under the 2002 general plan is expected to result in 4 percent fewer units and 4 percent less population than had been projected under the previous plan. Given recent growth trends and the lowering of expected growth in the current general plan, it is unlikely that buildout under the current plan would actually occur by 2010. (Cities frequently do not reach buildout of a general plan within the plan's stated planning horizon.) It therefore seems likely that the ABAG projection provides a more realistic estimate of the annual rate at which Moraga will grow over the next couple decades. As the table shows, the growth rate indicated for the District's projected water demand is close to ABAG's estimated growth rate for the town. Considering either ABAG's or the town's projections, implementation of the WTTIP projects would not induce growth at a rate beyond that projected and planned for by the town.

The Moraga General Plan Growth Management Element includes policies to achieve the goal of maintaining performance standards for town facilities, services, and infrastructure.

City of Orinda

The Orinda General Plan Housing Element (City of Orinda, 2004a), citing U.S. Census Bureau and California DOF information, states that the city's population in 2000 was 17,599; there were approximately 6,744 housing units, with a 2.59 percent vacancy rate, and the estimated household density was 2.67 persons per household. The 2004 housing element does not include population projections, nor does it project a buildout year; however, it presents housing-unit information that provides an indication of anticipated growth, at least for the near-term planning horizon of the housing element. In 2001, as part of its periodic assessment of housing need, ABAG estimated that Orinda would need to construct 221 additional housing units by mid-2006 in order to accommodate anticipated population growth. Assuming an existing housing stock of 6,744 units in 2000, the same household density as in 2000 (2.67 persons per household), and the same vacancy rate, the addition of 221 units by mid-2006 would increase the population to about 18,115; relative to the 2000 census population this represents an increase of approximately 516, or 2.9 percent, over six and a half years (an average annual increase of 0.45 percent) (see Table 4-5). This is a somewhat lower rate than the 5.7 percent increase in population from 1990 to 2000 (an average annual increase of 0.56 percent) reported in the 2004 housing element. According to the housing element, a survey of vacant parcels in 2000 indicated that 368 parcels in the city could accommodate approximately 646 additional dwelling units. Among planned developments for the city is the 245-unit Montanera project[10] (also referred to in the housing element as Gateway Valley) (City of Orinda, 2004a). However, the housing element does not provide an estimated timeframe for construction of these additional units.

Both the ABAG and general plan projections indicate a slower growth rate than Orinda experienced during the 1990s. As discussed, Orinda grew at an average annual rate of 0.56 percent from 1990 to 2000. More recently, according to DOF estimates, the city's population declined slightly in 2003, 2004, and 2005, resulting in a net 0.08 percent decline in population for the 2000–2005 period and an average annual growth rate of -0.02 percent. The growth rate indicated in the general plan is close to the average annual rate of increased water demand calculated from District projections for the Lamorinda area. Based on this comparison, implementation of the WTTIP projects would not induce growth at a rate beyond that projected by the City of Orinda.

City of Walnut Creek

The District serves about two-thirds of Walnut Creek, including the western, central, and southern portions (City of Walnut Creek, 2002a). The *Walnut Creek General Plan Housing Element 2001–2006* projects a population of approximately 70,200 in 2020, citing ABAG projections.[11] This projected increase translates to an average annual growth rate of 0.43 percent, which is somewhat lower than Walnut Creek's 6.2 percent growth between 1990 and 2000 (equivalent to an average annual rate of about 0.6 percent). The projection is about 3 percent lower than the ABAG *Projections 2005* estimate of 72,000 for Walnut Creek in 2020 (ABAG, 2004).

10 Although the District's PZPP studies for the Laguna and Baseline Pressure Zones, in which this housing project is located, states that the development would add 260 housing units, according to the city's website the project (approved in November 2005) would have 245 housing units.

11 The cited population and date of the housing element suggest that ABAG's *Projections 2000* was used (ABAG, 1999).

In April 2006, Walnut Creek adopted a new general plan (City of Walnut Creek, 2006). The new general plan does not include population projections per se, and incorporates the 2002 housing element by reference. However, under the new general plan, buildout is estimated to result in a population of 77,314 in 2025, according to the general plan EIR[12] (City of Walnut Creek, 2005). This projected population represents a 16 percent increase from the 2005 population of 66,500, which translates to an average annual growth rate of 0.76 percent for the 20-year period. This average annual rate is higher than both the city's 0.6 percent average annual growth for the 1990–2000 period and the 0.5 percent growth rate cited in the general plan for the period 2000–2004 (City of Walnut Creek, 2006). The projection is also about 3 percent higher than the ABAG *Projections 2005* forecast of 75,100 for Walnut Creek in 2025 (ABAG, 2004). The average annual population growth rate that would result from buildout of the Walnut Creek General Plan 2025 is substantially higher than the average annual increase in water demand calculated from District projections in the PZPP studies for the Lamorinda/Walnut Creek area (see Table 4-5).

To summarize, the general plan housing element (which is still current) projects a population of 70,200 in 2020, whereas the EIR for the 2006 general plan estimates a population of 77,314 by 2025 (the horizon year for the new general plan) based on permitted land uses and densities. The housing element's average annual growth rate of 0.43 percent is slightly lower than the rate of increased water demand calculated from the District's projections for the Lamorinda area, while the average annual growth rate based on the 2006 general plan is considerably higher. In either case, based on this comparison, implementation of the WTTIP would not induce growth at a rate beyond that projected and planned for by the City of Walnut Creek.

The growth management policies of Walnut Creek's General Plan 2025 include a program that limits new commercial development (with the exception of the Shadelands Business Park) to 75,000 square feet per year, metered in two-year periods, through 2015. This program continues the commercial component of a growth management program adopted in 1993. That program implemented the same limits on commercial development (i.e., 75,000 square feet per year, metered in two-year periods). The previous program had included a limit on residential development, as well. According to the housing element, the residential cap was not believed to have constrained development because, as of January 2002, 1,371 units remained in the residential allocation out of a total of 2,550 units allocated for residential development for the 12-year period (1993–2005). The growth management section of the 2006 general plan also has a cap on residential development with a policy that links the number of allowed new housing units to the Regional Housing Needs Determination allocation assigned to Walnut Creek. Affordable units and units produced through state-mandated density bonus regulations are exempt from the cap. The general plan also includes goals, policies, and actions to address countywide growth management requirements that were adopted with voter approval of Measure C (in 1988) and Measure J (in 2004; Measure J extends the provisions of Measure C to 2034). These measures require cooperation among cities and the county on transportation and growth issues that cross city boundaries (City of Walnut Creek, 2006).

[12] The projected population, identified in the general plan EIR, is based on an estimated existing population of 66,500 in January 2005, the potential for 5,342 new dwelling units to be added between 2005 and 2025, an assumed occupancy rate of 0.964, and an average household size of 2.10 persons per household.

In 2000, Walnut Creek had 31,425 dwelling units, which represents a 5 percent growth in housing stock between 1990 and 2000 (City of Walnut Creek, 2002a). From 2002 to May 2005, 683 multifamily units and 92 detached single-family houses had either been built, were under construction, or had been issued permits; 120 units of affordable housing had been initiated and approved, and another 800 multifamily units were under review.

Contra Costa County

The Contra Costa County General Plan, adopted in 1991, was republished with amendments in 1996, and again republished with amendments in 2005 (Contra Costa County, 1991, 1996, 2004, 2005a, 2005b). For many issues, including past population growth and future trends, the general plan considers the county in three sections: East County, Central County, and West County. The WTTIP is located in Central County, which had a population of 414,000 in 1990 and 471,800 in 2000; however, this part of the county extends far beyond the WTTIP project area. The Central County population is described as being primarily concentrated in large subdivided areas along Interstate 680 (I-680), Highway 24, and Highway 4. Regarding future growth in the Central County area, the general plan notes that, while residential growth had been very strong in the 1980s, many of the cities along the I-680 corridor are now reaching buildout as the last remaining lands are developed. The general plan cites the U.S. Census for the countywide population of 948,816 in 2000, and ABAG *Projections 2002* for a countywide population projection of 1,128,800 in 2020, an increase of 18.9 percent (Contra Costa County, 2005a). Considering that Central County is far larger than the unincorporated areas near Lamorinda and western Walnut Creek, it is likely that the demographic trends for any parts of the unincorporated county served by the WTTIP projects are better captured in the projections for cities including their spheres of influence (see Table 4-4, above).

Conclusions

The following conclusions are based on the analysis presented in the preceding sections:

- **The District projections are generally consistent with regional projections prepared by ABAG.** As indicated in Table 4-4, the growth trends reflected in *Projections 2005* population forecasts for Lafayette, Moraga, Orinda, and Walnut Creek combined are somewhat higher than the growth trend reflected in the PZPP studies for the pressure zones serving these cities. The water demand projections (even if they had been based primarily on population projections) would be expected to increase at a somewhat lower rate than would population alone, since the demand projections take into account the effects of conservation programs and the use of recycled water to reduce potable demands. In addition, because the District's demand projections are based on land use projections, they incorporate factors besides population, including differing use levels for different land use categories. For this reason, some differences between District and ABAG projections would be expected. The difference in ABAG and District projections is greater when ABAG's projected growth for unincorporated Contra Costa County is factored in. This discrepancy in part reflects the fact that the ABAG projections include all of the unincorporated county and all of Walnut Creek, while the PZPP studies focus more precisely on the specific areas served by EBMUD. As the comparison of growth projections indicates, the growth reflected in the District's PZPP studies is not greater than (and therefore would not induce growth beyond) the growth planned for by the regional planning agency in the service area.

- **The differences between the District forecasts and those prepared by local land use agencies are insignificant for the purposes of this analysis.** As discussed in Section 4.2.1, above, under Districtwide Update of Water Demand Projections, the District based the demand projections on the changes of land use that could occur under approved land use plans in the service area. Because the District did not use specific population or housing projections, a direct comparison with these elements in local planning documents is not possible. However, the average rates of projected growth provide a general means for comparing assumed growth trends. As shown in Table 4-5 and discussed in the above section, some differences occur between local planning agency projections and those of ABAG and the annual average increase in water demand calculated from District projections. In the case of the most substantial divergence between local projections and those of ABAG and the WTTIP, the analysis indicates that the ABAG and WTTIP projections are generally consistent with growth trends in the area. Based on the comparisons discussed in this section, the demand increases for the WTTIP are generally consistent with growth anticipated in local planning documents. In addition, where some potential future projects are speculative, the District will reevaluate the need for specific projects prior to project implementation to ensure that facilities are not sized for capacity in excess of projected demand.

It is also important to consider that the District's land-use-based methodology for projecting demand relies on the approved planning documents of the respective jurisdictions. These planning documents determine the nature and intensity of land uses to be served by EBMUD and have already been subjected to environmental review under CEQA. In adopting the applicable general and specific plans, the local decision-making bodies have adopted measures to mitigate adverse impacts associated with the growth that will occur under the plans and have adopted statements of overriding considerations associated with impacts that cannot be reduced to an insignificant level.

4.3 Impacts and Mitigation Measures

Impact G-1: Secondary effects of planned growth.

Implementation of the WTTIP would support an amount of growth that is consistent with regional growth projections. Nonetheless, according to the CEQA Guidelines, the project could indirectly contribute to potentially significant secondary effects by removing a potential obstacle to projected development. Some of these secondary effects of planned growth have been identified in CEQA documents prepared by land use agencies as significant and unavoidable, while others have been identified as significant but mitigable. Significant unavoidable impacts that could occur as a result of planned growth include: loss of open space, traffic increases, degradation of air quality, and change in the visual character of the region.

The following city council resolutions and environmental documents for city and county general plans and general plan amendments were reviewed in order to identify the significant impacts associated with planned growth in the area:

- City of Lafayette: *City Council Resolution 2002-055 Certifying an Environmental Impact Report Prepared for the Lafayette General Plan Revision and Adopting Environmental*

Findings Pursuant to the California Environmental Quality Act, Statement of Overriding Considerations and a Mitigation Monitoring Program (City of Lafayette, 2002b).

- City of Orinda: *City of Orinda General Plan, Volume 2: Technical Supplement and Environmental Impact Report* (City of Orinda, 1987a); *Resolution No. 29-87 Certifying Completion, Review, and Consideration of the Final EIR for the Orinda General Plan* (City of Orinda, 1987b); *Resolution No. 64-04 Approving a Negative Declaration for the Revised Housing Element of the City of Orinda General Plan Pursuant to the California Environmental Quality Act* (City of Orinda, 2004b).
- City of Walnut Creek: *Walnut Creek General Plan 2025 Final Environmental Impact Report* (City of Walnut Creek, 2005); *Negative Declaration, Housing Element Update* (City of Walnut Creek, 2002b).
- Town of Moraga: *Moraga 2000 General Plan Update Final Environmental Impact Report* (Town of Moraga, 2001); *Resolution 21-2002 in the Matter of Town Council Action to Certify the Environmental Impact Report and Adopt the Moraga 2002 General Plan Update* (Town of Moraga, 2002b).
- Contra Costa County: *Findings Related to Certification of the Environmental Impact Report for the General Plan and Adoption of the General Plan* (Contra Costa County, 1991).

Copies of these documents are available for review at the respective city and county planning departments. Table I-1 in Appendix I summarizes the growth impacts identified in the EIRs for general plans for the Lamorinda/Walnut Creek area.

4.3.1 Mitigation Measures

As a utility district, EBMUD does not have the authority to make land use decisions or to approve growth. Land use planning decisions, including the authority to approve or deny development proposals, are the responsibility of the land use planning agencies of the jurisdictions served by EBMUD. As it has for previous major water supply programs, the District will continue to coordinate with other jurisdictions to assist in mitigating the impacts of growth. The Urban Water Management Planning Act (as amended by Senate Bill 610) and the Subdivision Map Act (as amended by Senate Bill 221) require coordination between land use planning and water supply planning agencies; these statutes will help ensure that sufficient water supply is available to meet the demand of planned development while also helping to ensure that water supply facilities are planned and designed to meet the demand of planned growth. General plans of the jurisdictions served by EBMUD guide the pattern and rate of growth of those jurisdictions and have been reviewed under CEQA. Measures have been adopted in conjunction with plan approval to mitigate the adverse impacts of planned growth. However, some impacts related to growth remain significant and unavoidable.

Measure G-1: The EBMUD Board of Directors will work with other jurisdictions in the Lamorinda/Walnut Creek area to assist in mitigating the impacts of growth by:

- Participating in efforts to improve regional planning in the Bay Area

- Encouraging local land use planning agencies to coordinate land use planning functions and the provision of utility services
- Encouraging cities and counties to adopt general plans and zoning ordinances that favor high-density development and urban in-filling (which tends to minimize per-capita water use and minimize the costs and environmental impacts of water delivery systems); to provide incentives for more housing near public transit; and to adopt ordinances that conserve open spaces, protect wildlife habitat, and conserve energy and water resources

Despite implementation of the measures identified to mitigate growth summarized in Table I-1 in Appendix I, some secondary effects identified in EIRs prepared by land use jurisdictions for general plans and general plan amendments would remain significant and unavoidable.

References – Growth-Inducement Potential and Secondary Effects of Growth

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______, *Resolution No. 29-87, Certifying Completion, Review, and Consideration of the Final EIR for the Orinda General Plan*, May 20, 1987b.

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City of Walnut Creek, *2001–2006 Housing Element Update*, adopted October 1, 2002a.

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______, *Walnut Creek General Plan 2025, Final Environmental Impact Report*, December 9, 2005.

______, *Walnut Creek General Plan 2025*, adopted April 4, 2006.

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CHAPTER 5
Cumulative Impacts

5.1 Approach to Analysis

A cumulative impact is created as a result of the combination of the project evaluated in an EIR together with other projects causing related impacts. The purpose of this analysis is to disclose significant cumulative impacts resulting from the Water Treatment and Transmission Improvements Program (WTTIP) elements in combination with other projects or conditions, and to indicate the severity of the impacts and their likelihood of occurrence.

The California Environmental Quality Act (CEQA) Guidelines require that environmental impact reports (EIRs) discuss the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable," meaning that the project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. The discussion of cumulative impacts should include:

- Either: (1) a list of past, present, and probable future projects producing related or cumulative impacts; or (2) a summary of projections contained in an adopted general plan or similar document, or in an adopted or certified environmental document, that described or evaluated conditions contributing to a cumulative impact
- A discussion of the geographic scope of the area affected by the cumulative impact
- A summary of expected environmental effects to be produced by these projects
- Reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects

Due to the breadth and extent of the WTTIP, this chapter separates the analysis of cumulative impacts by first considering the *collective* impacts of all project-level and program-level projects included in the WTTIP, and then analyzing the *cumulative* impacts of the WTTIP as a whole in combination with other projects or conditions in the program area. The *collective* impact discussion provides a synthesis of both project- and program-level impacts for all proposed WTTIP facilities described in Chapter 3 and indicates the potential for overlapping impacts associated with multiple projects proposed for construction within the same timeframe and same geographic area. The c*umulative* impacts analysis follows the CEQA definition, in which the collective WTTIP impacts are analyzed in combination with potential effects associated with other proposed, planned, and approved projects from the recent past, present, and reasonably foreseeable future. The list of projects used in the cumulative analysis includes projects under the purview of multiple agencies with jurisdiction in the WTTIP project area.

5.2 Collective and Overlapping Impacts of the WTTIP

5.2.1 Land Use, Planning, and Recreation

As described in Chapter 3, Section 3.2, implementation of the WTTIP appears to be consistent with general and regional plans; the WTTIP projects would facilitate local jurisdictions' ability to achieve general plan goals and policies related to providing a high-quality water supply, addressing capacity deficiencies, and improving emergency response capabilities by improving water available for firefighting. However, implementation of some WTTIP projects would result in potential inconsistencies with the land use and zoning designations of local jurisdictions, with the general plans of local jurisdictions related to tree removal, and with policies related to scenic resources and to the temporary closure of public roadways and emergency access routes. Actual determinations of project consistency with general plans would be made by the pertinent land use jurisdictions during project implementation. Consistency with plans and policies would be made on a project-by-project basis, based on site-specific conditions, and therefore there would be no collective or overlapping impacts related to project consistency; collective impacts associated with scenic resources, tree removal or roadway closures are discussed in 5.2.2, Visual Quality, Section 5.2.5, Biological Resources, and Section 5.2.7, Traffic and Circulation, respectively.

None of the proposed project elements would disrupt or divide an established community, as described in Impact 3.2-1; therefore, there would be no collective impacts associated with implementation of the WTTIP as a whole. As described in Impact 3.2-2, the WTTIP would not result in permanent loss of agricultural use and would not result in substantial impacts on agricultural uses, since most of the WTTIP projects are located in urban lands and the few projects located on or adjacent to identified agricultural resources (mostly grazing lands) would result in short-term, temporary impacts during construction.

As described in Impact 3.2-3, construction activities associated with some WTTIP facilities would temporarily disrupt access to or enjoyment of existing recreation facilities, although many of the WTTIP projects are not located within or adjacent to recreation areas. However, the construction and operation of those WTTIP projects affecting recreational resources could result in a collective impact due to increased demand on other regional facilities. While implementation of the WTTIP could result in temporary closure or disruption of several recreation opportunities (such as the Walter Costa Trail at the Lafayette WTP), the effects on regional recreational land uses would be distributed over a relatively large area. Further, given the availability and diversity of recreation opportunities in the vicinity of the WTTIP project components and the entire region, diversion of recreation users would not likely result in overcrowding and associated potential deterioration of recreational resources. Therefore, the collective impact on recreational resources associated with implementation of the WTTIP as a whole would be less than significant.

5.2.2 Visual Quality

Chapter 3, Section 3.3 addresses the aesthetic and visual quality impacts associated with construction and operation of the WTTIP. With a few exceptions, construction at proposed sites would occur within generally developed urban/suburban areas, where visual impacts for individual facilities would be less than significant or could be mitigated to a less-than-significant level. The potential visual impacts include short-term visual effects during construction (considered less than significant, although the District would nevertheless implement measures to maintain clean and inconspicuous construction sites), alteration of the appearance at project sites, effects on views and scenic vistas, and new sources of light and glare as described in Impacts 3.3-1 through 3.3-5. At nearly all WTTIP facility sites, these impacts would be less than significant with implementation of measures, to implement landscaping plans, to restore sites to pre-project conditions, to use aesthetic design elements, and to employ temporary and permanent lighting that is directed onsite and downward to minimize glare (see Measures 3.3-1, 3.3-2a, 3.3-2b, and 3.3-2c).

Proposed WTTIP projects that would not be located at currently developed sites include the New Highland and Leland Pressure Zone Reservoirs and the Tice, Sunnyside, and Happy Valley Pumping Plants. However, with two exceptions, visual impacts at these sites could be mitigated with implementation of the measures described above. One exception is the facility at the Highland Reservoir site, which is situated on an undeveloped hillside within a publicly accessible area; proposed tree removal at this site (also see the discussion in Section 5.2.5, Biological Resources) would adversely affect views from a nearby recreational trail and would be considered significant and unavoidable. The New Leland Pressure Zone Reservoir site (a program-level project) would be located on a prominent ridgeline and would be highly visible from a state-designated highway (Interstate 680). Depending on the tank's design characteristics, visual impacts could remain significant and unavoidable.

Visual impacts would generally be site specific and would be mitigated on a site-specific basis. Measures to be implemented addressing potential tree loss and damage would help ensure that long-term visual impacts are reduced to less than significant levels in most cases. The WTTIP sites with above-ground facilities are, for the most part, visually separated due to distance, surrounding topography, structures, landscaping, or natural vegetation, and none of the WTTIP sites share the same public viewshed or major view corridor. Therefore, there would be no substantial additive or collective visual impacts from the proposed project elements. Therefore, the collective impacts of the WTTIP as a whole on visual quality and aesthetics would be the same as the individual facilities' impacts presented in Chapter 3.

5.2.3 Geology, Soils, and Seismicity

Chapter 3, Section 3.4 presents the potential geologic and seismic impacts of each WTTIP project facility, which include impacts associated with unstable slopes, groundshaking, expansive/compressible soils, liquefaction, and squeezing ground as described in Impacts 3.4-1 through 3.4-5. All potential impacts are either less than significant or could be mitigated to a less-than-significant level by Measures 3.4-1, 3.4-2, 3.4-3a, 3.4-3b, 3.4-4, and 3.4-5. These impacts would be site specific, dependent on local geologic and soil conditions, and would be mitigated on a site-specific basis. Therefore, the collective impacts of the WTTIP as a whole on geology, soils, and seismicity would be the same as the individual facilities' impacts presented in Chapter 3.

5.2.4 Hydrology and Water Quality

Chapter 3, Section 3.5 presents the hydrology and water quality impacts of each WTTIP facility. Potential water quality impacts associated with construction activities, including sedimentation and erosion, discharge of dewatering effluent, and discharge of chloraminated water (as described in Impacts 3.5-1, 3.5-2, and 3.5-4), would be mitigated through compliance with applicable regulations, EBMUD standard procedures and Measures 3.5-1a and 3.5-1b, and there would be no collective water quality impacts associated with construction of the WTTIP as a whole. As described in Impact 3.5-3, potential flooding impacts would be less than significant at all proposed project sites with implementation of Measure 3.5-3. Since all construction would occur at elevations higher than base flood elevations and no stockpiling of materials would occur in identified floodprone areas, there would be no collective flooding impacts of significance associated with the WTTIP as a whole for largely the same reasons. Potential impacts associated with the operational release of chloraminated water to surface water bodies, as described in Impact 3.5-5, would be less than significant at all sites, assuming the proposed facilities would be constructed and operated in compliance with applicable permits. For the same reason, there would also be no collective impacts associated with these discharges. Impact 3.5-6 describes the long-term increase in runoff associated with WTTIP implementation; collectively, the total net increase in new impervious surfaces associated with construction of all proposed facilities would be about 130,850 square feet (approximately 3 acres) for Alternative 1 and 134,850 square feet for Alternative 2. When compared to the number of square miles of existing impervious surfaces in the affected watersheds, this increase in impervious surfaces and associated runoff would be negligible under either alternative. Furthermore, projects that create or replace greater than 10,000 cubic feet of impervious surfaces would minimize stormwater flows as specified in Measure 3.5-6. Overall, the collective incremental impacts of increased runoff that would result from construction of the WTTIP would not be cumulatively considerable.

5.2.5 Biological Resources

Chapter 3, Section 3.6 presents the potential impacts of each WTTIP facility on biological resources, including the following: protected trees; streams, wetlands, and riparian habitat potentially subject to state and federal protection; special-status plant and wildlife species; and migratory wildlife corridors. With the exception of impacts to protected trees at the Highland Reservoir, all identified impacts would be either less than significant or less than significant locally with implementation of proposed mitigation measures.

As described in Table 3.6-4 and Impact 3.6-1, the total number of protected trees that would be removed at all sites would be approximately 200 to 280 trees under either Alternative 1 or 2, although there would be somewhat greater potential tree loss at the Lafayette WTP under Alternative 1 than at the Orinda WTP under Alternative 2. In addition, more trees could be damaged during project construction. At the Highland Reservoir site, removal of 30 to 35 multi-stemmed, large-diameter protected oak trees was determined to be a significant and unmitigable local impact. At all other WTTIP project sites, tree removal would be less than significant with implementation of proposed mitigation. At the Highland Reservoir and all other sites where the removal of protected trees would occur, protected trees would be replaced at a ratio of 3:1 for native trees and 1:1 for non-native trees. Additional measures would be implemented to minimize disturbance to protected trees adjacent to construction areas and monitor replacement trees (described in Measures 3.6-1a through 3.6-1e). When considered collectively within the geographic scope of the proposed project and with implementation of proposed mitigation, the number of protected trees to be removed at all sites combined, including the Highland Reservoir site, would not represent a substantial portion of the protected trees present in the surrounding 925-acre Lafayette Reservoir Recreation Area or the program area as a whole. Therefore, the removal of protected trees under the WTTIP projects collectively would not be considered significant.

Streams, wetlands, and riparian habitat potentially subject to state and federal protection either do not occur or could be avoided at many facility sites, as described in Impact 3.6-2. At 12 of the proposed sites, Lafayette Creek, Lauterwasser Creek, Las Trampas Creek, San Pablo Creek, and other drainages as well as Lafayette Reservoir could be directly affected through the removal of habitat during open-trench construction across drainages and/or indirectly affected through sedimentation and erosion, especially if grading and excavation occur during the rainy season. However, these impacts would primarily be temporary and could be mitigated to a less-than-significant level through avoidance or minimization of construction disturbance near streams and wetlands; establishment of a construction exclusion zone; acquiring and complying with applicable permits; and implementation of erosion control measures (including energy dissipators), special construction techniques and water quality protection measures (see Measures 3.6-2a through 3.6-2f). The collective impact of multiple WTTIP projects on streams, wetlands, and riparian habitat potentially subject to state and federal protection in the program area would be mitigated on a project-by-project basis and would not be cumulatively considerable.

As described in Impacts 3.6-3, 3.6-4, 3.6-5, 3.6-6, and 3.6-7, some of the project sites provide potential habitat for special-status plants and wildlife species, including both terrestrial and aquatic species. However, implementation of preconstruction surveys, habitat avoidance, and revegetation of disturbed areas, and other District-proposed mitigation measures (see Measures 3.6-3a through 3.6.3c, 3.6-4a through 3.6-4c, 3.6-5, 3.6-6, and 3.6-7a through 3.6-7c) would reduce potential impacts to these species to a less-than-significant level, and there would be no significant collective impacts on special-status species.

As discussed in Impact 3.6-8, 10 project sites could be considered part of existing migratory wildlife corridors. At project sites that provide habitat for migratory wildlife, potential impacts to wildlife corridors would be temporary, construction disturbance would be minimized in sensitive habitats, disturbed areas would be revegetated with native species upon project completion to prevent an increase in invasive plant species and habitat degradation, and low-impact lighting would be focused away from sensitive habitat. New above-ground structures would not interfere significantly with wildlife movement, and habitat surrounding the project site would continue to facilitate wildlife movement through the project area. Therefore, WTTIP projects individually would have less-than-significant impacts. Collectively, the projects would have less-than-significant cumulative impacts on migratory wildlife corridors.

5.2.6 Cultural Resources

As described in Chapter 3, Section 3.7, at all WTTIP project sites there is a potential to encounter previously undiscovered cultural resources, including archaeological and paleontological resources as discussed in Impacts 3.7-1 and 3.7-2; however, implementation of Measures 3.7-1a, 3.7-1b, and 3.7-2 would reduce impacts to less than significant. Similarly, while there is a potential for adverse effects to historic settings at or near some of the project sites as discussed in Impact 3.7-3, the proposed construction and design would not result in substantial changes to the historic settings, and impacts would be less than significant. Collective impacts of the WTTIP as a whole on cultural resources would be the same as the individual facilities' impacts presented in Chapter 3 and would not be cumulatively considerable.

5.2.7 Traffic and Circulation

As described in Chapter 3, Section 3.8, implementation of the WTTIP would result in potential impacts on traffic and circulation, including increased construction vehicles and traffic delays, reduced road width, loss of parking, traffic safety issues, access disruption, transit disruption, and roadway wear and tear as discussed in Impacts 3.8-1 through 3.8-7. With the exception of impacts associated with the lack of detour routing, all identified impacts would be less than significant or could be mitigated to a less-than-significant level.

On the basis of the proposed construction scheduling of specific facility projects, simultaneous (overlapping) construction is likely to occur for multiple WTTIP facilities. The implication of overlapping construction pertains to the potential for construction-generated traffic for more than one facility to use the same road(s); that is, the total number of vehicle trips added to the common route(s) due to concurrent construction of multiple projects could be cumulatively higher than the maximum number of daily and hourly vehicle trips used to determine impacts of a single facility project. However, the period of time of maximum trip generation would vary among the facility projects, and therefore the maximum traffic flows on the common route(s) would not necessarily be the sum of the maximum trips generated by the overlapping projects. Nonetheless, so as to not underestimate the potential traffic and circulation impacts resulting from simultaneous construction projects, those impacts were assessed assuming that the maximum trips generated by the overlapping projects would occur at the same time.

Examples of simultaneous use of roads by construction workers and trucks for more than one facility project (based on proposed construction scheduling) are the following:

- *Camino Pablo* (two-lane section north of Miner Road): Traffic generated by construction at the Orinda WTP (Alternative 2) and the Orinda-Lafayette Aqueduct (tunnel portion) would use this road during the years 2015–2017. If the maximum trip-generating phase for those two project elements were to overlap, the collective trip generation would be about 626 vehicles per day (i.e., about 3 percent above the existing daily traffic volume on this section of Camino Pablo). That level of increased traffic would not likely be perceptible to the average motorist because it would fall within the typical daily fluctuation of traffic volumes (which vary by as much as ±5 percent). The impact determination for the overlapping use of the two-lane Camino Pablo would be the same (less than significant with mitigation) as for the Orinda WTP (Alternative 2) or Orinda-Lafayette Aqueduct (tunnel portion) alone.

- *Camino Pablo* (four-lane section between Highway 24 and Miner Road): Traffic generated by construction for the Orinda WTP (Alternative 1) and Happy Valley Pumping Plant and Pipeline projects would both use this road during the years 2011–2013. If the maximum trip-generating phase for each of those two project elements were to overlap, the collective trip generation would be about 210 vehicles per day (i.e., about 1 percent above the existing daily traffic volume on this section of Camino Pablo). That level of increased traffic would not likely be perceptible to the average motorist because it would fall within the above-cited typical daily fluctuation of traffic volumes. The impact determination for the overlapping use of the four-lane Camino Pablo would be the same (less than significant with mitigation) as for the Orinda WTP (Alternative 1) or Happy Valley Pumping Plant and Pipeline projects alone.

- *Acalanes Road* (El Nido Ranch Road to Mt. Diablo Boulevard): Traffic generated by construction at the Lafayette WTP (Alternative 1) and the Sunnyside Pumping Plant would both use this road during the years 2012–2013. If the maximum trip-generating phase for each of those two project elements were to overlap, the collective trip generation would be about 346 vehicles per day. The daily traffic volume on this road is not known, but based on volumes for similar nearby roads, the collective trip generation for both above-cited scenarios is assumed to represent an increase of less than 5 percent above the existing daily traffic volume on this section of Acalanes Road (i.e., within the above-cited typical daily fluctuation of traffic volumes). The impact determination for the overlapping use of this section of Acalanes Road would be the same (less than significant with mitigation) as for the individual project elements alone.

- *Moraga Road* (Mt. Diablo Boulevard to Rheem Boulevard): Traffic generated by construction for the Fay Hill Pumping Plant and Pipeline and the Moraga Reservoir projects would both use this road during the years 2016–2017. If the maximum trip-generating phase for each of those two project elements were to overlap, the collective trip generation would be about 226 vehicles per day (i.e., about 1 percent above the existing daily traffic volume on this section of Moraga Road). That level of increased traffic would not likely be perceptible to the average motorist because it would fall within the above-cited typical daily fluctuation of traffic volumes. The impact determination for the overlapping use of this section of Moraga Road would be the same (less than significant with mitigation) as for the Fay Hill Pumping Plant and Pipeline project or Moraga Reservoir project alone.

- *El Nido Ranch Road* (Highway 24 to Upper Happy Valley Road): Traffic generated by construction of the Orinda-Lafayette Aqueduct (tunnel portion) under Alternative 2 and the Sunnyside Pumping Plant would use this road, but not at the same time, so there would be no additive (overlapping) impacts.

As would be the case for each facility project, truck trips generated by overlapping projects would be dispersed throughout the day, and construction workers for the projects would commute to and from the worksite primarily before or after peak traffic hours. The percent increase in traffic volumes caused by project-generated construction traffic on the arterials and freeways serving the project site would not be substantial, nor would project traffic significantly disrupt daily traffic flow on these roadways. Drivers would experience intermittent delays if they were traveling behind a construction truck. With implementation of Measure 3.8-1, this impact would be reduced to a less-than-significant level. Collectively, the traffic and circulation impacts resulting from implementation of the WTTIP as a whole would be less than significant. Furthermore, project-level impacts related to pavement wear and tear would be reduced to a less-than-significant level by Measure 3.8-7 which requires repair of damaged pavement. Because all damage would be repaired, there would be no collective impact related to pavement wear and tear.

5.2.8 Air Quality

All potential air quality impacts associated with WTTIP facilities, as described in Chapter 3, Section 3.9, would be less than significant or could be mitigated to a less-than-significant level. Potential air quality impacts include increases in dust and equipment emissions during construction, exposure to diesel particulates, emissions from ventilation fans, operational emissions, odors, and secondary emissions from power use.

As described in Impact 3.9-1, construction emissions associated with implementation of all WTTIP projects would span 12 years (2007 to 2018), and projects with overlapping construction schedules would have the potential for combined emissions in the same air basin. Total WTTIP-related average dust emissions are estimated to be 105 and 139 pounds per day under Alternatives 1 and 2, respectively. Due to the extended schedule of the combined WTTIP projects, a comparison of estimated dust emissions of the combined projects to the Bay Area Air Quality Management District's (BAAQMD) operational significance criterion of 80 pounds per day for dust would be exceeded between 2011 and 2018 under Alternative 2, and possibly on occasion under Alternative 1 when peak earthmoving activities occur. Similarly, for construction equipment exhaust emissions, the combined WTTIP construction activities would have the potential to exceed the BAAQMD's significance criteria for carbon monoxide and nitrogen oxide between 2007 and 2018. Due to this combined or collective impact, Measures 3.9-1a, 3.9-1b, and 3.9-1c would be required to reduce impacts to a less-than-significant level.

Impact 3.9-2 describes the potential for exposure of sensitive receptors to short-term increases in diesel particulates along truck haul routes during project construction. This impact was determined to be less than significant at all WTTIP project sites under Alternative 1; even with overlapping construction schedules and overlapping haul routes for multiple WTTIP projects, the potential impact would still be less than significant. For Alternative 2, there is some potential for daily combined truck trip volumes to exceed threshold levels between 2015 and 2018. When determining haul routes for each WTTIP project, EBMUD will consider all other scheduled WTTIP projects in the area that would use this route and will coordinate project schedules to ensure that the combined daily truck volume does not exceed 600 trips per day. Therefore, this cumulative impact is not considered significant and no mitigation is necessary.

Impact 3.9-3 relates to potential air pollutant emissions from ventilation fans and pertains only to tunneling. This site-specific impact could be mitigated to a less-than-significant level by

Measure 3.9-3, and there would be no collective impact, since proposed tunneling activities would be limited to the Orinda-Lafayette Aqueduct.

Operational air quality impacts, described in Impacts 3.9-4, 3.9-5, and 3.9-6, would all be less than significant with no mitigation required at any of the project sites. Therefore, the collective operational air quality impacts resulting from implementation of the WTTIP as a whole would be less than significant.

5.2.9 Noise and Vibration

Chapter 3, Section 3.10, identifies potential noise and vibration impacts associated with construction and operation of WTTIP project facilities. As described in Impacts 3.10-1 and 3.10-2, at most locations construction noise impacts would be mitigated to a level consistent with daytime and nighttime noise ordinance limits; in most cases, if feasible noise controls are implemented, construction noise levels at the closest sensitive receptors could be reduced to below the speech interference criterion. The exceptions would be for construction activities associated with the Orinda-Lafayette Aqueduct (under Alternative 2), Glen Pipeline, Happy Valley Pipeline, Moraga Road Pipeline, Tice Pipeline, Highland Reservoir, Moraga Reservoir, Happy Valley Pumping Plant, and Leland Pressure Zone Isolation Bypass Valves. Implementation of noise controls (Measure 3.10-1a), time limits (Measure 3.10-1b), and use of temporary sound barriers (Measure 3.10-1e) would reduce potential construction impacts to a less-than-significant level, although mitigated construction noise could still cause occasional disturbance at the closest noise-sensitive receptors.

Construction noise impacts identified for each facility were evaluated with respect to site-specific conditions, including ambient noise levels and distance to closest receptors. Most construction noise impacts would be facility-specific. Overlapping noise impacts would be limited to impacts along haul routes where overlapping construction schedules for multiple WTTIP facilities could result in combined noise increases from increased truck traffic. As described in Section 5.2.7, Traffic and Circulation, above, there would be a collective impact associated with increased traffic along common haul routes for multiple WTTIP projects. Collective noise increases associated with simultaneous use of roads by haul trucks for more than one facility project (based on proposed construction scheduling) would include the following:

- Camino Pablo (north of Miner Road), Moraga Road (Mt. Diablo Boulevard to Rheem Boulevard), and Moraga Way (Highway 24 to Ivy Drive): Estimated haul-truck-related noise levels would be 64 to 66 dBA (Leq), which is not expected to result in noticeable noise increases on these road segments. These roads are already subject to high levels of traffic (13,766 to 26,400 vehicles per day) and associated traffic noise levels (estimated to be 61 to 65 dBA, Ldn). Therefore, truck-related noise increases would not noticeably increase ambient noise levels. In addition, these temporary noise increases would only occur during the less noise-sensitive, daytime weekday hours.

- Camino Pablo (Highway 24 to Miner Road), Mt. Diablo Boulevard (Acalanes Road to east of the Lafayette Reservoir Recreation Area), Acalanes Road (El Nido Ranch Road to Mt. Diablo Boulevard), Rheem Boulevard (Moraga Road to Chalda Way), Deer Hill Road (Highway 24 to Oak Hill Road), and Oak Hill Road (Highway 24 to Mt. Diablo Boulevard): Estimated haul-truck-related noise levels would range between 62 and 65 dBA (Leq), which would not be expected to result in noticeable noise increases on these road segments. These road segments either are located near or traverse Highway 24 (where daytime ambient noise levels are likely to be at or above 65 dBA, Leq) or there are no noise-sensitive receptors adjacent to these road segments. Therefore, collective traffic increases on these road segments are not expected to result in significant noise impacts on sensitive receptors.

- El Nido Ranch Road (Highway 24 to Upper Happy Valley Road): Since there would be no collective traffic increases on this section of El Nido Ranch Road, no collective noise impacts are anticipated.

- Ardith Drive (Ivy Drive to Ardith Reservoir site), and Ivy Drive (Moraga Road to Ardith Drive): Estimated haul-truck-related noise levels would be 65 dBA (Leq), which could result in noticeable noise increases on these residential streets, where noise levels are expected to be 60 dBA (Ldn) or less. However, these temporary maximum noise increases would occur for a limited amount of time (three to six weeks if the excavation and backfilling phases were to overlap). Potential collective noise increases would be less during the remainder of construction. In addition, these temporary truck-related noise increases would only occur during the less noise-sensitive, daytime weekday hours, and noise levels are not expected to exceed the 70-dBA speech interference criterion at adjacent residences.

As described in Impact 3.10-3, potential vibration impacts would be mitigated to a less-than-significant level with implementation of Measure 3.10-3 requiring compliance with vibration limits. Vibration impacts for the proposed projects would be limited to the project site and immediate vicinity and there would be no potential for additive or combined effects of multiple projects. Therefore, the collective impacts of the WTTIP as a whole on vibration effects would be the same as the individual facilities' impacts presented in Chapter 3.

Similarly, operational noise associated with some projects, discussed in Impact 3.10-4, would be mitigated to a level of less than significant with construction of operational noise controls as specified in Measure 3.10-4. Because operational noise impacts for all projects would be reduced to an acceptable level and noise impacts are restricted to the project site and immediate vicinity, there would be no potential for additive or combined effects of multiple projects. Therefore, the collective impacts of the WTTIP as a whole on operational noise effects would be the same as the individual facilities' impacts presented in Chapter 3.

5.2.10 Hazards and Hazardous Materials

Chapter 3, Section 3.11 presents potential hazards and hazardous materials impacts associated with construction and operation of WTTIP project facilities. As described in Impacts 3.11-1 through 3.11-4, impacts associated with the potential to encounter hazardous materials or hazardous conditions during construction would be mitigated to a less-than-significant level at all sites through implementation of Measures 3.11-1, 3.11-2, and 3.12-1c, compliance with standard EBMUD procedures, and compliance with regulatory requirements. Construction and excavation activities for the proposed projects would be limited to the boundaries identified in Chapter 2, Project Description, and none of the projects would require the disposal of substantial volumes of hazardous materials. Due to the site-specific nature of these impacts and mitigation measures, there would be no potential for additive or combined effects of multiple projects, and the collective impacts associated with the WTTIP as a whole would be the same as the project-specific impacts described in Chapter 3. Similarly, Impact 3.11-7 relates to the potential for accidental releases of chemicals stored at the WTPs, which is also a site-specific issue with no potential for additive effects; therefore, identified impacts at all WTPs would be less than significant.

Impact 3.11-5 describes the potential for an increased risk of wildland fires during construction in high fire hazard areas. Three of the WTTIP projects located in areas of wildland fire risk are in Orinda on the north side of Highway 24 (Orinda WTP, entry shaft of the Orinda-Lafayette Tunnel, and Happy Valley Pumping Plant) and share a major access route (Camino Pablo). The project analysis indicates that the potential impacts would be less than significant through compliance with the Public Resource Code provisions governing the use of construction equipment in fireprone areas; however, there could be an additive effect due to the proximity of these projects to each other and the shared use of the same access and haul roads, especially if construction overlaps during the season of highest fire danger (April 1 to December 1). The potentially compounded increase in wildland fire risk could place an additional burden on local fire service providers (Contra Costa County Fire Protection District and/or the Moraga-Orinda Fire District); furthermore, as described in Impact 3.8-5, construction activities could disrupt access to project sites, which could impede access for emergency vehicles. The extent of this impact would depend on the actual phasing of the WTTIP projects, requiring EBMUD internal coordination. However, this coordination, in combination with implementation of Measure 3.8-5 to reduce access impacts and Measure 3.12-1e to notify local fire departments, would reduce collective impacts to a less-than-significant level.

5.2.11 Public Services and Utilities

Chapter 3, Section 3.12 presents potential public services and utilities impacts associated with construction and operation of WTTIP project facilities. These impacts include potential disruption of existing utilities; an increase in electricity demand; an increase in demand for police and fire services; effects on landfill capacity; and failure to achieve state-mandated solid waste diversion rates.

As described in Impact 3.12-1, while construction of proposed projects could potentially damage or interfere with existing public utilities, impacts at all sites could be mitigated to a less-than-significant level with Measures 3.12-1a through 3.12-1g. Impacts to utilities would be project-specific and localized to individual sites (even if regional utilities are affected), and implementation of measures described in Chapter 3 would reduce these impacts to a less-than-significant level.

Impact 3.12-2 describes the short-term and long-term increase in electricity demand, primarily associated with the operation of WTPs and pumping plants. A preliminary study performed by the Pacific Gas and Electric Company (PG&E) in February 2006 indicates the need for additional electricity distribution facilities under both Alternative 1 and Alternative 2. With construction of these additional facilities, the impact of the WTTIP projects on the electricity demand would be less than significant.

Impact 3.12-3 describes the potential for increased demand for police and fire services during construction and operation of the WTTIP projects. With incorporation of Measures 3.12-1a through 3.12-1g, the impact is expected to be less than significant.

The most significant source of solid waste is potentially requiring offsite disposal would be excavated material, estimated at approximately 230,000 – 376,000 cubic yards for all WTTIP projects under Alternatives 1 and 2, respectively. As described under Impacts 3.12-4 and 3.12-5 and presented in Table 3.12-5, however, most of this material would be reused onsite and, together with other measures designed to encourage waste recycling and reuse, is not expected to result in a significant cumulative effect on landfill capacity in the area.

5.3 Potential Projects with Related or Cumulative Effects

The evaluation presented in Section 5.2 considered the collective impacts associated with construction and operation of all components of the WTTIP based on the geographic scope of the affected environmental resource and the proposed project schedule. The following cumulative analysis considers collective WTTIP impacts in combination with potential environmental effects of other projects in the WTTIP study area. “Other projects,” also referred to as “cumulative projects,” include recently completed projects, projects currently under construction, and future projects currently in development. Table 5-1 lists the projects that were considered in the evaluation of cumulative impacts and is organized by geographic location, and Figure 5-1 shows the approximate location of the cumulative projects.[1] Table 5-2 presents the proposed construction schedule for the WTTIP facilities; for the purpose of the cumulative analysis, construction schedules are grouped into five-year periods to determine the potential for schedule overlap with projects listed in Table 5-1.

Table 5-1 identifies the project sponsors, which include EBMUD as well as other service districts (Central Contra Costa Sanitary District, Contra Costa Transit Authority, SBC, and PG&E), local jurisdictions (Lafayette, Moraga, Orinda, Walnut Creek, Pleasant Hill, San Pablo, Richmond, Oakland, and Contra Costa County) and other agencies (California Department of Transportation, or Caltrans). These projects were identified by the planning, community development, and public works/engineering departments of those agencies as well as through information posted on their websites. The table presents the project location, description, status, and construction schedule based on information available through early 2006; it also indicates the potential for geographic overlap with any WTTIP element. Those projects with identified schedules that could overlap with construction of a nearby WTTIP facility are shown in shaded cells, although this preliminary determination could change due to the uncertainty of project schedules; in addition, the construction schedule is as yet unknown for many of the projects listed in Table 5-1.

1 Figure 5-1 indicates the approximate location of projects, but does not indicate the size of project sites. Refer to Table 5-1 and the sources listed for more details on the size and location of projects.

TABLE 5-1
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
LAFAYETTE						
Overlapping Haul Routes with Lafayette WTP, Orinda-Lafayette Aqueduct, Highland Reservoir and Pipeline, Moraga Road Pipeline						
A-1	EBMUD	Folsom South Canal Connection Projects	Install stop logs and isolation valve at Lafayette WTP.	All	Approved / construction date uncertain	EBMUD, 2005g
A-2	Contra Costa Transportation Authority	Lafayette Carpool Lots	Construct a carpool lot on Mt. Diablo Boulevard at Risa Road.	All	Approved / 2007	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a
South Projects with Overlapping Haul Routes with Fay Hill Reservoir Replacement, Fay Hill Pumping Plant and Pipeline, Glen Pipeline Improvements, Moraga Road Pipeline, Moraga Reservoir, Sunnyside Pumping Plant, St. Mary's Road/Rohrer Drive Pipeline						
B-1	EBMUD	Brook Street Pipeline	Replace 2,700 feet of 6- and 8-inch transmission pipeline with 16-inch pipeline. Located on Brook Street from Mountain View Drive to Moraga Road.	Moraga Road Pipeline, Glen Pipeline Improvements	Planned / Apr. 2012 through Jan. 2013	EBMUD, 2005c
B-2	EBMUD	Sunset Reservoir Rehabilitation	Rehabilitate 0.07-million-gallon tank located east of Lafayette Reservoir.	Moraga Road Pipeline	Planned / Apr. 2010 through Sept. 2010	EBMUD, 2005b
B-3	EBMUD	Folsom South Canal Connection Projects	Install a new pump control panel, dechlorination improvements, and electrical improvements at the Moraga Pumping Plant.	Moraga Road Pipeline, Glen Pipeline Improvements	Approved / construction date uncertain	EBMUD, 2005g
B-4	City of Lafayette	Veteran's Memorial Building	10,500-square-foot community facility located at 3491 Mt. Diablo Boulevard.	Moraga Road Pipeline, Glen Pipeline Improvements	Construction completed 2005	City of Lafayette, 2005
B-5	City of Lafayette	Soldier Field Subdivision	87.9-acre subdivision for eight residential lots and approximately 60 acres of open space at the boundary between Lafayette and Walnut Creek.	St. Mary's Road/Rohrer Drive Pipeline	Proposed	City of Lafayette, 2005
B-6	City of Lafayette	Lafayette Library and Learning Center	30,321-square-foot library and 33,019-square-foot garage at Mt. Diablo Boulevard and First Street.	Glen Pipeline Improvements	Approved / 2006	City of Lafayette, 2005
B-7	City of Lafayette	Lafayette Mercantile	22,000-square-foot retail and 33,000-square-foot office building at Mt. Diablo Boulevard at Dewing Avenue.	Glen Pipeline Improvements	Approved / 2005–2006	City of Lafayette, 2005
B-8	City of Lafayette	Town Center Phase III	75-unit apartment building at Mt. Diablo Boulevard at Dewing Avenue.	Glen Pipeline Improvements	Planned (in approval process) / 2006	City of Lafayette, 2005

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP Project element includes those WTTIP projects in reasonable proximity.

NOTE: Shaded projects indicates preliminary determination of potential for overlap with WTTIP construction schedule for nearest WTTIP facility.

TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
B-9	PG&E	Rule 20 Electric Undergrounding Program	Undergrounding of utilities along 1,000 feet of Lafayette Circle.	Glen Pipeline Improvements	Approved / 2008	Pflaum, 2006
B-10	Contra Costa Transportation Authority	Moraga Road Corridor Improvements – Phases I and II	Eliminated a signal and crosswalks at the intersection of Brook Street and Moraga Road (involved closure of Brook Street). Installed traffic signal at intersection of Moraga Road and Moraga Boulevard.	Glen Pipeline Improvements	Completed in 2005	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a
B-11	Contra Costa Transportation Authority	Moraga Road Corridor Improvements – Phases III and IV	Acquire right-of-way and realign Brook Street with School Street. Construct a pedestrian walkway along Moraga Road from Old Jones Hill Road to Hillsdale.	Glen Pipeline Improvements	Completed in 2005	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a
B-12	Contra Costa Transportation Authority / City of Lafayette	Moraga Road Structural & Safety Improvements	Structural and safety improvements on Moraga Road between St. Mary's Road and Moraga city limit. Improvements include access improvements at intersections, shoulder work, potential slope stabilization, pavement rehabilitation, removal of safety hazards, and related improvements. Improvements from the Lafayette/Moraga town limit to Rim Rock Road are completed.	Moraga Road Pipeline	Completed in 2005	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a; City of Lafayette, 2006; Coe, 2006
B-13	City of Lafayette	Lafayette Valley Estates Storm Drain Improvement Project	Repair and replacement of approximately 1,600 feet of broken concrete ditches and 600 feet of corroded metal pipes of the original storm drain system at several locations within the subdivision as the first phase to upgrading and renewing the area drainage system.	St. Mary's Road/Rohrer Drive Pipeline	Approved / 2006	City of Lafayette, 2006; Coe, 2006
B-14	City of Lafayette	St. Mary's Road Storm Drain Improvements	Construct 1,000 feet of underground storm drainage pipe to replace existing open ditch where standing water occurs between Huertas Road and Hope Lane.	St. Mary's Road/Rohrer Drive Pipeline	Approved / 2006	City of Lafayette, 2006; Coe, 2006
B-15	Contra Costa Transportation Authority	Mt. Diablo Boulevard Corridor Improvements	Added a third east-bound lane to Mt. Diablo Boulevard between Oak Hill Road and Moraga Road. At the intersection with Moraga Road, a third south-bound lane was added. Other improvements were made to Plaza Way and Golden Gate Way. The project included some landscape work that mitigated the loss of landscaped medians and park area. Plaza park was rebuilt using local funds.	Glen Pipeline Improvements	Construction completed in 2001	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a
B-16	EBMUD	Folsom South Canal Connection Projects	Install isolation butterfly valve on the branch line from Lafayette Aqueduct No. 1 to Moraga Pumping Plant.	Moraga Road Pipeline	Approved / 2006	EBMUD, 2005g

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP project element includes those WTTIP projects in reasonable proximity.

NOTE: Shaded projects indicates a preliminary determination of potential overlap with the construction schedule for the nearest WTTIP facility.

TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
B-17	EBMUD	Happy Valley Road Pipeline	Replace 3,150 feet of pipeline on Dolores Street, under Highway 24, and on Happy Valley Road.	Glen Pipeline Improvements	Planned / completion expected by April 2007	Kirkpatrick, 2006
North Projects with Overlapping Haul Routes with Fay Hill Reservoir Replacement, Fay Hill Pumping Plant and Pipeline, Glen Pipeline Improvements, Moraga Road Pipeline, Moraga Reservoir, Sunnyside Pumping Plant, St. Mary's Road/Rohrer Drive Pipeline						
C-1	EBMUD	Valory Reservoir Replacement	Replace 0.27-million-gallon reservoir with a 0.5-million-gallon reservoir off of Panorama Drive	Glen Pipeline Improvements	In construction / completion expected by Jun. 2006	EBMUD, 2005e
C-2	Caltrans	Deer Hill Road/Oak Road Interchange	Improve interchange and signals at westbound off-ramp at Highway 24 Deer Hill Road/Oak Road interchange.	Glen Pipeline Improvements	Status being determined	Caltrans, 2006
C-3	City of Lafayette	Happy Valley Road Storm Drain Improvements	Replace 100 feet of roadside ditch on Happy Valley Road, just east of Crestmont Drive, with an underground pipe.	Glen Pipeline Improvements	Approved / 2006	City of Lafayette, 2006; Coe, 2006
Overlapping Haul Routes with Tice Pumping Plant and Leland Reservoir Replacement						
D-1	EBMUD	Old Tunnel Road Pipeline	Replace 1,300 feet of 8-inch transmission pipeline with a 12-inch pipeline. Located on Old Tunnel Road from Buchanan Drive to Linda Vista Lane.	Leland Reservoir Replacement	Planned / Apr. 2013 through Jan. 2014	EBMUD, 2005c
D-2	Central Contra Costa Sanitary District	Trunk Sewer Project – Lower Pleasant Hill Road Trunk	Replace approximately 3,300 feet of trunk sewer with a 21-inch line in Pleasant Hill Road, south of Highway 24.	Leland Reservoir Replacement	Approved / 2012	Central Contra Costa Sanitary District, 2005
D-3	City of Lafayette	Hidden Oaks	21-lot single-family residential subdivision near Kinney Drive.	Leland Reservoir Replacement	Approved / under construction	City of Lafayette, 2002
D-4	Caltrans / City of Lafayette	Pleasant Hill Road Bike/Pedestrian Path Improvements	Construct multipurpose pathways, tree-lined strips, bike lanes, and narrow travel lanes in Pleasant Hill Road between Mt. Diablo Boulevard and Condit Lane.	Leland Reservoir Replacement	Under construction / completion expected by 2006	Caltrans, 2006; Contra Costa Transportation Authority, 2006a; City of Lafayette, 2006
Other Overlaps						
E-1	EBMUD	Diablo Vista Reservoir Replacement	Drain and decommission 2.9-million-gallon reservoir and replace with a new 0.62-million-gallon reservoir at the existing reservoir site at a higher overflow elevation.	Walnut Creek WTP	Planned / Feb. 2010 through Jul. 2011	EBMUD, 2005c

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP Project element includes those WTTIP projects in reasonable proximity.

NOTE: Shaded projects indicates preliminary determination of potential for overlap with WTTIP construction schedule for nearest WTTIP facility.

TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
	City of Lafayette	2006 Pavement Management Program	Rehabilitation and maintenance of 25 streets citywide, including Happy Valley Road, Mt. Diablo Boulevard, and St. Mary's Road (not shown on figure).	Various locations	Approved for 2006	City of Lafayette, 2006
	Central Contra Costa Sanitary District	Collection System Renovation Program	Replace or renovate small-diameter sewers in Lafayette at various locations (allowance for future projects – not shown on figure).	Various locations	Planned / no certain dates	Central Contra Costa Sanitary District, 2005
MORAGA						
Overlapping Haul Routes with Fay Hill Reservoir Replacement, Fay Hill Pumping Plant and Pipeline, Glen Pipeline Improvements, Moraga Road Pipeline, Moraga Reservoir, Sunnyside Pumping Plant, St. Mary's Road/Rohrer Drive Pipeline						
F-1	EBMUD	Decommission Jonas Hill Reservoir	Decommission existing reservoir.	Moraga Road Pipeline	Completed in 2005	EBMUD, 2005b
F-2	Central Contra Costa Sanitary District	Concrete Corrosion Control Work on St. Mary's Road	Install 2,850 feet of cured-in-place pipe inside existing 33-inch sewer along easement paralleling St. Mary's Road beginning at Bollinger Canyon Road and extending southeast along Lafayette Moraga Trail (all internal work, no trench excavation); parallels one segment of the St. Mary's Road/Rohrer Drive Pipeline.	St. Mary's Road/Rohrer Drive Pipeline	Approved / 2006	Central Contra Costa Sanitary District, 2005
F-3	Central Contra Costa Sanitary District	Moraga Way Pumping Station Force Main	Evaluation and rehabilitation of existing force main paralleling St. Mary's Road near St. Mary's College and Bollinger Canyon Road. May overlap with one segment of the St. Mary's Road/Rohrer Drive Pipeline.	St. Mary's Road/Rohrer Drive Pipeline	Approved / 2014	Central Contra Costa Sanitary District, 2005
F-4	Town of Moraga	Rancho Laguna Housing Development	43-single-family housing development on 180 acres of existing open space. Currently in approval process.	Moraga Road Pipeline, Fay Hill Reservoir Replacement, Fay Hill Pumping Plant and Pipeline	Planned / construction date uncertain	Town of Moraga, 2005
F-5	Town of Moraga	Palos Colorados Housing Development	120-lot single-family housing development and 18-hole golf course on existing open space. Currently in approval process.	Moraga Road Pipeline	Planned / construction date uncertain	Town of Moraga, 2005
F-6	Contra Costa County Building Department	Relay Module APN 255-015-13	Relay module for commercial electrical at southwest corner of Moraga Road and Rheem Boulevard at or very near the same site as the Fay Hill Pumping Plant.	Fay Hill Pumping Plant and Pipeline, Moraga Road Pipeline, Fay Hill Reservoir Replacement	Approved / construction date uncertain	Gomez, 2005

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP project element includes those WTTIP projects in reasonable proximity.

NOTE: Shaded projects indicates a preliminary determination of potential overlap with the construction schedule for the nearest WTTIP facility.

TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
F-7	Contra Costa County Building Department	Metro PCS APN 255-015-14	Metro PCS cell site on Rheem Boulevard just west of Moraga Road; on other side of Center Street from the Fay Hill Pumping Plant. Currently in for plan check.	Fay Hill Pumping Plant and Pipeline, Moraga Road Pipeline, Fay Hill Reservoir Replacement	Approved / construction date uncertain	Gomez, 2005
F-8	EBMUD	Rheem Pumping Plant Upgrade	Upgrade Rheem Pumping Plant from 1.6 million gallons per day (mgd) to 3.2 mgd.	Fay Hill Pumping Plant and Pipeline, Moraga Road Pipeline, Fay Hill Reservoir Replacement	Approved / Dec. 2006 through Nov. 2007	EBMUD, 2005a
F-9	EBMUD	Lamorinda Recycled Water Project	As part of its water recycling program, EBMUD may implement a recycled water project in the Lamorinda area. This potential project could serve the proposed Palos Colorados development in Moraga (project F-5, above). Facilities would consist of a satellite recycled water treatment plant located next to the development to produce approximately 200,000 gallons per day of recycled water for irrigation of the golf course proposed as part of the development. The source of wastewater for the project would be an existing sewer located along Moraga Road, which would overlap with a part of the Moraga Road Pipeline. Construction of the recycled water project is dependent upon approval of the Palos Colorados development.	Moraga Road Pipeline	Proposed / timing dependent on approval of Palos Colorados project	Hu, 2006
F-10	Town of Moraga	New Office Building	Construction of a new office building and site improvements at 533 Moraga Road.	Fay Hill Pumping Plant and Pipeline, Moraga Road Pipeline, Fay Hill Reservoir Replacement	Approved / construction date uncertain	Town of Moraga, 2005
F-11	Town of Moraga	Hetfield Conceptual Development Plan	Subdivision of 58.2 acres on Hetfield Place into six lots.	St. Mary's Road/Rohrer Drive Pipeline	Application under consideration by the design review board / construction date uncertain	Dennsler, 2006
F-12	Town of Moraga	Los Encinos Housing Development	Single-family housing development.	St. Mary's Road/ Rohrer Drive Pipeline	April 2006	Dennsler, 2005
F-13	Town of Moraga	Bollinger Canyon General Plan Amendment and Rezoning Study	Single-family housing development.	St. Mary's Road/ Rohrer Drive Pipeline	Application submitted but project on hold because of additional studies required	Town of Moraga, 2005

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP Project element includes those WTTIP projects in reasonable proximity.

NOTE: Shaded projects indicates preliminary determination of potential for overlap with WTTIP construction schedule for nearest WTTIP facility.

TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
Other Overlaps						
	Central Contra Costa Sanitary District	Collection System Renovation Program	Replace or renovate small-diameter sewers in Moraga (allowance for future projects – not shown on figure).	Various locations	Planned / no certain dates	Central Contra Costa Sanitary District, 2005
ORINDA						
Overlapping Haul Routes with Orinda WTP, Orinda-Lafayette Aqueduct, Happy Valley Pumping Plant and Pipeline, and San Pablo Pipeline						
G-1	Central Contra Costa Sanitary District	Lower Orinda Pumping Station Force Main	Rehabilitation of existing force main on Camino Pablo between Miner Road and Crossroads Shopping Center.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Approved / 2012	Central Contra Costa Sanitary District, 2005
G-2	EBMUD	Orinda Reservoir	Decommission existing reservoir.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Completed in 2005	EBMUD, 2005b
G-3	EBMUD	Encinal Reservoir Replacement	Replace 0.26-million-gallon redwood reservoir with a new 0.19-million-gallon steel-bolted tank at the same site.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Planned / Jan. 2009 through Jun. 2010	EBMUD, 2005d
G-4	EBMUD	Westside Reservoir Replacement	Replace the 0.49-million-gallon Encinal Reservoir with a new 0.36-million-gallon reservoir and demolish the existing reservoir.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Completed in 2005	EBMUD, 2005d
G-5	EBMUD	Claremont Tunnel Seismic Improvements	Seismic improvements to the existing Claremont Tunnel, including construction of short bypass tunnel at west end in Berkeley and repairs to the tunnel from the Orinda WTP portal (Figure shows only Orinda WTP portion of project.)	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Under construction / completion expected by 2007	EBMUD, 2003b
G-6	EBMUD	Folsom South Canal Connection Projects	Construct spillway improvements at Orinda WTP.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Approved / 2008–2009	EBMUD, 2005g
G-7	Central Contra Costa Sanitary District	Flushkleen Force Main Renovation	Replace existing force main on Camino Pablo between Manzanita and Miner Road. Overlaps the Orinda WTP site and segments of the San Pablo Pipeline.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Approved / 2007	Central Contra Costa Sanitary District, 2005
G-8	Central Contra Costa Sanitary District	Trunk Sewer Project – Miner Road, Orinda	Replace approximately 7,200 feet of trunk sewer in Miner Road and Lombardy Lane with lines ranging in size from 15 to 27 inches. Overlaps with segments of the Happy Valley Pipeline.	Happy Valley Pumping Plant and Pipeline	Approved / 2008	Central Contra Costa Sanitary District, 2005
G-9	Central Contra Costa Sanitary District	Trunk Sewer Project – Camino Pablo, Orinda	Replace approximately 1,500 feet of trunk sewer in Camino Pablo near Miner Road with a 15-inch line.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Approved / 2008	Central Contra Costa Sanitary District, 2005

a See Figure 5.1 for approximate location of projects.
b Closest WTTIP project element includes those WTTIP projects in reasonable proximity.

NOTE: Shaded projects indicates a preliminary determination of potential overlap with the construction schedule for the nearest WTTIP facility.

TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
G-10	City of Orinda	Orinda Grove Development	80-dwelling housing development, relocation of city-owned ballfields, and construction of new office building. Project is located on 14.1-acre site, northeast of the intersection of Camino Pablo and Altarinda Road. In approval process; construction anticipated to begin in 2006.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Planned / 2006	City of Orinda, Planning Department, 2006
G-11	Contra Costa County Building Department	APN 266-010-04	Retaining wall work on two parcels west of the Happy Valley Pumping Plant parcel on Lombardy Lane.	Happy Valley Pumping Plant and Pipeline	Approved / construction schedule uncertain	Gomez, 2005
G-12	City of Orinda	Manzanita Drive Bride	Rebuilding Manzanita Drive bridge over San Pablo Creek because of seismic safety concerns and because the bridge is flooded during some storm events. Requires right-of-way for construction of temporary bridge on EBMUD Orinda WTP property. Some overhead utilities have already been relocated to accommodate construction.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Approved / 2007	Lowry, 2006
G-13	PG&E	Rule 20 Electric Undergrounding Program	Undergrounding of utilities along 5,000 feet of Miner Road between Camino Pablo and Lombardy Lane.	Happy Valley Pumping Plant and Pipeline	Approved / 2007 or 2008	Pflaum, 2006
G-14	Contra Costa Transportation Authority	Santa Maria Intersection Improvements	Review of traffic volumes and movements along Camino Pablo, extending northerly from Highway 24 to Santa Maria intersection. Recommendations may include addition of second lane on Camino Pablo.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Tentative	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a
G-15	EBMUD	Sleepy Hollow Reservoir Replacement	Replace 0.14-million-gallon temporary reservoir with a 0.4-million-gallon reservoir.	Happy Valley Pumping Plant and Pipeline	Under construction / expected to be completed by Sept. 2006	EBMUD, 2005e
Overlapping Haul Routes with Ardith Reservoir and Donald Pumping Plant						
H-1	EBMUD	Laguna Pumping Plant Replacement	Replace 0.2-mgd pumping plant with a 0.75-mgd pumping plant. To be located within the Montanera Development.	Ardith Reservoir and Donald Pumping Plant	Approved / Mar. 2007 through Jan. 2008	EBMUD, 2005a
H-2	EBMUD	Laguna No. 2 Reservoir	Construct new 0.27-million-gallon Laguna Reservoir adjacent to existing Laguna Reservoir.	Ardith Reservoir and Donald Pumping Plant	Approved / Mar. 2007 through Jun. 2008	EBMUD, 2005a

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP Project element includes those WTTIP projects in reasonable proximity.

NOTE: Shaded projects indicates preliminary determination of potential for overlap with WTTIP construction schedule for nearest WTTIP facility.

TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
H-3	EBMUD	Cross Roads Pumping Plant Replacement	Replace 0.3-mgd pumping plant with a 0.9-mgd pumping plant at existing site and replace 400 feet of 6-inch suction pipeline in Spring Road from pumping plant to Knickerbocker Lane with 8-inch pipeline.	Ardith Reservoir and Donald Pumping Plant	Approved / May 2006 through Jun. 2007	EBMUD, 2005a
H-4	Central Contra Costa Sanitary District	Trunk Sewer Project – Moraga Way, Orinda	Replace approximately 3,400 feet of existing trunk sewer with 12- and 15-inch lines in Moraga Way in the vicinity of El Camino Moraga and Del Rey School.	Ardith Reservoir and Donald Pumping Plant	Approved / 2009	Central Contra Costa Sanitary District, 2005
H-5	Central Contra Costa Sanitary District	Hall Drive Sewer Improvements – Phase 2B Construction	Renovation/replacement of the old easement sewer that serves 18 homes. The new line will be constructed in front yards of homes and tie into the bypass sewer in Hall Drive. Trenchless technologies will be utilized to minimize disruption of the front yards.	Ardith Reservoir and Donald Pumping Plant	Approved / 2011	Central Contra Costa Sanitary District, 2005
H-6	City of Orinda	Southwood Valley Subdivision	16 lot subdivision on 43 acres in Southwood Valley (Southwood Drive and Tara Road). EIR scoping in January 2006.	Ardith Reservoir and Donald Pumping Plant	Planned / construction Date uncertain	Parkman, 2005
H-7	City of Orinda	Stein Way Subdivision	2-parcel subdivision (will probably be subdivided further) at Stein Way and Oak Road. Application is being appealed.	Ardith Reservoir and Donald Pumping Plant	Planned / construction date uncertain	Parkman, 2005
H-8	EBMUD	New Siesta Reservoir	Construct a new 0.73-million-gallon reservoir and 1,160 feet of 12-inch inlet/outlet pipeline within the Montanera Development. (Figure shows only a generalized location within the Montanera site.)	Ardith Reservoir and Donald Pumping Plant	Approved / Mar. 2007 through Jun. 2008	EBMUD, 2005a
H-9	City of Orinda	Montanera	245-unit single-family housing development in Gateway Valley (western Orinda). Approved; EIR certified; construction to begin in 2006.	Ardith Reservoir and Donald Pumping Plant	Approved / 2006	City of Orinda, Planning Department, 2006
H-10	EBMUD	Moraga Way Pipeline Replacement	Replacement of aging water pipelines on Moraga Way between Overhill Road and Camino Encinas.	Ardith Reservoir and Donald Pumping Plant	Completed in 2005	EBMUD, 2005h
H-11	City of Orinda	Asphalt Reconstruction on Moraga Way	Repave Moraga Way between Camino Encinas and Ivy Drive.	Ardith Reservoir and Donald Pumping Plant	Approved / 2007	Lowry, 2006
H-12	Contra Costa Transportation Authority	Moraga Way/Ivy Drive Roadway Improvement & Signalization Project	Modify intersection of Ivy Drive and Moraga Way to provide free right-turn lane from southbound Moraga Way to Westbound Ivy Drive. Replace existing signal and widen sidewalks to meet Americans with Disabilities Act standards.	Ardith Reservoir and Donald Pumping Plant	Completed in 2004	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP project element includes those WTTIP projects in reasonable proximity.

NOTE: Shaded projects indicates a preliminary determination of potential overlap with the construction schedule for the nearest WTTIP facility.

TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
H-13	Contra Costa Transportation Authority	Bryant Way/Moraga Way Improvements	Provide pedestrian and bicycle connection between St. Stephens Trail, downtown Orinda, and the Orinda BART station. Areas encompassed are Bryant Way/Davis Road from St. Stephens Trail to the BART station connection near Camino Pablo; and Moraga Way from Brookwood Road to Bryant Way.	Ardith Reservoir and Donald Pumping Plant	Competed in 2005	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a
H-14	Contra Costa Transportation Authority	Moraga Way at Glorietta Boulevard and Camino Encinas	Improvements of Moraga Way at the intersections with Glorietta Boulevard and Camino Encinas.	Ardith Reservoir and Donald Pumping Plant	Completed in 2001	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a
H-15	Contra Costa Transportation Authority	Moraga Way Safety Improvements	Construction of safety features on Moraga Way between Glorietta Boulevard and Ivy Drive, including separate walkways, crosswalks, roadway widening, speed bumps, and other traffic calming devices.	Ardith Reservoir and Donald Pumping Plant	Completed in 2002	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a
H-16	Contra Costa Transportation Authority	Widen Eastbound Highway 24 Off-Ramp at Brookwood Road	Widen the eastbound Highway 24 off-ramp at Brookwood Road.	Ardith Reservoir and Donald Pumping Plant	Tentative	Contra Costa Transportation Authority, 2006b; Contra Costa Transportation Authority, 2006a
Other Overlaps						
I-1	City of Orinda	Asphalt Reconstruction on El Nido Ranch Road	Repave El Nido Ranch Road between Stephens Drive and city limit. Would not be implemented until WTTIP would be completed.	Orinda-Lafayette Aqueduct	Approved / construction schedule dependent on WTTIP	Lowry, 2006
	Central Contra Costa Sanitary District	Collection System Renovation Program	Replace or renovate small-diameter sewers in south Orinda (south of Highway 24 – many locations, not shown on figure).	Various locations	Planned / no certain dates	Central Contra Costa Sanitary District, 2005

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP Project element includes those WTTIP projects in reasonable proximity.

NOTE: Shaded projects indicates preliminary determination of potential for overlap with WTTIP construction schedule for nearest WTTIP facility.

TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
WALNUT CREEK						
J-1	EBMUD	Walnut Creek – San Ramon Improvement Project	Treatment, transmission, and distribution system improvements to correct deficiencies and increase reliability through Walnut Creek and Alamo. Includes four main components: (1) upgrades at Walnut Creek WTP where construction is scheduled to be completed in 2006; (2) northern pipeline and tunnel, where construction began in March 2003 and is scheduled for completion in 2006 and includes a completed segment on Lacassie Avenue, which is the same location as the Leland Isolation Pipeline, and pipeline construction along South Broadway between Newell Avenue and Rudgear Road is scheduled for completion in fall 2006 and is the same location as the New Leland Reservoir and Pipeline and Valve Improvements; (3) recently completed construction of Danville Pumping Plant in Alamo just south of Rudgear Road Trailhead near the New Leland Reservoir and Pipeline and Valve Improvements; and (4) completed construction of the Iron Horse corridor pipeline in Alamo.	Walnut Creek WTP, Leland Isolation Pipeline, New Leland Reservoir and Pipeline and Valve Improvements	Approved / partly completed and partly under construction, construction began in 2003 and scheduled for completion in 2006	EBMUD, 2000; EBMUD, 2006
Overlapping Haul Routes with Walnut Creek WTP						
K-1	EBMUD	Folsom South Canal Connection Projects	Install isolation butterfly on the north raw water line to the Walnut Creek WTP.	Walnut Creek WTP	Approved / construction date uncertain	EBMUD, 2005g
K-2	City of Walnut Creek	Contra Costa Christian School Expansion	Remove two portable buildings, construct new two-story 22,955-square-foot gymnasium/classroom building on seven-acre site at 2721 Larkey Lane.	Walnut Creek WTP	Under Review	City of Walnut Creek, Planning Division, 2006b
K-3	City of Walnut Creek	Trailside Glen Subdivision	Subdivision on 3.77 acres with seven lots for single-family residential – each lot over 12, 000 square feet at 2637 Larkey Lane.	Walnut Creek WTP	Under Review	City of Walnut Creek, Planning Division, 2006b
Overlapping Haul Routes with Leland Isolation Pipeline						
L-1	Central Contra Costa Sanitary District	Trunk Sewer Project – South Broadway Walnut Creek	Replace approximately 2,000 feet of the existing trunk sewer with a 15-inch line between Newell Avenue and Mt. Diablo Boulevard.	Leland Isolation Pipeline	Approved / 2009	Central Contra Costa Sanitary District, 2005
L-2	Central Contra Costa Sanitary District	Trunk Sewer Project – Walnut Boulevard, Walnut Creek	Replace approximately 7,000 feet of the existing trunk sewer in Walnut Boulevard between Homestead Avenue and Norlyn Drive with lines ranging in size from 18 to 22 inches.	Leland Isolation Pipeline	Approved / 2015	Central Contra Costa Sanitary District, 2005

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP project element includes those WTTIP projects in reasonable proximity.

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TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
L-3	Central Contra Costa Sanitary District	Walnut Creek Civic Center Main Improvements	Replace several deteriorated sewer lines along and adjacent to Civic Drive in downtown Walnut Creek.	Leland Isolation Pipeline	Tentative – dependent on Walnut Creek Plan	Central Contra Costa Sanitary District, 2005
L-4	Central Contra Costa Sanitary District	Locust Street Improvements	Replace several deteriorated sewers along and crossing Locust Street in downtown Walnut Creek, with one end overlapping with the Leland Isolation Pipeline.	Leland Isolation Pipeline	Tentative – dependent on Walnut Creek Plan	Central Contra Costa Sanitary District, 2005
L-5	Central Contra Costa Sanitary District	Mt. Diablo Boulevard Main Improvements	Replace several deteriorated sewers along and adjacent to Mt. Diablo Boulevard in downtown Walnut Creek.	Leland Isolation Pipeline	Tentative – dependent on Walnut Creek Plan	Central Contra Costa Sanitary District, 2005
L-6	Central Contra Costa Sanitary District	North Main Street Trunk Improvements	Replace several deteriorated sewers along North Main Street in downtown Walnut Creek between Civic Drive and Mt. Diablo Boulevard.	Leland Isolation Pipeline	Tentative – dependent on Walnut Creek Plan	Central Contra Costa Sanitary District, 2005
L-7	City of Walnut Creek	The Mercer	2.95-acre mixed-use residential and retail project, including 181 residential condominiums, 21,000 square feet of retail space, and two levels of parking. Located at 1655 North California Boulevard, between Trinity Avenue and Cole Avenue. Construction estimated from August 2005 to April 2007 (20 months).	Leland Isolation Pipeline	Approved / 2005–2007	City of Walnut Creek, Planning Division, 2006a
L-8	City of Walnut Creek	North Creek Church Expansion	Phased expansion including 69,885 square feet of a two-story sanctuary and 22,785 square feet of a gym/multipurpose room on 7.1 acres at 2303 Ygnacio Valley Road.	Leland Isolation Pipeline	Approved	City of Walnut Creek, Planning Division, 2006b
L-9	City of Walnut Creek	Walnut Creek Ford Remodel	29,000-square-foot facility at 1800 North Main Street and 5,370-square-foot facility across the street on Carlback, with street frontage improvements along Carlback and North Broadway. Very close to some sections of the Leland Isolation Pipeline.	Leland Isolation Pipeline	Approved	City of Walnut Creek, Planning Division, 2006a
L-10	City of Walnut Creek	Talbot's Apparel	20,000-square-foot retail facility at 1201 South Main Street at Olympic Boulevard.	Leland Isolation Pipeline	Completed fall 2004	City of Walnut Creek, Planning Division, 2006a
L-11	City of Walnut Creek	Montecito Apartments	120-unit apartment building at 1315 Alma Avenue.	Leland Isolation Pipeline	Completed in 2004	City of Walnut Creek, Planning Division, 2006a
L-12	City of Walnut Creek	Bonanza Street Apartments	24-unit residential project at 1852 Bonanza Street.	Leland Isolation Pipeline	Approved / under construction	City of Walnut Creek, Planning Division, 2006a

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP Project element includes those WTTIP projects in reasonable proximity.

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TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
L-13	City of Walnut Creek	SBC Switching Building	30,000-square-foot office building at 1755 Locust Street, under construction or near completion. Very close to some sections of the Leland Isolation Pipeline.	Leland Isolation Pipeline	Approved / under construction	City of Walnut Creek, Planning Division, 2006a
L-14	City of Walnut Creek	Ygnacio Valley Road Condominiums	Five-story residential, mixed-use development with 83 condominium units and five livework units at 547 and 565 Ygnacio Valley Road.	Leland Isolation Pipeline	Approved	City of Walnut Creek, Planning Division, 2006a
L-15	City of Walnut Creek	John Muir Medical Center Master Plan Amendment	Construction of numerous improvements and demolition of some structures on 30.66-acre site at 1601 Ygnacio Valley Road.	Leland Isolation Pipeline	Under Review	City of Walnut Creek, Planning Division, 2006b
L-16	City of Walnut Creek	Citrus Walk	Construction of 47 homes on 3.81 acres at 3063 Citrus Circle.	Leland Isolation Pipeline	Under construction	City of Walnut Creek, Planning Division, 2006b
L-17	City of Walnut Creek	Kinross Terrace	12-lot residential subdivision on 3.58 acres of existing common-area open space at the end of Kinross Drive.	Leland Isolation Pipeline	Under construction	City of Walnut Creek, Planning Division, 2006b
L-18	City of Walnut Creek	Bancroft Garden	Four-phased development on 3.5 acres to include office/library, multi-use building, gift shop, plant display, sales area, garden maintenance building, and overflow parking at 1500 Bancroft Road.	Leland Isolation Pipeline	Under construction	City of Walnut Creek, Planning Division, 2006b
L-19	City of Walnut Creek	St. John Vianney Church Expansion	13,106 square feet of additions to a church at 1650 Ygnacio Valley Road.	Leland Isolation Pipeline	Under construction	City of Walnut Creek, Planning Division, 2006b
L-20	City of Walnut Creek	Springfield Montessori Educational Center	Construction of 11,500-square-foot child daycare facility at 2780 Mitchell Drive.	Leland Isolation Pipeline	Under construction	City of Walnut Creek, Planning Division, 2006b
L-21	City of Walnut Creek	Casa Montego II	Construction of 33 multifamily units on 3.65 acres at 1485 Montego.	Leland Isolation Pipeline	Under construction	City of Walnut Creek, Planning Division, 2006b
L-22	City of Walnut Creek	Stoneridge Condo Conversion	340 units converted from apartments to condominiums on 17.25 acres at 1400 Marchbanks Drive.	Leland Isolation Pipeline	Approved	City of Walnut Creek, Planning Division, 2006b
L-23	City of Walnut Creek	Walnut Creek BART Transit Village	Construction of 574 residential units, 30,000 square feet of commercial space, and parking for 1,500 vehicles on 16.2 acres located at 200 Ygnacio Valley Road.	Leland Isolation Pipeline	Approved	City of Walnut Creek, Planning Division, 2006b

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP project element includes those WTTIP projects in reasonable proximity.

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TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
L-24	City of Walnut Creek	Ygnacio Valley Road Planned Development	Construction of 109-unit, five-story condominium development with three work/live lofts on 1.01 acres at 547/565 Ygnacio Valley Road.	Leland Isolation Pipeline	Under review	City of Walnut Creek, Planning Division, 2006b
L-25	City of Walnut Creek	Berean Christian High School Field Restoration	Football field renovation, parking lot extension, and other site improvements on seven acres at El Divisadero Avenue.	Leland Isolation Pipeline	Under review	City of Walnut Creek, Planning Division, 2006b
Overlapping Haul Routes with Leland Bypass Valve and New Leland Reservoir and Pipeline						
M-1	Central Contra Costa Sanitary District	South Main Sewer Sliplining	Slipline or rehabilitate approximately 800 feet of existing 36-inch corrugated-metal pipe in South Main Street just south of I-680 between the South Main off-ramp and Rudgear Road.	New Leland Pressure Zone Reservoir and Pipeline and Valve Improvements	Approved / 2008	Central Contra Costa Sanitary District, 2005
M-2	EBMUD	Rezone Hill Mutual Pressure Zone	Construct Hill Mutual Pipeline Intertie consisting of 1,600 feet of 12-inch steel pipeline extending from the end of Grey Eagle Drive to the southern end of Castle Crest Road, connecting Ridgewood and Holly Pressure Zones. Install individual pressure regulators on 55 homes in the Hill Mutual Pressure Zone. Demolish 0.003-million-gallon Hill Mutual Pressure Tank and 0.4-mgd Hill Mutual Pumping Plant. Demolish 0.12-million-gallon Crest Reservoir and 0.1-mgd Crest pumping plant.	New Leland Pressure Zone Reservoir and Pipeline and Valve Improvements	Planned / Jan. 2016 through Dec. 2016	EBMUD, 2003a
M-3	Central Contra Costa Sanitary District	Trunk Sewer Project – Rudgear Road Sewer Improvements	Replace approximately 13,000 feet of the existing trunk sewer line in Rudgear Road, Sylvan Road, and Palmer Road with lines ranging in size from 8 to 24 inches.	New Leland Pressure Zone Reservoir and Pipeline and Valve Improvements	Approved / 2009	Central Contra Costa Sanitary District, 2005
M-4	Central Contra Costa Sanitary District	Trunk Sewer Project – Lancaster Road	Replace approximately 5,100 feet of the existing trunk sewer in Lancaster Road and Meadow Road with 15- and 18-inch lines.	New Leland Pressure Zone Reservoir and Pipeline and Valve Improvements	Approved / 2010	Central Contra Costa Sanitary District, 2005
M-7	City of Walnut Creek	4 Seasons Condo Conversion	Conversion of 176 apartment units into condominiums on 2.72 acres at 1385 Creekside Drive.	Leland Isolation Pipeline	Under review	City of Walnut Creek, Planning Division, 2006b

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP Project element includes those WTTIP projects in reasonable proximity.

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TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
Overlapping Haul Routes with Tice Pumping Plant and Pipeline						
M-5	City of Walnut Creek	Contra Costa Jewish Community Center	Construction of 138 condominium units and reconstruction and enlargement of existing community center up to a total of 68,587 square feet on 8.26 acres at 2071 Tice Valley Boulevard.	Tice Pumping Plant and Pipeline	Under review	City of Walnut Creek, Planning Division, 2006b
M-6	City of Walnut Creek	Rossmoor Detention Basin	Expansion of Tice Creek detention basin at the entrance to Rossmoor.	Tice Pumping Plant and Pipeline	Constructed	City of Walnut Creek, 2006c
Other Overlaps						
N-1	EBMUD	Folsom South Canal Connection Projects	Install new pump control panel and surge pressure control measures at Walnut Creek Pumping Plant		Approved / construction date uncertain	EBMUD, 2005g
	Central Contra Costa Sanitary District	Collection System Renovation Program	Replace or renovate small-diameter sewers in Walnut Creek (allowance for future projects – not shown on figure).	Various Locations	Planned / no certain dates	Central Contra Costa Sanitary District, 2005
	Central Contra Costa Sanitary District	Orinda Crossroads Pumping Station Force Main	Evaluation and rehabilitation of existing force mains in various parts downtown Walnut Creek towards Lafayette (location not shown on map).	Various locations	Approved / 2013	Central Contra Costa Sanitary District, 2005
UNINCORPORATED CONTRA COSTA COUNTY (INCLUDING EL SOBRANTE)						
Overlapping Haul Routes with Orinda WTP, Orinda-Lafayette Aqueduct, Happy Valley Pumping Plant and Pipeline, and San Pablo Pipeline						
O-1	EBMUD	San Pablo Dam Seismic Upgrade Project	Upgrade of San Pablo Dam to meet seismic safety requirements.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Planned / Mar. 2008 through Mar. 2010	EBMUD, 2005f
O-2	EBMUD	Water Education Center	Construct a new water education center and offices for conservation division staff (23 employees) at the upper parking lot of the San Pablo Recreation Area.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Planned / 2009	Harris, 2006
O-3	EBMUD	San Pablo Recreation Center Tank Replacement Project	Replacement of 100,000-gallon redwood water tank in the northwest corner of the main recreation area parking lot with a steel tank of the same size to provide fire flows for the Water Education Center.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Planned / 2009	Hanoian, 2006a
O-4	EBMUD	Remodel San Pablo Recreation Area Visitor's Center	Small interior remodel of existing recreation area visitor's center for better customer service for food and retail.	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Planned / 2009	Hanoian, 2006b

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP project element includes those WTTIP projects in reasonable proximity.

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TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
O-5	SBC	Utility Undergrounding Project	Underground cable on the east side of San Pablo Road from 800 feet south of entrance to recreation area to approximately 3,200 feet north of entrance (near dam).	Orinda WTP, Orinda-Lafayette Aqueduct, San Pablo Pipeline	Constructed in 2005	Colosito, 2006
O-7	Contra Costa County Department of Public Works	San Pablo Dam Road Type III Slurry Seal	Apply type 3 slurry seal surface treatment to San Pablo Dam Road between Wildcat Canyon Road and San Pablo Reservoir spillway.	Sobrante WTP	Approved / 2007–2008	Contra Costa County, Department of Public Works, 2005
O-8	EBMUD	San Pablo Dam Drain Valve Replacement	Repair or replace 60-inch butterfly emergency drain valve	Orinda WTP, Orinda-Lafayette Aqueduct	Planned / 2007	EBMUD
Overlapping Haul Routes with Sobrante WTP						
P-1	Contra Costa County Department of Public Works	Castro Ranch Road Widening	Widen Castro Ranch Road between San Pablo Dam Road and Olinda Road.	Sobrante WTP	Planned	Contra Costa County, Department of Public Works, 2005
P-2	Contra Costa County Department of Public Works	El Portal Drive Widening	Widen El Portal Drive from Richmond city limits to San Pablo Dam Road.	Sobrante WTP	Planned	Contra Costa County, Department of Public Works, 2005
P-3	Contra Costa County Department of Public Works	Olinda Road Pedestrian Facilities	Provide walking facility for students and other pedestrians from Valley View Road to Olinda Elementary School on Olinda Road.	Sobrante WTP	Approved	Contra Costa County, Department of Public Works, 2005
P-4	Contra Costa County Department of Public Works	El Sobrante Area Micro Surface	Refurbish existing roadway on Appian Way between San Pablo Dam Road and Pinole city limit; Sobrante Avenue between Appian Way and Valley View Road; and Valley View Road between Appian Way and Richmond city limit.	Sobrante WTP	Planned / 2008–2009	Contra Costa County, Department of Public Works, 2005
P-5	Contra Costa County Department of Public Works	San Pablo Dam Road Pedestrian Improvements	Install curb and sidewalk and widen the road in the areas where the frontage improvements have not been installed between Tri Lane and Appian Way.	Sobrante WTP	Approved	Contra Costa County, Department of Public Works, 2005
P-6	Contra Costa County Department of Public Works	San Pablo Dam Road Surface Treatment	Apply surface treatment to San Pablo Dam Road between El Portal Drive and Appian Way.	Sobrante WTP	Planned / 2005–2006	Contra Costa County, Department of Public Works, 2005

[a] See Figure 5.1 for approximate location of projects.
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TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
P-7	City of Richmond	Knobcone	Subdivision of one lot into five lots at 5801 Knobcone Court.	Sobrante WTP	EIR in preparation / construction schedule unknown	City of Richmond, 2006; Boyce, 2006
P-8	Contra Costa County Department of Public Works	San Pablo Dam Road Micro Surfacing	Apply micro surface to San Pablo Dam Road between El Portal Drive and the Richmond city limit at Tri Lane.	Sobrante WTP	Approved / 2007	Pullman, 2006
P-9	Contra Costa County Department of Public Works	San Pablo Dam Road Type II Micro Surface	Apply Type II micro surface treatment to San Pablo Dam Road between Appian Way and the Richmond city limit.	Sobrante WTP	Planned / 2005–2006	Contra Costa County, Department of Public Works, 2005
P-10	Contra Costa County Department of Public Works	San Pablo Dam Road Middle Turn Lane	Add a middle turn lane to San Pablo Dam Road between Appian Way and Castro Ranch Road.	Sobrante WTP	Planned	Contra Costa County, Department of Public Works, 2005
P-11	Contra Costa County Department of Public Works	San Pablo Dam Road Improvements	Construct San Pablo Dam Road improvements and widening from Appian Way to the Richmond city limit.	Sobrante WTP	Planned	Contra Costa County, Department of Public Works, 2005
P-12	Contra Costa County Department of Public Works	Amend Road Overlay	Pavement overlay on Amend Road.	Sobrante WTP	Completed / 2003	Finch, 2006
P-13	City of San Pablo	San Pablo Dam Road East Utility Undergrounding	Undergrounding of utilities, construction of sidewalk, curb, and gutter, repair of failing pavement sections, edge grinding, and overlay of existing pavement at the eastern end of San Pablo Dam Road within the city limits of San Pablo.	Sobrante WTP	Completed in 2005	City of San Pablo, 2006
P-14	City of San Pablo	San Pablo Dam Road Pedestrian, Amador Street to Morrow Drive	Install a pedestrian path where there are currently no pedestrian facilities on San Pablo Dam Road.	Sobrante WTP	Planned / 2006	City of San Pablo, 2006
P-15	City of San Pablo	I-80/San Pablo Dam Road Interchange Reconstruction	Reconstruction of freeway interchange to improve traffic flow and better accommodate pedestrians and bicyclists.	Sobrante WTP	Planned / 2009	City of San Pablo, 2006
P-16	City of San Pablo	San Pablo Dam Road Storm Drain Repair	In-place repair of a 24-inch-diameter storm drain line between Morrow Drive and El Portal Drive that carries stormwater runoff from San Pablo Dam Road to San Pablo Creek.	Sobrante WTP	Completed in 2005	City of San Pablo, 2006

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP project element includes those WTTIP projects in reasonable proximity.

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TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
P-17	City of San Pablo	San Pablo Dam Road Subdrain Manhole Relocation	Construction of new intercept wells to tie into an existing subdrain system and convey subsurface drainage to the storm drain system between Morrow Drive and El Portal Drive. Needed to maintain proper drainage of a former landslide repair.	Sobrante WTP	Completed in 2005	City of San Pablo, 2006
P-18	City of Richmond	Forest Green Estates	120 single-family residential units at the end of Wesley Road near Clark Road and San Pablo Dam Road.	Sobrante WTP	EIR expected in Feb. 2003 / construction schedule unknown	City of Richmond, 2006; Light, 2006
P-19	City of Richmond	The Oaks	Possible 54 single-family homes at 1201 Castro Ranch Road.	Sobrante WTP	Approved, but tentative	City of Richmond, 2006; Light, 2006
P-20	City of Richmond	Canyon Oaks II	36 single-family homes north of Castro Ranch Road intersection with San Pablo Dam Road.	Sobrante WTP	EIR in preparation / construction schedule unknown	City of Richmond, 2006; Light, 2006
P-21	West Contra Costa Unified School District	De Anza High School	Phased demolition of existing campus on Valley View and building of a new facility. Proposed access route Appian Way to Valley View.	Sobrante WTP	Approved / 2006–2009	Blackwell, 2006
Overlapping Haul Routes With Tice Pumping Plant and Pipeline						
Q-1	Contra Costa County Building Department	APN 189-011-033	Grading for new residence; retaining wall on Tice Valley Boulevard just south of Olympic Boulevard.	Tice Pumping Plant	Approved	Gomez, 2005
Q-2	Contra Costa County Department of Public Works	Olympic Avenue Overlay	200 feet of pavement overlay on Olympic Avenue, west of Tice Valley Boulevard.	Tice Pimping Plant and Pipeline	Completed / 2001	Finch, 2006
Q-3	Contra Costa County Department of Public Works	Saranap Area Micro Surface	Apply micro surface treatment to Olympic Boulevard between the Lafayette city limit and Tice Valley Boulevard and to Tice Valley Boulevard between 1620 Tice Valley Boulevard and the Walnut Creek city limit.	Tice Pumping Plant and Pipeline	Approved / 2008–2009	Contra Costa County, Department of Public Works, 2005

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP Project element includes those WTTIP projects in reasonable proximity.

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TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
Overlapping Haul Routes with Withers Pumping Plant						
R-1	Caltrans/Contra Costa County Department of Public Works	Reliez Valley Road Pedestrian Path	Construct pedestrian path along Reliez Valley Road from Grayson Road to the end of the existing sidewalk, one-half mile to the south.	Withers Pumping Plant	Approved / 2006–2007	Caltrans, 2006; Contra Costa County, Department of Public Works, 2005
R-2	Contra Costa County Department of Public Works	Reliez Valley Road Overlay	Pavement sealant projects on Reliez Valley Road between Alhambra Road and the Lafayette city limit.	Withers Pumping Plant	Completed / 2001–2005	Finch, 2006
R-3	Contra Costa County Department of Public Works	Reliez Valley Road Overlay	Apply micro surface treatment to Reliez Valley Road between 2319 Reliez Valley Road and Withers Avenue.	Withers Pumping Plant	Approved / 2007–2008	Contra Costa County, Department of Public Works, 2005
R-4	City of Pleasant Hill	Best Western Hotel	Construction of three-story hotel at 1432 Contra Costa Boulevard.	Withers Pumping Plant	Constructed	City of Pleasant Hill, 2006
R-5	Central Contra Costa Sanitary District	Contra Costa Boulevard Slipling Project	Sliplining a 33-inch pipe into the existing sewer main underneath Contra Costa Boulevard from Gregory Lane to Chilpancingo Parkway.	Withers Pumping Plant	Constructed	Central Contra Costa Sanitary District, 2005
R-6	Contra Costa Water District	Patterson Boulevard Water Pipeline	Reconstruct the Patterson Boulevard main water pipeline between Boyd Road and Oak Park Boulevard.	Withers Pumping Plant	Constructed in 2005	City of Pleasant Hill, 2006
R-7	Contra Costa Sanitary District	Pleasant Hill Road Corridor	Replace 2,800 feet of existing trunk sewer with an 18-inch line on Pleasant Hill Road between Mercury Way and near Virginia Hills Drive.	Withers Pumping Plant	Planned / 2012	Central Contra Costa Sanitary District, 2005
R-8	Contra Costa Sanitary District	Pleasant Hill Grayson Creek	Construct approximately 5,600 feet of 18- and 24-inch trunk sewer from intersection of Pleasant Hill Road and Mercury Way to the Pleasant Hill relief interceptor in Tayolor Boulevard.	Withers Pumping Plant	Constructed in 2001	Central Contra Costa Sanitary District, 2005
Other Overlaps						
	Central Contra Costa Sanitary District	Collection System Renovation Program	Replace or renovate small-diameter sewers in unincorporated Contra Costa County (allowance for future projects – not shown on a figure).	Various Locations	Tentative	Central Contra Costa Sanitary District, 2005
	City of Pleasant Hill	2005 Citywide Pavement Rehabilitation Project	Reconstruction of various streets, including Patterson Boulevard.	Various locations		City of Pleasant Hill, 2006

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP project element includes those WTTIP projects in reasonable proximity.

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TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
OAKLAND						
S-1	PG&E	Rule 20 Electric Undergrounding Program	Undergrounding of utilities on MacArthur Boulevard between Alvingroom Court and 98th Avenue.	Upper San Leandro WTP	Ongoing, expected to be complete by Dec. 2006	PG&E, 2006; Chen, 2006
S-2	PG&E	Rule 20 Electric Undergrounding Program	Undergrounding of utilities on MacArthur Boulevard between Alvingroom Court and 73rd Avenue.	Upper San Leandro WTP	Dec. 2006 to Mar. 2007	PG&E, 2006; Chen, 2006
S-3	City of Oakland	Sewer Rehabilitation Project	Sewer rehabilitation projects west of MacArthur Boulevard and generally north of 73rd Avenue.	Upper San Leandro WTP	2011	Amirzehni, 2006
S-4	City of Oakland	Sewer Rehabilitation Project	Sewer rehabilitation projects south of S-3 and generally north of El Monte.	Upper San Leandro WTP	Ongoing	Amirzehni, 2006
S-5	City of Oakland	Sewer Rehabilitation Project	Sewer rehabilitation projects south of S-4.	Upper San Leandro WTP	2012	Amirzehni, 2006
MAJOR HIGHWAY PROJECTS						
CT-1	Caltrans	Caldecott Tunnels to El Curtola Overcrossing Rehabilitation	Rehabilitate Highway 24 between Caldecott Tunnels and El Curtola overcrossing.	To be determined	Status being determined	Caltrans, 2006
CT-2	Caltrans	Orinda and Lafayette Restore Planting and Irrigation	Restore planting and irrigation on Highway 24 from 0.6 miles west of Camino Pablo to the Lafayette city line.	To be determined	Status being determined	Caltrans, 2006
CT-3	Caltrans	Acalanes Road to El Curtola Boulevard Rehab	Rehabilitate Highway 24 between Acalanes Road and El Curtola overcrossing.	To be determined	Status being determined	Caltrans, 2006
CT-4	Caltrans	Replace Lighting	Replace lighting on Highway 24 between Acalanes Road and El Curtola Boulevard.	To be determined	Status being determined	Caltrans, 2006
CT-5	Caltrans	I-680 Alameda County Line to Rudgear Road – Rehabilitate Roadway	Rehabilitate I-680 between Alameda County line and Rudgear Road.	To be determined	Status being determined	Caltrans, 2006
CT-6	Caltrans	I-680 Alameda County Line to Rudgear Road – Rehabilitate Roadway	Rehabilitate I-680 between Alameda County line and Rudgear Road.	To be determined	Status being determined	Caltrans, 2006
CT-7	Caltrans	Newell/Ygnacio/El Curtola Replacement Planting	Conduct replacement planting on I-680 and Highway 24 from Newell Avenue to Ygnacio Valley Road and El Curtola.	To be determined	Status being determined	Caltrans, 2006
CT-8	Caltrans	I-680 HOV Lane, Marina Vista to North Main	Widen I-680 between North Main Street and Marina Vista Boulevard for high-occupancy vehicle lanes.	To be determined	Status being determined	Caltrans, 2006

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP Project element includes those WTTIP projects in reasonable proximity.

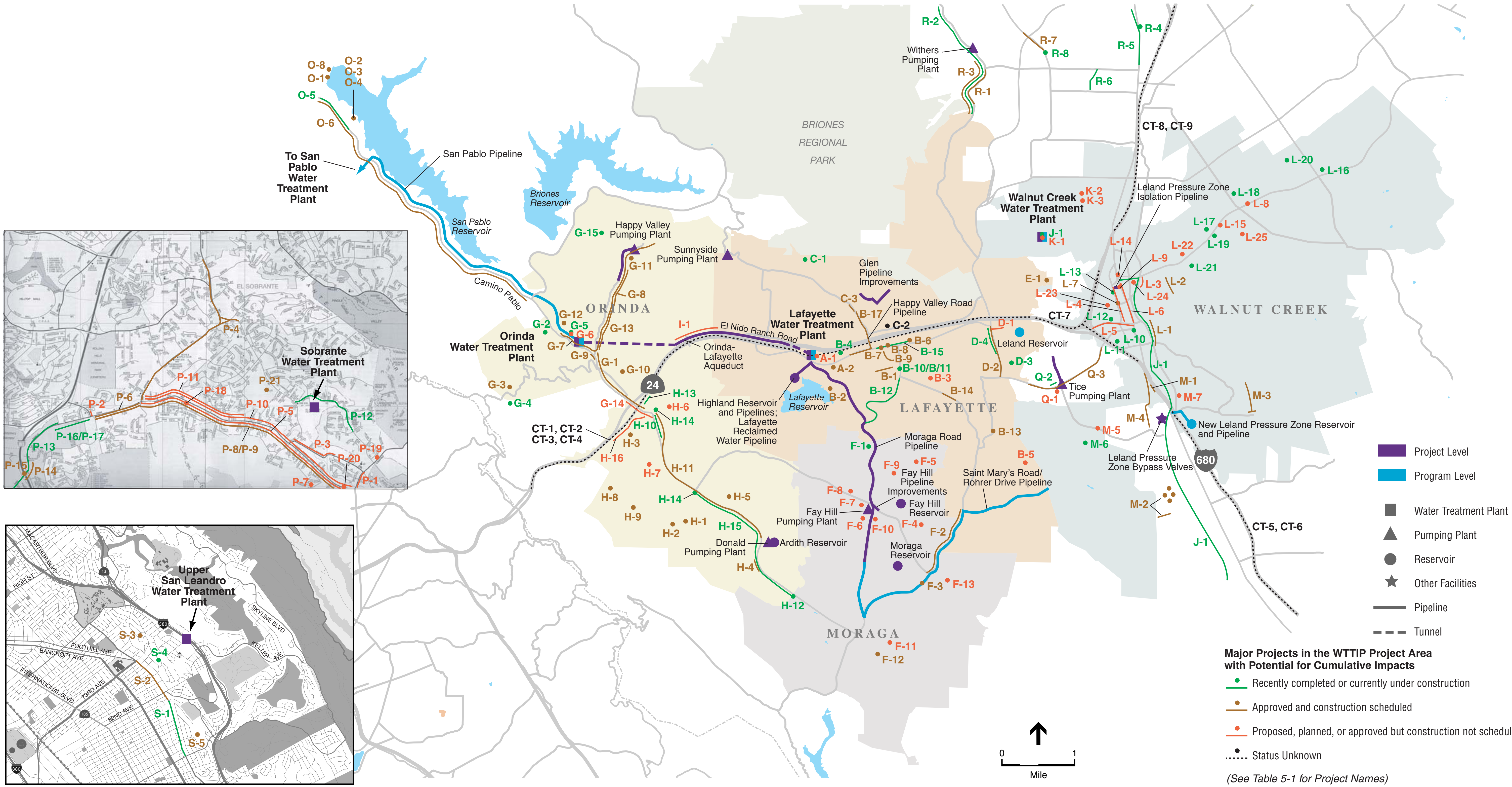
NOTE: Shaded projects indicates preliminary determination of potential for overlap with WTTIP construction schedule for nearest WTTIP facility.

TABLE 5-1 (continued)
OTHER PROJECTS IN THE WTTIP AREA WITH POTENTIAL FOR CUMULATIVE IMPACTS

No.[a]	Planning Jurisdiction	Project Name	Project Description	Closest WTTIP Project Element[b]	Project Status / Construction Schedule	Source
CT-9	Caltrans	Parkside Drive/Contra Costa Boulevard Replacement Planting	Replacement planting on I-680 between Parkside Drive and Contra Costa Boulevard.	To be determined	Status being determined	Caltrans, 2006
CT-10	Contra Costa Transit Authority	Caldecott Tunnel Improvement Project	Construct a fourth bore between Contra Costa and Alameda Counties.	To be determined	Preparation of environmental documents is underway	Contra Costa Transportation Authority, 2006b
SYSTEMWIDE						
	Freeport Regional Water Authority (Sacramento County Water Agency and EBMUD)	Freeport	The Freeport Regional Water Project (FRWP) is a cooperative effort of the Sacramento County Water Agency (SCWA) and EBMUD to provide surface water from the Sacramento River just below its confluence with the American River to customers in Sacramento County and the East Bay. The project will divert water from the Sacramento River at the Freeport Bend, upstream of the town of Freeport, and convey it through new, large pipelines to SCWA and EBMUD facilities. SCWA will treat and distribute water throughout the year to its service area in central Sacramento County. EBMUD will rely on the FRWP for a supplemental water supply during dry years only, estimated to be three out of every 10 years. The project does not include construction of any major facilities in the WTTIP study area, but the addition of this water supply to the EBMUD system may affect existing water treatment and transmission operations.	To be determined	Approved / construction 2006–2009	Freeport Regional Water Authority, 2006

[a] See Figure 5.1 for approximate location of projects.
[b] Closest WTTIP project element includes those WTTIP projects in reasonable proximity.

NOTE: Shaded projects indicates a preliminary determination of potential overlap with the construction schedule for the nearest WTTIP facility.



SOURCE: East Bay Municipal Utility District; ESA

EBMUD Water Treatment and Transmission Improvements Program . 204369

Figure 5-1
Major Projects in the WTTIP Project Area with Potential for Cumulative Impacts

As shown in Table 5-1, the cumulative projects identified in the WTTIP area include utility infrastructure projects, development projects (e.g., residential, commercial, community-serving uses), and transportation infrastructure projects (e.g., roadway, bicycle, and pedestrian facilities), with construction schedules ranging from completion in 2001 to proposed construction in 2016.

Table 5-2 shows that proposed construction schedules for WTTIP projects range from 2006 to 2020. In summary, Tables 5-1 and 5-2 indicate the following:

- *Lafayette*. There are 29 identified projects that could potentially contribute to cumulative impacts in Lafayette. Eleven are City of Lafayette projects, nine are other EBMUD projects, and the remaining are projects sponsored by the Contra Costa Transportation Authority, PG&E, Caltrans, or Central Contra Costa Sanitary District. All but five of the cumulative projects would be constructed before 2011, whereas construction of most of the WTTIP projects in Lafayette would occur after 2011. The exceptions are the Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipelines, and Moraga Road Pipeline projects, which are proposed to be constructed between 2006 and 2009. The Lafayette Reclaimed Water Pipeline and Highland Reservoir and Pipelines have the potential for both geographic and temporal overlap with two cumulative projects (A-2 and B-17 in Table 5-1); the Moraga Road Pipeline has the potential for both geographic and temporal overlap with one cumulative project (B-2 in Table 5-1). For the WTTIP projects proposed for construction after 2011, the Leland Reservoir Replacement has the potential for overlap with two projects (D-1 and D-2 in Table 5-1).

- *Moraga*. There are 14 identified projects that could potentially contribute to cumulative impacts in Moraga. Six are Town of Moraga projects, three are other EBMUD projects, and the remaining are projects sponsored by the Central Contra Costa Sanitary District or the Contra Costa County Building Department. All of the WTTIP projects in Moraga would be constructed after 2011. With one exception, all cumulative projects in Moraga would either be constructed before 2011 or the construction date is uncertain. The one exception (F-3 in Table 5-1) is proposed for construction in 2014, but the closest WTTIP project would be constructed after 2016. Therefore, at this time, there is no potential for geographic or temporal overlap of WTTIP projects with other projects in Moraga, although this determination could change when construction dates for the cumulative projects are determined.

- *Orinda*. There are 40 identified projects that could potentially contribute to cumulative impacts in Orinda, including eight projects located in unincorporated Contra Costa County. Seven are City of Orinda projects, 16 are other EBMUD projects, seven are sponsored by the Central Contra Costa Sanitary District, six are Contra Costa Transportation Authority projects, and the remaining are Contra Costa County Building Department, Contra Costa Department of Public Works, PG&E, and SBC projects. All of the WTTIP projects in Orinda would be constructed after 2011. With two exceptions, all cumulative projects in Orinda would either be constructed before 2011 or the construction date is uncertain. Therefore, the potential for both geographic and temporal overlap with the cumulative projects is limited to the Orinda WTP and the Happy Valley Pumping Plant and Pipeline, which could coincide with one cumulative project (G-1 in Table 5-1), and the Ardith Reservoir and Donald Pumping Plant, which could coincide with one cumulative project (H-5 in Table 5-1).

TABLE 5-2
PROPOSED WTTIP PROJECT CONSTRUCTION SCHEDULES

WTTIP Facility	Land Use Jurisdiction	Proposed Construction Schedule				Cumulative Project with Potential Overlapping Schedule[a]
			2006–2010	2011–2015	2016–2020	
Sobrante WTP	Contra Costa County	2011–2013		X		P-21
Tice Pumping Plant and Pipeline	Contra Costa County	2008–2010	X			Q-3
Withers Pumping Plant	Contra Costa County	2011–2013		X		R-7
Lafayette WTP	Lafayette	Alternative 1: 2012–2018 Alternative 2: 2015–2017		X X	X X	
Lafayette WTP Reclaimed Water Pipeline	Lafayette	2007–2009	X			A-2
Glen Pipeline Improvements	Lafayette	2011–2012		X		
Glen Reservoir Decommission	Lafayette	2011–2013		X		
Highland Reservoir and Pipelines	Lafayette	2007–2009	X			A-2
Leland Reservoir Replacement	Lafayette	2014–2016		X		D-1, D-2
Moraga Road Pipeline	Lafayette/Moraga	2007–2009	X			B-2, B-17
Fay Hill Pumping Plant, Reservoir, and Pipeline Improvements[a]	Moraga	2015–2017		X	X	
Moraga Reservoir	Moraga	2016–2018			X	
St. Mary's Road/Rohrer Drive Pipeline	Moraga / Lafayette / Walnut Creek	2018–2020			X	
Upper San Leandro WTP	Oakland	2011–2013		X		S-3, S-5
Orinda WTP	Orinda	Alternative 1: 2011–2013 Alternative 2: 2012–2018		X X	 X	G-1
Ardith Reservoir and Donald Pumping Plant	Orinda	2013–2015		X		H-5
Happy Valley Pumping Plant and Pipeline	Orinda	2011–2013		X		G-1
San Pablo Pipeline	Orinda / Contra Costa County / Richmond	2016 – 2018			X	
Sunnyside Pumping Plant and Pipeline	Orinda and Lafayette	2011–2013		X		

TABLE 5-2 (continued)
PROPOSED WTTIP PROJECT CONSTRUCTION SCHEDULES

WTTIP Facility	Land Use Jurisdiction	Proposed Construction Schedule				Cumulative Project with Potential Overlapping Schedule[a]
			2006–2010	2011–2015	2016–2020	
Orinda-Lafayette Aqueduct	Orinda / Lafayette	2015–2017		X	X	
Walnut Creek WTP	Walnut Creek	Alternative 1 or 2: 2007–2010	X			J-1
Leland Isolation Bypass Valve and Pipeline	Walnut Creek	2010–2011	X			J-1, L-1, L-7
Leland Pumping Plant	Walnut Creek	2009–2010	X			
New Leland Pressure Zone Reservoir and Pipeline	Walnut Creek	2011–2013		X		M-4

Notes: Italics indicate program-level project.
[a] Cumulative projects in the same vicinity as a WTTIP facility with proposed schedules within the same five-year period. See **Table 5-1** for names and descriptions.

SOURCE: EBMUD, 2006.

- *Walnut Creek*. There are 39 identified projects that could potentially contribute to cumulative impacts in Walnut Creek. Twenty-four projects are City of Walnut Creek projects, 11 are Central Contra Costa Sanitary District projects, and four are other EBMUD projects. Construction of all of the WTTIP projects in Walnut Creek is scheduled to occur between 2006 and 2015. There is the potential for overlap between the Walnut Creek WTP project with at least one cumulative project (J-1 in Table 5-1). There are 26 identified cumulative projects in the vicinity of the Leland Isolation Pipeline, although only three of them (J-1, L-1, and L-7 in Table 5-1) appear to have potentially similar construction schedules. None of the cumulative projects in the vicinity of the New Leland Reservoir and Pipeline appear to have potentially similar construction schedules.

- *Unincorporated Contra Costa County (including El Sobrante)*. There are 21 identified projects that could potentially contribute to cumulative impacts in the vicinity of the Sobrante WTP, which include projects under the planning jurisdiction of Contra Costa County, the City of Richmond, the City of San Pablo, or the West Contra Costa Unified School District. However, construction of the Sobrante WTP is scheduled for after 2011, and all the identified cumulative projects are either scheduled for construction before 2010 or the construction date is uncertain. One project (P-21 in Table 5-1) is scheduled for construction from 2006 to 2009, within five years of the scheduled construction at the Sobrante WTP. There are five identified cumulative projects in the vicinity of the Tice Pumping Plant (including two projects in Walnut Creek), and one of them (Q-3 in Table 5-1) has a potentially similar construction schedule. There are eight identified cumulative projects in the vicinity of the Withers Pumping Plant, and one of them (R-7 in Table 5-1) has a potentially similar construction schedule.

- *Oakland*. There are five identified projects that could potentially contribute to cumulative impacts in the vicinity of the Upper San Leandro WTP, sponsored either by the City of Oakland or by PG&E. Two of the projects (S-3 and S-5 in Table 5-1) have a potentially similar construction schedules as the Upper San Leandro WTP.

- *Entire Region*. In addition, there are 10 major highway projects proposed for the region by Caltrans and the Contra Costa Transit Authority that could contribute to cumulative impacts of the WTTIP projects, but the status and timing of these projects are still uncertain.

The District has initiated coordination with the appropriate departments in Moraga, Orinda, Walnut Creek, Lafayette, Oakland, and Contra Costa County and with other utility districts and agencies regarding the timing of construction projects that would occur near WTTIP sites. Such coordination will help to minimize multiple disruptions to the same areas within the same timeframe. The District will also submit plans related to, and comply with the requirements of, encroachment permits, which will provide further opportunity for coordination of multiple projects.

5.4 Cumulative Impacts and Mitigation Measures

Potential cumulative impacts of the WTTIP are described in this section by environmental topic area, since the geographic scope of the impact can vary by topic. Each impact discussion assesses the potential for one or more of the WTTIP facilities to contribute to a significant cumulative impact when considered in combination with the effects of the projects listed in Table 5-1. The potential for a cumulative impact depends on both the geographic location as well as the project schedule. However, for future projects, construction schedules are often broadly estimated and can be subject to change; therefore, the cumulative analysis is based on estimated construction schedules bracketed into roughly five-year periods. For impacts related to the secondary effects of growth that could be induced by the project, refer to Chapter 4, Growth-Inducement Potential and Secondary Effects of Growth.

5.4.1 Land Use, Planning, and Recreation

Impact C-1: Cumulative effects on recreational resources during construction.

The geographic scope of this impact is the regional recreational facilities in the program area, generally located within Alameda and Contra Costa Counties.

As indicated in Table 5-1 and Figure 5-1, numerous proposed and planned projects in the WTTIP study area have the potential to cause cumulative impacts to recreational facilities, including the temporary disruption of recreational facilities as well as disruption of access to or enjoyment of recreational facilities. This impact would be more likely if construction schedules overlapped with WTTIP projects' schedules in the same vicinity as major recreational resources such as the Lafayette Reservoir Recreation Area. Cumulative impacts on recreational land uses could result in increased demand on other regional facilities, with the potential for overcrowding during peak-use periods and associated potential deterioration of recreational resources.

However, as described in Chapter 3, all WTTIP impacts to recreational resources would be mitigated to a less-than-significant level, and, as described above, the WTTIP as a whole would not result in impacts to recreational resources. Therefore, WTTIP impacts to recreational resources, as mitigated, would not contribute to cumulative impacts.

5.4.2 Visual Quality

Impact C-2: Cumulative effects on the existing visual character.

The geographic scope of the cumulative impacts to visual quality is the viewsheds that could be affected by the WTTIP facilities from public roadways, trails, open space, and residential areas.

As described in Chapter 3, most proposed above-ground WTTIP sites are within generally developed urban/suburban areas, although the Highland and New Leland Pressure Zone Reservoirs and the Tice, Sunnyside, and Happy Valley Pumping Plants would involve project activities at undeveloped sites.

Only the above-ground WTTIP facilities could contribute substantially to long-term, cumulative visual impacts, as underground facilities such as the pipelines and tunnels would not be visible (although under Alternative 2 the Orinda-Lafayette Aqueduct tunnel entry shaft would remain as a low-profile concrete structure). However, the WTTIP sites with above-ground facilities are visually separated due to distance, surrounding topography, structures, landscaping, or natural vegetation. With the exception of the Highland Reservoir site and possibly the New Leland Pressure Zone Reservoir site, implementation of Measures 3.3-1, 3.3-2a, 3.3-2b, and 3.3-2c would mitigate WTTIP visual impacts to a less-than-significant level.

The cumulative projects listed in Table 5-1 include numerous major development projects in Lafayette, Moraga, Orinda, and Walnut Creek that could substantially alter the visual character of areas within the WTTIP study area, potentially covering over 500 acres and over 2,000 dwelling units. The cumulative projects would, by and large, add to the urban/developed character of the region. When considered in combination with these projects, the WTTIP's incremental contribution to long-term visual impacts, with proposed mitigation, would not be cumulatively considerable.

5.4.3 Geology, Soils, and Seismicity

Impact C-3: Cumulative geologic and seismic hazards.

The geographic scope of potential cumulative geologic and seismic impacts encompasses the WTTIP sites and immediate vicinity.

As described in Chapter 3, some of the proposed WTTIP projects could be constructed in or create areas with unstable slopes, experience strong groundshaking in the event of an earthquake on one of the regional faults, be damaged by settlement of weak or saturated soil, or be damaged by liquefaction. The Orinda-Lafayette Aqueduct could also be subjected to squeezing ground. However, these impacts would be less than significant or mitigated to a less-than-significant level with the implementation of Measures 3.4-1, 3.4-2, 3.4-3a, 3.4-3b, 3.4-4, and 3.4-5. Since none of the projects shown in Table 5-1 are located within the area of potential impact, there would be no cumulative geologic or seismic impacts.

5.4.4 Hydrology and Water Quality

Impact C-4: Cumulative increase in water quality impacts.

The geographic scope of potential cumulative water quality impacts encompasses the multiple creeks, streams, and associated drainage areas within the WTTIP study area.

Chapter 3 presents hydrology and water quality impacts of each WTTIP facility; as described above, collective water quality impacts of the WWTIP as a whole would be less than significant with compliance with standard EBMUD procedures and regulatory requirements as well as implementation of Measures 3.5-1a, 3.5-1b, 3.5-3, and 3.5-6.

Potential water quality impacts associated with construction and operation of the cumulative projects would be similar to those described in Chapter 3 for the WTTIP, with the potential for cumulative water quality impacts. However, as described in Chapter 3, the protection of surface waters is regulated under the federal Clean Water Act and Porter Cologne Water Quality Control Act, and all existing, planned, and proposed projects are subject to federal, state, and local regulations designed to protect water quality. These include National Pollutant Discharge Elimination System permit requirements, including developing and implementing stormwater pollution prevention plans and complying with Contra Costa Clean Water Program and Alameda Countywide Clean Water Program guidelines for stormwater control; compliance with California Department of Fish and Game and U.S. Army Corps of Engineers regulations pertaining to wetlands and streambeds; and "C.3" stormwater control requirements of the California Regional Water Quality Control Board regarding new development and redevelopment projects. Similar to the WTTIP projects, the cumulative projects listed in Table 5-1 would be expected to comply with applicable water quality regulations and incorporate project-specific mitigation measures that are similar to those described in Section 3.5, Hydrology and Water Quality, for the WTTIP projects. Because of these measures, when considered in combination with these projects, the WTTIP's incremental contribution to water quality impacts, with proposed mitigation, would not be cumulatively considerable.

5.4.5 Biological Resources

Impact C-5: Cumulative loss of habitat for special-status wildlife and plants and other biological resources.

The geographic scope of potential biological resources impacts encompasses the wildlife and plant habitats of affected species in the region, including grassland, scrubland, riparian, and woodland communities as well as aquatic habitat in the San Pablo Creek watershed and other local watersheds.

Impacts on Biological Resources during WTTIP Construction

As discussed in Section 3.6, Biological Resources, grassland, scrubland, riparian, and woodland communities provide habitat for common and special-status plant species, and nesting and foraging habitat for a variety of common and special-status upland wildlife species. San Pablo Creek and other drainages that traverse WTTIP sites provide habitat for common and special-status aquatic species. Section 3.6 includes several mitigation measures to reduce potential construction impacts to these species (i.e., construction disturbance, erosion, noise, and human disturbance) to a less-than-significant level. In addition, future projects with potentially significant impacts to plant, wildlife, and fish species would be required to comply with federal, state, and local regulations and ordinances protecting biological resources through implementation of similar mitigation measures during construction. For those projects that have not already undergone review, CEQA analysis would be performed and potential impacts addressed. Therefore, the potential incremental construction impacts of the WTTIP projects would not contribute to a cumulatively significant impact on special-status plant, wildlife, and fish species.

Impacts on Biological Resources due to Habitat Removal

The project region has undergone significant past conversion of natural habitats to development. Construction and installation of WTTIP facilities could contribute to a cumulative loss of protected trees; streams, wetlands, and riparian habitat potentially subject to state and federal protection; and habitat for common and special-status plant and wildlife species. In addition, WTTIP facilities could contribute to cumulative habitat fragmentation, isolation, or loss of established migratory wildlife corridors. These cumulative impacts are analyzed within the geographic scope of each watershed included within the WTTIP project sites below.

Though past, present, and reasonably foreseeable projects within the geographic scope of this analysis may result in cumulatively significantly adverse impacts to protected trees, habitat for plants and wildlife, and migratory wildlife corridors, in light of the nature and extent of those impacts the incremental effects of the proposed WTTIP would not result in cumulatively considerable effects. The WTTIP would not significantly contribute to protected tree, wetland, riparian, and other habitat removal that has occurred or is proposed within the geographic context of this analysis. Though potentially a significant local impact, protected tree loss in the Lafayette Reservoir Recreation Area would not be considered cumulatively significant, as discussed above.

San Pablo Creek Watershed

The San Pablo Creek watershed includes the San Pablo Pipeline and the following WTTIP project-level sites: Orinda WTP, Sobrante WTP, Orinda-Lafayette Tunnel entry shaft, and Happy Valley Pumping Plant and Pipeline. Project-level projects would result in the removal of up to 17 protected trees. Additional loss of protected trees, wetland, and riparian habitat as well as impacts to migratory wildlife corridors could occur under the San Pablo Pipeline project. Protected tree and resident and migratory wildlife habitat losses due to the San Pablo Pipeline would not likely be a significant local impact due to the project’s temporary and linear nature, implementation of revegetation measures, and location within the San Pablo Recreation Area, which includes 7,022 acres of primarily undeveloped watershed land owned by EBMUD. Cumulative projects within the San Pablo Creek watershed, in particular residential developments in Richmond (Forest Green Estates, The Oaks, Canyon Oaks II, and Knobcone), have the potential to result in the additional loss of protected trees, wetlands, and riparian habitat as well as habitat for plant and wildlife species. Depending on the projects’ configurations, these cumulative projects could also affect established migratory wildlife corridors. It is likely, however, in light of existing legal requirements, that mitigation measures will be implemented for these projects to mitigate or minimize these impacts. When considered in combination with these projects, the incremental impacts associated with the WTTIP projects, as mitigated, would not represent a cumulatively considerable contribution to the potential long-term impacts to biological resources.

Walnut Creek Watershed

The Walnut Creek watershed includes the Leland Reservoir, New Leland Pressure Zone Reservoir and Pipeline, a portion of the St. Mary’s Road/Rohrer Drive Pipeline and the following WTTIP project-level sites: Lafayette WTP, Walnut Creek WTP, the exit shaft site for the Orinda-Lafayette Tunnel, the entire Orinda-Lafayette Pipeline, Glen Pipeline Improvements, Highland Reservoir and Pipelines, Lafayette Reclaimed Water Pipeline, Leland Isolation Pipeline and Bypass Valves, the northern portion of the Moraga Road Pipeline, Sunnyside Pumping Plant, Tice Pumping Plant and Pipeline, and Withers Pumping Plant.

Project-level projects would result in the removal of up to 246 protected trees. The majority of these trees (approximately 185) are within the Lafayette Reservoir Recreation Area. As discussed above, protected tree and resident and migratory wildlife habitat losses within the recreation area would not likely be a significant collective impact due to the project's temporary nature, implementation of revegetation measures, and the project's location within the 925-acre, primarily undeveloped recreation area where this loss would not be cumulatively considerable. Additional loss of protected trees, wetland, and riparian habitat as well as impacts to migratory wildlife corridors could occur under the Leland Reservoir, New Leland Pressure Zone Reservoir and Pipeline, and St. Mary's Road/Rohrer Drive Pipeline. Much of the cumulative development projects proposed within the Walnut Creek watershed are located near the Leland Isolation Pipeline in an urbanized region of Walnut Creek. Some residential developments, such as the Soldier Field Subdivision and Hidden Oaks, have the potential to result in the additional loss of protected trees, wetlands, and riparian habitat as well as habitat for plant and wildlife species. Depending on the project configurations, these cumulative projects could also affect established migratory wildlife corridors. However, when considered in combination with these projects, the incremental impacts associated with the WTTIP projects, as mitigated, would not represent a cumulatively considerable contribution to the potential long-term impacts to biological resources.

Upper San Leandro/Moraga Creek Watershed

The Upper San Leandro/Moraga Creek watershed includes a portion of the St. Mary's Road/Rohrer Drive Pipeline and the following WTTIP project-level sites: Ardith Reservoir and Donald Pumping Plant, Fay Hill Pumping Plant and Pipeline Improvements, Fay Hill Reservoir, Moraga Reservoir, and much of the Moraga Road Pipeline. Project-level projects would result in removal of up to five protected trees. Additional loss of protected trees, wetland, and riparian habitat as well as impacts to migratory wildlife corridors could occur under the St. Mary's Road/Rohrer Drive Pipeline. Cumulative projects within the Upper San Leandro/Moraga Creek watershed, in particular residential developments within Orinda (Southwood Valley Subdivision and Montanera) and within open space in Moraga (Rancho Laguna Housing Development and Palos Colorados), have the potential to result in the additional loss of protected trees, wetlands, and riparian habitat as well as habitat for plant and wildlife species. Depending on the project configurations, these projects could also affect established migratory wildlife corridors. However, when considered in combination with these projects, the incremental impacts associated with the WTTIP projects, as mitigated, would not represent a cumulatively considerable contribution to the potential long-term impacts to biological resources.

Baxter/Cerrito/Richmond Drainages

The Baxter/Cerrito/Richmond drainages include the underground portion of the San Pablo Pipeline. Impacts to protected trees and other biological resources are expected to be less than significant due to underground construction. However, other cumulative projects within these drainages could result in the loss of protected trees, wetlands, and riparian habitat, loss of habitat for plant and wildlife species, as well as impacts to established migratory wildlife corridors. This potential loss would not represent a cumulatively considerable contribution given the need to mitigate and otherwise compensate for any significant displacement of these habitats and resources.

Arroyo Viejo Creek Watershed

The Upper San Leandro WTP project, located in the Arroyo Viejo Creek watershed, would result in the removal of up to 14 protected trees. Much of the cumulative development proposed within the Arroyo Viejo Creek watershed is located in an urbanized region of Oakland. Construction activities would likely occur primarily within paved roads and other disturbed rights-of-way. Thus, cumulative projects within this watershed are likely to have a limited effect on protected trees, wetlands, and riparian habitat, on habitat for plant and wildlife species, as well as on established migratory wildlife corridors, and impacts are not expected to be cumulatively considerable.

5.4.6 Cultural Resources

Impact C-6: Cumulative increase in archaeological, paleontological, and historic resources impacts.

The geographic scope considered for potential cumulative impacts to archaeological resources is Contra Costa and Alameda Counties.

As described above, the collective impacts of the WTTIP as a whole on cultural resources would be the same as the individual facilities’ impacts presented in Chapter 3. While there is a potential to encounter previously undiscovered cultural resources, including archaeological and paleontological resources during construction of WTTIP facilities, implementation of Measures 3.7-1a, 3.7-1b, 3.7-2, and 3.7-3 would reduce impacts to a less-than-significant level. The potential to encounter cultural resources associated with the other cumulative projects listed in Table 5-1 is unknown, but does exist. Given the lack of information on the extent of potential impacts to archaeological resources associated with the cumulative projects, the WTTIP contribution to any such impacts would not be cumulatively considerable, and implementation of the specified measures would reduce those impacts to a less-than-significant level.

As described in Impact 3.7-3, the WTTIP would not have a direct impact on historic resources, and potential indirect impacts would be less than significant with mitigation. Therefore, while the cumulative projects could result in impacts to historic resources, the incremental impacts associated with the WTTIP projects would not be cumulatively considerable.

5.4.7 Traffic and Circulation

Impact C-7: Cumulative traffic and roadway disruptions.

The geographic scope of potential cumulative traffic impacts includes access routes to area freeways, and arterial and collector roadways used for haul routes and construction equipment/ vehicle access to the WTTIP sites.

As described in Chapter 3, the proposed project would result in short-term increases in vehicle trips, reduced road width, reduced access to and parking at adjacent land uses, traffic safety issues, reduced access, disruptions to transit service, and increased wear-and-tear on designated haul routes. While the project impacts would be reduced to a less-than-significant level with implementation of Measures 3.8-1 through 3.8-7, the WTTIP could contribute to cumulative traffic and circulation impacts when considered in combination with projects listed in Table 5-1.

Potential cumulative impacts could occur as a result of (1) cumulative projects that generate increased traffic at the same time on the same roads as would the WTTIP facility projects, causing increased congestion and delays, and (2) infrastructure projects in roads that would be used by WTTIP construction workers and trucks, which could affect detour routes around WTTIP work zones or could delay WTTIP-generated vehicles past the work zones of those other projects. In addition to cumulative (additive) effects on traffic flow conditions, the WTTIP and other cumulative projects would extend the period of time when there would be disruptions (albeit not all disruptions would be significant) to traffic flow on area roadways. For example, if the Orinda WTP (Alternative 2) were implemented, and construction for that project commenced as early as 2012 (and/or if the construction schedule for the EBMUD San Pablo Dam Seismic Upgrade were extended), there could be a significant cumulative effect on Camino Pablo, a major arterial, resulting from the extended duration of construction-related traffic.

Given the lack of certainty about the timing of the projects in Table 5-1, and of the WTTIP projects, it is prudent to conclude that significant cumulative traffic and circulation impacts could occur, particularly on Camino Pablo. The District will coordinate with the appropriate local government departments in Moraga, Orinda, Walnut Creek, Lafayette, Oakland, and Contra Costa County and with other utility districts and agencies regarding the timing of construction projects that would occur near WTTIP sites. Such coordination will help to minimize multiple disruptions to the same areas. The District will also submit plans related to, and comply with the requirements of, encroachment permits with local jurisdictions, which will provide further opportunity for coordination of multiple projects. Specific measures to mitigate significant impacts that could occur will be determined as part of the interagency coordination, but could include measures such as employing flagmen during key construction periods, designating alternate haul routes, and providing more outreach and community noticing. With these measures, the potential impacts would not represent a considerable contribution to this potential cumulative impact.

5.4.8 Air Quality

Impact C-8: Cumulative construction emissions.

The geographic scope for cumulative air quality impacts is the San Francisco Bay Area Air Basin. As described in Chapter 3, potential air quality impacts associated with implementation of the WTTIP include increased dust and equipment emissions during construction, exposure to diesel particulates, emissions from ventilation fans, operational emissions, odors, and secondary emissions from power use. However, all potential air quality impacts associated with WTTIP facilities would be less than significant or would be mitigated to a less-than-significant level, based on criteria developed by the BAAQMD and guidelines established in the Clean Air Plan. In addition, implementation of Measures 3.9-1a, 3.9-1b, 3.9-1c, and 3.9-3 would reduce WTTIP air quality impacts to a less-than-significant level, and therefore impacts would not be cumulatively considerable. Implementation of the proposed WTTIP improvements would generally be consistent with the Bay Area's Clean Air Plan.

Other projects listed in Table 5-1 also have the potential to result in the same types of air quality impacts as the WTTIP facilities, with the extent of impact depending on individual project characteristics. However, as with the WTTIP facilities, all planned and proposed projects in the region are subject to BAAQMD regulations and the Clean Air Plan guidelines. Therefore, assuming implementation of appropriate mitigation measures for all projects in the region, cumulative air quality impacts would be less than significant.

5.4.9 Noise and Vibration

Impact C-9: Cumulative construction noise impacts.

The geographic scope of potential cumulative noise impacts encompasses the WTTIP sites and immediate vicinity (within the range of audible noise from the facilities during construction and operation) as well as along the access and haul routes to the WTTIP sites. As described in Chapter 3, noise increases associated with construction and operation of proposed WTTIP facilities would be limited to each facility's immediate vicinity. The WTTIP's site-specific noise impacts would be reduced to a less-than-significant level with implementation of Measures 3.10-1a through 3.10-1e, 3.10-2, 3.10-3a, 3.10-3b, and 3.10-4; therefore, when considered in combination with any adjacent projects shown on Table 5-1, the incremental noise impacts of the WTTIP projects, as mitigated, would not be cumulatively considerable.

Potential cumulative impacts could occur if other proposed or approved projects generate truck traffic at the same time on the same roads as the WTTIP facility projects, causing cumulative truck noise increases. For example, Camino Pablo, a major arterial, could be subject to cumulative noise increases if truck traffic associated with the Orinda WTP (Alternative 2) on

Camino Pablo were to coincide with truck traffic from the EBMUD San Pablo Dam Seismic Upgrade if trucks were to use Camino Pablo.

Given the lack of certainty about the timing of the projects in Table 5-1, and of the WTTIP projects, it is prudent to conclude that significant cumulative truck noise increases are possible on streets that could serve as common haul routes for listed projects, particularly on Camino Pablo. As stated above, the District will coordinate with the appropriate local government departments in Moraga, Orinda, Walnut Creek, Lafayette, Oakland, and Contra Costa County and with other utility districts and agencies regarding the timing of construction projects that would occur near WTTIP sites. Such coordination will help to minimize potential cumulative truck noise increases on common haul routes. The District will also submit plans related to, and comply with the requirements of, encroachment permits with local jurisdictions, which will provide further opportunity for coordination of multiple projects. Specific measures to mitigate significant impacts that could occur will be determined as part of the interagency coordination, but could include measures such as employing flagmen during key construction periods, designating alternate haul routes, and providing more outreach and community noticing.

5.4.10 Hazards and Hazardous Materials

Impact C-10: Cumulative hazardous materials impacts.

The geographic scope of impacts associated with hazardous materials generally encompasses the WTTIP site, the construction zone, and the area within a one-quarter-mile radius. The geographic scope for wildland fire risk is the high fire hazard areas identified by the California Department of Forestry and Fire Protection.

As described in Chapter 3, the proposed WTTIP could expose workers and the public to hazardous materials that could be present in excavated soil and groundwater as well as to hazardous building materials during demolition or renovation of existing structures. However, no WTTIP projects would require the disposal of substantial volumes of hazardous materials. The potential for accidental releases of chemicals stored at the WTPs is a site-specific issue with no potential for additive effects. Due to the site-specific nature of these impacts and compliance with EBMUD contract specifications, applicable laws and regulations, and Measures 3.11-1, 3.11-2, and 3.12-1c identified in Chapter 3, there would be no potential for cumulative effects.

There would be an increased risk of wildland fires during WTTIP construction in high fire hazard areas. As discussed above under collective effects, four WTTIP sites are located in high fire risk areas (Orinda WTP, entry shaft of the Orinda-Lafayette Tunnel, Happy Valley Pumping Plant, and Sunnyside Pumping Plant). Potential impacts would be less than significant through compliance with the Public Resource Code provisions governing the use of construction equipment in fireprone areas; however, there could be a cumulative impact due to the proximity of these sites to the cumulative projects and the shared use of the same access and haul roads, especially if construction overlapped during the season of highest fire danger (April 1 to

December 1). The potentially compounded increase in wildland fire risk could place an additional burden on local fire service providers (Contra Costa County Fire Protection District and/or the Moraga-Orinda Fire District); furthermore, construction activities could disrupt access to project sites, which could impede emergency access. The extent of cumulative impacts would depend on the actual phasing of the cumulative projects, requiring interagency coordination. Based on the location and timing of the projects listed in Table 5-1, there is only one project (G-1, Lower Orinda Pumping Station force main) with the potential to contribute to cumulative wildland fire impacts in combination with proposed WTTIP construction. As stated above, the District would coordinate with the Central Contra Costa Sanitary District, as well appropriate departments of other local jurisdictions and agencies regarding the timing of construction projects that would occur near WTTIP sites. Such coordination, particularly with respect to projects located in high fire hazard areas, along with coordination with local fire service providers, would help to minimize the incremental contribution of WTTIP projects to cumulative wildland fire impacts.

5.4.11 Public Services and Utilities

Impact C-11: Cumulative utilities and public services impacts.

The geographic scope of this impact is the service area of affected services and utilities, generally limited to within Contra Costa and Alameda Counties.

As described in Chapter 3, implementation of the WTTIP projects would have no long-term effects on the demand for or provision of utilities and public services, including police and fire services and solid waste disposal. Implementation of Measures 3.12-1a to 3.12-1h would reduce those impacts to a less-than-significant level. Therefore, the incremental impact associated with the WTTIP projects would not contribute to cumulative long-term impacts on utilities and public services.

Short-term and long-term increases in electricity demand would occur, primarily associated with the operation of WTPs and pumping plants. A preliminary study performed by PG&E in February 2006 indicates the need for additional electricity distribution facilities under both Alternative 1 and Alternative 2. With construction of these additional facilities, the incremental contribution of the WTTIP projects to cumulative impacts on electricity demand in Contra Costa and Alameda Counties would be less than significant.

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CHAPTER 6
Analysis of Alternatives

This chapter contains the following sections:

6.1 Approach to Analysis and Overview

Chapters 2 through 5 of this environmental impact report (EIR) present detailed evaluations of Alternative 1 – Supply from Orinda and Lafayette WTPs (the preferred alternative) and Alternative 2 – Supply from the Orinda WTP. This chapter (Chapter 6) describes and evaluates other alternatives to the Water Treatment and Transmission Improvements Program (WTTIP) (including the required No Project Alternative), describes the alternatives screening process and alternatives eliminated from consideration, and compares the environmental merits of the alternatives.

The California Environmental Quality Act (CEQA) Guidelines require EIRs to describe and evaluate a reasonable range of alternatives to a project, or to the location of a project, which would feasibly attain most of the basic project objectives and avoid or substantially lessen significant project impacts. The CEQA Guidelines, Section 15126.6, set forth the following criteria for alternatives:

- *Identifying Alternatives*. The range of alternatives is limited to those that would avoid or substantially lessen any of the significant effects of the project, are feasible, and would attain most of the basic objectives of the project. Factors that may be considered when addressing the feasibility of an alternative include site suitability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, economic viability, and whether the proponent can reasonably acquire, control, or otherwise have access to an alternative site. An EIR need not consider an alternative whose impact cannot be reasonably ascertained and whose implementation is remote and speculative. The specific alternative of "no project" must also be evaluated along with its impact.

- *Range of Alternatives*. An EIR need not consider every conceivable alternative, but must consider a reasonable range of alternatives that will foster informed decision-making and public participation. The “rule of reason” governs the selection and consideration of EIR alternatives, requiring that an EIR set forth only those alternatives necessary to permit a reasoned choice. The lead agency (EBMUD) is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasons for selecting those alternatives.
- *Evaluation of Alternatives*. EIRs are required to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the project. Matrices may be used to display the major characteristics of each alternative and environmental effects of each alternative. If an alternative would cause one or more significant effects not caused by the project as proposed, the significant effects of the alternative must be discussed but in less detail than the significant effects of the project.

The WTTIP is the result of a six-year planning effort that entailed consideration of over 60 alternatives. Sources of alternatives to be considered included background reports prepared for the WTTIP (described in Section 6.10), suggestions made in responses to the notice of preparation (NOP) and at public meetings held for the WTTIP, and EIR preparers (based on the environmental impacts described in Chapter 3). Table 6-1 lists the alternatives considered, indicates whether the alternatives are evaluated in the EIR or were eliminated, and the source of the alternative. Numerous alternatives were eliminated from consideration based on inability to meet most of the project’s basic objectives, infeasibility, or inability to reduce the project’s environmental impacts. Those alternatives retained for consideration (in addition to Alternatives 1 and 2) are presented in Sections 6.3 through 6.9. The alternatives screening process, alternatives eliminated and the reasons for their elimination are discussed in Section 6.10.

The information contained in this EIR will be reviewed and considered by the East Bay Municipal Utility District (EBMUD) Board of Directors prior to the ultimate decision to approve, disapprove, or modify the project. As part of its deliberations, the Board of Directors will decide whether to approve all or part of Alternative 1 or 2, or whether to defer action on some elements. The Board could adopt one of the alternatives described in Sections 6.3 through 6.9 in lieu of a proposed project. For each alternative evaluated in the EIR, the Board will adopt findings concerning its feasibility and environmental merits based on the contents of this EIR and the administrative record.

6.2 No Project Alternative

6.2.1 Description

Under the No Project Alternative, the proposed project would not be implemented. None of the proposed facility improvements described in Chapter 2 would occur.

6.2.2 Environmental Impacts

If the WTTIP were not implemented, none of the needs for the project would be achieved, and none of the benefits associated with the project would occur. The WTTIP responds to a variety of needs, summarized as follows and detailed in Section 2.2 of Chapter 2:

TABLE 6-1
SUMMARY OF ALTERNATIVES CONSIDERED

	Proposed Project/Alternative	Evaluated or Eliminated?: Evaluated in EIR Chapters 2–5	Evaluated in EIR Chapter 6	Eliminated (see Section 6.10 for reasons)	Source: Lamorinda Facilities Plan	Pressure Zone Planning Program Studies	Other[a]
ALTERNATIVES INVOLVING WATER TREATMENT PLANTS							
Alternatives Involving Systemwide Changes	Alternative 1 – Supply from Orinda and Lafayette WTPs	x			x		
	Alternative 2 – Supply from Orinda WTP	x			x		
	Alternative 3 – Supply from Walnut Creek WTP			X	x		
	Alternative 4 – Supply from Lafayette and Orinda WTPs			X	x		
	Alternative 5 – Supply from Lafayette and Walnut Creek WTPs			X	x		
	Alternative 6 – Supply from Orinda and Walnut Creek WTPs			X	x		
Other Water Treatment Plant Improvement Alternatives	Membrane Filtration Alternative (Lafayette WTP)		x				X
	Relocate Orinda WTP to Scow Canyon			X			X
	Relocate Orinda WTP near Briones Dam			X			X
	Eliminate Transmission of Treated Water to West of Hills from Orinda WTP			X			X
	Expand Lafayette WTP and Decommission Orinda WTP			X			X
	Continued Use of West of Hills Reservoirs as Remote Clearwell Storage			X			X
	Modified Orinda WTP Site Plan		x				X
	Alternative Haul Routes to and/or from the Walnut Creek WTP			X			X
	Leland Pumping Plant No. 2 – Proposed Site at Walnut Creek WTP	x				x	
	Leland Pumping Plant No. 2 – North California Boulevard			x			X
	Leland Pumping Plant No. 2 – northwest of South Broadway/Newell Avenue			x			X
	Leland Pumping Plant No. 2 – southeast of South Broadway/Newell Avenue		x				X
Orinda–Lafayette Aqueduct	Orinda–Lafayette Aqueduct – Proposed Route	x					X
	Conversion of Existing Lafayette Aqueduct No. 1			x			X
	Modified Long Tunnel Alignment			x			X
	Full Length Tunnel Alignment			x			X
	Long Tunnel Alignment Alternative			x			X
DISTRIBUTION SYSTEM PROJECTS/ALTERNATIVES							
Fay Hill Pumping Plant							
	Proposed Project	x				x	
	New pumping plant near St. Mary's Road/Rheem Boulevard, Moraga			x		x	
Fay Hill Reservoir							
	Proposed Project	x				x	
	Construction of a single tank in existing reservoir basin			x		x	
	Rehabilitation of the existing reservoir's liner			x		x	
Glen Pipeline Improvements and Reservoir Decommission							
	Proposed Project	x				x	
	Replace reservoir and construct pipeline improvements			x		x	

[a] Includes alternatives suggested in responses to the Notice of Preparation, alternatives suggested at public meetings, alternatives developed by Jacobs Associates for the Orinda-Lafayette Aqueduct, and alternatives developed by EBMUD and EIR preparers.

TABLE 6-1 (Continued)
SUMMARY OF ALTERNATIVES CONSIDERED

Proposed Project/Alternative	Evaluated or Eliminated?			Source		
	Evaluated in EIR Chapters 2–5	Evaluated in EIR Chapter 6	Eliminated (see Section 6.10 for reasons)	Lamorinda Facilities Plan	Pressure Zone Planning Program Studies	Other[a]
Happy Valley Pumping Plant and Pipeline						
Proposed Project (previously known as Site 3)	x				x	
Expand Sleepy Hollow, Valory and Las Aromas Pumping Plants			x		x	
Build Proposed Project with More Capacity			x		x	
Site 1 – Pumping Plant eastern portion of 42 Haciendas Road parcel		x			x	
Site 2 – Pumping Plant at 1 Miner Road			x		x	
Lafayette Reclaimed Water Pipeline						
Proposed Project	x					X
Alternative – Package Plant at Lafayette WTP		x				X
Highland Reservoir and Pipelines						
Proposed Project (previously known as Site 9)	x				x	
Reservoir Site North of Proposed Site		x				X
Site 1 – Lafayette Reservoir Recreation Area east of the dam			x		x	
Site 2 – west of Moraga Road, Lafayette			x		x	
Site 3 – east of Moraga Road, Lafayette			x		x	
Site 4 – east of Moraga Road, Lafayette			x		x	
Site 5 – east of Moraga Road, Lafayette			x		x	
Site 6 – east of Saint Mary's Drive, Lafayette			x		x	
Site 7 – Caltrans property north of Highway 24			x		x	
Site 8 – near end of Crestmont Drive			x		x	
Sunnyside Pumping Plant						
Proposed Project (previously known as Site 2)	x				x	
Site 1 – Sundown Terrace, Orinda,			x		x	
Site 3 – northwest of proposed site, Orinda.			x		x	
Site 4 – Honeywood Road, Orinda			x		x	
Tice Pumping Plant and Pipeline						
Proposed Project (previously known as Site 3)	x				x	
Site 1 – Pumping Plant southeast of Tice Valley Boulevard/Olympic Boulevard			x		x	
Site 2 – Pumping Plant north of Olympic Boulevard		x			x	
Site 4 –Pumping Plant near Boulevard Way/Boulevard Court			x		x	
Withers Pumping Plant						
Proposed Project (at Grayson Reservoir, previously known as Site 1)	x				x	
Site 2 –Pumping Plant at portion of 1024 Grayson Road, Contra Costa County			x		x	
Site 3 – Pumping Plant at parcel subdivided from 3182 Withers Avenue, Contra Costa County			x		x	
New Leland Pressure Zone Reservoir (Program-Level Project)						
Proposed Project (previously known as Site 3)	x				x	
Site 1 – near Craddock Court and Summit Road, Walnut Creek.			x		x	
Site 2 – in Shell Ridge Open Space, Walnut Creek			x		x	
Site 4 – near Cielo Via and Arbol Via, Walnut Creek and Contra Costa County			x		x	
Site 5 – at East Bay Regional Park District parcel, Lafayette			x		x	
Site 6 – northwest of Highway 24/I–680 interchange, Contra Costa County, Walnut Creek			x		x	
Site 7 – south of Olympic Boulevard, Contra Costa County			x		x	

- Meeting future regulatory standards related to water quality
- Complying with permit conditions
- Meeting existing and future water demands
- Improving aging infrastructure
- Correcting hydraulic constraints

The District is obligated to comply with water quality regulations and permit conditions and to provide adequate water service to its customers. Consequently, if the WTTIP were not implemented, EBMUD would have to implement other strategies to meet these needs (where other strategies exist). Such strategies could include implementing some of the alternatives listed later in this chapter which were considered and rejected. As explained in this chapter, implementation of these alternatives would generate environmental impacts and would take multiple years to implement.

In the meantime, EBMUD would continue to operate the system as it does today. The current supply and hydraulic deficiencies will result in water shortages, reduced customer service pressure, and reduced fire fighting capacity during peak summertime demand periods. Existing problems, such as system capacity deficiencies in the Walnut Creek/Lamorinda area during peak-use periods (summer) would persist and worsen over time. Without additional water treatment, storage, pumping, and pipeline transmission capacities provided by the project, the service areas will experience water shortages during summer and reduced customer service pressure, possibly requiring that the District impose water rationing even under nondrought conditions and constraining the amount of water available for emergencies. These water shortages would occur due to a lack of treatment and distribution capacity, not a lack of water supply. This condition could become worse with planned growth in the area if no system improvements were made. At the Orinda Water Treatment Plant (WTP), discharges of backwash water to San Pablo Creek would continue and periodic violations of the WTP's National Pollution Discharge Elimination System (NPDES) permit would continue. If the project were not implemented, infrastructure problems at the Lafayette WTP plant would continue, impairing the reliability of water service to the Lamorinda area. The District would also have an increased potential for future non-compliance with disinfection by-products and surface water treatment rules.

6.3 Membrane Filtration Alternative

6.3.1 Description

This alternative involves modifications to Alternative 1 to incorporate a different water treatment technology, membrane filtration,[1] at the Lafayette WTP. Since much of the Lafayette WTP would be reconstructed under Alternative 1, there is an opportunity to consider whether a different treatment technology that would reduce environmental impacts could be implemented at the plant

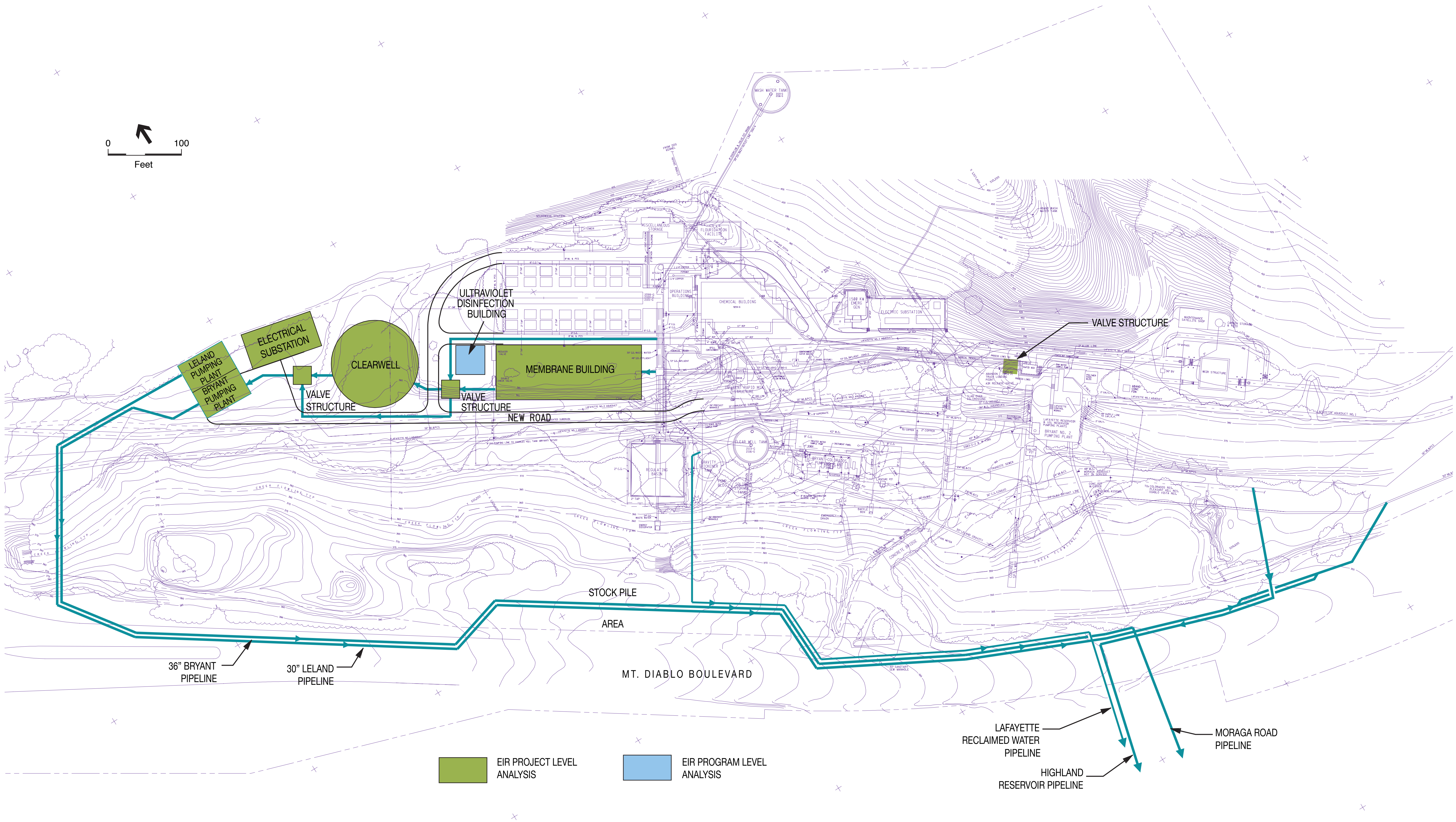
1 The U.S. Environmental Protection Agency defines membrane filtration as a pressure- or vacuum-driven separation process in which particulate matter larger than 1 micron is rejected by an engineered barrier, primarily through a size exclusion mechanism, and which has a measurable removal efficiency of a target organism (e.g., *cryptosporidium*). The definition includes the following membrane processes used in drinking water treatment: microfiltration, ultrafiltration, nanofiltration, and reverse osmosis.

while also reducing environmental impacts. (Lafayette WTP is also the only plant where full-scale replacement of filtration and other treatment processes implementation of the would be cost-effective.) The U.S. Environmental Protection Agency (U.S. EPA) has determined that membrane filtration is one of several effective strategies to remove *cryptosporidium* and other microbial pathogens from drinking water, consistent with the Long Term 2 Enhanced Surface Water Treatment Rule. The typical filtration process used at most water treatment plants (and all of EBMUD's plants) works as follows: coagulated water flows by gravity through a granular filter media (e.g., layers of sand and anthracite) and particles get trapped. Membrane filtration works by forcing raw water through extremely small hollow fiber membrane filters assembled in cartridges. The number of treatment plants in the U.S. that use membrane filtration to produce drinking water is not known but several exist, including a similarly sized facility in Valley Home, California.

Figure 6-1 shows the proposed WTP layout for the Lafayette WTP under the Membrane Filtration Alternative. The demand capacity of the Lafayette WTP would be the same as proposed under Alternative 1 (34 million gallons per day [mgd]). Improvements at all other WTPs would be the same as those proposed under Alternative 1. This alternative would involve less construction than under Alternative 1: fewer changes would be needed to the existing backwash water handling facilities; the existing filters would not be rehabilitated; only one clearwell would be needed; and no new chemical feed building or chlorine contact basin would be constructed. The Leland and Bryant Pumping Plant layouts and pipelines and the raw water bypass would be the same as under Alternative 1. Design elements of the membrane filtration system are described below.

The existing water treatment plant process flow train is shown in Figure 2-8 in Chapter 2. Under this alternative, the membrane filtration plant would use a two-stage, low-pressure ultrafiltration membrane system. The first stage would treat the raw water and remove particulate and microbiological contaminants and would require no process chemicals. The membrane cartridges would be pulse-backwashed with a combination of air and water every few minutes. Next, the backwash water would be treated by a second-stage membrane system. The backwash water from the second-stage membranes would then be discharged to the existing backwash water equalization basin. The existing Lafayette WTP backwash system would generally be sufficient to treat the backwash water from the second stage membrane filtration system; modifications that would be needed include an ultraviolet disinfection system and replacement of existing pumps and piping to route the recycled backwash water to the head of the plant. A new building would be constructed to house the membrane plant, as shown on Figure 6-1. The building would be 25 feet above grade and 15 feet below grade. The existing sodium hypochlorite storage and feed systems would be replaced and modified in the existing chemical building.

The existing clearwell at the Lafayette WTP would be replaced with one new clearwell at the west end of the plant. (Under Alternative 1, two new clearwells [operational capacities of 4.0 and 2.0 million gallons] would be constructed; the membrane filtration system would reduce the amount of treated water storage capacity needed.) The clearwell would be partially buried, with 25 feet above grade (as opposed to the clearwells proposed under Alternative 1, which would be buried). As under Alternative 1, a new clearwell overflow discharge pipe between the clearwell and Lafayette Creek would be constructed for emergency use only.



SOURCE: EBMUD

Figure 6-1
Membrane Filtration Alternative

There would be numerous changes to piping within the site, and a new electrical substation would be constructed. The substation would be configured to supply the added power needs associated with membrane filtration processes.

While the duration of construction of the Membrane Filtration Alternative has not been determined, it would be less than under Alternative 1 (four to six years) because construction would be less extensive.

6.3.2 Environmental Impacts

Table 6-2 compares the impacts of implementing Alternative 1 at the Lafayette WTP to those of implementing the Membrane Filtration Alternative. Overall, the Membrane Filtration Alternative is considered environmentally superior to the upgrades proposed at the Lafayette WTP under Alternative 1.

The magnitude of numerous impacts would be less under the Membrane Filtration Alternative than under Alternative 1, although there would be no change in the significance designation of any impacts. Some impacts related to hydrology and water quality, traffic and circulation, air quality, noise along haul routes, and solid waste disposal would be less because there would be less excavation and fewer total truck trips. There would be fewer protected trees removed under the Membrane Filtration Alternative, although the construction of above-ground structures (the clearwell and the membrane filtration building—both would be about 25 feet above ground) could be incrementally more visible in views from Mt. Diablo Boulevard than structures proposed under Alternative 1 until replacement trees and landscaping at pipe crossings of Lafayette Creek mature.

Impacts related to long-term demand for electricity would be greater under this alternative than under Alternative 1 (but still less than significant) because the Membrane Filtration Alternative would consume more power than conventional filtration. With respect to noise, while the overall construction period would be shorter, construction of the clearwell would require sheetpile driving, which would be more disruptive than conventional shoring to residents and other sensitive receptors. Implementation of Measure 3.10-1a would reduce the duration of pile-driving by requiring predrilling.

There are few large water treatment plants using this water treatment technology in the US, but its usage has been increasing for several years. EBMUD has only limited experience with membrane treatment via a very small package plant unit serving a few buildings at the Pardee Reservoir. The technology has not been investigated or pilot-tested by EBMUD for use at its large water treatment plants. Testing of the alternative treatment technology would require a year or more; the California Department of Health Services would need to review and approve the pilot test results. EBMUD will defer consideration of the Membrane Filtration Alternative until this technology is more fully investigated. If Alternative 1 is selected, membrane technology may be reviewed at the predesign stage of the project.

TABLE 6-2
COMPARISON OF PROPOSED LAFAYETTE WTP IMPROVEMENTS UNDER ALTERNATIVE 1 WITH MEMBRANE FILTRATION ALTERNATIVE

Impacts	Lafayette WTP Alternative 1	Membrane Filtration Alternative	Discussion
Land Use, Planning, and Recreation			
Divide an Established Community	--	--	Like Alternative 1, this alternative would not result in any significant land use impacts. The Walter Costa Trail would be relocated as proposed under Alternative 1.
Agricultural Resources Impacts	--	--	
Recreation Resources Impacts	LTS	LTS=	
Visual Quality			
Short-Term Visual Effects during Construction	LTS	LTS=	This alternative would significantly alter the appearance of the Lafayette WTP. Although fewer trees would be removed relative to Alternative 1, two additional above-ground structures—the clearwell and the membrane filtration building—would be constructed. The height above grade of both structures would be approximately 25 feet, which is similar to the height of the pumping plants depicted in the visual simulations (Figures 3.3-LWTP-5 through 3.3-LWTP-8 in Section 3.3). These structures would likely be partially or wholly screened by the pumping plants and intervening vegetation in the viewpoints depicted in the simulations (the Walter Costa trail west of the plant and Highway 24). Tree loss associated with pipeline construction across Lafayette Creek could open up new views of these facilities from Mt. Diablo Boulevard. The measures identified to mitigate impacts associated with Alternative 1 could likewise reduce visual impacts at the Lafayette WTP under the Membrane Filtration Alternative to a less-than-significant level.
Alteration of Appearance of WTTIP Sites	SM	SM+	
Effects on Views	SM	SM=	
Effects on Scenic Vistas	LTS	LTS=	
New Sources of Light and Glare	SM	SM=	
Geology, Soils, and Seismicity			
Slope Stability	LTS	LTS=	The issues related to slope stability, groundshaking, and soil characteristics would be similar under Alternative 1 and the Membrane Filtration Alternative (and could be similarly mitigated).
Groundshaking	SM	SM=	
Expansive Soils	SM	SM=	
Liquefaction	SM	SM=	
Squeezing Ground	--	--	
Hydrology and Water Quality			
Degradation of Water Quality during Construction	SM	SM–	Surface water quality issues would be similar under Alternative 1 and the Membrane Filtration Alternative. Less excavation, stockpiling, and grading would occur adjacent to Lafayette Creek under the Membrane Filtration Alternative, incrementally lessening the likelihood of erosion and sedimentation. There would be less dewatering under this alternative because excavation would be shallower and less extensive than under Alternative 1. There would be less discharge of chloraminated water because there would be only one clearwell and less use of sodium hypochlorite generally. Less new impervious surfaces would be created.
Groundwater Dewatering	LTS	LTS–	
Diversion of Flood Flows	--	--	
Discharge of Chloraminated Water during Construction	LTS	LTS=	
Operational Discharge of Chloraminated Water	LTS	LTS–	
Change in Impervious Surfaces	LTS	LTS–	

[a] Impacts summarized; please see Chapter 3 for details.

LTS = Less Than Significant
SM = Significant and Mitigable
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– Impact would be less under this alternative than under the proposed project.
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TABLE 6-2 (Continued)
COMPARISON OF PROPOSED LAFAYETTE WTP IMPROVEMENTS UNDER ALTERNATIVE 1 WITH MEMBRANE FILTRATION ALTERNATIVE

Impacts	Lafayette WTP Alternative 1	Membrane Filtration Alternative	Discussion
Biological Resources			
Loss of or Damage to Protected Trees	SM	SM–	Impacts to protected trees would be reduced under the Membrane Filtration Alternative. Under Alternative 1, an estimated 15–25 oaks and riparian trees considered protected would be removed. Under the Membrane Filtration Alternative, fewer trees would be removed because no construction (or associated tree removal) would occur near the existing backwash water facilities, south of the Lafayette Aqueducts. Other impacts to biological resources would be similar to Alternative 1.
Degradation to Streams, Wetlands, and Riparian Habitats	SM	SM–	
Loss of or Damage to Special-Status Plants	SM	SM=	
Disturbance to Special-Status Birds	SM	SM=	
Disturbance to Special-Status Bats	SM	SM=	
Disturbance to San Francisco Dusky-Footed Woodrat	SM	SM=	
Degradation of Special-Status Aquatic Species Habitat	SM	SM=	
Disruption to Wildlife Corridors	LTS	LTS=	
Cultural Resources			
Archaeological Resources, including Unrecorded Cultural Resources	SM	SM=	Like Alternative 1, excavation and grading activities near Lafayette Creek for the Membrane Filtration Alternative could result in the discovery of unrecorded resources. (The existing Bryant Pumping Plant, a potential historic resource at the Lafayette WTP, would be decommissioned but retained.)
Paleontological Resources	SM	SM=	
Historic Settings	LTS	LTS=	
Traffic and Circulation			
Increased Traffic	SM	SM–	Like Alternative 1, implementation of the Membrane Filtration Alternative would result in significant construction-phase traffic impacts related to increased traffic on local roadways, reduced road width (from construction of the Bryant and Leland Pipelines in Mt. Diablo Boulevard), parking, and traffic safety. The total number of truck trips for the Membrane Filtration Alternative would be less overall because excavation and construction would be less extensive than under Alternative 1.
Reduced Road Width	SM	SM=	
Parking	SM	SM=	
Traffic Safety	SM	SM=	
Access	--	--	
Transit	--	--	
Pavement Damage/Wear	LTS	LTS–	
Air Quality			
Construction Emission	SM	SM–	Short-term construction-related air quality impacts would be less under the Membrane Filtration Alternative relative to Alternative 1 because excavation and construction would be less extensive. The construction duration would be shorter than under Alternative 1 and total criteria air pollutant emissions and particulate would be less. Diesel particulate emissions along haul routes would also be less (and, like Alternative 1, less than significant). Secondary emissions from electricity generation would be greater than under Alternative 1 because the membrane filtration process is more energy-intensive.
Diesel Particulate Emissions along Haul Routes	LTS	LTS–	
Tunnel-Related Emissions	--	--	
Operational Pollutant Emissions at Treatment Facilities	LTS	LTS=	
Operational Odor Emissions	LTS	LTS=	
Secondary Emissions from Electricity Generation	LTS	LTS+	

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TABLE 6-2 (Continued)
COMPARISON OF PROPOSED LAFAYETTE WTP IMPROVEMENTS UNDER ALTERNATIVE 1 WITH MEMBRANE FILTRATION ALTERNATIVE

Impacts	Lafayette WTP Alternative 1	Membrane Filtration Alternative	Discussion
Noise and Vibration			
Construction Noise Increases Noise Increases along Haul Routes Construction-Related Vibration Effects Operational Noise Increases	SM LTS SM SM	SM+– LTS– LTS= SM=	With the Membrane Filtration Alternative, less construction would occur at the Lafayette WTP site (relative to Alternative 1) and construction would not occur as close to residences as it would under Alternative 1. (The nearest residences are about 800 feet south of the eastern end of the WTP site.) While the overall construction period would be shorter than under Alternative 1, construction of the clearwell would involve sheetpile driving. Impacts from operational pumping plant noise would be similar under either the project or this alternative and would be mitigable.
Hazards and Hazardous Materials			
Hazardous Materials in Soil and Groundwater Hazardous Building Materials Gassy Conditions in Tunnels High-Pressure Gas Line Rupture Wildland Fires Release from Construction Equipment Accidental Release during Operation	SM SM -- -- -- LTS LTS	SM– SM– -- -- -- LTS– LTS–	There would be less excavation and dewatering under this alternative. Corresponding to less potential to encounter hazardous materials in the soil and groundwater and to release hazardous materials from construction equipment. Demolition of existing structures that may contain hazardous building materials would not be required although there would be modifications to the chemical storage and feed systems. Membrane filtration essentially substitutes a physical water treatment process for chemical water treatment. Consequently, the Membrane Filtration Alternative would reduce the quantity of water treatment chemicals transported to and stored at the Lafayette WTP relative to Alternative 1. As indicated in Section 3.11, compliance with extensive requirements governing the safe handling of water treatment chemicals would reduce the risk of potential accidental release to acceptable levels.
Public Services and Utilities			
Disruption of Utility Lines Increase in Electricity Demand Increase in Public Services Demand Adverse Effect on Landfill Capacity Failure to Achieve State Diversion Mandates	SM LTS LTS SM SM	SM= LTS+ LTS= SM– SM–	The increase in electricity demand would be greater under this alternative because of the energy required to force water (through pumping or suction) through the membranes. Like the proposed project, offsite improvements would be needed at a PG&E substation to provide the additional electricity supply needed (the additional electrical demand has not been quantified). There would be less excavation under the Membrane Filtration Alternative than under the proposed project, requiring less offhaul of soil for disposal.

[a] Impacts summarized; please see Chapter 3 for details.

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= Impact would be the same (or similar) under this alternative as under the proposed project.

6.4 Modified Orinda WTP Site Plan

6.4.1 Description

The Orinda Historic Landmarks Committee requested that this EIR take into consideration the historical importance of the Orinda Filter Plant (O'Connell-Nye, 2005). This alternative responds to that comment, and involves relocating some structures associated with the backwash water recycle facilities and the potential future high-rate sedimentation unit. The Modified Orinda WTP Site Plan alternative could be implemented under either Alternative 1 or Alternative 2. Figure 6-2 shows the proposed layout for the Orinda WTP under the Modified Orinda WTP Site Plan alternative.

As described in Section 3.7 (Cultural Resources), EBMUD constructed the Orinda Filter Plant in 1936. The building, which appears in the center of Photo O5 on Figure 3.3-4b in Section 3.3 (Visual Quality), was one of three buildings at the site designed by architect Mark Daniels in 1934 (the main building, chemical building, and grounds/maintenance building) in an Art Deco style of architecture. In November 1988, the Orinda Filter Plant was designated Orinda's first historic landmark. The City Council found the Orinda Filter Plant to be significant for the following reasons:

- It is part of the development and heritage characteristics of Orinda.
- It is located on a site of significant historic events.
- It represents a distinctive example of an architectural period of style.
- It is associated with important governmental and social developments in the city.

EBMUD also identifies the Orinda WTP as a historic architectural resource.

Under Alternative 1 or 2, several new structures would be constructed in the vicinity of the historic building: a backwash water recycle system facility, an emergency generator building, a solids pumping plant, a solids storage tank, and high-rate sedimentation unit facility. (The latter facility is a potential future project evaluated at a program-level of detail in this EIR.) The solids pumping plant, emergency generator building and solids storage tank would be visible from the historic building, and would also be visible in views of the historic building from close range (e.g., the main entrance gate). These facilities would be about 16 feet tall and located approximately 100 feet southeast of the entrance gate on Manzanita Drive, and about 150 feet northwest of the front entrance of the Orinda WTP. The facilities would be visible when looking southeast from the entrance gate of the treatment plant, as well as when looking northwest from the front entrance of the Orinda WTP.

Although these changes are unlikely to result in a significant impact to the Orinda Filter Plant, to the extent that it would no longer qualify as a historic resource, this alternative proposes relocating the emergency generator building, solids pumping plant, and solids storage tank (and, if implemented in the future, the high-rate sedimentation unit) to diminish any adverse effect on its historic setting. The emergency generator and solids pumping plant would be integrated with the above-grade portion of the backwash water recycle system, closer to Camino Pablo. The height of this structure will be the same as that of the main building (15 feet). The solids storage tank would be between the backwash water facilities and the chemical building, as shown in Figure 6-2. The dimensions of this tank would be the same as under Alternative 2.

Regarding program-level elements at the Orinda WTP, in planning studies the District will consider two alternatives to reduce impacts at/near the plant: siting the large clearwell farther from the Wagner Ranch Elementary School, as shown on Attachment 5 of the Revised Notice of Preparation (feasible only under Alternative 1), and reconstructing the San Pablo WTP as an alternative to constructing the San Pablo Pumping Plant and Pipeline.

6.4.2 Environmental Impacts

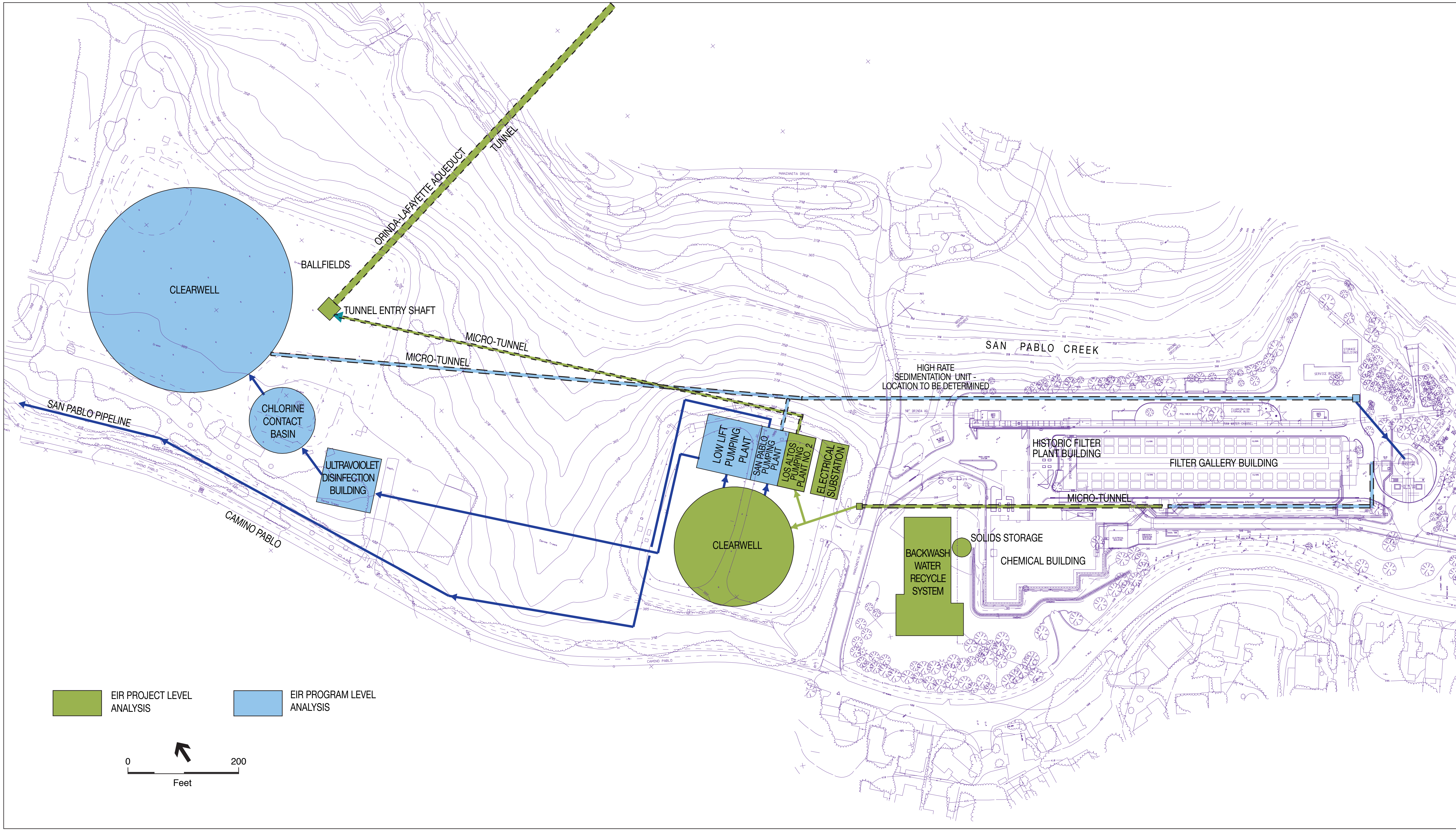
There would be no change in the significance determination of any impacts under the Modified Orinda WTP Site Plan. There are several environmental trade-offs that distinguish the Modified Orinda WTP Site Plan from the site plan for the backwash water recycle facilities proposed under either Alternative 1 or Alternative 2. Although the Modified Alternative Orinda WTP Site Plan would improve the historic setting of the main building, impacts to views along Camino Pablo would incrementally worsen, as would noise impacts to residents west of Camino Pablo. As such, the Modified Orinda WTP Site Plan is not considered environmentally superior to the proposed project.

This alternative would not materially alter the magnitude or severity of impacts associated with Alternatives 1 or Alternative 2 for the following environmental issues: Land Use and Recreation; Geology, Soils and Seismicity; Hydrology and Water Quality; Biological Resources; Traffic and Circulation; Air Quality; Hazards and Hazardous Materials; and Public Services and Utilities.

Although these changes in the site layout would improve the integrity of the Orinda filter plant's historic setting, impacts on views of the site from Camino Pablo, a designated scenic route, could be worse under the Modified Orinda Site Plan alternative than under Alternative 1 or 2.

As proposed under Alternative 1 or Alternative 2, the above-grade portion of the backwash water facilities would be about 100 feet by 75 feet and about 15 feet tall. The western façade of the building, paralleling Camino Pablo, would be about 100 feet long. As shown in the Figure 3.3 S3a simulation (in Section 3.3), the new building would be similar in appearance to the existing chemical building and within five years, landscaping would substantially screen the new facilities in views from Camino Pablo. With the Modified Orinda WTP Site Plan, the western façade of the building would be about 120 long and 15 feet tall. No tree removal would be expected for the larger building, but the larger building would be more visually prominent in views from Camino Pablo. Additional landscaping would be needed near the southwestern corner of the building. Noise impacts affecting residents to the west (along Camino Pablo, near Claremont Avenue) would be incrementally worse because construction of the structure to house the solids pumping plant and emergency generator would be about 100 feet closer to Camino Pablo.

EBMUD prefers to implement the proposed site plan instead of this alternative because the proposed layout provides easier truck access to the emergency generator building and the solids storage tank.



SOURCE: EBMUD

Figure 6-2
Modified Orinda WTP Site Plan Alternative

6.5 Lafayette Reclaimed Water Pipeline Alternative

6.5.1 Description

This alternative involves implementing a prefabricated backwash water treatment plant in place of the Lafayette Reclaimed Water Pipeline (proposed under both Alternative 1 and 2) to reduce impacts associated with pipeline construction and operation.

As described in Section 2.4 (Chapter 2), filter backwash water from the Lafayette WTP is currently discharged into the Lafayette Aqueducts, which are the raw water supply for the Orinda WTP. EBMUD has agreed to discontinue that practice by 2008 pursuant to discussions with the California Department of Health Services (DHS). The DHS' concern is associated with the potential reintroduction of pathogens into the raw water supply of the Orinda WTP. In order to eliminate the discharge into the aqueducts, the District proposes to discharge the settled, dechlorinated backwash water into the Lafayette Reservoir via the Lafayette Reclaimed Water Pipeline. Under Alternative 1, the District would construct new backwash water recycle facilities at the Lafayette WTP to allow the backwash water to be reused (recycled to the head of the plant); under Alternative 2, the Lafayette WTP would be decommissioned (so no backwash water would be generated at the Lafayette WTP). But the facilities needed to make these long-term changes would take many years to design, construct, and bring into operation, whereas the Lafayette Reclaimed Water Pipeline could be constructed in 2007.

As an alternative to the Lafayette Reclaimed Water Pipeline, the District could install a prefabricated backwash water treatment facility (referred to herein as the package plant) at the Lafayette WTP to treat backwash water such that it could be recycled to the head of the plant. The package plant would essentially accomplish the same backwash water treatment processes as proposed under Alternative 1 (flocculation, sedimentation, and ultraviolet disinfection), but because the facility is prefabricated and would not involve below-ground construction, it could be installed much more quickly. Existing operational problems at the Lafayette WTP (e.g., small clearwell capacity and high elevation) would continue to constrain the overall WTP performance and reliability. The package plant would be constructed just west of the existing regulating basin, as shown in Figure 6-3). The process flow would be the same as shown in the bottom half of Figure 2-8. The system would also include pumps and associated piping to connect to existing WTP facilities.

The District would prefer to implement the Lafayette Reclaimed Water Pipeline instead of the package plant because of the benefits of adding water to the Lafayette Reservoir, and because the package plant would have substantially higher capital and operating costs than the Lafayette Reclaimed Water Pipeline and would be more maintenance-intensive. Further, most of the pipeline would be constructed at the same time as and in a joint trench with the Highland Reservoir Pipelines.

6.5.2 Environmental Impacts

Most of the impacts associated with constructing the Lafayette Reclaimed Water Pipeline would happen whether the project is implemented or not, because most of the pipeline alignment coincides with other pipeline alignments that would still be built. The one segment of the Lafayette Reclaimed Water Pipeline that does not coincide with another pipeline is the Lafayette Creek crossing. A pipe bridge would be constructed across the creek. The impacts associated with construction of the pipe bridge include loss of or damage to a 20-foot-wide by 150-foot-long area of riparian vegetation due to construction, removal of 15 trees (8 of which are considered protected trees), degradation of stream and riparian habitat, and visual impacts associated with vegetation removal. Implementation of Measure 3.6-2a would require that the District avoid or minimize effects on streams and riparian habitat by (for example) using trenchless construction techniques where feasible. The feasibility of Measure 3.6-2a to avoid impacts to riparian habitat would be determined during the design phase (if avoidance is determined to be infeasible, Measures 3.6-2b and 3.6-2c would reduce the impact to a less-than-significant level by minimizing the size of the construction zone and restoring habitat following construction). The package plant would avoid impacts at the Lafayette Creek crossing.

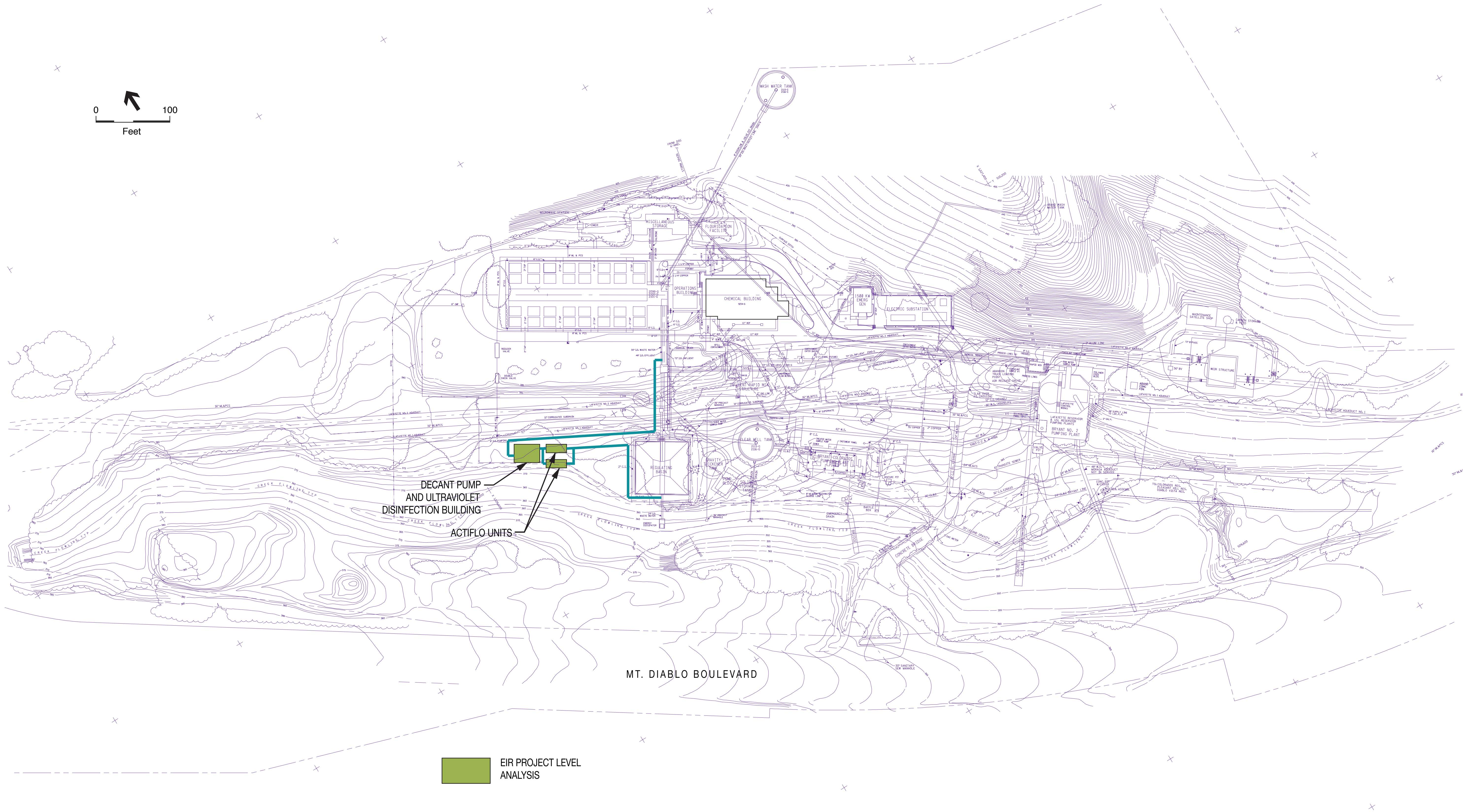
Under the proposed Lafayette Reclaimed Water Pipeline project, an average of about 0.3 mgd of dechlorinated water (maximum of 0.5 mgd) from the Lafayette WTP filter backwash water recycle system would be discharged to Lafayette Reservoir, resulting in potential impacts on water quality and/or aquatic organisms. The discharge would consist of supernatant from the backwash water recycle system that has undergone treatment by flocculation and sedimentation to remove solids. As described in Section 3.5, Hydrology and Water Quality, compliance with either the general or individual National Pollutant Discharge Elimination System (NPDES) permit requirements would ensure that the discharge meets Basin Plan water quality objectives and that the existing beneficial uses and water quality in Lafayette Reservoir are maintained and protected. Therefore, adverse water quality impacts related to discharge of the filter backwash water effluent would be less than significant, and water quality in the reservoir would be expected to improve in some respects (e.g., dissolved oxygen and turbidity). Under the package plant alternative, the reclaimed water would instead be recycled to the head of the WTP and reused.

This alternative is considered environmentally superior to the proposed Lafayette Reclaimed Water Pipeline if impacts at the Lafayette Creek crossing cannot be avoided through trenchless construction.

6.6 Highland Reservoir Alternative Site

6.6.1 Description

This alternative would involve constructing the Highland Reservoir at a site north of the proposed site to avoid impacts to a grove of large-diameter valley and coast live oaks. The 2.5-acre reservoir site is located atop a ridge, within undeveloped oak woodland on a hillside north of the Lafayette Reservoir within EBMUD watershed lands. The site is adjacent to and north of the



SOURCE: EBMUD

Figure 6-3
Lafayette Reclaimed Water Pipeline Alternative

Rim Trail, which would be permanently realigned as part of the project. The tank design (e.g., diameter, height, elevation), construction and permanent access routes, and pipeline alignments would be the same as under the proposed project. Development of the tank at this location would require less excavation than at the proposed site. Figure 6-4 shows the location of the alternative site for the Highland Reservoir.

6.6.2 Environmental Impacts

Table 6-3 indicates the severity and magnitude of impacts associated with the alternative site relative to impacts of the proposed project. Overall, there would be a tradeoff between impacts to biological resources and impacts to visual quality.

The alternative site supports a mixed oak woodland with coast live oak, valley oak, black oak, and bay trees, whereas the proposed site is primarily comprised of multi-stemmed, very large-diameter valley oaks (30–40 inches diameter at breast height). Although the alternative location would result in removal of more protected trees overall (approximately 50–55 trees instead of 30–35 trees), the trees at the alternative location are smaller and younger. The alternative location would not result in the removal of a large number of multi-stemmed, very large-diameter trees, which provide high-quality habitat for upland special-status species; therefore, the loss of protected trees at the alternative site is considered mitigable with implementation of measures 3.6-1a through 3.6-1e in Section 3.6 (replacement of removed trees at a 3:1 ratio, etc).

The alternative location would substantially alter the site's appearance, but would be less visually prominent in views from the Rim Trail relative to the project because the trail would go past (rather than around) the tank. However, overall impacts to visual quality would worsen because the tank would be atop the ridge (rather than on the southern slope of the ridge), and therefore visible from points north. Trees along the ridge would be removed and trees down slope of the alternative site are not tall enough to sufficiently screen the tank from viewpoints along Highway 24 and some neighborhoods north of Highway 24. The degree of visibility cannot be fully ascertained without computer modeling and preparation of visual simulations, but based on the designation of this ridge as scenic resource, and designation of Highway 24 as a scenic route, significant and unavoidable visual impacts associated with the alternative site are considered more adverse than with the proposed site.

Some "volume-sensitive" impacts (e.g., traffic, emissions of criteria air pollutants, and truck noise along haul routes) would be incrementally less under this alternative because less excavation and off-hauling of soil would occur. Potential impacts associated with disruption of utilities is considered more adverse with the alternative site because a high-pressure gas main traversing the tank site would have to be relocated.

6.7 Moraga Road Pipeline Alternative

6.7.1 Description

This alternative would alter the proposed construction method and alignment for the Moraga Road Pipeline to address traffic impacts, loss of protected trees, and visual quality impacts. With the proposed project, the pipeline would be constructed almost entirely by the open-trench method. The Moraga Road Pipeline Alternative involves constructing a tunnel between the Lafayette Reservoir Recreation Area just west of Moraga Road, adjacent to Nemea Court, and a location to the south near Sky-Hy Drive. The tunneling method would depend on the substrate likely to be encountered; for analysis purposes, it is assumed that construction methods would be similar to those described for the Orinda-Lafayette Aqueduct.

This alternative, shown in Figures 6-5a and 6-5b, includes the following elements:

- *Open-Trench Segments*. Two alignment variants in the Lafayette Reservoir Recreation Area are included in this alternative: one just northeast of the Lafayette Reservoir dam, and one along the Rim Trail further southeast (see Figure 6-5a).

- *Tunnel Entry Shaft*. The entry shaft would be in an open space area near the Nemea Court/Moraga Road intersection. The entry shaft would be 20 feet deep (between 580 feet and 560 feet above mean sea level).

- *Tunnel*. The tunnel would be approximately 13 feet in diameter and 2,000 feet long. The amount of cover for the first 800 feet would be approximately 20 feet. The tunnel would pass beneath a hill south of Nemea Court and would have approximately 85 feet of cover for the next 300 to 400 feet. The amount of cover would decrease from 85 feet to approximately 30 feet at the exit shaft at Nemea Court.

- *Tunnel Exit Shaft*. The exit shaft would be on the east side of Moraga Road south of Sky-Hy Drive and Via Granada. The exit shaft would be 30 feet deep (between 660 feet and 630 feet above mean sea level). Construction staging would mainly occur at the tunnel entry shaft site.

With the exception of the elements described above, the rest of the proposed alignment would be as described in Chapter 2.

6.7.2 Environmental Impacts

Table 6-4 indicates the severity and magnitude of impacts associated with the Moraga Road Pipeline Alternative relative to impacts of the proposed project. Overall, this alternative would reduce impacts related to visual and biological resources. Tunneling operations would concentrate impacts at the tunnel shafts, lessen some traffic impacts but worsen other impacts (traffic volumes, noise and vibration). In addition, tunneling operations would cause some significant impacts related to geology and soils that would not be caused by the project as proposed. Impact trade-offs are summarized below:

- In general, tunneling this segment of the pipeline alignment would take about seven months; trenching the pipeline in this segment would take about one month.

SOURCE: EBMUD

EBMUD Water Treatment and Transmission Improvements Program . 204369

Figure 6-4
Highland Reservoir Site Alternative

TABLE 6-3
COMPARISON OF PROPOSED HIGHLAND RESERVOIR AND PIPELINES PROJECT WITH HIGHLAND RESERVOIR ALTERNATIVE

Impacts	Highland Reservoir and Pipelines	Highland Reservoir Alternative	Discussion
Land Use, Planning, and Recreation			
Divide an Established Community	LTS	LTS=	Like the proposed project, the alternative Highland Reservoir site would not divide an established community or affect agricultural resources. (Like the project, a segment of the Rim Trail would be temporarily closed during construction and permanently realigned.)
Agricultural Resources Impacts	LTS	LTS=	
Recreation Resources Impacts	LTS	LTS=	
Visual Quality			
Short-Term Visual Effects during Construction	LTS	LTS=	The alternative location would substantially alter the site's appearance, but would be less visually prominent in views from the Rim Trail relative to the project because the trail would go past (rather than around) the tank. However, with the alternative site the tank would be located atop the ridge, a scenic vista. Consequently, the tank would be visible from points north, including Highway 24 and (in longer range views) some neighborhoods north of Highway 24. Trees along the ridge would be removed, and trees downslope of the site that would remain are not tall enough to provide effective screening. This impact would remain significant and unavoidable. Like the proposed site, the alternative site also would be in the Hillside Overlay District and would involve development within 250 feet of a Class II ridgeline. Under either the project or this alternative nighttime construction for the Highland Reservoir Inlet/Outlet Pipeline would occur, requiring lighting.
Alteration of Appearance of WTTIP Sites	SU	SU=	
Effects on Views	SU	SU+	
Effects on Scenic Vistas	SU	SU+	
New Sources of Light and Glare	SM	SM=	
Geology, Soils, and Seismicity			
Slope Stability	SM	SM=	The topography at the alternative site consists of a moderate slope at the crest of the ridge. The tank site is outside of a mapped landslide on the northern slope of the ridgeline. Like the proposed site, the alternative site contains upland soils. Slope stability, groundshaking, and soils impacts would be similar under this alternative to those at the proposed site.
Groundshaking	SM	SM=	
Expansive Soils	SM	SM=	
Liquefaction	SM	SM=	
Squeezing Ground	--	--	
Hydrology and Water Quality			
Degradation of Water Quality during Construction	SM	SM–	Hydrology and water quality issues would be similar under the proposed project and this alternative because the site is in the same area, would require similar construction, and would result in a similar net change in impervious surfaces. Less excavation, stockpiles, and grading would occur with a related decrease in the potential for erosion and siltation of Lafayette Reservoir.
Groundwater Dewatering	LTS	LTS=	
Diversion of Flood Flows	--	--	
Discharge of Chloraminated Water during Construction	--	--	
Operational Discharge of Chloraminated Water	LTS	LTS=	
Change in Impervious Surfaces	SM	SM=	

[a] Impacts summarized; please see Chapter 3 for details.

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\+ Impact would be greater under this alternative than under the proposed project.
– Impact would be less under this alternative than under the proposed project.
= Impact would be the same (or similar) under this alternative as under the proposed project.

TABLE 6-3 (Continued)
COMPARISON OF PROPOSED HIGHLAND RESERVOIR AND PIPELINES PROJECT WITH HIGHLAND RESERVOIR ALTERNATIVE

Impacts	Highland Reservoir and Pipelines	Highland Reservoir Alternative	Discussion
Biological Resources			
Loss of or Damage to Protected Trees	SU	SM–	Construction at the alternative site would result in the removal of numerous oaks and other protected trees. Oak woodland at both locations supports a healthy understory and numerous oak seedlings and saplings indicating woodland regeneration. Both locations provide quality wildlife habitat. The alternative site supports a mixed oak woodland with coast live oak, valley oak, black oak, and bay trees, whereas the proposed site is primarily comprised of multi-stemmed, very large-diameter valley oaks (30–40 inches diameter at breast height). Though the alternative location would result in removal of more protected trees overall (approximately 50–55 trees instead of 30–35 trees), trees at the alternative location are smaller and younger. The alternative location would not result in the removal of a large number of multi-stemmed very large-diameter trees, which provide high-quality habitat for upland special-status species.
Degradation to Streams, Wetlands, and Riparian Habitats	SM	SM=	
Loss of or Damage to Special-Status Plants	SM	SM–	
Disturbance to Special-Status Birds	SM	SM–	
Disturbance to Special-Status Bats	SM	SM–	
Disturbance to San Francisco Dusky-Footed Woodrat	SM	SM–	
Degradation of Special-Status Aquatic Species Habitat	SM	SM=	
Disruption to Wildlife Corridors	LTS	LTS=	
Cultural Resources			
Archaeological Resources, including Unrecorded Cultural Resources	SM	SM=	There are no known cultural resources at the alternative site. Like the proposed project, this alternative could result in the discovery of unrecorded resources. Construction of pipelines would be near Bryant Pumping Plant, a potentially historic resource. No adverse impacts would be associated with pipeline construction.
Paleontological Resources	SM	SM=	
Historic Settings	LTS	LTS=	
Traffic and Circulation			
Increased Traffic	SM	SM–	The estimated maximum number of one-way trips per day would be the same for the alternative site and the proposed site (because it is based on truck capacity and the rate at which trucks can be filled during the peak construction phase: excavation). However, only half as much soil would be off-hauled so, overall, fewer total truck trips would occur. Otherwise, traffic and circulation impacts would be the same as for the proposed project.
Reduced Road Width	SM	SM=	
Parking	SM	SM=	
Traffic Safety	SM	SM=	
Access	LTS	LTS=	
Transit	LTS	LTS=	
Pavement Damage/Wear	LTS	LTS–	
Air Quality			
Construction Emission	SM	SM–	The haul route for the alternative site would be the same as for the proposed site. Construction-related emissions, including diesel particulate from trucks, would be less under the alternative because less excavation would occur (18,000 cubic yards [cy] versus 25,600 cy for the proposed tank site).
Diesel Particulate Emissions along Haul Routes	LTS	LTS–	
Tunnel-Related Emissions	--	--	
Operational Pollutant Emissions at Treatment Facilities	--	--	
Operational Odor Emissions	LTS	LTS=	
Secondary Emissions from Electricity Generation	LTS	LTS=	
Noise and Vibration			
Construction Noise Increases	SM	SM=	Noise impacts would be similar to the proposed project (overall, there would be fewer truck trips with this alternative).
Noise Increases along Haul Routes	LTS	LTS–	
Construction-Related Vibration Effects	LTS	LTS=	
Operational Noise Increases	LTS	LTS=	

[a] Impacts summarized; please see Chapter 3 for details.

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TABLE 6-3 (Continued)
COMPARISON OF PROPOSED HIGHLAND RESERVOIR AND PIPELINES PROJECT WITH HIGHLAND RESERVOIR ALTERNATIVE

Impacts	Highland Reservoir and Pipelines	Highland Reservoir Alternative	Discussion
Hazards and Hazardous Materials			
Hazardous Materials in Soil and Groundwater	SM	SM=	There is no known contamination at the existing or alternative site. Impacts would be similar to the proposed project. The inlet/outlet pipeline alignment for both alternatives is the same (the proposed alignment crosses a high-pressure gas line). However, the alternative requires relocation of this gas line because the gas line crosses directly under the alternative tank site.
Hazardous Building Materials	--	--	
Gassy Conditions in Tunnels	--	--	
High-Pressure Gas Line Rupture	SM	SM+	
Wildland Fires	--	--	
Release from Construction Equipment	LTS	LTS–	
Accidental Release during Operation	--	--	
Public Services and Utilities			
Disruption of Utility Lines	SM	SM+	Impacts would be similar to the proposed project except that an 8-inch transmission pressure gas main (over 60 psi) and a buried telephone conduit would need to be relocated at the alternative site. The inlet/outlet pipeline alignment for both alternatives is the same. There would be less soil hauled offsite under this alternative (10,500 cy versus 20,400 cy for the proposed site).
Increase in Electricity Demand	LTS	LTS=	
Increase in Public Services Demand	LTS	LTS=	
Adverse Effect on Landfill Capacity	SM	SM–	
Failure to Achieve State Diversion Mandates	SM	SM–	

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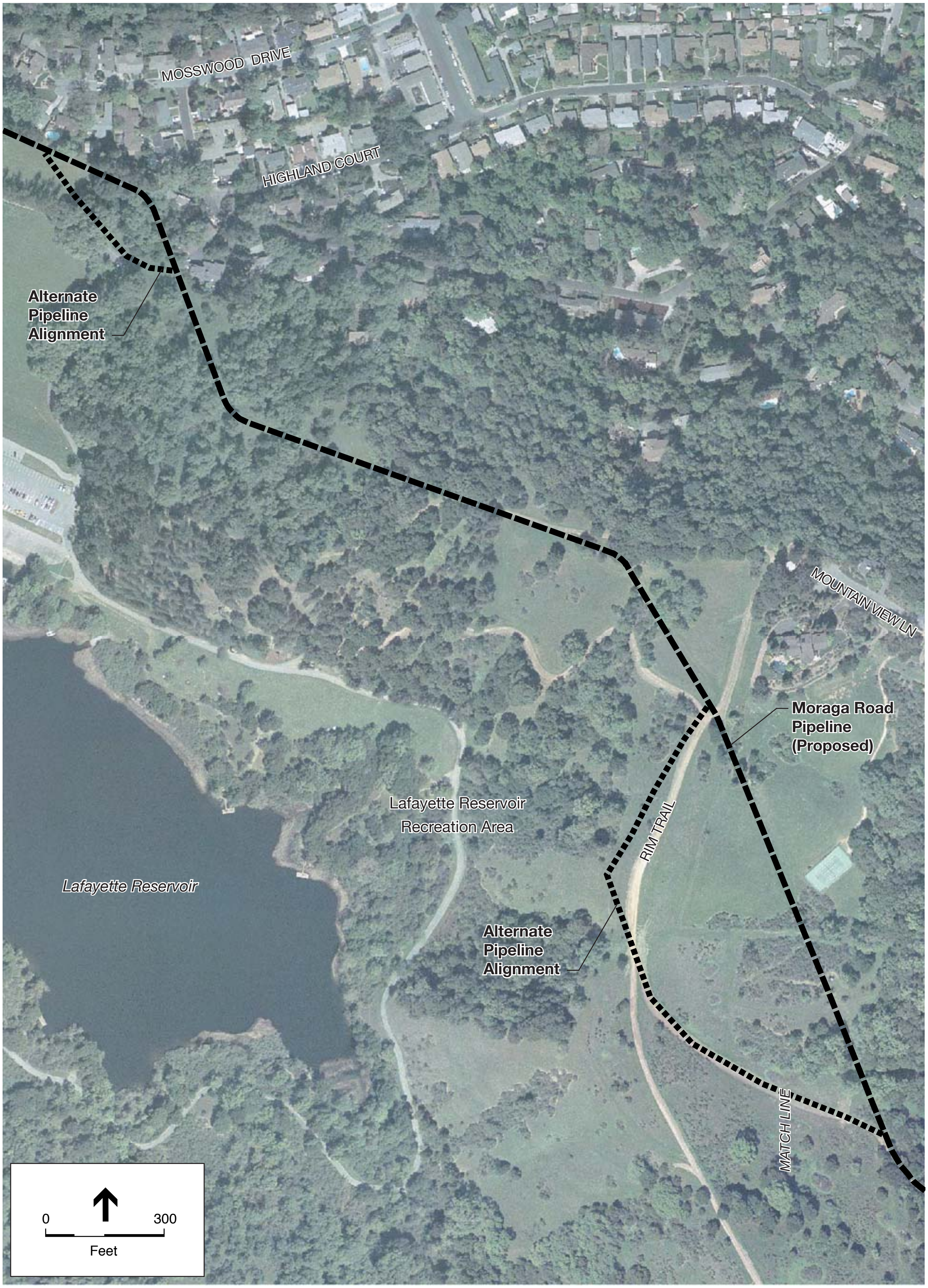

SOURCE: ESA; Aerial Photos: Contra Costa County, 2004

EBMUD Water Treatment and Transmission Improvements Program . 204369

Figure 6-5a
Moraga Road Pipeline Alternative

SOURCE: ESA; Aerial Photos: Contra Costa County, 2004

Figure 6-5b
Moraga Road Pipeline Alternative

TABLE 6-4
COMPARISON OF PROPOSED MORAGA ROAD PIPELINE PROJECT WITH MORAGA ROAD PIPELINE ALTERNATIVE

Project-Level Element / Impacts	Moraga Road Pipeline	Moraga Road Pipeline Alternative	Discussion
Land Use, Planning, and Recreation			
Divide an Established Community	LTS	LTS=	Like the proposed project, the Moraga Road Pipeline Alternative would not divide an established community or affect agricultural resources. The alternative would require closure of a longer segment of the Rim Trail for a longer period of time than under the proposed project; however, this would not lead to a substantial deterioration in trails that might be used in lieu of the affected segment of the Rim Trail.
Agricultural Resources Impacts	LTS	LTS=	
Recreation Resources Impacts	LTS	LTS+	
Visual Quality			
Short-Term Visual Effects during Construction	LTS	LTS =	Long-term visual effects would be less under the alternative than under the proposed project because about 60 fewer trees within the Lafayette Reservoir Recreation Area (including trees within a Hillside Overlay District and on a Class II Ridgeline) would be removed.
Alteration of Appearance of WTTIP Sites	SM	SM–	
Effects on Views	SM	SM–	
Effects on Scenic Vistas	LTS	LTS–	
New Sources of Light and Glare	LTS	LTS =	
Geology, Soils, and Seismicity			
Slope Stability	SM	SM+	The proposed alternative alignments near the ridge would intersect previously identified landslides. The tunnel would pass beneath two houses, 3763 and 3764 Via Granada. With tunneling, there is a potential that the ground surface could settle (referred to as subsidence) in response to removal of subsurface materials. Subsidence occurs when the overlying earth materials lose the capacity to support the overlying weight as tunneling progresses. Deepening the tunnel, realigning the tunnel, and constructing adequate interior tunnel supports are ways to avoid adverse consequences to structures from subsidence. Interior tunnel supports prevent subsidence while geotechnical instrumentation monitors its occurrence and rate.
Groundshaking	SM	SM=	
Expansive Soils	SM	SM=	
Liquefaction	SM	SM=	
Squeezing Ground	--	LTS+	
Subsidence	--	SM+	
Hydrology and Water Quality			
Degradation of Water Quality during Construction	SM	SM=	Degradation of water quality would be similar under the proposed project and this alternative. Tunneling would likely require dewatering. Dewatered groundwater could require treatment (e.g., settling) prior to discharge into a storm drain or sanitary sewer. Tunnel shafts would require permanent concrete pads, incrementally increasing the net change in impervious surface area. Otherwise, hydrology and water quality impacts would be the same as or similar to the proposed project.
Groundwater Dewatering	LTS	LTS+	
Diversion of Flood Flows	SM	SM =	
Discharge of Chloraminated Water during Construction	--	--	
Operational Discharge of Chloraminated Water	--	--	
Change in Impervious Surfaces	LTS	LTS+	

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TABLE 6-4 (Continued)
COMPARISON OF PROPOSED MORAGA ROAD PIPELINE PROJECT WITH MORAGA ROAD PIPELINE ALTERNATIVE

Project-Level Element / Impacts	Moraga Road Pipeline	Moraga Road Pipeline Alternative	Discussion
Biological Resources			
Loss of or Damage to Protected Trees	SM	SM–	Implementation of the alternative would reduce the total number of trees by about 60. The number of protected oaks and pines requiring removal would be reduced by up to 35 but the alternative route would also require removal of an additional 10-20 protected riparian trees. Removing fewer large-diameter trees would reduce impacts to the habitat of upland special-status species.
Degradation to Streams, Wetlands, and Riparian Habitats	SM	SM+	
Loss of or Damage to Special-Status Plants	SM	SM–	
Disturbance to Special-Status Birds	SM	SM–	
Disturbance to Special-Status Bats	SM	SM–	
Disturbance to San Francisco Dusky-Footed Woodrat	SM	SM–	
Degradation of Special-Status Aquatic Species Habitat	SM	SM=	
Disruption to Wildlife Corridors	LTS	LTS=	
Cultural Resources			
Archaeological Resources, including Unrecorded Cultural Resources	SM	SM	There are no known cultural resources along the alternative alignment segments. Like the proposed project, this alternative could result in the discovery of unrecorded resources. The tunnel would pass beneath two houses, 3763 and 3764 Via Granada. Neither house is old enough to be considered a historic resource. Construction of the pipeline would be near Bryant Pumping Plant, a potentially historic resource. No adverse impacts would be associated with pipeline construction.
Paleontological Resources	SM	SM	
Historic Settings	LTS	LTS=	
Traffic and Circulation			
Increased Traffic	SM	SM+	The primary benefit of the tunneling portion of this alternative is that it would avoid trenching and allow two-way traffic flow in the narrowest section of Moraga Road that the pipeline alignment follows: Nemea Court to Sky-Hy Drive. Under the proposed project, the northbound lane of this roadway segment would be closed for about a month. Under the Moraga Road Pipeline Alternative, lane closure would be avoided in this section of Moraga Road because the pipeline would be tunneled. The total number of truck trips (as well as the maximum number of vehicles per day) would be greater with tunneling because there would be more total excavation and more excavation per day. With tunneling, there would be three times as many one-way vehicle trips per day (about 300 trips versus about 100) relative to open-trench construction. The production rate (feet per day) for tunneling is much lower than with trenching, and tunnel construction would take about seven months.
Reduced Road Width	SM	SM–	
Parking	SM	SM=	
Traffic Safety	SM	SM=	
Access	SM	SM–	
Transit	SM	SM–	
Pavement Damage/Wear	LTS	LTS+	
Air Quality			
Construction Emissions	SM	SM+	The alternative probably would generate more dust and criteria air pollutants than the proposed project because there would be more excavation and more truck trips would occur. Methane and hydrogen sulfide gases could be encountered during tunneling (and could be mitigated with implementation of Measure 3.9-3, which requires the addition of water scrubbers to tunnel ventilation systems).
Diesel Particulate Emissions along Haul Routes	LTS	LTS+	
Tunnel-Related Emissions	--	SM+	
Operational Pollutant Emissions at Treatment Facilities	--	--	
Operational Odor Emissions	LTS	LTS =	
Secondary Emissions from Electricity Generation	LTS	LTS =	

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TABLE 6-4 (Continued)
COMPARISON OF PROPOSED MORAGA ROAD PIPELINE PROJECT WITH MORAGA ROAD PIPELINE ALTERNATIVE

Project-Level Element / Impacts	Moraga Road Pipeline	Moraga Road Pipeline Alternative	Discussion
Noise and Vibration			
Construction Noise Increases	SM	SM or SU+	The magnitude of noise and vibration impacts would be greater under the alternative than under the proposed project. Tunneling involves 24-hour construction. Tunneling construction activities would be concentrated at the entry shaft. The nearest homes to the entry shaft are 250 to 300 feet away. Whether implementation of Measures 3.10-1a, 3.10-d, and 3.10-1e could reduce nighttime noise from construction to a less-than-significant level cannot be determined without more information on existing nighttime ambient noise conditions, but in any case would be worse than with the project as proposed. (The small size, topography, and orientation of the entry shaft site likely would limit the effectiveness of a noise barrier.) With the tunnel alignment, the tunnel crown would pass about 70 feet beneath two houses. Vibration and groundborne noise from tunneling equipment could pose a significant impact. The impact could be mitigated by deepening the tunnel, realigning the tunnel, and implementing the performance standard and controls in Measures 3.10-3a and 3.10-3b to ensure that vibration levels were sufficiently attenuated.
Noise Increases along Haul Routes	LTS	LTS+	
Construction-Related Vibration Effects	SM	SM+	
Operational Noise Increases	LTS	LTS=	
Hazards and Hazardous Materials			
Hazardous Materials in Soil and Groundwater	SM	SM=	No areas of contamination are known to occur along the alternative segments of the pipeline. The potential for gassy conditions or squeezing ground to be encountered are unknown; however, impacts related to these would be reduced to less than significant through compliance with existing regulations or implementation of standard project procedures, similar to the Orinda-Lafayette Aqueduct. Otherwise hazards and hazardous materials impacts would be the same as under the proposed project.
Hazardous Building Materials	--	--	
Gassy Conditions in Tunnels	--	LTS	
High-Pressure Gas Line Rupture	SM	SM=	
Wildland Fires	--	--	
Release from Construction Equipment	LTS	LTS=	
Accidental Release during Operation	--	--	
Public Services and Utilities			
Disruption of Utility Lines	SM	SM=	The potential for existing utility lines to be disrupted would not increase under the alternative. There would likely be a greater increase in demand for electricity during construction to support tunneling. There would be more soil excavated for this alternative.
Increase in Electricity Demand	LTS	LTS+	
Increase in Public Services Demand	LTS	LTS=	
Adverse Effect on Landfill Capacity	SM	SM+	
Failure to Achieve State Diversion Mandates	SM	SM+	

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- The primary traffic benefit of the tunneling portion of this alternative is that it would avoid trenching and allow two-way traffic flow in the narrowest section of Moraga Road that the pipeline alignment follows. Under the proposed project, the northbound lane of this roadway segment would be closed for about a month. Therefore, tunneling would reduce traffic delays relative to the proposed construction method. However, tunneling generates more truck trips (on a daily basis and overall) relative to open-trench construction.

- Impacts related to loss of trees (biological resources and visual quality) would be less under this alternative because fewer trees would be removed. With the alternative alignment segments in the in the Lafayette Reservoir Recreation Area, 60 fewer trees would be removed, and 15 fewer trees considered protected would be removed.

- The size and topography of the tunnel entry shaft site, combined with the location and proximity of nearby residences, would limit the effectiveness of mitigation measures to reduce nighttime noise (tunneling involves 24-hour construction).

- Noise and vibration impacts would be worse under the alternative compared with the proposed project not only because tunneling involves 24-hour construction but also because vibration and groundborne noise could significantly affect two residences above the tunnel. With this tunnel alignment, the top of the tunnel could pass within approximately 70 feet of two houses. This impact could be avoided or mitigated by deepening the tunnel, realigning it (if feasible) and implementing vibration performance standards and controls identified in the EIR.

- With tunneling, there is a potential that the ground surface could settle (referred to as subsidence) in response to removal of subsurface materials. Subsidence occurs when the overlying earth materials lose the capacity to support the overlying weight as tunneling progresses. Deepening the tunnel, realigning the tunnel, and constructing adequate interior tunnel supports are ways to avoid adverse consequences to structures from subsidence.

- Some volume-sensitive impacts (e.g., traffic, emissions of criteria air pollutants, truck noise along haul routes, solid waste disposal) would be incrementally greater under this alternative because more excavation and off-hauling of soil would occur.

Because of the severity and duration of the impacts associated with the tunneling aspect of this alternative, the proposed construction method (open trench) is considered environmentally preferable. Implementing the proposed project with the realignments through the Lafayette Reservoir Recreation Area identified under this alternative is considered environmentally preferable to the proposed alignment through that area.

6.8 Happy Valley Pumping Plant Alternative Site

6.8.1 Description

Figure 6-6 shows the alternative site for the Happy Valley Pumping Plant. The alternative site is the west side of Miner Road near the Miner Road/Camino Sobrante intersection, although the parcel extends between Miner Road and Haciendas Road (the address of the parcel is 42 Haciendas Road). Neighboring land uses are residential; the Orinda Country Club Golf Course is across Miner Road from the site. The parcel is surrounded by trees, except for a gap facing Miner Road, and is therefore visually well shielded. The parcel is split by the steep ravine of Lauterwasser Creek. The

Note: The pipeline under this alternative would be 450’ shorter at the Lombardy Lane end.

SOURCE: ESA; Aerial Photos: Contra Costa County, 2004

Figure 6-6
Happy Valley Pumping Plant Alternative Site

parcel is vacant on the east side of the creek and is occupied by a residence on the west side of the creek. Under this alternative, the parcel would be subdivided and the pumping plant would be constructed on the undeveloped portion east of the creek. Space for construction would be more constrained at this site, potentially requiring that some construction staging (equipment and materials storage) occur at an offsite location. Under this alternative, the Happy Valley Pumping Plant Pipeline would be shorter than under the preferred project, terminating 450 feet short of the Happy Valley Pumping Plant site on Lombardy Lane.

6.8.2 Environmental Impacts

Table 6-5 indicates the severity and magnitude of impacts associated with the alternative site relative to impacts of the proposed project. As Table 6-5 indicates, there would be no change in the overall significance determination of any impact with the alternative site. In general, the magnitude of impacts to biological resources would be incrementally less under this alternative. Site development would require removal of numerous trees, although none of the trees are as large as the coast live oaks to be removed at the proposed site. Some volume-sensitive impacts (e.g., traffic, noise, and air quality) would be incrementally less because the haul route would be shorter and less pipe would be constructed, although traffic safety and parking issues would be a greater concern at the alternative site. The alteration of the alternative site would be visually prominent (and visual impacts incrementally worse than at the proposed site) because all of the trees bordering Miner Road would be removed, Miner Road receives more traffic than Lombardy Lane, and the site would be visible from a recreation facility. Overall, although some impacts (e.g., impacts to protected trees) would be less under this alternative, the Happy Valley Pumping Plant Alternative is not considered environmentally superior to the proposed project.

EBMUD prefers the proposed site to the alternative site because development of the alternative site would require dividing a residential parcel.

6.9 Tice Pumping Plant Alternative Site

6.9.1 Description

The alternative site for the Tice Pumping Plant is located directly across (north of) Olympic Boulevard and the proposed site. The alternative site (shown in Figure 6-7) is within a rectangular-shaped field bordered on most sides by trees. Neighboring land uses are residential and commercial. The parcel has recently been subdivided by the current owner, Bay Area Rescue Missions (Anderson, 2005). The parcel of interest for construction of the pumping plant would be east of the existing house on the parcel. A small seasonal drainage ditch supporting riparian habitat borders the northern portion of the site. The site would be accessed from Olympic Boulevard either at the west end of the parcel or through a gap in the trees along Olympic Boulevard. The pumping plant would have the same dimensions as the plant at the proposed location but because the alternative site is flat, some design features would differ (e.g., there would be no need for a retaining wall). The pipeline alignment would largely be the same as under the proposed project, but slightly less pipe would be installed in Olympic Boulevard for the alternative site (because the pipes would not have to cross the eastbound lanes).

TABLE 6-5
COMPARISON OF PROPOSED HAPPY VALLEY PUMPING PLANT AND PIPELINE PROJECT WITH HAPPY VALLEY PUMPING PLANT ALTERNATIVE

Impacts	Happy Valley Pumping Plant and Pipeline	Happy Valley Alternative	Discussion
Land Use, Planning, and Recreation			
Divide an Established Community	LTS	LTS=	Like the proposed site, the alternative site would not divide an established community or affect agricultural resources. (Construction activities would be noticeable at the golf course across Miner Road.)
Agricultural Resources Impacts	--	--	
Recreation Resources Impacts	LTS	LTS=	
Visual Quality			
Short-Term Visual Effects during Construction	LTS	LTS+	The alteration of the alternative site would be more visually prominent because all of the trees bordering Miner Road would be removed, Miner Road receives more traffic than Lombardy Lane, and the site would be visible from a recreation facility (the golf course). These impacts could be mitigated with landscaping.
Alteration of Appearance of WTTIP Sites	SM	SM+	
Effects on Views	SM	SM+	
Effects on Scenic Vistas	LTS	LTS=	
New Sources of Light and Glare	SM	SM=	
Geology, Soils, and Seismicity			
Slope Stability	SM	SM=	Like the proposed site, Lauterwasser Creek traverses the parcel and a drainage abuts the parcel to the west. The topography is nearly level at the proposed plant location and steepens considerably toward the creek. Like the proposed site, the alternative site contains lowland soils. Slope stability, groundshaking, liquefaction and soils impacts would similar under this alternative as for the proposed site.
Groundshaking	SM	SM=	
Expansive Soils	SM	SM=	
Liquefaction	SM	SM=	
Squeezing Ground	--	--	
Hydrology and Water Quality			
Degradation of Water Quality during Construction	SM	SM=	Hydrology and water quality issues would be similar under the proposed project and this alternative because both sites are bordered by creeks, would require similar excavation and construction, and would result in a similar net change in impervious surfaces.
Groundwater Dewatering	LTS	LTS=	
Diversion of Flood Flows	SM	SM=	
Discharge of Chloraminated Water during Construction	--	--	
Operational Discharge of Chloraminated Water	--	--	
Change in Impervious Surfaces	LTS	LTS=	
Biological Resources			
Loss of or Damage to Protected Trees	SM	SM–	Like the proposed site, the alternative site contains protected trees (alongside Miner Road) and is bordered by Lauterwasser Creek and a drainage. Site development would require removal of numerous trees, although none of the trees are as large as the coast live oaks to be removed at the proposed site. The site is less suitable for special-status species than the proposed site but, given the adjacent riparian habitat, their potential presence cannot be ruled out.
Degradation to Streams, Wetlands, and Riparian Habitats	SM	SM=	
Loss of or Damage to Special-Status Plants	SM	SM–	
Disturbance to Special-Status Birds	SM	SM–	
Disturbance to Special-Status Bats	SM	SM–	
Disturbance to San Francisco Dusky-Footed Woodrat	SM	LTS–	
Degradation of Special-Status Aquatic Species Habitat	SM	SM	
Disruption to Wildlife Corridors	LTS	LTS–	
Cultural Resources			
Archaeological Resources, including Unrecorded Cultural Resources	SM	SM=	There are no structures and no known cultural resources at the alternative site. Like the proposed project, this alternative could result in the discovery of unrecorded resources.
Paleontological Resources	SM	SM=	
Historic Settings	--	--	

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TABLE 6-5 (Continued)
COMPARISON OF PROPOSED HAPPY VALLEY PUMPING PLANT AND PIPELINE PROJECT WITH HAPPY VALLEY PUMPING PLANT ALTERNATIVE

Impacts	Happy Valley Pumping Plant and Pipeline	Happy Valley Alternative	Discussion
Traffic and Circulation			
Increased Traffic	SM	SM–	The estimated maximum number of one-way trips per day would be the same for the alternative site and the proposed site (because it is based on truck capacity and the rate at which trucks can be filled during the peak construction phase: excavation). There would be less truck traffic on Lombardy Lane east of the alternative site. Traffic safety and parking issues would be incrementally greater because the alternative site is smaller than the proposed site (1.6 acres versus 1.9 acres), has less room for construction staging, and is adjacent to a road that receives more traffic. Impacts to roadway width and transit are related to pipeline construction (which would be the same under the alternative and the project).
Reduced Road Width	SM	SM=	
Parking	SM	SM+	
Traffic Safety	SM	SM+	
Access	SM	SM=	
Transit	SU	SU=	
Pavement Damage/Wear	SM	SM–	
Air Quality			
Construction Emission	SM	SM–	The haul route for the alternative site would be shorter than for the proposed project, and therefore construction emissions would be incrementally less, and receptors would be exposed to less diesel particulate. Excavation quantities would be similar.
Diesel Particulate Emissions along Haul Routes	LTS	LTS–	
Tunnel-Related Emissions	--	--	
Operational Pollutant Emissions at Treatment Facilities	--	--	
Operational Odor Emissions	LTS	LTS=	
Secondary Emissions from Electricity Generation	LTS	LTS=	
Noise and Vibration			
Construction Noise Increases	SM	SM=	The alternative site is adjacent to and within 100 feet of residences. Like the project, implementation of noise controls and installation of a noise barrier would reduce construction noise to a less-than-significant level. Like the project, design considerations (e.g., vent location) would ensure that operational-phase noise is less than significant. There would be less truck traffic on Lombardy Lane east of the alternative site. Impacts from pumping plant operational noise would be similar under either the proposed project or this alternative and would be mitigable.
Noise Increases along Haul Routes	LTS	LTS–	
Construction-Related Vibration Effects	LTS	LTS=	
Operational Noise Increases	SM	SM=	
Hazards and Hazardous Materials			
Hazardous Materials in Soil and Groundwater	SM	SM=	There are no structures and no known contamination at the alternative site. The alignment for the Happy Valley Pipeline would be the same under the alternative (and is proximate to a high-priority utility). Hazards and hazardous materials impacts would be the same as for the proposed project.
Hazardous Building Materials	--	--	
Gassy Conditions in Tunnels	--	--	
High-Pressure Gas Line Rupture	SM	SM=	
Wildland Fires	LTS	LTS=	
Release from Construction Equipment	LTS	LTS=	
Accidental Release during Operation	--	--	
Public Services and Utilities			
Disruption of Utility Lines	SM	SM=	Impacts would be similar to the proposed project.
Increase in Electricity Demand	LTS	LTS=	
Increase in Public Services Demand	LTS	LTS=	
Adverse Effect on Landfill Capacity	SM	SM=	
Failure to Achieve State Diversion Mandates	SM	SM=	

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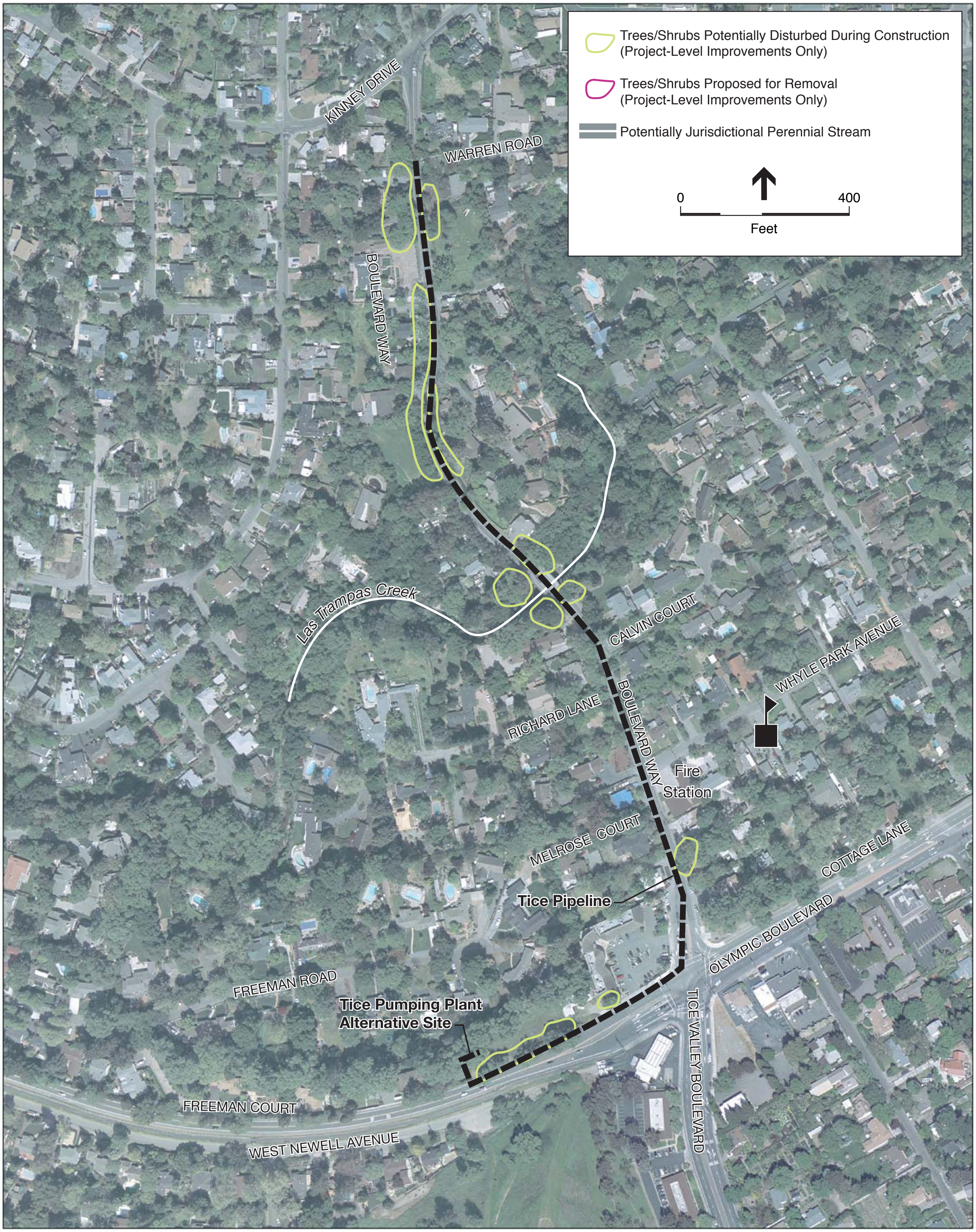

SOURCE: ESA; Aerial Photos: Contra Costa County, 2004

Figure 6-7
Tice Pumping Plant Alternative Site

6.9.2 Environmental Impacts

Table 6-6 indicates the severity and magnitude of impacts associated with the alternative site relative to impacts of the proposed project. As shown in the table, development of the pumping plant at the alternative site would not require removal of any protected trees (as indicated in Table 3.6-4, Section 3.6, Biological Resources, the proposed project would require the removal of 7 to 10 protected trees with a diameter at breast height of 6.5 inches or greater). A number of volume-sensitive impacts (e.g., traffic, noise along haul routes, and air quality) would be less under this alternative because there would be less earthwork and construction associated with construction of the pumping plant as the alternative site is flat. The nearest residence to the proposed site is about 200 feet to the west; there are residences located to the east, north, and west of the alternative site. Consequently, construction- and operation-phase noise impacts are considered incrementally worse with the alternative site for the Tice Pumping Plant than under the proposed project but, like the proposed site, could be mitigated to a less-than-significant level with implementation of noise controls (e.g., installation of a noise barrier opening toward Olympic Boulevard) and design considerations (e.g., vent location and transformer facing Olympic Boulevard). In total, the magnitude of over 20 impacts would be less with the alternative site than with the proposed site. Consequently, the alternative site for the Tice Pumping Plant is considerably environmentally superior to the proposed site. As stated above, the owner of the alternative site, Bay Area Rescue Missions, recently received approval to split the parcel into three parcels (Anderson, 2005). Development of the site as a pumping plant could conflict with development plans for the site. If the property owner proceeds with development of the parcel as residences, the site would no longer be a suitable location for a pumping plant.

6.10 Alternatives Screening Process and Alternatives Eliminated

This section summarizes the alternatives screening processes for the WTTIP, discusses the screening criteria used, and identifies alternatives that were eliminated. Scores of alternatives have been considered, many of which were eliminated based on inability to meet most of the project's basic objectives, infeasibility, or inability to reduce the project's environmental impacts. Sources of alternatives to be considered included background reports prepared for the WTTIP, suggestions made in responses to the NOP and at public meetings held for the WTTIP, and EIR preparers (based on the environmental impacts described in Chapter 3). Background reports used to develop potentially feasible alternatives that could meet the objectives of and engineering constraints associated with the WTTIP projects include the *Lamorinda Water System Improvement Program Facilities Plan* (Facilities Plan) (EBMUD, 2005a, 2006) and related reports, draft Pressure Zone Planning Program (PZPP) studies (EBMUD, 2003a, 2003b, 2004, and 2005b–2005f), and the *Draft Water Treatment and Transmission Improvements Program Lamorinda Tunnel Conceptual Study* (Jacobs Associates, 2005).

Consistent with CEQA, a major factor in considering potential alternatives is the environmental impacts associated with a proposed project. As described throughout Chapter 3, implementation of either Alternative 1 or Alternative 2 would result in numerous significant impacts. The severity

TABLE 6-6
COMPARISON OF PROPOSED TICE PUMPING PLANT AND PIPELINE PROJECT WITH TICE PUMPING PLANT ALTERNATIVE

Impacts	Tice Pumping Plant and Pipeline	Tice Pumping Plant and Pipeline Alternative	Discussion
Land Use, Planning, and Recreation			
Divide an Established Community	LTS	LTS=	Like the proposed site, the alternative site would not divide an established community or affect agricultural resources. The owner of the alternative site, Bay Area Rescue Missions, recently received approval to split the parcel into three parcels (Anderson, 2005). Development of the site as a pumping plant could conflict with development plans for the site. This alternative would avoid disruption of the trail adjacent to the proposed site.
Agricultural Resources Impacts	--	--	
Recreation Resources Impacts	LTS	LTS–	
Visual Quality			
Short-Term Visual Effects during Construction	LTS	LTS–	The alternative site is less visible than the proposed site and is well screened from most directions by trees that would preserved. Development of the proposed site would require modification of a hillside adjacent to a trail and removal of 10 trees. The alternative site is flat, largely screened from the trail and Olympic Boulevard, and would not require removal of trees. Consequently, the magnitude of impacts to visual quality would be less.
Alteration of Appearance of WTTIP Sites	SM	LTS–	
Effects on Views	SM	LTS–	
Effects on Scenic Vistas	LTS	LTS–	
New Sources of Light and Glare	SM	SM=	
Geology, Soils, and Seismicity			
Slope Stability	SM	LTS–	The proposed site is located at the foot of a moderate- to steep-sloping hillside with evidence of soil instability. The alternative site is flat. Soil characteristics, groundshaking potential, and liquefaction susceptibility are otherwise similar between the sites.
Groundshaking	SM	SM=	
Expansive Soils	SM	SM=	
Liquefaction	SM	SM=	
Squeezing Ground	--	--	
Hydrology and Water Quality			
Degradation of Water Quality during Construction	SM	SM=	Hydrology and water quality issues would be similar under the proposed project and this alternative because the site is in the same area, would require similar construction, and would result in a similar net change in impervious surfaces. The alternative pumping plant would be constructed in a zone of minimal flood hazards (a 500 year flood zone or an area where the depth of the 100-year would be less than one-foot). Although this would not be significant, there would be a minimal increase in flood hazards.
Groundwater Dewatering	LTS	LTS=	
Diversion of Flood Flows	SM	SM+	
Discharge of Chloraminated Water during Construction	--	--	
Operational Discharge of Chloraminated Water	--	--	
Change in Impervious Surfaces	LTS	LTS=	
Biological Resources			
Loss of or Damage to Protected Trees	SM	SM–	The alternative site (shown in Figure 6-7) is within a rectangular-shaped field bordered on most sides by trees, primarily valley oaks. A small seasonal drainage ditch supporting valley oaks and other riparian tree species borders the northern portion of the site. With the exception of some disturbance within the dripline of several of the larger valley oaks, the ditch and riparian habitat could be avoided by construction activities. The site would be accessed from Olympic Boulevard either at the west end of the parcel or through a gap in the trees along Olympic Boulevard; the alternative site is incrementally less favorable to wildlife (the
Degradation to Streams, Wetlands, and Riparian Habitats	SM	SM=	
Loss of or Damage to Special-Status Plants	SM	SM–	
Disturbance to Special-Status Birds	SM	SM–	
Disturbance to Special-Status Bats	SM	SM–	
Disturbance to San Francisco Dusky-Footed Woodrat	LTS	LTS=	
Degradation of Special-Status Aquatic Species Habitat	SM	SM=	
Disruption to Wildlife Corridors	LTS	LTS–	

[a] Impacts summarized; please see Chapter 3 for details.

LTS = Less Than Significant
SM = Significant and Mitigable
SU = Significant and Unavoidable
-- = Impact does not apply
CBD = Cannot Be Determined

\+ Impact would be greater under this alternative than under the proposed project.
– Impact would be less under this alternative than under the proposed project.
= Impact would be the same (or similar) under this alternative as under the proposed project.

TABLE 6-6 (Continued)
COMPARISON OF PROPOSED TICE PUMPING PLANT AND PIPELINE PROJECT WITH TICE PUMPING PLANT AND PIPELINE ALTERNATIVE

Impacts	Tice Pumping Plant and Pipeline	Tice Pumping Plant and Pipeline Alternative	Discussion
Biological Resources (cont.)			proposed site is contiguous with an open space area). (Potential impacts to aquatic species like red-legged frog are associated with the pipeline alignment, which is the same under the project and the alternative.)
Cultural Resources			
Archaeological Resources, including Unrecorded Cultural Resources	SM	SM=	There are no known cultural resources at the alternative site. Like the proposed project, this alternative could result in the discovery of unrecorded resources.
Paleontological Resources	SM	SM=	
Historic Settings	--	--	
Traffic and Circulation			
Increased Traffic	SM	SM–	The estimated maximum number of one-way trips per day would less for the alternative site relative to the proposed site because there would be considerably less earthwork and less construction (e.g., no retaining wall would be needed). Impacts to travel lanes on Olympic Boulevard would also be less than with the proposed site because there would be less pipe installed in the road. The alternative site provides more space for off-street parking. Otherwise, traffic and circulation impacts would be the same as for the proposed project.
Reduced Road Width	SM	SM–	
Parking	SM	SM–	
Traffic Safety	SM	SM–	
Access	SM	SM=	
Transit	SU	SU=	
Pavement Damage/Wear	SM	SM–	
Air Quality			
Construction Emission	SM	SM–	The haul route for the alternative site would be the same as for the proposed site. Construction-related emissions, including diesel particulate, would be less under the alternative because less excavation would occur.
Diesel Particulate Emissions along Haul Routes	LTS	LTS–	
Tunnel-Related Emissions	--	--	
Operational Pollutant Emissions at Treatment Facilities	--	--	
Operational Odor Emissions	LTS	LTS=	
Secondary Emissions from Electricity Generation	LTS	LTS=	
Noise and Vibration			
Construction Noise Increases	SM	SM+	The nearest residence to the proposed site is about 200 feet to the west; there are residences located to the east, north, and west of the alternative site. Like the project, implementation of noise controls and installation of a noise barrier (opening toward Olympic Boulevard) would reduce construction noise to a less-than-significant level. Operational phase noise impacts could be greater with the alternative site than with the proposed project because of the proximity of multiple residences, but design considerations (e.g., vent location) would ensure that operational-phase noise is less than significant.
Noise Increases along Haul Routes	LTS	LTS=	
Construction-Related Vibration Effects	SM	LTS=	
Operational Noise Increases	SM	SM+	
Accidental Release during Operation	--	--	

[a] Impacts summarized; please see Chapter 3 for details.

LTS = Less Than Significant
SM = Significant and Mitigable
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CBD = Cannot Be Determined

\+ Impact would be greater under this alternative than under the proposed project.
– Impact would be less under this alternative than under the proposed project.
= Impact would be the same (or similar) under this alternative as under the proposed project.

TABLE 6-6 (Continued)
COMPARISON OF PROPOSED TICE PUMPING PLANT AND PIPELINE PROJECT WITH TICE PUMPING PLANT AND PIPELINE ALTERNATIVE

Impacts	Tice Pumping Plant and Pipeline	Tice Pumping Plant and Pipeline Alternative	Discussion
Hazards and Hazardous Materials			
Hazardous Materials in Soil and Groundwater	SM	SM–	The alternative pumping plant location would be located farther from known leaking underground storage tank sites with a related decrease in the potential to encounter hazardous materials in the soil and groundwater. The alignment for the Tice Pipeline up Boulevard Way would be the same under the alternative (and is proximate to a high-priority utility). Hazards and hazardous materials impacts would be the same as for the proposed project.
Hazardous Building Materials	--	--	
Gassy Conditions in Tunnels	--	--	
High-Pressure Gas Line Rupture	SM	SM=	
Wildland Fires	--	--	
Release from Construction Equipment	LTS	LTS=	
Public Services and Utilities			
Disruption of Utility Lines	SM	SM–	Disruption of utilities would be incrementally less for the alternative site because existing PG&E facilities at the proposed site would not require relocation and there would be less pipeline installation in Olympic Boulevard. There would be less excavation and more room to spoil onsite (and, therefore, possibly less soil off-hauled).
Increase in Electricity Demand	LTS	LTS=	
Increase in Public Services Demand	LTS	LTS=	
Adverse Effect on Landfill Capacity	SM	SM–	
Failure to Achieve State Diversion Mandates	SM	SM–	

[a] Impacts summarized; please see Chapter 3 for details.

LTS = Less Than Significant
SM = Significant and Mitigable
SU = Significant and Unavoidable
-- = Impact does not apply
CBD = Cannot Be Determined

\+ Impact would be greater under this alternative than under the proposed project.
– Impact would be less under this alternative than under the proposed project.
= Impact would be the same (or similar) under this alternative as under the proposed project.

of an impact is a function of whether the impact can be mitigated or is considered unavoidable, as well as impact duration. An unavoidable significant impact that is permanent is considered to be more severe than a short-term impact that can be mitigated to a less-than-significant level. Although most of the project's impacts would occur only during construction, some impacts would last for weeks while other impacts would occur over a period of up to several years.

This section is divided as follows:

- Alternatives involving the water treatment plants
- Alternatives to the Orinda-Lafayette Aqueduct
- Alternatives to other WTTIP projects

6.10.1 Alternatives Involving the Water Treatment Plants

Lamorinda Water System Improvements Program Facilities Plan

The Facilities Plan developed concepts initially identified in EBMUD's *Water Treatment and Transmission Master Plan* (WTTMP) (EBMUD, 2003c).[2] The purpose of the Facilities Plan was to:

- Identify feasible alternative projects that would achieve project objectives
- Develop the alternatives in sufficient detail to permit analysis and evaluation
- Analyze and evaluate the alternatives using a systematic approach
- Screen the alternatives using objective screening criteria
- Provide a range of alternatives for environmental review prior to selection and approval of a specific project

Table 6-7 lists the six alternatives evaluated in the Facilities Plan, indicates the water treatment plant capacities associated with each, and describes their general characteristics.

[2] Prior to drafting the Facilities Plan, the District underwent a long-term planning process known as the Water Treatment and Transmission Master Plan (WTTMP). The WTTMP recommended that the San Pablo and Lafayette WTPs be decommissioned and new pumping and transmission facilities be constructed, and that other improvements be made at the remaining WTPs. The WTTMP also recommended that this concept be further evaluated through detailed planning studies. The Facilities Plan served as the detailed planning and decision-making milestone for the WTTMP recommendations. The two leading concepts from the WTTMP—one that serves the Lamorinda area from the Orinda and Walnut Creek WTPs and decommissions the Lafayette WTP (Alternative 4 in the WTTMP), and the other that leaves the Lafayette WTP in service (Alternative 5 in the WTTMP)—provided the basis for six detailed alternatives that were evaluated in the Facilities Plan.

Description of Screening Process

The Facilities Plan alternatives analysis was a systematic process that reexamined overall project objectives established in the WTTMP and identified a range of alternatives for environmental review. Alternatives were evaluated by their performance relative to project objectives. Table 6-8 shows the project objectives that were developed based on major considerations such as reliability.

Screening criteria were developed to serve as indicators of an alternative's ability to meet project objectives. In total, 24 criteria (listed in Table 6-9) were developed from the objectives, including nine fatal-flaw criteria, which together served as measurable indicators of the ability of an alternative to meet all of the project objectives. For example, one criterion was the minimum level of water service met by each alternative during an emergency at a water treatment plant. The District evaluated each alternative based on its ability to provide a minimum level of service for an average summer day (high demand), average day (medium demand), and average winter day (lower demand). For each criterion, the possible responses were then converted to a common rating scale (0 to 10, where 0 was the worst score and 10 was the best score[3]) so that the alternatives could be compared to one another across all the criteria.

Weighting factors were developed to measure the relative importance of the different categories of project objective: reliability, regulatory and water quality, operations, environment, and economics. The District established five different weighting scenarios to evaluate the sensitivity of the alternative ranking to the weighting scenario, as shown in Table 6-10. In each scenario, different weighting factors were applied to each category.

Results of Facilities Plan Alternatives Evaluation

Table 6-11 shows the rank and total weighted score of each alternative for each weighting scenario. Alternatives 1 and 2 had the best performance in four out of five of the weighting scenarios and were selected for more detailed study and for analysis in this EIR. The remaining four alternatives were eliminated from further study for reasons summarized below.

Facilities Plan Alternatives 3 through 6: Description and Reasons for Rejection

Alternative 3 – Supply from Walnut Creek WTP

Description. Alternative 3 involves decommissioning the Lafayette WTP and constructing the necessary facilities at and from the Walnut Creek WTP to make up the shortfall in water supply. Project-level upgrades at the Walnut Creek WTP would be much more extensive than under either Alternative 1 or 2, including construction of a 23-million gallon (mg) clearwell and 93-mg Leland Pumping Plant No. 2 (see Table 6-7 for details). This alternative would include construction of major distribution system improvements in Walnut Creek and Lafayette, including a tunnel, several miles of pipeline, and a new pumping plant. Upgrades at the Orinda, Sobrante, and Upper San Leandro WTPs would be similar to Alternative 1 (see Table 6-7).

3 To avoid giving more weight to categories that contained more criteria and associated metrics, the total score for each category was normalized by converting to a 0 to 10 scale; then the normalized scores were added to get a raw score for the alternative. Each category is worth a normalized 10 points. Categories that only contained fatal-flaw criteria were not scored.

TABLE 6-7
FACILITIES PLAN ALTERNATIVES

Water Treatment Plant	Current Sustained Operating Capacity	Forecast (2030) Maximum Day Demands	Water Treatment Plant Capacities under Facilities Plan Alternatives: Alternative 1 Supply From Lafayette WTP[a] Demand Capacity/ Operational Capacity[b]	Alternative 2 Supply from Orinda WTP Demand Capacity/ Operational Capacity[b]	Alternative 3 Supply from Walnut Creek WTP Demand Capacity/ Operational Capacity[b]	Alternative 4 Supply from Lafayette and Orinda WTPs (with Tunnel) Demand Capacity/ Operational Capacity[b]	Alternative 5 Supply from Lafayette and Walnut Creek WTPs Demand Capacity/ Operational Capacity[b]	Alternative 6 Supply from Orinda and Walnut Creek WTPs Demand Capacity/ Operational Capacity[b]
Lafayette	25[c]	34	34/44	Decommissioned	Decommissioned	25/35	18/27	Decommissioned
Orinda	175	175	175	175/180	175	174/180	175	180
Walnut Creek	91	96	96/115	96/115	130/141	96/115	112/120	112/120
Sobrante	45[d]	33	33	49	33	38	33	46
Upper San Leandro	55[d]	25	25	44	25	30	25	30

Water Treatment Plant	Water Treatment Plant Improvements under Facilities Plan Alternatives: Alternative 1 Supply From Lafayette WTP[a]	Alternative 2 Supply from Orinda WTP	Alternative 3 Supply from Walnut Creek WTP	Alternative 4 Supply from Lafayette and Orinda WTPs (with Tunnel)	Alternative 5 Supply from Lafayette and Walnut Creek WTPs	Alternative 6 Supply from Orinda and Walnut Creek WTPs
Lafayette	▪ Plant improvements for a demand capacity of 34 mgd ▪ Two Clearwells – one 4 mg; one 2 mg (operating capacity) ▪ Chlorine Contact Basin ▪ Blower Building ▪ Backwash Water Recycle System ▪ Sodium Hypochlorite and Feed Building (for WTP and Lafayette Aqueducts) ▪ Raw Water Bypass Pipe ▪ Leland (27 mgd) and Bryant (32 mgd) Pumping Plants and Pipelines ▪ Electrical Substation ▪ Filter Rehabilitation *Potential Future Improvements:* ▪ High-Rate Sedimentation Unit ▪ Ultraviolet Disinfection (UV) Building ▪ Ozonation	▪ Decommission ▪ Sodium Hypochlorite and Feed System (for Lafayette Aqueducts)	▪ Decommission ▪ Sodium Hypochlorite and Feed System (for Lafayette Aqueducts)	Plant improvements for a demand capacity of 25 mgd. Improvements are similar to Alternative 1 but several facilities would be smaller (the new Leland and Bryant Pumping Plants). Only one clearwell (3.6-mg operating capacity) would be constructed. The Lafayette WTP serves mostly the Colorados Pressure Zone. Most of the Bryant Pressure Zone is supplied by Orinda WTP. *Potential Future Improvements:* Same as Alternative 1	Plant improvements for a demand capacity of 18 mgd. Similar to Alternative 4 with the same proposed clearwell (3.6-mg operating capacity). The new Bryant Pumping Plant would be larger at 32 mgd. The Lafayette WTP serves the Bryant Pressure Zone.	▪ Decommissioned ▪ Sodium Hypochlorite and Feed System (for Lafayette Aqueducts)

TABLE 6-7 (Continued)
FACILITIES PLAN ALTERNATIVES

Water Treatment Plant	Water Treatment Plant Improvements under Facilities Plan Alternatives					
	Alternative 1 **Supply From Lafayette WTP**[a]	**Alternative 2** **Supply from Orinda WTP**	**Alternative 3** **Supply from Walnut Creek WTP**	**Alternative 4** **Supply from Lafayette and Orinda WTPs (with Tunnel)**	**Alternative 5** **Supply from Lafayette and Walnut Creek WTPs**	**Alternative 6** **Supply from Orinda and Walnut Creek WTPs**
Orinda	▪ 175 mgd capacity (no change) ▪ Backwash water recycle system *Potential Future Improvements:* ▪ Two clearwells – one 9 mg; one capacity TBD (approximately 35 mg operating capacity) ▪ Chlorine contact basin ▪ UV Building ▪ Low-lift pumping plant ▪ San Pablo pumping plant and clearwell (separate) ▪ San Pablo Pipeline ▪ Electrical substation ▪ High-rate sedimentation unit	▪ 175 mgd capacity (no facilities change - but WTP will need operational capacity of 180 mgd during short term peak demand periods) ▪ One clearwell – 9 mg (operating capacity) ▪ Los Altos Pumping Plant No. 2 (60 mgd) ▪ Tunnel/Pipeline (see below) ▪ Backwash Water Recycle System ▪ Electrical Substation *Potential Future Improvements:* ▪ One clearwell - capacity TBD (approximately 35 mg operating capacity) ▪ Chlorine Contact Basin ▪ UV Building ▪ Low-lift Pumping Plant ▪ San Pablo Pumping Plant and clearwell ▪ San Pablo Pipeline ▪ High Rate Sedimentation Unit	Same as Alternative 1 *Potential Future Improvements:* ▪ Same as Alternative 1	Similar to Alternative 2 but new Los Altos Pumping Plant No. 2 would be smaller (19 mgd) as would the clearwell (5 mg) Project- and program-level facility layout would be essentially the same as Alternative 2. *Potential Future Improvements:* Same as Alternative 2	Same as Alternative 3 *Potential Future Improvements:* ▪ Same as Alternative 1	Similar to Alternatives 2 and 4 but new Los Altos Pumping Plant No. 2 would be 32 mgd and clearwell would be 7 mg. *Potential Future Improvements:* ▪ Same as Alternative 2
Walnut Creek	▪ Increase demand capacity to 96 mgd and operational capacity to 115 mgd for short term peak demands ▪ Leland Pumping Plant (34 mgd) ▪ One new filter *Potential Future Improvements:* ▪ UV Building ▪ High Rate Sedimentation Units ▪ Ozone Generator	Same as Alternative 1 *Potential Future Improvements:* ▪ Same as Alternative 1	▪ Increase demand capacity to 130 mgd and operational capacity to 141 mgd. ▪ Leland Pumping Plant (93 mgd) ▪ One clearwell – 23 mg (operating capacity) ▪ Two new filters ▪ New pumps for filter-to-waste (2) and backwash water processing (2). ▪ New UV reactor for backwash water disinfection. *Potential Future Improvements:* ▪ Same as Alternative 1 but sized for 141 mgd.	Same as Alternative 1 *Potential Future Improvements:* ▪ Same as Alternative 1	▪ Increase demand capacity to 112 mgd and operational capacity to 120 mgd ▪ Leland Pumping Plant (62 mgd) ▪ One 16.8-mg clearwell (operating capacity) *Potential Future Improvements:* ▪ Same as Alternative 1 but sized for 118 mgd.	Same as Alternative 5 *Potential Future Improvements:* ▪ Same as Alternative 5

TABLE 6-7 (Continued)
FACILITIES PLAN ALTERNATIVES

	Water Treatment Plant Improvements under Facilities Plan Alternatives					
Water Treatment Plant	**Alternative 1** **Supply From Lafayette WTP[a]**	**Alternative 2** **Supply from Orinda WTP**	**Alternative 3** **Supply from Walnut Creek WTP**	**Alternative 4** **Supply from Lafayette and Orinda WTPs (with Tunnel)**	**Alternative 5** **Supply from Lafayette and Walnut Creek WTPs**	**Alternative 6** **Supply from Orinda and Walnut Creek WTPs**
Sobrante	▪ 33 mgd capacity (with taste and odor control) ▪ Ozone Upgrades ▪ Filter-to-Waste Equalization Basin ▪ Backwash Water Equalization Basin ▪ High Rate Sedimentation Units ▪ Chlorine Contact Basin	Same as Alternative 1, but taste and odor facilities (ozone upgrades), backwash water recycle system and chlorine contact basin are sized to provide 49 mgd instead of 33 mgd (current sustained capacity is 45 mgd)	Same as Alternative 1	Same as Alternative 1, but ozone upgrades, backwash water recycle system and chlorine contact basin are sized to provide 38 mgd instead of 33 mgd (current sustained capacity is 45 mgd)	Same as Alternative 1	Same as Alternative 1, but ozone upgrades, backwash water recycle system and chlorine contact basin are sized to provide 46 mgd instead of 33 mgd (current sustained capacity is 45 mgd)
Upper San Leandro	▪ 25 mgd capacity (with taste and odor control) ▪ Ozone Upgrades ▪ Filter-to-Waste Equalization Basin	Same as Alternative 1, but ozone upgrades, filter-to-waste equalization basin are sized to provide 44 mgd instead of 25 mgd (current sustained capacity is 55 mgd)	Same as Alternative 1	Same as Alternative 1, but ozone upgrades, filter-to-waste equalization basin are sized to provide 30 mgd instead of 25 mgd (current sustained capacity not including ozone processes is 55 mgd)	Same as Alternative 1	Same as Alternative 1, but ozone upgrades, filter-to-waste equalization basin are sized to provide 30 mgd instead of 25 mgd (current sustained capacity not including ozone processes is 55 mgd)
Offsite Distribution System Improvements (excluding pressure zone projects)						
	Limited to construction of proposed Bryant and Leland Pressure Zone Pipelines partially in right-of-way of Mt. Diablo Boulevard in front of Lafayette WTP.	Orinda-Lafayette Tunnel/Pipeline from Orinda WTP to Lafayette WTP (tunnel: 1.9 miles; open-cut pipeline: 1.7 miles)	▪ 1.6-mile tunnel (48-inch-diameter pipe) from Walnut Creek WTP to new Grizzly Pumping Plant at Pleasant Hill Road/Mt. Diablo Boulevard intersection ▪ 2.5 miles of 42-inch-diameter pipeline from new Grizzly Pumping Plant to Lafayette WTP ▪ 3-mile long, 24-inch-diameter pipeline from new Grizzly Pumping Plant along Pleasant Hill Road, Glenside Drive, and St. Mary's Road to Rohrer Drive.	Same as Alternative 2 (open cut pipeline portion would have smaller diameter pipeline)	1.4-mile tunnel (24-inch-diameter pipe required except tunnel may be larger to facilitate maintenance) from Walnut Creek WTP to Pleasant Hill Road, 0.2-mile open-trench pipeline south along Pleasant Hill Road to Leland Reservoir.	▪ Orinda-Lafayette Tunnel/Pipeline from Orinda WTP to Lafayette WTP (tunnel: 1.9 miles; open-cut pipeline: 1.7 miles) ▪ 0.7 mile tunnel (24-inch-diameter pipe required except tunnel may be larger to facilitate maintenance) from Walnut Creek WTP to Pleasant Hill Road, 0.9-mile open-trench pipeline south along Pleasant Hill Road to Leland Reservoir.

[a] LWSIP Alternative 1 – Supply from Lafayette WTP is the same as WTTIP Alternative 1 – Supply from Lafayette and Orinda WTPs.
[b] Demand capacity is the 24-hour maximum day demand served by the WTP; operational capacity is the instantaneous capacity required to meet short term operational demands during peak demand periods.
[c] The Lafayette WTP currently must operate all available filters to produce 25mgd. EBMUD design standards are to produce required capacity with one filter out of service.
[d] The Sobrante and Upper San Leandro WTPs sustainable treatment capacity are 45 and 55 mgd respectively to support Claremont Tunnel outages and other emergency operations. However, normal operations include ozonation processes for taste and odor issues (caused by algae) which limit each plant's production to about 30 mgd during summer operations.

TABLE 6-8
PROJECT OBJECTIVES

Category	Project Objectives
Reliability	▪ Provide reliable water treatment, transmission, and distribution infrastructure that meets long-term operational needs under average and maximum-day demand conditions ▪ Meet EBMUD standards for planned, unplanned, and emergency outages ▪ Meet security initiatives
Regulatory & Water Quality	▪ Continue to meet drinking water and environmental regulations with a margin of safety and achieve EBMUD internal long-term water quality goals
Operations	▪ Ensure project will meet short-term peak demand periods in excess of projected demands ▪ Minimize the risk of service disruption and meet demands during construction
Implementation	▪ Minimize implementation issues by considering the complexity of public and local agency issues
Environmental	▪ Minimize environmental impacts during construction ▪ Minimize environmental impacts after construction and during operations
Economics	▪ Minimize life-cycle costs (capital, operating, and maintenance) to EBMUD customers

Reasons for Elimination from Further Study. This alternative ranked no higher than third in the various weighting scenarios, indicating that it did not meet the objectives of the WTTIP as well as Alternative 1 or 2. The Facilities Plan environmental screening process used six criteria (listed in Table 6-9) as indicators of, for example, the number of sensitive receptors (e.g., residences) affected during and after construction, the level of traffic disruption, and the degree of disturbance in environmentally sensitive areas. This approach provided a quantitative means of comparing the relative magnitude of potentially significant environmental effects among the alternatives. Alternative 3 had the longest identified construction period (five years), the greatest number of residents and businesses located near construction areas, and the most pipeline construction in commercial areas and along arterial roadways; consequently, Alternative 3 had the lowest environmental score of all the alternatives.

Alternative 4 – Supply from Lafayette and Orinda WTPs

Description. Alternative 4 is a hybrid of Alternatives 1 and 2. Upgrades at the Lafayette WTP would be similar to those proposed under Alternative 1 but somewhat less extensive (e.g., demand capacity would only be 25 mgd, so only one smaller clearwell would be constructed). All of the facilities proposed at the Orinda WTP under Alternative 2 are included in Alternative 4, but the capacity (and size) of the new Los Altos Pumping Plant No. 2 and associated clearwell would be smaller. Proposed changes at the Walnut Creek, Sobrante, and Upper San Leandro WTPs would essentially be the same as under Alternatives 1 and 2. Similar to Alternative 2, Alternative 4 includes the Orinda-Lafayette Aqueduct, but with a smaller (36-inch-diameter) pipeline in the open-cut section.

TABLE 6-9
ALTERNATIVES SCREENING CRITERIA

Project Objective Category / Screening Criteria
Reliability
▪ Alternative meets average annual demands for the service area (fatal-flaw criterion)
▪ Alternative meets maximum-day demands for the service area (fatal-flaw criterion)
▪ Alternative meets service level goals for emergency raw water transmission (fatal-flaw criterion)
▪ Minimum level of service achieved by the alternative during emergency treated water transmission scenarios supplies adequate raw water under emergency conditions (fatal-flaw criterion)
▪ Minimum level of service achieved by the alternative during emergency treatment outage (at one-half capacity) scenarios is adequate for: an average summer day (10 points); average annual demand (5 points); average winter day (0 points)
▪ Alternative upgrades the WTP to achieve security initiatives (fatal-flaw criterion)
Regulatory and Water Quality
▪ Alternative meets existing and currently foreseeable water quality regulations (fatal-flaw criterion)
▪ Alternative utilizes strategies or technologies that will assist in meeting the District's long-term water quality goals (fatal-flaw criterion)
Operations
▪ Total increase of 51 to 61 mgd in deliverable capacity that can be provided by the alternative using the standby filter(s), compared to statistically unusual demands of an additional 8 mgd (5 points)
▪ WTPs meet standard design criteria for operating at maximum-day demand with one filter out of service (fatal-flaw criterion)
Implementation
▪ Number of Caltrans and BART permits: 0 permits (10 points); 2 permits (5 points); 4 permits (0 points)
▪ Number of other agency permits, easements, and rights-of-way: <5 permits (10 points); 5-8 permits (5 points); >8 permits (0 points)
▪ Number of cities requiring significant outreach: 3 cities (5 points)
▪ Number of years between proposed and most recent major WTP construction in the same region: >15 years (10 points); 10–15 years (5 points); <10 years (0 points)
▪ Number of years between proposed and most recent EBMUD major pipeline construction in the same or nearby pipeline corridor: >15 years (10 points)
▪ Alternative meets projected demands during construction (fatal-flaw criterion)
Environmental Impacts
Construction-related Impacts:
▪ Number of years of construction: ~ 3 years (10 points); ~ 4 years (5 points); ~ 5 years (0 points)
▪ Number of residences or businesses within 500 feet of treatment plant and pipeline construction: <500 services (10 points); 500–1,200 services (5 points); >1,200 services (0 points)
▪ Number of residences or businesses within 500 to 1,000 feet of treatment plant and pipeline construction: <800 services (10 points); 800–1,200 services (5 points); >1,200 services (0 points)
▪ Miles of new pipeline in commercial areas or arterial roads: none (10 points); 1 to 5 miles (5 points); >5 miles (0 points)
▪ Miles of new pipeline in potentially environmentally sensitive areas: none (10 points)
Operations-related Impacts:
▪ Number of services within 500 feet of treatment plants: 200–250 services (5 points)
▪ Number of services within 500 to 1,000 feet of treatment plants: 400–500 services (5 points)
Economics
▪ Estimated present-value lifecycle costs of improvements to meet 2030 demands

SOURCE: EBMUD, 2005a.

TABLE 6-10
WEIGHTING SCENARIOS

Category	Weighting Scenario (percent) A	B	C	D	E
Reliability	10	0	5	5	10
Regulatory and Water Quality[a]	–	–	–	–	–
Operations	15	30	15	5	20
Implementation	20	20	25	75	25
Environmental	25	20	30	10	20
Economics	30	30	25	5	25
Total Percent	**100**	**100**	**100**	**100**	**100**

[a] This category was not scored since it contained only fatal-flaw criteria, and all alternatives met these criteria.

SOURCE: EBMUD, 2005a.

TABLE 6-11
ALTERNATIVE RANKS AND WEIGHTED SCORES BY WEIGHTING SCENARIO

Alternative	Alternative Name	Weighting Scenarios[a] A	B	C	D	E
1	Supply from Lafayette WTP	**2nd** (636)	**2nd** (594)	**2nd** (655)	**1st** (695)	**2nd** (632)
2	Supply from Orinda WTP	**1st** (734)	**1st** (726)	**1st** (708)	3rd (547)	**1st** (693)
3	Supply from Walnut Creek WTP	5th (444)	3rd (455)	5th (434)	4th (478)	5th (455)
4	Supply from Lafayette and Orinda WTPs	4th (449)	5th (413)	4th (477)	**2nd** (584)	4th (468)
5	Supply from Lafayette and Walnut Creek WTPs	3rd (480)	4th (437)	3rd (499)	5th (454)	3rd (476)
6	Supply from Orinda and Walnut Creek WTPs	6th (409)	6th (399)	6th (427)	6th (354)	6th (406)

[a] The highest score received the highest ranking (number 1), and the lowest score received the lowest ranking (number 6).

SOURCE: EBMUD, 2005a, 2006.

Reasons for Elimination from Further Study. Alternative 4 ranked fourth in three out of the five weighting scenarios. Because Alternative 4 is a hybrid of Alternatives 1 and 2, it offers no distinct environmental advantages over either one and essentially combines the impacts of both; Alternative 4 does not meaningfully add to the range of EIR alternatives. The fact that some facilities at the Orinda WTP would be smaller than those proposed under Alternative 2 could reduce the duration of some construction activities, such as clearwell excavation, but would have little effect on other activities, such as tunnel construction (a 12-foot-diameter tunnel would still be required even though the pipe diameter would be smaller than under Alternative 2).

Alternative 5 – Supply from Lafayette and Walnut Creek WTPs

Description. Alternative 5 is a hybrid of Alternatives 1 and 3, described above. The Lafayette WTP would be retained and upgraded, but at a smaller scale than proposed under Alternative 1 (Lafayette WTP demand capacity of 18 mgd); under this alternative, the Walnut Creek WTP would make up the water supply shortfall. The facility upgrades at the Walnut Creek WTP would also be at a smaller scale than under Alternative 3 and would include (among other things) a new 16.8-mg clearwell tank and a 62-mgd Leland Pumping Plant No. 2. Upgrades at the Orinda, Sobrante, and Upper San Leandro WTPs would be similar to Alternative 1 (see Table 6-7).

Reasons for Elimination from Further Study. Alternative 5 ranked third in three of the five weighting scenarios, demonstrating that it did not meet the project objectives as well as Alternative 1 or 2. In the same fashion as Alternative 4, Alternative 5 is a hybrid of Alternatives 1 and 3. It offers no distinct environmental advantages over either one, and essentially combines the impacts of both. Alternative 5 also had a low ranking (fifth) in the implementation category due to the high number of agency permits, easements, and rights-of-ways required, and the highest operations and maintenance costs among the alternatives.

Alternative 6 – Supply from Orinda and Walnut Creek WTPs

Description. Alternative 6 involves decommissioning the Lafayette WTP and making up for the shortfall in water supply from both the Orinda and Walnut Creek WTPs. For the Orinda WTP, the proposed facilities are the same as under Alternative 2, but the new Los Altos No. 2 Pumping Plant and clearwell would be smaller. For the Walnut Creek WTP, the facilities would be the same as under Alternative 5. Improvements to the Upper San Leandro and Sobrante WTPs would be similar to those proposed under Alternatives 1 and 2.

Reasons for Elimination from Further Study. Alternative 6 ranked sixth under all the weighting scenarios. Alternative 6 would have required the most permits and had the highest estimated present-value capital cost out of all six projects. The Facilities Plan environmental screening process identified a three-year construction period and a higher number of services located within both 500 and 500–1,000 feet of treatment plant and pipeline construction areas than either Alternative 1 or 2. Alternative 6 offers no distinct environmental advantages over Alternative 1 or 2.

Other Water Treatment Plant Alternatives Considered

On the basis of input from agencies and the public, several alternatives concerning the Orinda and Walnut Creek WTP were also considered.

Orinda WTP

Several alternatives to upgrading the Orinda WTP were suggested during the NOP scoping period. Commenters suggested alternatives involving relocation or decommissioning of the Orinda WTP. In its response to the NOP, City of Orinda staff requested that the EIR consider alternatives involving improvements to West of Hills facilities, and that the EIR discuss whether "the potential downsizing or elimination of reservoirs west of hills could accommodate additional treatment capacity and better distribute impacts among the communities EBMUD serves" (Worth, 2005).

Any alternative involving a shift in water treatment operations from the Orinda WTP to other WTPs serving the West of Hills area or to a new WTP would diverge from the District's water quality objectives and would represent a radical departure from current and proposed water treatment and transmission practice. The WTTMP (the predecessor document to the Facilities Plan) considered a broad range of conceptual alternatives for meeting District water quality and quantity needs, including complete restructuring of the water treatment and transmission system (by consolidating all treatment activities at one WTP, either within or outside of EBMUD's service area), various reconfigurations of the existing system, as well as some nontraditional strategies.[4] The evaluation of these conceptual alternatives concluded that reconfigurations of the existing system that maintained between three and six WTPs in service were viable options; the other conceptual alternatives contained fatal flaws related to excessive cost, regulatory acceptance, customer disruption, and reliability. Through the WTTMP and Facilities Plan evaluations the District concluded that the Orinda WTP was essential to existing and future operations based on water quality, cost, reliability and operational flexibility.[5]

Nonetheless, EBMUD explored the following alternatives in response to the above-noted comments.

- Alternative A – Relocate Orinda WTP
- Alternative B – Eliminate Transmission of Treated Water to West of Hills from Orinda WTP
- Alternative C – Expand Lafayette WTP and Decommission Orinda WTP

These alternatives, as well as the potential for downsizing West of Hills reservoirs to accommodate additional treatment capacity, are briefly described below.

Alternative A – Relocate Orinda WTP

Alternative A would involve decommissioning the Orinda WTP and building a new water treatment plant at approximately the same capacity as the Orinda WTP. Two alternative locations for the WTP were considered, both on District watershed lands: Scow Canyon and a site near

4 While traditional water utility practice is to construct centralized treatment facilities and distribute drinking water for all customers through a piped distribution system, various alternatives to this practice exist and have been implemented in certain circumstances. Examples of some nontraditional alternatives considered in the WTTMP include point of entry devices (package water treatment units located at customers' service connections), point of use devices (water treatment devices for homes and businesses, such as faucet attachments), dual (raw and potable) systems, and distribution of bottled water for potable use.

5 As described in Section 2.2.1 of Chapter 2, Orinda is EBMUD's largest WTP, and the District relies on it more heavily than other WTPs because the Orinda WTP receives high-quality raw water. The Orinda WTP is also the only WTP that routinely services both the West of Hills and East of Hills areas and, if needed (e.g., due to an outage of the Mokelumne Aqueducts), can draw water from the Briones Reservoir and can serve all but the Walnut Creek WTP service area during portions of the winter months. Consequently, the Orinda WTP provides significant operational flexibility to ensure a reliable level of service to all customers west of Walnut Creek in a variety of planned and unplanned circumstances.

Briones Dam. Under either alternative, both the Orinda and Lafayette WTPs would be decommissioned and their service areas supplied by the new water treatment plant.

WTP in Scow Canyon. This alternative would involve decommissioning the Orinda and Lafayette WTPs and building a new water treatment plant in Scow Canyon on the east shore of San Pablo Reservoir and north of the Orinda WTP. The source water for the new treatment plant would come from San Pablo Reservoir. An intake pipeline for the raw water would be constructed in San Pablo Reservoir near Scow Canyon. The new WTP would be a conventional treatment plant as opposed to a filtration plant (like the existing Orinda and Lafayette WTPs) because water from the San Pablo Reservoir requires more treatment.[6] EBMUD would construct two parallel 90-inch-diameter treated water pipelines to convey water from the treatment plant in Scow Canyon to the Orinda WTP. The existing tunnel to the San Pablo WTP would be reconstructed to carry a treated water pipeline, as would also occur as part of the program-level San Pablo Pipeline project proposed in the WTTIP. The alignment for the two treated water pipelines would follow Old San Pablo Dam Road. Like Alternative 2, a water treatment plant in Scow Canyon would require construction of the Orinda-Lafayette Aqueduct to convey water east to the Lafayette WTP service area. The estimated cost associated with this alternative would be 2.3 billion dollars.

WTP near Briones Dam. This alternative would involve decommissioning the Orinda and Lafayette WTPs and building a new water treatment plant on Bear Creek Road near Briones Dam. The source water for the new treatment plant would come from the Briones Center, on the alignment of the Lafayette Aqueducts. A new intake pipeline would be constructed in Briones Reservoir adjacent to the treatment plant, and a new raw water pumping plant would be constructed near Briones Center. This plant would also use conventional treatment processes as discussed for the Scow Canyon plant. EBMUD would construct two parallel 84-inch-diameter treated water pipelines from the treatment plant on Bear Creek Road to the Orinda WTP. A tunnel would be constructed to house the pipelines. Additionally, a 42-inch-diameter pipeline would be open-trenched from the treatment plant to the eastern portal of the San Pablo Raw Water Tunnel. The existing tunnel to the San Pablo WTP would be reconstructed to carry a treated water pipeline. This alternative would require construction of the Orinda-Lafayette Aqueduct to convey water east to the Lafayette WTP service area. The estimated cost associated with this alternative would be 1.9 billion dollars.

Reasons for Elimination from Further Study. These two relocation alternatives were eliminated based on feasibility, ability to meet the WTTIP's objectives regarding source water quality and reliability, and environmental impacts. Refer to discussion on page 6-53.

Alternative B – Eliminate Transmission of Treated Water to West of Hills from Orinda WTP

This alternative explores the concept of providing separate treatment facilities to serve East of Hills customers and West of Hills customers, respectively. This alternative would include expansion of the San Pablo WTP to 30 mgd, construction of a new 130-mgd-WTP in the West of

[6] Refer to the discussion in Section 2.2 of Chapter 2 for a description of conventional versus direct filtration WTPs.

Hills area, decommissioning of the Orinda WTP, reconstruction of the Lafayette WTP to treat 50 mgd, conversion of the Claremont Tunnel to raw water, and additional transmission facility improvements. The result would be that treatment plants west of the Oakland-Berkeley Hills would provide water to West of Hills customers, while treatment plants east of the Oakland-Berkeley Hills would provide water to East of Hills customers. Given the configuration of the West of Hills treated water transmission system, a new WTP serving the West of Hills area would need to be located at or very near the existing Claremont Center (the western terminus of the Claremont Tunnel). However, the Claremont Center is too small to accommodate a 130-mgd water treatment plant and the area around the site is surrounded by residences and a school. The estimated cost associated with this alternative would be 2.1 billion dollars.

Reasons for Elimination from Further Study. These transmission alternatives were eliminated based on feasibility, ability to meet the WTTIP's objectives regarding source water quality and reliability, and environmental impacts. Refer to discussion on page 6-53.

Alternative C – Expand Lafayette WTP and Decommission Orinda WTP

EBMUD also investigated the possibility of converting the Lafayette WTP to a 174-mgd membrane filtration plant. This alternative is similar but larger than the Membrane Filtration Alternative described in Section 6.4. It also converts both of the Lafayette Aqueducts to convey treated water. Under this alternative, the Orinda-Lafayette Aqueduct would be constructed as it is described in Chapter 2 (Alternative 2), but the pipeline would be approximately 86 inches in diameter. This would convey raw water from Briones back to the Lafayette WTP. The Orinda-Lafayette Aqueduct would also serve to gravity-flow raw water to San Pablo Reservoir. This conveyance would serve both the Sobrante WTP and the Briones Pumping Plant.

The Orinda and San Pablo WTPs would be decommissioned under this alternative. Construction of the San Pablo Pipeline (program-level element) would facilitate the decommissioning of the San Pablo WTP. This pipeline would be constructed using open-trench construction. The San Pablo Pipeline and Claremont Tunnel would convey the treated water to the West of Hills area. In addition, a raw water pipeline would be constructed between Briones Center and the eastern portal of the Orinda-Lafayette Aqueduct and a new treated water pipeline/microtunnel would be constructed from Briones Center to connect Lafayette Aqueduct No. 2 to the eastern portal of the Claremont Tunnel. The cost associated with this alternative would be 1.4 billion dollars.

Reasons for Elimination from Further Study. This alternative was also eliminated based on feasibility, ability to meet the WTTIP's objectives regarding source water quality and reliability, and environmental impacts. Refer to discussion on page 6-53.

Downsizing West of Hills Reservoirs/Continued Use of West of Hills Reservoirs as Remote Clearwell Storage

The comment requesting that the EIR discuss the potential downsizing or elimination of reservoirs as an alternative is likely referring to the North, Central, and South Reservoirs located in Richmond, Oakland, and Castro Valley. These large, open-cut reservoirs serve the Central Pressure Zone, the largest pressure zone in the West of Hills area. These three reservoirs, in conjunction with the Dunsmuir Reservoir and Claremont Tunnel, currently serve as distribution storage and remote clearwell storage for the Orinda WTP. As described in Chapter 2, there is presently no clearwell at the Orinda WTP. Most water treated at the Orinda WTP flows by gravity through the Claremont Tunnel to the West of Hills portion of the EBMUD service area.

The District plans to explore options for replacing or rehabilitating the North, Central, and South Reservoirs with tanks, as described in the draft PZPP studies for the Central Pressure Zone (EBMUD, 2005g, 2005h, and 2005i). Similar to the existing Fay Hill and Moraga Reservoirs, the North, South, and Central Reservoirs experience maintenance issues associated with open-cut reservoirs. In addition, the reservoirs are substantially oversized (partly because they function as remote clearwell storage), which contributes to water quality problems associated with water aging. The replacement tanks would have much smaller volumes.

This EIR evaluates, at a program level of detail under either Alternative 1 or Alternative 2, the addition of clearwell capacity to the Orinda WTP. The purpose of constructing that clearwell capacity at the Orinda WTP is two-fold:

- *Manage the Quality of Treated Water Delivered to the Distribution System*. The District needs to keep water that does not meet (due to source water quality problems or a problem in the treatment process) water quality regulations out of the distribution system. Once water enters the Claremont Tunnel it cannot be retrieved and enters the distribution system. The clearwells would allow the District to more effectively manage the quality of treated water delivered to the distribution system by preventing such water from entering the Claremont Tunnel.

- *Manage the Quality of Treated Water in Distribution Storage Reservoirs*. The clearwell would be designed to turn over all of its water in a single day, an added water quality benefit, which is not possible with the existing system configuration of the West of Hills reservoirs and would not be possible if they were reconstructed to provide remote clearwell storage. Because the West of Hills reservoirs are oversized to provide remote clearwell storage, they experience water quality problems due to water aging (e.g., low chlorine residuals and potential for additional formation of disinfection byproducts as the reservoirs are field-chlorinated). Refer also to the discussion under Section 2.4 regarding reservoir operations.

Although providing clearwell capacity at the Orinda WTP would allow the District to further reduce the size of the North, South and Central Reservoirs, doing so would not meet the fundamental objectives (managing water quality) of building the program-level clearwell at the Orinda WTP and therefore cannot be considered an alternative.

The potential downsizing of the South, Central, and North Reservoirs would not create opportunities to accommodate additional treatment capacity. The reservoirs are part of the treated water distribution system and are not located anywhere near the District's raw water reservoirs or raw water transmission mains.

EBMUD Board approval of the WTTIP would not constitute approval to construct clearwell capacity for the West of Hills area at the Orinda WTP; as stated elsewhere in this EIR, additional project-level environmental evaluation would be required prior to such approval.

Walnut Creek WTP

Public and agency comments regarding the Walnut Creek WTP asked whether alternative haul routes could be used and whether alternative sites had been considered for the Leland Pumping Plant No.2.

Alternative Haul Routes to and/or from the Walnut Creek WTP

At a public meeting held in Walnut Creek, several residents from the neighborhood surrounding the existing Walnut Creek WTP requested consideration of an alternative haul route. The commenters' concerns stemmed from their experience with traffic impacts during construction of the Walnut Creek WTP expansion. The WTP expansion was completed in 2005.

Under the WTTIP, the District is proposing that truck traffic follow the same haul route to and from the Walnut Creek WTP that was used for the previous project. The haul route includes Pinneman Lane, North Main Street, San Luis Road, Larkey Lane, and Alfred Avenue. The vehicle trip estimates for trucks hauling soil or clean fill (to and from the site), trucks hauling other materials (such as construction equipment), and worker vehicle trips are detailed in Appendix B, Table B-WCWTP-1. The proposed construction schedule and estimated trip generation associated with WTTIP activities at the Walnut Creek WTP are summarized below:

- The proposed schedule for construction activities at the site is from 7:00 a.m. to 6:00 p.m.; the proposed haul schedule is from 9:00 a.m. to 4:00 p.m.
- The construction phase with the greatest number of vehicle trips is projected to occur when the concrete foundations are poured. This construction phase is expected to last less than a month and would generate up to 24 one-way truck trips (12 trucks hauling concrete and other materials to the site and then leaving the site) and 60 one-way worker vehicle trips per day.
- Excavation (for the new filters) is expected to last almost three months. Of the approximately 5,500 cubic yards of excavated material, project designers are assuming that most of the soil (about 4,100 cubic yards) would be hauled offsite for disposal. The excavation phase would generate an estimated 10 one-way truck trips and 30 one-way worker vehicle trips per day.

In comparison, during July 2004, construction activities at the Walnut Creek WTP generated over 300 one-way truck trips per day on numerous occasions.

Developing an alternative haul route would require additional construction, given the limited points of access to the WTP. One option would be to use the right-of-way for the Mokelumne Aqueducts to access the WTP site. However, the existing gravel road on top of the Mokelumne Aqueducts is not suitable for heavy truck use. Substantial roadbed improvements would be needed to protect the aqueducts from damage. A second alternative haul route would be to access the site from the north, via Camino Verde from Pleasant Hill Road. In this case, a route would have to be found from Camino Verde through the Acalanes Ridge Open Space to the WTP. A third alternative would be to route construction through the Acalanes Ridge Open Space from Pleasant Hill Road. The second and third haul routes would also cross the Mokelumne Aqueducts.

Reasons for Elimination from Further Study. The improvements needed to develop these alternative access routes would generate additional environmental impacts for road construction and might not be feasible. In addition, the first alternative would only avoid truck trips on Larkey Lane and Alfred Avenue, since trucks would still access the site via San Luis Road. The second option would not avoid truck trips through neighborhoods, but would affect other residents. In addition to residential considerations, two of the alternative routes would cross through the Acalanes Ridge Open Space area. This open space area is owned by the City of Walnut Creek. In the City's response to the Notice of Preparation published for the WTTIP EIR (Parness, 2005), city staff indicated that "no permission will be granted to allow materials deliveries, dirt off-haul, or lay down areas through open space." Lastly, the access road improvements would increase the cost of the project. For these reasons, development of an alternative haul route is not considered a feasible option.

Alternative Sites for Leland Pumping Plant No. 2

The proposed Leland Pumping Plant is needed to address problems associated with meeting summer demand in the Leland Pressure Zone, which covers parts of Pleasant Hill, Walnut Creek, and Alamo. The hydraulic connectivity between the Danville Pumping Plant suction pipeline and the Leland Pressure Zone is adversely affecting summertime water supply in that zone, which, among other problems, is causing: (1) the Lafayette WTP to produce water that flows into the Leland Pressure Zone; (2) drawdown of the Leland Reservoir; and (3) low water pressure for customers in the upper parts of the zone. (The capacity of the Lafayette WTP is not sufficient to meet current maximum-day demands; the Leland Pressure Zone is supposed to be supplied by the Walnut Creek WTP.) The Leland Pumping Plant No.2, the new filter, and the Leland Pressure Zone Isolation Pipeline and Bypass Valves would correct these problems.

Two alternatives to the proposed Leland Pumping Plant No.2 site were considered. In order to meet the project need, the District determined that the pumping plant would need to be sited at either the Walnut Creek WTP or along the transmission pipeline between the Walnut Creek WTP and Lacassie Avenue, where one of the isolation pipelines would be installed. The preferred site (discussed in Chapter 2 – Project Description) is located at the Walnut Creek WTP. The first alternative site is located between Cole Avenue and Trinity Avenue, near the intersection of North California Boulevard in Walnut Creek. The other alternative site is located at the southeast corner of South Broadway and Newell Avenue in downtown Walnut Creek. These alternatives were eliminated from further study for the following reasons:

- North California Boulevard Alternative Site. This site was an undeveloped parcel at the time the alternative sites were identified. However, since then, construction has begun on *The Mercer*, a mixed-use residential and multi-family housing project. Due to this change in parcel status, the site is no longer under consideration for Leland Pumping Plant No. 2.

- Kaiser Parking Lot Alternative Site. The second alternative site evaluated for the Leland Pumping Plant No. 2 is a parking lot owned by Kaiser Permanente. It is currently used for auxiliary employee parking for employees at Kaiser Hospital further west on Newell Avenue. This site was comparable to the preferred site with respect to many of the potential impacts. However, because a pumping plant on this site would permanently affect parking for Kaiser employees, this location was less desirable than the preferred site.

6.10.2 Alternatives to the Orinda-Lafayette Aqueduct

Alternative to the Orinda-Lafayette Aqueduct: Conversion of Existing Lafayette Aqueduct No. 1

As an alternative to constructing a new tunnel (the Orinda-Lafayette Aqueduct), the District evaluated the possibility of modifying the existing Lafayette Aqueduct No. 1 to convey treated water eastbound from the Orinda WTP to the Lafayette WTP distribution system. This alternative would include the following elements, in addition to the improvements at the Orinda and Lafayette WTPs proposed under Alternative 2:

- Wetwell and new Los Altos Pumping Plant No. 2 at the Orinda WTP for conveyance of treated water east to the Lafayette WTP (as proposed under Alternative 2)
- Modifications at the Lafayette Tunnel No. 1 West Portal to allow treated water to be pumped into the tunnel during normal operations while also maintaining the capability (during atypical operations) for raw water flow from the tunnel into the Orinda WTP's south raw water channel
- Lining of the Lafayette Tunnel No. 1 from Orinda to the Lafayette WTP
- New intertie between Lafayette Aqueducts Nos. 1 and 2 at the Lafayette WTP to provide flexibility to convey raw water through the upper (Walnut Creek WTP to Lafayette WTP) or lower (Lafayette WTP to Orinda WTP) sections of Lafayette Aqueduct No. 1 in emergency situations
- Approximately 10 new large valves (at the Walnut Creek Tunnel East Portal and Lafayette WTP)

Reasons for Elimination from Further Study. This alternative was determined to be infeasible because westbound raw water conveyance would not be adequate for supplemental water supplies during dry years.

Lamorinda Conceptual Tunnel Study

This section summarizes alignment alternatives for the Orinda-Lafayette Aqueduct as presented in the *Lamorinda Tunnel Conceptual Study* (Jacobs Associates, 2005). The study evaluated feasible tunnel designs, the impacts of ground conditions on construction methods, and project-specific tunnel alignment alternatives. The study analyzed four tunnel alignments (including the proposed project) originating from the Orinda Sports Field. Two of the four alignments, the Modified Long Tunnel Alignment and Full Length Tunnel Alignment, which traveled in a straight line between the construction shaft and the exit shaft located west of the Lafayette WTP, were not evaluated in detail due to the following issues:

- Both straight-line alternatives encroached on Caltrans and BART right-of-way over significant distances in the east end of these alignments.

- The east end of these alignment alternatives present potentially significant geologic/ geotechnical issues related to rock conditions. This issue is of particular importance with respect to constructing a tunnel under BART and Caltrans right-of-way. No existing geotechnical information about rock conditions in this area was found.

In particular, the significant overburden depth (depth from surface to tunnel depth) in the east end of the alignment and in the vicinity of the Lafayette WTP, absence of information from borings into rock in this area, and the termination of the existing tunnels about 1,000 feet to the north and west of the Lafayette WTP and Highway 24/BART right-of-way justify caution about the feasibility of tunneling without further exploration and evaluation. The tunnel study recommended early characterization of the geotechnical conditions in this area prior to completing preliminary design of the new facilities.

The fourth alternative, the Long Tunnel Alignment Alternative, was evaluated in the study. The Long Tunnel Alignment Alternative involved construction of a 16,950-foot-long tunnel with entry and exit shafts at the ballfields in Orinda and at a property owned by EBMUD about 1,000 feet west of the Lafayette WTP, north of Highway 24 and adjacent to the entrance to the Bentley School parking lot. From that location, this alternative is the same as the preferred project (the pipeline would be installed using bore and jack construction under Highway 24 from the Bentley School park lot and open-trench construction along Mt. Diablo Boulevard to the Lafayette WTP). The alignment for this alternative was between the rights-of-way for Lafayette Tunnel No. 1 and No.2, and included two short arcs. This alternative was eliminated from further consideration based on cost and attenuation of environmental impacts to receptors near the entry shaft site.

6.10.3 Alternatives to Other WTTIP Projects

This section identifies alternatives considered for projects other than the WTPs and the Orinda-Lafayette Aqueduct.

Fay Hill Pumping Plant and Pipeline Improvements Alternative

The proposed Fay Hill Pumping Plant and Pipeline project is needed to increase pumping capacity to meet future maximum-day demands and to correct existing water pressure problems in the Fay Hill Pressure Zone. The PZPP study for the Fay Hill and Carter Pressure Zones (EBMUD, 2003a) analyzed one alternative to the preferred project to meet these needs: constructing a new pumping plant (referred to as the Bollinger Pumping Plant) near the St. Mary’s Road/Rheem Boulevard intersection. Although the construction of a new pumping plant was considered feasible, upgrading the existing Fay Hill Pumping Plant and associated discharge pipeline as proposed in this EIR would be more cost-effective. Constructing a new pumping plant would require more construction than the proposed project because it involves installing new equipment. Therefore, the Bollinger Pumping Plant was eliminated from further evaluation.

Fay Hill Reservoir Alternatives

The District considered three alternatives for addressing maintenance problems associated with the existing open-cut Fay Hill Reservoir: the preferred project described in Chapter 2 (constructing two tanks within the basin of the existing reservoir); construction of a single tank in the existing reservoir's basin; and rehabilitation of the existing reservoir's liner (EBMUD, 2003a). Reservoir rehabilitation was rejected because of long-term maintenance and water quality concerns. The preferred project was selected over the single-tank option based on operations and maintenance considerations.

Glen Pipeline Improvements and Reservoir Decommission Alternatives

The Glen Pipeline Improvements and Glen Reservoir Decommission project would correct unacceptably low water levels in the Glen Reservoir during high-demand periods. For the Bryant Pressure Zone PZPP study (EBMUD, 2004), the District conducted hydraulic modeling of three alternatives (in addition to the preferred project) to meet these needs. The first alternative (Remove Reservoir from Service with No Improvements) had fatal flaws, including pressure decreases in the area around Glen Reservoir and the lack of water supply to one area. Due to these fatal flaws, the alternative was eliminated from further evaluation.

Under the second alternative (Remove and Replace Reservoir Only), Glen Reservoir would still drop to below 50 percent of capacity. The alternative would not appreciably improve existing conditions and was therefore eliminated from further evaluation.

The third alternative (Upgrade Pipeline and Replace Glen Reservoir with 0.6-mg Reservoir) was similar to the preferred project but also included replacement of Glen Reservoir. However, hydraulic modeling confirmed that, while Glen Reservoir could not be refilled to acceptable levels without pipeline improvements, the pipeline improvements eliminate the need for the reservoir. While replacing the Glen Reservoir would add system redundancy, it was not needed for acceptable water service (to address water pressure and fire flow). Reservoir replacement, together with pipeline improvements, would also cost more than the preferred alternative. Therefore, this alternative was eliminated from further evaluation.

Happy Valley Pumping Plant and Pipeline Alternatives

An alternative pumping configuration was considered in the PZPP study for the Las Aromas Pressure Zone (2005c) to address existing maximum-demand and future (2030) deficits in pumping capacity. This alternative involved expanding the pumping plants currently serving the Las Aromas Pressure Zone. Existing pumping plants serving this pressure zone include Sleepy Hollow (located 600 feet north of 53 Los Altos Drive in Orinda), Valory (located on the corner of Happy Valley Road and Palo Alto Drive in Lafayette), and Las Aromas (located at 32 Las Aromas in Orinda, 100 feet east of Las Cascadas Road). Each of these pumping plants fill a reservoir of the same name, and all three pumping plants fill a fourth reservoir serving the Las Aromas Pressure Zone (the Happy Valley Reservoir).

This alternative was determined to be infeasible based on siting constraints, hydraulic constrictions, and the extent of construction involved. Because no single existing pumping plant could accommodate the 3.2-mgd expansion needed to address the aforementioned demands and deficits, a combination of pumping plants would require expansion, meaning that construction-related impacts would occur at multiple pumping plant sites. In addition, relative to the proposed project, more pipeline construction would be needed between the expanded pumping plants and the reservoirs currently serving the Las Aromas Pressure Zone in order to meet project objectives. Specifically, this alternative would require approximately 1.9 miles of 16-inch pipe to expand another pumping plant in the pressure zone, while the proposed project would require only 1.0 mile of 16-inch pipeline. For these reasons, this alternative pumping configuration was eliminated from further evaluation.

The District also considered a variant of the proposed Happy Valley Pumping Plant and Pipeline project that would increase pumping plant capacity to 4.2 mgd (instead of the proposed capacity of 3.2 mgd), thereby allowing the Sleepy Hollow Pumping Plant to be decommissioned. Hydraulic analysis indicated that removal of the Sleepy Hollow Pumping Plant would trigger the need for other distribution system improvements (e.g., more piping); consequently, EBMUD decided to retain the Sleepy Hollow Pumping Plant.

EBMUD also identified two alternative locations in addition to the preferred site for the Happy Valley Pumping Plant (see the Happy Valley Pumping Plant Alternative Sites map in Appendix J). Site selection and evaluation criteria included land use compatibility (e.g., whether the parcel was vacant), site size, the number of adjacent landowners, environmental factors (impact indicators such as the length of haul routes through residential neighborhoods and the number of nearby residences), construction requirements (including pipeline length), and cost. One of these alternative sites (referred to as #2) is described in Section 6.8; the other site (#1) was eliminated from further evaluation, based on the extent of construction and environmental impact, as described below:

- Site #1 is a 1.2-acre vacant parcel at 1 Miner Road (on the west side of the road) between Camino Don Miguel and Oak Arbor Road. The site has one residential neighbor. The usable land on the parcel is on the opposite side of a creek/bridge. This site would require hillside excavation, a retaining wall, and a bridge for the inlet/outlet pipe. There is a mapped landslide on the northeast part of the site. This site was less desirable than both the preferred site and the alternative #2 site as it would have greater impacts to protected trees, greater impacts on neighbors during construction, and would require considerably more site work. Furthermore, the bridge to the pumping plant would require additional maintenance.

Highland Reservoir and Pipelines Alternatives

As described in Section 2.6, the Highland Reservoir is needed because the southwestern portion of the Colorados Pressure Zone does not have sufficient storage and because water levels in this subzone drop below acceptable levels during periods of high demand. The southwestern portion of the Colorados Pressure Zone includes portions of the city of Lafayette north and south of Highway 24, west of Pleasant Hill Road, and between 250 feet to 450 feet above mean sea level. This subzone is currently served by the Colorados Reservoir. The elevation of the Highland

Reservoir must match that of the Colorados Reservoir, so any areas below 530 feet were excluded from consideration. The Highland Reservoir Alternative Sites map in Appendix J depicts the 530-foot elevation contour and the nine sites (including the preferred project) that were initially considered for the Highland Reservoir. Only vacant properties were considered; sites at a suitable elevation that were already developed were excluded.

The reservoir also needs to be sited such that customers at the highest elevations in this subzone of the Colorados Pressure Zone would not experience large swings in water pressure. Reservoirs tend to stabilize the water pressure in the surrounding area. In general, the farther water service is from the distribution reservoir, the larger the swing will be (between the static pressure when no water is flowing and the residual pressure available during a period of maximum demand). The subzone for the proposed Highland Reservoir includes customers north of Highway 24 that are located at a high elevation and consequently have low static water pressure.

The nine candidate sites were screened against five criteria (operational, implementation, environmental, construction, and cost). Site 9 was determined to best meet these criteria; Sites 1 through 8 were eliminated for the reasons discussed below.

- Site 1 is located within EBMUD’s Lafayette Reservoir Recreation Area east of the dam and north of the Lower Trail. The site was less desirable than the preferred alternative because of its impacts on the recreational use of the facility (the Lower Trail receives much more use than the Rim Trail). This site would have visual impacts comparable to those of the preferred alternative and would require removal of protected trees.

- Sites 2 through 6 were eliminated from further consideration because none would sufficiently meet the hydraulic requirements of the project. The sites were not close enough hydraulically to the low-pressure water services north of Highway 24 to stabilize residual water pressures during periods of high demand.

- Site 7 is a vacant parcel owned by Caltrans north of Highway 24 and east of Via Roble. Initially, this site was considered less than desirable than the preferred alternative because of uncertainties regarding EBMUD’s ability to acquire the site and visual impacts. Site 7 would require removal of few, if any, protected trees. However, subsequent investigation revealed that Caltrans has changed the topography and the site is now below the 530-foot contour, making the site infeasible for development of the reservoir.

- Site 8 is a privately owned vacant parcel at the end of Crestmont Drive. The site is surrounded by 20 residential neighbors that are in close proximity to the potential construction. The site was less desirable than the preferred alternative because of potential construction impacts to neighboring residences, including construction of the inlet/outlet pipeline. Construction of the reservoir at Site 8 would substantially alter the site’s appearance and significantly affect views, an impact that could be reduced with landscaping but could not be avoided. The reservoir would be highly visible to the surrounding neighborhood. The site would require removal of fewer trees than the proposed project.

Environmental analysis conducted for the EIR concluded that development of the preferred site would result in significant, unavoidable impacts related to the removal of protected trees and effects on views and scenic vistas. Subsequent consideration of alternatives to the proposed reservoir site focused on avoidance of these significant impacts. No sites were identified that could avoid significant visual impacts due primarily to the elevation requirements of the reservoir. Site 7 was reconsidered but review of recent topography indicated that the site is not high enough for the reservoir due to modifications made by Caltrans. Two sites near the preferred site, one north of the Rim Trail from the preferred site and a second site to the southwest, were also reconsidered. The site to the southwest was eliminated due to greater impacts on recreation resources and slope stability issues. The site north of the Rim Trail is evaluated in Section 6.6.

Sunnyside Pumping Plant and Pipeline Alternatives

Three of the locations identified on the Sunnyside Pumping Plant Alternative Sites map in Appendix J were considered and rejected as potential alternatives. Site 2 on that map is the proposed Sunnyside Pumping Plant site. All of the sites were located near Sundown Terrace in Orinda and Lafayette. Residential development along Sundown Terrace is characterized by custom-built homes and estates in a rural setting. Land use compatibility impacts associated with construction of the new pumping plant and related inlet/outlet pipeline were therefore the primary consideration in site selection. Sites 1, 3, and 4 were eliminated from further evaluation for the reasons discussed below:

- Site 1 is a vacant 0.62-acre parcel located at 283 Sundown Terrace, Orinda, adjacent to three residential properties, and is the least suitable from a land use compatibility perspective as it has relatively close residential neighbors on three sides. It would also require a comparatively long inlet/outlet line and thus would have additional construction-related impacts (noise, dust, and traffic) on neighborhood residents. It is likely that the District would need to purchase the entire parcel so as not to leave an undevelopable remnant parcel. If the entire parcel were purchased, the site would be the most expensive to develop. Site 1 is the least desirable of the four site alternatives.

- Site 3 is located in an undeveloped area on a 133-acre parcel at the intersection of Sundown Terrace and Happy Valley Road in Orinda. This site would have similar but slightly greater impacts than the preferred site as it is closer to more residential neighbors. Although this site would require minimal inlet/outlet pipeline construction, it would be more difficult to develop than the preferred site because it is situated in a local drainage area on a steep slope.

- Site 4 is located at the northeast end of Honeywood Road, Orinda, on an EBMUD-owned parcel containing the existing 1.5-mg Happy Valley Reservoir. This site is the farthest from adjacent residential neighbors. However, it would have greater construction-related impacts as it would require a long inlet/outlet line, either along Honeywood Road and Sundown Terrace or through residential parcels and then along Sundown Terrace. It would also need to be constructed on the steep slopes to the south of the pumping plant, potentially altering the hillside views for residents on Sundown Terrace.

Tice Pumping Plant and Pipeline Alternatives

Three alternatives to the proposed Tice Pumping Plant site were considered (see the Tice Pumping Plant Alternative Sites map in Appendix J). Site 2 is the proposed project site, and Site 3 is the alternative site evaluated in Section 6.9. Of the other two, one site was located on Boulevard Way and one site was located near the intersection of Olympic Boulevard and Tice Valley Boulevard in unincorporated Contra Costa County. Land use compatibility was the primary consideration in site selection. Inlet/outlet pipeline construction impacts were similar for both sites.

- Site 1 is a vacant 0.30-acre parcel located at 1600 Tice Valley Boulevard that is currently being used as a parking lot for adjacent businesses. Because a pumping plant on this site would permanently affect parking for the adjacent businesses, this location was less desirable than the other sites at the Olympic/Tice Valley Boulevard intersection.
- Site 4 is a vacant 0.73-acre parcel located on the west side of Boulevard Way, south of Boulevard Court adjacent to three residential properties. Unlike Sites 1, 2, and 3, Site 4 is surrounded on all sides by residences. This site was eliminated based on potential to generate greater impacts to residential uses than the preferred project.

Withers Pumping Plant

Two alternatives to the proposed Withers Pumping Plant site were considered. One alternative site is located on Grayson Road, and the other is located on Withers Avenue. Both are in unincorporated Contra Costa County. Both of these sites are on privately owned parcels zoned for residential development. Land use compatibility and operational requirements were the primary considerations in site selection. These sites were eliminated from further evaluation based on the details below.

- For Site 2, EBMUD would purchase a portion of the one-acre parcel on which an existing residence is located (at 1024 Grayson Road). The site was less desirable than the proposed project site as the land would have to be purchased and because of the existing residence on the site. The inlet/outlet pipeline would be longer (approximately 1,400 feet) than that for the proposed project site.
- Site 3 is one of four parcels resulting from a recent subdivision at 3182 Withers Avenue. The site was less desirable than the other alternative site for several reasons. The site would fail to meet EBMUD operational requirements. Water quality in Grayson Reservoir would not be improved as much as with the other two options due to the proximity of the site to the Walnut Creek WTP. Tree removal and slope stability issues also contributed to rejection of this site. The inlet/outlet pipeline for this site would be significantly longer than the other alternatives and would require substantial improvements. In addition, this site would have to be purchased by EBMUD (whereas EBMUD owns the proposed site for the Withers Pumping Plant).

New Leland Pressure Zone Reservoir and Pipeline Alternatives

Sites considered for the New Leland Pressure Zone Reservoir are shown on the New Leland Pressure Zone Reservoir Alternative Sites map in the Appendix J. Site 3 is the proposed New Leland Pressure Zone Reservoir site described in Chapter 2. The remaining six sites were rejected for the following reasons:

- Site 1 is made up of one privately owned vacant parcel and one vacant parcel owned by the City of Walnut Creek, located between Craddock Court and Summit Road in Walnut Creek. The City-owned parcel is designated open space, which can only be sold following a vote in favor of this action by the citizens of Walnut Creek; therefore, this site is no longer under consideration.

- Site 2 is a portion of a parcel owned by the City of Walnut Creek in the Shell Ridge Open Space. Since open space land in Walnut Creek can only be sold following a vote in favor of the sale by citizens, this site is no longer under consideration.
- Site 4 is a privately owned parcel located south of Cielo Via and east of Arbol Via. Due to the extent of traffic impacts associated with construction of the inlet/outlet pipeline (the pipeline alignment followed Ygnacio Valley Road) this site is no longer under consideration.
- Site 5 is a vacant parcel owned by the East Bay Regional Park District. This site is fatally flawed because it is located on the Reliez Fault. The new reservoir could not be safely operated if it were constructed over an active fault trace.
- Site 6, composed of portions of seven different parcels, is located northwest of the interchange between Highway 24 and Interstate 680. One parcel, owned by the City of Walnut Creek, is part of the Acalanes Ridge Open Space. As discussed above, since open space land in Walnut Creek can only be sold a vote by citizens, this site is no longer under consideration.
- Site 7 is a privately owned vacant parcel. The site is less than desirable than the preferred site because there are five mapped landslides on the property.

6.11 Comparison of Alternatives

This section presents a comparison of the alternatives and identifies the environmentally superior alternative. Consistent with the CEQA Guidelines, Section 15126.6a, the comparison of alternatives and determination of the environmentally superior alternative is based on the ability of the alternative to meet the basic objectives of the project while avoiding or substantially lessening any significant impacts. Consequently, this section presumes implementation of mitigation measures identified in the EIR.

6.11.1 Comparison of the No Project Alternative, Alternative 1, and Alternative 2

Many of the same significant impacts would occur under Alternative 1 or Alternative 2 because those impacts are associated with projects common to both alternatives. All of the impacts determined to be unavoidable would occur under either alternative because those impacts are associated with the Highland Reservoir project (impacts to visual and biological resources), and Tice, Happy Valley, and Glen pipelines (temporary, construction-phase impacts related to available width of traffic lanes, vehicular access, and transit service).

However, there are several important differences between the potential impacts and extent of required mitigation measures associated with the two alternatives; these differences are discussed below. Table 6-12 provides a summary comparison of impacts for Alternatives 1 and 2 by impact classification (e.g. significant mitigable, less than significant).

TABLE 6-12
COMPARISON OF ALTERNATIVE 1 AND ALTERNATIVE 2

	Lafayette WTP		Orinda WTP		
Project-Level Element / Impacts[a]	**Alternative 1 (Preferred)**	**Alternative 2**	**Alternative 1**	**Alternative 2**	**Orinda-Lafayette Aqueduct**
Land Use/Planning and Recreation					
Divide an Established Community	--	--	--	--	LTS
Agricultural Resources Impacts	--	--	--	--	--
Recreation Resources Impacts	LTS	LTS	LTS	LTS	LTS
Visual Quality					
Short-Term Visual Effects during Construction	LTS	LTS	LTS	LTS	LTS
Alteration of Appearance of WTTIP Sites	SM	SM	SM	SM	LTS
Effects on Views	SM	SM	SM	SM	LTS
Effects on Scenic Vista	SM	LS	LS	LS	LTS
New Sources of Light and Glare	SM	LTS	SM	SM	SM
Geology, Soils, and Seismicity					
Slope Stability	LTS	LTS	LTS	LTS	SM
Groundshaking	SM	SM	SM	SM	SM
Expansive Soils	SM	SM	SM	SM	SM
Liquefaction	SM	LTS	SM	SM	SM
Ground Squeezing	--	--	--	--	SM
Hydrology and Water Quality					
Degradation of Water Quality during Construction	SM	SM	SM	SM	SM
Groundwater Dewatering	LTS	--	LTS	LTS	LTS
Diversion of Flood Flows	--	--	--	--	SM
Discharge of Chloraminated Water during Construction	LTS	LTS	LTS	LTS	LTS
Operational Discharge of Chloraminated Water	LTS	--	--	LTS	--
Change in Impervious Surfaces	LTS	LTS	LTS	LTS	LTS
Biological Resources					
Protected Trees	SM	--	LTS	SM	SM
Streams, Wetlands, and Riparian Habitat	SM	--	--	SM	SM
Special-Status Plants	SM	--	--	--	--
Special-Status Birds	SM	SM	SM	SM	SM
Special-Status Bats	SM	SM	--	SM	SM
San Francisco Dusky-Footed Woodrat	SM	--	--	SM	SM
Special-Status Aquatic Species	SM	--	--	SM	SM
Wildlife Corridors	LTS	--	--	LTS	LTS
Cultural Resources					
Archaeological Resources, including Unrecorded Cultural Resources	SM	SM	SM	SM	SM
Paleontological Resources	SM	SM	SM	SM	SM
Historic Settings	LTS	LTS	LTS	LTS	--

[a] Impacts summarized; please see Chapter 3 for details.

LTS = Less than Significant
SM = Significant and Mitigable
SU = Significant and Unavoidable
-- = Impacts does not apply

**TABLE 6-12 (Continued)
COMPARISON OF ALTERNATIVE 1 AND ALTERNATIVE 2**

Project-Level Element / Impacts[a]	Lafayette WTP: Alternative 1 (Preferred)	Lafayette WTP: Alternative 2	Orinda WTP: Alternative 1	Orinda WTP: Alternative 2	Orinda-Lafayette Aqueduct
Traffic and Circulation					
Increased Traffic	SM	SM	SM	SM	SM
Reduced Road Width	SM	SM	--	--	SM
Parking	SM	SM	SM	SM	SM
Traffic Safety	SM	SM	SM	SM	SM
Access	--	--	--	--	SM
Transit	--	--	--	--	SM
Pavement Wear/Tear	LTS	LTS	LTS	LTS	LTS
Air Quality					
Construction Emission	SM	SM	SM	SM	SM
DPM Emissions Along Haul Routes	LTS	LTS	LTS	LTS	LTS
Tunnel-Related Emissions	--	--	--	--	SM
Operational Pollutant Emissions at Treatment Facilities	LTS	LTS	LTS	LTS	--
Operational Odor Emissions	LTS	LTS	LTS	LTS	LTS
Secondary Emissions from Electricity Generation	LTS	LTS	LTS	LTS	LTS
Noise and Vibration					
Construction Noise Increases	SM	SM	SM	SM	SM
Noise Increases Along Haul Routes	LTS	LTS	LTS	LTS	LTS
Construction-Related Vibration Effects	SM	SM	SM	SM	SM
Operational Noise Increases	SM	LTS	LTS	SM	LTS
Hazards and Hazardous Materials					
Hazardous Materials in Soil and Groundwater	SM	SM	SM	SM	SM
Hazardous Building Materials	SM	SM	--	SM	--
Gassy Conditions in Tunnels	--	--	--	--	LTS
High Pressure Gas Line Rupture	--	--	--	--	SM
Wildland Fires	--	--	LTS	LTS	LTS
Release from Construction Equipment	LTS	LTS	LTS	LTS	LTS
Accidental Release during Operation	LTS	LTS	--	--	--
Public Services and Utilities					
Disruption of Utility Lines	SM	SM	SM	SM	SM
Increase in Electricity Demand	LTS	LTS	LTS	LTS	LTS
Increase in Public Services Demand	LTS	LTS	LTS	LTS	LTS
Adverse Effect On Landfill Capacity	SM	--	SM	SM	SM
Failure to Achieve State Diversion Mandates	SM	SM	SM	SM	SM

[a] Impacts summarized; please see Chapter 3 for details.

LTS = Less than Significant
SM = Significant and Mitigable
SU = Significant and Unavoidable
-- = Impacts does not apply

The differences primarily reflect the fact that the Orinda-Lafayette Aqueduct project would only be associated with Alternative 2 and thus that project's impacts over a one- to two-year period would be avoided under Alternative 1. Although the tunneling proposed as part of the Orinda-Lafayette Aqueduct project would avoid surface-disturbance impacts associated with open-trench construction, it would concentrate impacts at the tunnel entry shaft (and, to a lesser extent, the exit shaft), and there are some impacts unique to tunneling, including noise associated with 24-hour construction and groundborne vibration. The total areal extent of construction also would be greater under Alternative 2 than under Alternative 1 because of the Orinda-Lafayette Aqueduct.

Other differences between the alternatives relate to the impacts to, and sensitivities of, the areas immediately surrounding the Orinda WTP and Lafayette WTP sites. There are a greater number of residences closer to the Orinda WTP than is the case at the Lafayette WTP. There are about twice as many residences within 1,000 feet of the Orinda WTP as there are within 1,000 feet of the Lafayette WTP. The Lafayette WTP backs up to Highway 24, and the open space of the Lafayette Reservoir Recreation Area lies to the south, across Mt. Diablo Boulevard. Mt. Diablo Boulevard itself, because of its breadth near the Lafayette WTP, provides something of a buffer from other nearby residential areas, although this is also partially the case along the west side of the Orinda WTP, adjacent to Camino Pablo.

The more extensive construction footprints and greater excavation and grading requirements associated with Alternative 2 -- about 680,000 cubic yards of excavation, compared to about 445,000 cubic yards of excavation for Alternative 1 -- would result in incrementally greater construction-phase air emissions (e.g. approximately 139 lbs/day of PM10 emissions under Alternative 2 versus about 105 lbs/day under Alternative 1). In both cases, those emissions can be mitigated to a less-than-significant level.

Potential cumulative construction traffic added to Camino Pablo (two-lane section north of Miner Road) would be incrementally greater under Alternative 2 than Alternative 1 (about three percent above existing traffic volumes under Alternative 2 and one percent above existing traffic volumes under Alternative 1). In both cases the increases would fall within the typical daily traffic volume fluctuations. Conversely, potential cumulative construction traffic added to Acalanes Road (El Nido Ranch Road to Mt. Diablo Boulevard) would represent about a five percent increase above existing traffic volumes and would only occur under Alternative 1. Cumulative truck traffic resulting from potentially overlapping WTTIP projects, and associated diesel particulate emissions, would also be incrementally greater under Alternative 2 than under Alternative 1, although the analytic threshold (600 truck-trips per day) would not likely be exceeded along any particular haul route under either alternative.

There would be fewer (15-20) protected trees lost under Alternative 1 than under Alternative 2, primarily because more protected trees would be removed to upgrade and expand the Lafayette WTP than would be required to upgrade and expand the Orinda WTP. There would be somewhat more (20-30) protected trees potentially damaged under Alternative 2, owing primarily to the Orinda-Lafayette Aqueduct project, although the degree of damage is unknown and may be quite limited in many cases (e.g. tree limb loss).

For these reasons, Alternative 1 is considered environmentally superior to Alternative 2. For reasons summarized below in Section 6.11.2, implementation of Alternative 1 coupled with the Membrane Filtration Alternative, Lafayette Reclaimed Water Pipeline Alternative, alternative alignment segments for the Moraga Road Pipeline through the Lafayette Reservoir Recreation Area, and Tice Pumping Plant Alternative Site, is considered environmentally superior to Alternative 1 as proposed.

The No Project Alternative would neither meet the needs addressed by the WTTIP nor satisfy the project objectives. In the short term, the No Project Alternative would be environmentally superior to either “action” alternative because none of the impacts associated with those alternatives would occur. However, as described in Section 6.2, a continuation of existing conditions would become untenable, and the District would eventually have to implement projects to address the purpose and need identified for the WTTIP. This situation could, in turn, result in environmental effects that could be worse than those of either Alternative 1 or 2 in the long term.

6.11.2 Comparison of WTTIP Projects as Proposed with Alternatives Described in Chapter 6

As described in the preceding sections, the following alternatives described in this section are considered environmentally superior to the projects as proposed under the WTTIP:

- **Membrane Filtration Alternative.** Overall, the Membrane Filtration Alternative is considered environmentally superior to the upgrades proposed at the Lafayette WTP under Alternative 1. This would be due primarily to the fact that less excavation and dewatering would be necessary at the Lafayette WTP and the construction for the Membrane Filtration Alternative would not be as close to residences. In addition, demolition of existing structures that may contain hazardous materials in the soil and groundwater would not be required under this alternative. However, there are few large water treatment plants using this water treatment technology in the US today. EBMUD will defer consideration of the Membrane Filtration Alternative until this emerging technology is more fully investigated.

- **Lafayette Reclaimed Water Pipeline Alternative**. This alternative is considered environmentally superior to the proposed Lafayette Reclaimed Water Pipeline if impacts at the Lafayette Creek crossing cannot be avoided through trenchless construction techniques pursuant to Mitigation Measure 3.6-2a. The alternative would avoid construction impacts to trees and other riparian vegetation along the Creek as well as any impacts associated with constructing the pipeline across the Reservoir shoreline and would also avoid the backwash water discharge to Lafayette Reservoir, although those impacts and that associated with the discharge itself is expected to result in a less than significant water quality impact to the Reservoir under the proposed project.

- **Moraga Road Pipeline.** Implementing the proposed project with the realignments through the Lafayette Reservoir Recreation Area identified under the Moraga Road Pipeline Alternative is considered environmentally preferable to either the project as proposed or the tunneling option. The tunnel option is considered environmentally superior to trenching the pipeline in Moraga Road between Nemea Court and Sky-Hy Drive because it would reduce the number of protected trees requiring removal by up to 25 and total number of trees by up to 40. Removing fewer trees, particularly those of large-diameter, would in turn reduce impacts to the habitat of upland special status species.

- **Tice Pumping Plant.** The alternative pumping plant site is considered environmentally preferable to the proposed site. This is primarily because the alternative site would be less visible and well screened from most directions by trees that would be preserved, and would reduce the magnitude of more significant impacts. However, if the site owner proceeds to develop the parcel with residences, the site would no longer be a suitable location for a pumping plant.

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CHAPTER 7
Report Preparers

7.1 Project Sponsor / Lead Agency

East Bay Municipal Utility District

375 Eleventh Street (Mail Slot #701)
Oakland, CA 94607-4240

This document was prepared under the direction of:

- Xavier Irias – Director, Engineering and Construction Department
- Marilyn L. Miller – Director, Engineering and Construction Department (Emeritus)
- William R. Kirkpatrick – Engineering Manager, Water Distribution Planning Division
- John Hurlburt – Senior Civil Engineer, Water Distribution Planning Division
- Judy Zavadil – Senior Project Manager, Water Distribution Planning Division
- Tim McGowan – Assistant Project Manager, Water Distribution Planning Division

7.2 EIR Authors and Consultants

ESA

225 Bush Street, Suite 1700
San Francisco, CA 94104

- Gary Oates – Project Director
- Jill Hamilton – Project Manager
- Amy Sinsheimer – Deputy Project Manager
- Christal Love – Project Coordinator, Public Services and Utilities
- Leah Katz – Project Coordinator, Land Use, Planning, and Recreation
- Alisa Moore – Land Use, Planning, and Recreation
- Peter Hudson, PG, CEG – Geology, Soils, and Seismicity
- Eric Schniewind, REA – Geology, Soils, and Seismicity
- Christine Gaber – Biological Resources
- Yolanda Molette – Biological Resources
- Martha Lowe – Biological Resources

- Brad Brewster – Historic Resources
- Dean Martorana, RPA – Archaeological Resources
- Jack Hutchison, PE – Traffic and Circulation
- Chris Mueller – Growth Inducement and Secondary Effects of Growth
- Maryann Hulsman – Assistant Technical Editor
- Kelly Runyon, PE – Geographic Information Systems
- Lisa Bautista – Publications and Word Processing
- Gus JaFolla – Word Processing
- Anthony Padilla – Production
- Irvin Huerta – Production

Orion Environmental Associates

4010 Random Lane,
Sacramento, CA 95864

- Joyce Hsiao – Cumulative Effects
- Mary MacDonald, RPG – Hydrology and Water Quality, Hazards and Hazardous Materials
- Valerie Geier – Air Quality, Noise and Vibration

Environmental Vision

2550 Ninth Street, Suite 205,
Berkeley, CA 94710

- Marsha Gale – Visual Quality

Mara Feeney & Associates

19 Beaver Street,
San Francisco, CA 94114

- Mara Feeney – Land Use, Planning, and Recreation

Jacobs Associates

465 California Street, Suite 1000
San Francisco, CA 94104

- John Caulfield – Draft Lamorinda Tunnel Conceptual Study
- Jeppe Eskilsson – Draft Lamorinda Tunnel Conceptual Study

AGS, Inc

364 14th Street
Oakland, CA 94612

- Bahram Khamenehpour, PhD, CE, GE – Draft Geotechnical Impact Assessment

Yuki Kawaguchi

211 Sutter Street, Suite 605
San Francisco, CA 94108

- Ron Teitel – Graphic Design
- Yuki Kawaguchi – Graphic Design

Eagle Eye Editing

168-A Linda Street
San Francisco, CA 94110

- Loralie Froman – Technical Editor

Wiltec

110 Acorn Lane
Pittsburg, CA 94656

- Moises Wilson, PE – Traffic Counts

Elite Reprographics

363 Sixth Street
San Francisco, CA 94103

APPENDICES

APPENDIX A

Public Involvement

APPENDIX A
Public Involvement

Public Review under CEQA

Public involvement is an essential feature of the California Environmental Quality Act (CEQA) process. The CEQA environmental review process has greatly expanded the opportunities for interested citizens to participate in project planning and government decision-making. CEQA encourages public involvement in project planning as early as possible. The Environmental Impact Report (EIR) is a well-established tool by which the public can gain access to information and influence the outcome of a broad variety of projects, including the proposed EBMUD Water Treatment and Transmission Improvements project. EBMUD's outreach efforts to date for the project, described below, exceed CEQA requirements.

Public Involvement for the Project

EBMUD has provided and will continue to provide opportunities for the public to participate in the CEQA process through meetings, public notices on and public review of the this Draft EIR, additional public meetings, and preparation of the Final EIR. A summary of the public involvement process to date is provided below.

EBMUD held the following public agency scoping and informational meetings for the Water Treatment and Transmission Improvements Program Notice of Preparation/EIR:

- Agency NOP Scoping Meeting — September 26, 2005
- City of Walnut Creek Public Meeting — October 26, 2005
- City of Lafayette Public Meeting — November 7, 2005
- Public Informational Meeting, Lamorinda — November 7, 2005
- Public Informational Meeting, South Walnut Creek and County — December 8, 2005
- Agency Scoping Meeting, Revised NOP — March 2, 2006

Approximately 5,000 public notices announcing the meetings were mailed to residents of the Moraga, Lafayette, Orinda, Walnut Creek, Unincorporated Contra Costa County, others who had previously expressed interest in the project, and regional and local agencies. EBMUD has attempted in good faith to involve the public in reviewing the proposed project. At each stage of the environmental review process, EBMUD has invited and continues to invite the public to provide input. EBMUD welcomes and encourages comments concerning the project and respects the input that members of the community have to offer on this project.

APPENDIX B

Project-Specific Construction Assumptions

APPENDIX B
Project-Specific Construction Assumptions

B-LWTP-1	Trip Generation Estimate - Lafayette WTP, Alternative 1
B-LWTP-2	Trip Generation Estimate – Lafayette WTP, Alternative 2
B-OWTP-1	Trip Generation Estimate – Orinda WTP, Alternative 1
B-OWTP-2	Trip Generation Estimate – Orinda WTP, Alternative 2
B-WCWTP-1	Trip Generation Estimate – Walnut Creek WTP, Alternative 1 or 2
B-SOBWTP-1	Trip Generation Estimate – Sobrante WTP, Alternative 1
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B-USLWTP-1	Trip Generation Estimate – Upper San Leandro WTP, Alternative 1 or 2
B-OLA-1	Trip Generation Estimate – Orinda-Lafayette Aqueduct – Pipeline Portion, Alternative 2
B-OLA-2	Trip Generation Estimate – Orinda-Lafayette Aqueduct – Tunnel Portion, Alternative 2
B-ARRES-1	Trip Generation Estimate – Ardith Reservoir
B-DONPP-1	Trip Generation Estimate – Donald Pumping Plant
B-FHPP-1	Trip Generation Estimate – Fay Hill Pumping Plant
B-FHPP-2	Trip Generation Estimate – Fay Hill Pipeline
B-FHRES-1	Trip Generation Estimate – Fay Hill Reservoir
B-GLENPL-1	Trip Generation Estimate – Glen Pipeline Improvements
B-HVPP-1	Trip Generation Estimate – Happy Valley Pumping Plant
B-HVPP-2	Trip Generation Estimate – Happy Valley Pipeline
B-HIGHRES-1	Trip Generation Estimate – Highland Reservoir
B-HIGHRES-2	Trip Generation Estimate – Highland Reservoir Pipelines
B-LELPL-1	Trip Generation Estimate – Leland Isolation Pipeline
B-MORRES-1	Trip Generation Estimate – Moraga Reservoir
B-MORPL-1	Trip Generation Estimate – Moraga Road Pipeline
B-SUNPP-1	Trip Generation Estimate – Sunnyside Pumping Plant
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B-TICEPP-2	Trip Generation Estimate – Tice Pipeline
B-WITHPP-1	Trip Generation Estimate – Withers Pumping Plant

Trip Generation Estimate -Lafayette WTP Alternative 1

B-LWTP-1

Construction Phase	Approx. Duration (months)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Phase 1 - Clearwells and Pumping Plant Construction and Pipeline and Interties							
Mobilization	2.0	0	4	18	44	1	Trucks
						18	Vehicles
Excavation	12.7	36	0	60	192	12	Trucks
	link	link				60	Vehicles
Foundation - Rebar	2.0	0	6	120	252	2	Trucks
						120	Vehicles
Foundation - Concrete	5.1	0	36	120	312	12	Trucks
	link		link			120	Vehicles
Backfilling	7.5	24	0	120	288	8	Trucks
	link	link				120	Vehicles
Mechanical/Electrical	6.0	0	2	90	184	1	Trucks
						90	Vehicles
Phase 2 - Demolition of the Backwash water system & Currnt Pumping Plant							
Excavation	0.7	4	0	40	88	1	Trucks
	link	link				40	Vehicles
Phase 3 - Chlorine Contact Basin & Backwash Water Recycle System							
Excavation	4.1	36	0	60	192	12	Trucks
	link	link				60	Vehicles
Foundation - Rebar	1.0	0	6	120	252	2	Trucks
						120	Vehicles
Foundation - Concrete	0.8	0	36	120	312	12	Trucks
	link		link			120	Vehicles
Backfilling	2.6	24	0	120	288	8	Trucks
	link	link				120	Vehicles
Mechanical/Electrical	6.0	0	2	90	184	1	Trucks
						90	Vehicles
Demobilization	1.0	0	4	30	68	1	Trucks
						30	Vehicles
				MAXIMUM ONE-WAY TRIPS PER DAY =	**312**		
				MAXIMUM ONE-WAY TRIPS PER HOUR =		**12**	**Trucks**
						120	**Vehicles**

B-LWTP-1

B-LWTP-1

Assumptions:

1. Haul trucks for soil disposal and import of fill from a temporary off-site stockpile location (no on-site capacity is assumed for excavated soil that will be used as fill).
2. Material trucks for concrete and equipment delivery.
3. Haul trucks average 12.5 CY; Concrete trucks average 9 CY
4. 167,174 CY of total Cut (99,663 CY to be disposed, and 66,711 CY reused as Fill), and 42,249 CY of total Concrete
5. Haul schedule is from M-F, 9:00 am to 4:00 pm
6. Work schedule M-F 7:00 am to 6:00 pm
7. Foundation material truck number is peak number for floor slab concrete pour.
8. Phase 2 starts after Phase 1 completion, and Phase 3 starts after Phase 2 completion.
9. Doesn't show down time nor reflect total duration

Lafayette Alternative 1 Estimates of Truck Trips for Excavation & Fill

Phase 1 - Construction of Clearwells & PP & PL		
Total Excavation	125,824	cy
Total Fill	49,704	cy
Total Soil to Be Disposed	76,120	cy
Total Concrete	36,582	cy
Phase 2 - Demo of Current BW System & Existing PP		
Total Excavation	800	cy
Phase 3 - CCB and Backwash Water Facilities		
Total Excavation	40,550	cy
Total Fill	17,007	cy
Total Soil to Be Disposed	23,543	cy
Total Concrete	5,666	cy

	# of Loads	Truck Capacity (cy/truck)	Average Time Truck Loading/ Unloading per crew (minutes)	# of crews	# of truck loads/day	# of one-way trips/day	# of days to get job done	# of months to get job done
Phase I - Construction of the Clearwells & PP & Temp backwash water treatment tank & backfill								
Total Number Excavation Trucks	10,066	12.5	10	1	36	72	280	12.7
Total Number of Fill Trucks	3,976	12.5	15	1	24	48	166	7.5
Total Number of Conc. Trucks	4,065	9	30	3	36	72	113	5.1
Phase 2 - Demo of Current BW System, and Existing Pumping Plants								
Total Number of Excavation Trucks	64	12.5	90	1	4	8	16	0.7
Phase 3 - CCB and Backwash Water Facilities								
Total Number Excavation Trucks	3,244	12.5	10	1	36	72	90	4.1
Total Number of Fill Trucks	1,361	12.5	15	1	24	48	57	2.6
Total Number of Conc. Trucks	630	9	30	3	36	72	17	0.8

B-LWTP-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENTS
Trip Generation Estimate -Lafayette WTP Alternative 2

B-LWTP-2

Construction Phase	Approx. Duration (months)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1.0	0	4	10	28	1	Trucks
						10	Vehicles
Excavation	2.0	6	0	20	52	2	Trucks
		link to below				20	Vehicles
Backfilling	0.5	6	0	20	52	2	Trucks
		link to below				20	Vehicles
Mechanical/Electrical	5.0	1	1	15	34	1	Trucks
						15	Vehicles

Assumptions:
1. Haul trucks for soil disposal and import of new fill.
2. Material trucks for concrete and equipment delivery.
3. Haul trucks average 12.5 CY; Concrete trucks average 9 CY;
4. Haul schedule is from M-F, 9:00 am to 3:00 pm
5. Work schedule M-F 7:00 am to 6:00 pm
6. Doesn't show down time nor reflect total duration

Lafayette Alternative 2 Estimates of Truck Trips for Excavation & Fill

Total Excavation	800	cy
Total Fill	900	cy
Total Soil to Be Disposed	800	cy
Total Concrete	0	cy

	Truck loads	Truck Capacity	Average Time Truck Loading/ Unloading per crew	# of crews	# truck loads/day	# of round trips/ day	# of days to get job done	Months
Total Number Excavation Trucks	64	12.5	60	1	6	12	11	0.5
Total Number of Fill Trucks	72	12.5	60	1	6	12	12	0.5

B-LWTP-2

Trip Generation Estimate - Orinda WTP Alternative 1

B-OWTP-1

Construction Phase	Approx. Duration (months)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1.0	0	4	12	32	1	Trucks
						12	Vehicles
Excavation	2.4	24	0	30	108	7	Trucks
	link	link				30	Vehicles
Foundation - Rebar	2.0	0	3	45	96	1	Trucks
						45	Vehicles
Foundation - Concrete	0.3	0	36	45	162	10	Trucks
	link		link			45	Vehicles
Backfilling	0.6	18	0	45	126	5	Trucks
	link	link				45	Vehicles
Mechanical/Electrical	3.0	0	4	60	128	1	Trucks
						60	Vehicles
Demobilization	1.0	0	4	15	38	1	Trucks
						15	Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**162**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**10**	**Trucks**
						60	**Vehicles**

Assumptions:
1. Haul trucks for soil disposal and import of fill from a temporary off-site stockpile location (no on-site capacity is assumed for excavated soil that will be used as fill).
2. Material trucks for concrete and equipment delivery.
3. Haul trucks average 12.5 CY; Concrete trucks average 9 CY
4. Haul schedule is from M-F, 9:00 am to 4:00 pm
5. Work schedule M-F 7:00 am to 6:00 pm
6. Foundation material truck number is peak number for floor slab concrete pour.
7. Doesn't show down time nor reflect total duration

Orinda Alternative 1 Estimates of Truck Trips for Excavation & Fill

Total Excavation	15,692	cy
Total Fill	3,144	cy
Total Soil to Be Disposed	12,548	cy
Total Concrete	2,464	cy

	# of Loads	Truck Capacity (cy/truck)	Average Time Truck Loading/ Unloading per crew (minutes)	# of crews	# of truck loads/day	# of one-way trips/day	# of days to get job done	# of months to get job done
Total Number Excavation Trucks	1,255	12.5	15	1	24	48	52	2.4
Total Number of Fill Trucks	252	12.5	20	1	18	36	14	0.6
Total Number of Conc. Trucks	274	9	30	3	36	72	8	0.3

B-OWTP-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENTS
Trip Generation Estimate- Orinda WTP Alternative 2

B-OWTP-2

Construction Phase	Approx. Duration (months)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Phase 1 - Backwash Water Recycle System							
Mobilization	2.0	0	4	18	44	1 18	Trucks Vehicles
Excavation	1.6 link	36 link	0	60	192	10 60	Trucks Vehicles
Foundation - Rebar	0.5	0	6	60	132	2 60	Trucks Vehicles
Foundation - Concrete	0.5 link	0	27 link	60	174	8 60	Trucks Vehicles
Backfilling	0.5 link	24 link	0	60	168	7 60	Trucks Vehicles
Mechanical/Electrical	5.0	0	4	120	248	1 120	Trucks Vehicles
Phase 2 - Clearwell & PP Construction							
Excavation	14.1 link	72 link	0	90	324	21 90	Trucks Vehicles
Foundation - Rebar	3.0	0	6	120	252	2 120	Trucks Vehicles
Foundation - Concrete	5.1 link	0	54 link	100	308	15 100	Trucks Vehicles
Backfilling	14.2 link	36 link	0	90	252	10 90	Trucks Vehicles
Mechanical/Electrical	5.0	0	4	120	248	1 120	Trucks Vehicles
Demobilization	1.0	0	4	30	68	1 30	Trucks Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**324**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**21** **120**	**Trucks** **Vehicles**

B-OWTP-2

Trip Generation Estimate- Orinda WTP Alternative 2

B-OWTP-2

Assumptions:

1. Haul trucks for soil disposal and import of fill from a temporary off-site stockpile location (no on-site capacity is assumed for excavated soil that will be used as fill).
2. Material trucks for concrete and equipment delivery.
3. Haul trucks average 12.5 CY; Concrete trucks average 9 CY
4. 295,784 CY of total Cut (151,761 CY to be disposed, and 144,023 CY reused as Fill), and 56,594 CY of total Concrete.
5. Haul schedule is from M-F, 9:00 am to 4:00 pm
6. Work schedule M-F 7:00 am to 6:00 pm
7. Foundation material truck number is peak number for floor slab concrete pour.
8. Phase 2 starts after Phase 1 completion
9. Doesn't show down time nor reflect total duration

Orinda Alternative 2 Estimates of Truck Trips for Excavation & Fill

Phase 1 - Backwash Water Construction		
Total Excavation	15,692	cy
Total Fill	3,144	cy
Total Soil to Be Disposed	12,548	cy
Total Concrete	2,464	cy
Phase 2 - Clearwell + PP + VP Construction		
Total Excavation	280,092	cy
Total Fill	140,879	cy
Total Soil to Be Disposed	139,213	cy
Total Concrete	54,130	cy

	# of Loads	Truck Capacity (cy/truck)	Average Time Truck Loading/ Unloading per crew (minutes)	# of crews	# of truck loads/day	# of one-way trips/day	# of days to get job done	# of months to get job done
Phase 1 - Backwash Water Construction								
Total Number Excavation Trucks	1,255	12.5	10	1	36	72	35	1.6
Total Number of Fill Trucks	252	12.5	15	1	24	48	10	0.5
Total Number of Conc. Trucks	274	9	40	3	27	54	10	0.5
Phase 2 - Clearwell + PP + VP Construction								
Total Number Excavation Trucks	22,407	12.5	5	1	72	144	311	14.1
Total Number of Fill Trucks	11,270	12.5	10	1	36	72	313	14.2
Total Number of Conc. Trucks	6,014	9	20	3	54	108	111	5.1

B-OWTP-2

B-WCWTP-1

Construction Phase	Approx. Duration (months)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1.0	0	4	10	28	1 10	Trucks Vehicles
Excavation	4.4 link	5 link	0	15	39	2 15	Trucks Vehicles
Foundation - Rebar	1.0	0	4	30	68	1 30	Trucks Vehicles
Foundation - Concrete	0.5 link	0	12 link	30	84	4 30	Trucks Vehicles
Backfilling	0.4 link	4 link	0	15	38	1 15	Trucks Vehicles
Mechanical/Electrical	5.0	0	2	12	28	1 12	Trucks Vehicles
Demobilization	1.0	0	4	12	32	1 12	Trucks Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**84**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**4** **30**	**Trucks** **Vehicles**

Assumptions:

1. Haul trucks for soil disposal and import of fill from a temporary off-site stockpile location (no on-site capacity is assumed for excavated soil that will be used as fill).
2. Material trucks for concrete and equipment delivery.
3. Haul trucks average 12.5 CY; Concrete trucks average 9 CY
4. Work schedule M-F 7:00 am to 6:00 pm
5. Haul schedule is from M-F, 9:00 am to 4:00 pm
6. Foundation material truck number is peak number for floor slab concrete pour.
7. Doesn't show down time nor reflect total duration

Walnut Creek Estimates Truck Trips for Excavation & Fill

Total Excavation	**5,500**	**cy**
Total Fill	**400**	**cy**
Total Soil to Be Disposed	**4,100**	**cy**
Total Concrete	**1,100**	**cy**

	# of Loads	Truck Capacity (cy/truck)	Average Time Truck Loading/ Unloading per crew (minutes)	# of crews	# of truck loads/day	# of one-way trips/day	# of days to get job done	# of months to get job done
Total Number Excavation Trucks	440	12.5	80	1	4.5	9	98	4.4
Total Number of Fill Trucks	32	12.5	90	1	4	8	8	0.4
Total Number of Conc. Trucks	122	9	30	1	12	24	10	0.5

B-WCWTP-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENTS
Trip Generation Estimate - Sobrante WTP Alternative 1

B-SOBWTP-1

Construction Phase	Approx. Duration (months)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
CCB & Related Structures and Piping							
Mobilization	1.0	0	4	12	32	1 12	Trucks Vehicles
Excavation	4.3 link	24 link	0	60	168	7 60	Trucks Vehicles
Foundation - Rebar	2.0	0	6	90	192	2 90	Trucks Vehicles
Foundation - Concrete	0.4 link	0	36 link	90	252	10 90	Trucks Vehicles
Backfilling	2.9 link	18 link	0	90	216	5 90	Trucks Vehicles
Mechanical/Electrical	3.0	0	4	120	248	1 120	Trucks Vehicles
Demobilization	1.0	0	4	30	68	1 30	Trucks Vehicles
Filter-to-Waste Basin & HR Sedimentation							
Mobilization	1.0	0	4	12	32	1 12	Trucks Vehicles
Excavation	1.8 link	18 link	0	25	86	5 25	Trucks Vehicles
Foundation - Rebar	0.5	0	6	25	62	2 25	Trucks Vehicles
Foundation - Concrete	0.2 link	0	31 link	30	122	9 30	Trucks Vehicles
Backfilling	0.3 link	14 link	0	25	79	4 25	Trucks Vehicles
Mechanical/Electrical	4.0	0	2	30	64	1 30	Trucks Vehicles
Demobilization	1.0	0	4	15	38	1 15	Trucks Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**252**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**10** **120**	**Trucks** **Vehicles**

B-SOBWTP-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENTS
Trip Generation Estimate - Sobrante WTP Alternative 1

Assumptions:
1. Haul trucks for soil disposal and import of fill from a temporary off-site stockpile location (no on-site capacity is assumed for excavated soil that will be used as fill).
2. Material trucks for concrete and equipment delivery.
3. Haul trucks average 12.5 CY; Concrete trucks average 9 CY
4. Haul schedule is from M-F, 9:00 am to 4:00 pm
5. Work schedule M-F 7:00 am to 6:00 pm
6. Foundation material truck number is peak number for floor slab concrete pour.
7. Doesn't show down time nor reflect total duration

Sobrante Estimates of Truck Trips for Excavation & Fill

CCB & Related Structures and Piping		
Total Excavation	28,099	cy
Total Fill	14,131	cy
Total Soil to Be Disposed	13,968	cy
Total Concrete	2,747	cy
Filter-to-Waste Basin & HR Sedimentation		
Total Excavation	8,948	cy
Total Fill	1,333	cy
Total Soil to Be Disposed	7,615	cy
Total Concrete	1,063	cy

	# of Loads	Truck Capacity (cy/truck)	Average Time Truck Loading/ Unloading per crew (minutes)	# of crews	# of truck loads/day	# of one-way trips/day	# of days to get job done	# of months to get job done
CCB & Related Structures and Piping								
Total Number Excavation Trucks	2,248	12.5	15	1	24	48	94	4.3
Total Number of Fill Trucks	1,130	12.5	20	1	18	36	63	2.9
Total Number of Conc. Trucks	305	9	30	3	36	72	8	0.4
Filter-to-Waste Basin & HR Sedimentation								
Total Number Excavation Trucks	716	12.5	20	1	18	36	40	1.8
Total Number of Fill Trucks	107	12.5	25	1	14.4	28.8	7	0.3
Total Number of Conc. Trucks	118	9	35	3	31	62	4	0.2

B-SOBWTP-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENTS
Trip Generation Estimate - Sobrante WTP Alternative 2

B-SOBWTP-2

Construction Phase	Approx. Duration (months)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
CCB & Related Structures and Piping							
Mobilization	1.0	0	4	12	32	1 12	Trucks Vehicles
Excavation	4.4 link	24 link	0	60	168	7 60	Trucks Vehicles
Foundation - Rebar	2.0	0	6	90	192	2 90	Trucks Vehicles
Foundation - Concrete	0.5 link	0	36 link	90	252	10 90	Trucks Vehicles
Backfilling	1.7 link	18 link	0	90	216	5 90	Trucks Vehicles
Mechanical/Electrical	3.0	0	4	120	248	1 120	Trucks Vehicles
Demobilization	1.0	0	4	30	68	1 30	Trucks Vehicles
Filter-to-Waste Basin & HR Sedimentation							
Mobilization	1.0	0	4	12	32	1 12	Trucks Vehicles
Excavation	1.8 link	18 link	0	25	86	5 25	Trucks Vehicles
Foundation - Rebar	0.5	0	6	25	62	2 25	Trucks Vehicles
Foundation - Concrete	0.2 link	0	31 link	30	122	9 30	Trucks Vehicles
Backfilling	0.3 link	14 link	0	25	79	4 25	Trucks Vehicles
Mechanical/Electrical	4.0	0	2	30	64	1 30	Trucks Vehicles
Demobilization	1.0	0	4	15	38	1 15	Trucks Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**252**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**10 120**	**Trucks Vehicles**

WATER TREATMENT AND TRANSMISSION IMPROVEMENTS
Trip Generation Estimate - Sobrante WTP Alternative 2

Assumptions:
1. Haul trucks for soil disposal and import of fill from a temporary off-site stockpile location (no on-site capacity is assumed for excavated soil that will be used as fill).
2. Material trucks for concrete and equipment delivery.
3. Haul trucks average 12.5 CY; Concrete trucks average 9 CY
4. Haul schedule is from M-F, 9:00 am to 4:00 pm
5. Work schedule M-F 7:00 am to 6:00 pm
6. Foundation material truck number is peak number for floor slab concrete pour.
7. Doesn't show down time nor reflect total duration

Sobrante Estimates of Truck Trips for Excavation & Fill

CCB & Related Structures and Piping		
Total Excavation	29,092	cy
Total Fill	8,251	cy
Total Soil to Be Disposed	20,842	cy
Total Concrete	3,447	cy
Filter-to-Waste Basin & HR Sedimentation		
Total Excavation	8,948	cy
Total Fill	1,333	cy
Total Soil to Be Disposed	7,615	cy
Total Concrete	1,063	cy

	# of Loads	Truck Capacity (cy/truck)	Average Time Truck Loading/ Unloading per crew (minutes)	# of crews	# of truck loads/day	# of one-way trips/day	# of days to get job done	# of months to get job done
CCB & Related Structures and Piping								
Total Number Excavation Trucks	2,327	12.5	15	1	24	48	97	4.4
Total Number of Fill Trucks	660	12.5	20	1	18	36	37	1.7
Total Number of Conc. Trucks	383	9	30	3	36	72	11	0.5
Filter-to-Waste Basin & HR Sedimentation								
Total Number Excavation Trucks	716	12.5	20	1	18	36	40	1.8
Total Number of Fill Trucks	107	12.5	25	1	14.4	28.8	7	0.3
Total Number of Conc. Trucks	118	9	35	3	31	62	4	0.2

B-SOBWTP-2

WATER TREATMENT AND TRANSMISSION IMPROVEMENTS
Trip Generation Estimate - Upper San Leandro WTP

B-USLWTP-1

Construction Phase	Approx. Duration (months)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1.0	0	4	12	32	1	Trucks
						12	Vehicles
Excavation	1.4	5	0	60	129	1	Trucks
	link	link				60	Vehicles
Foundation - Rebar	1.0	0	3	90	186	1	Trucks
						90	Vehicles
Foundation - Concrete	0.1	0	36	90	252	10	Trucks
	link		link			90	Vehicles
Backfilling	0.2	4	0	90	188	1	Trucks
	link	link				90	Vehicles
Mechanical/Electrical	3.0	0	4	120	248	1	Trucks
						120	Vehicles
Demobilization	1.0	0	4	30	68	1	Trucks
						30	Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**252**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**10**	**Trucks**
						120	**Vehicles**

Assumptions:

1. Haul trucks for soil disposal and import of fill from a temporary off-site stockpile location (no on-site capacity is assumed for excavated soil that will be used as fill).
2. Material trucks for concrete and equipment delivery.
3. Haul trucks average 12.5 CY; Concrete trucks average 9 CY
4. Haul schedule is from M-F, 9:00 am to 4:00 pm
5. Work schedule M-F 7:00 am to 6:00 pm
6. Foundation material truck number is peak number for floor slab concrete pour.
7. Doesn't show down time nor reflect total duration

USL Estimates of Truck Trips for Excavation & Fill

Total Excavation	1,780	cy
Total Fill	272	cy
Total Soil to Be Disposed	1,508	cy
Total Concrete	761	cy

	# of Loads	Truck Capacity (cy/truck)	Average Time Truck Loading/ Unloading per crew (minutes)	# of crews	# of truck loads/day	# of one-way trips/day	# of days to get job done	# of months to get job done
Total Number Excavation Trucks	142	12.5	80	1	4.5	9	32	1.4
Total Number of Fill Trucks	22	12.5	90	1	4	8	5	0.2
Total Number of Conc. Trucks	85	9	30	3	36	72	2	0.1

B-USLWTP-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENTS
Trip Generation Estimate - Orinda - Lafayette Aqueduct - Pipeline Portion

B-OLA-1

Construction Phase	Pipe length	Pipe diameter	Production Rate (feet/day)	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
El Nido Ranch Rd. (*requires road closure in vicinity of construction*)										
St. Stephens Dr. to Acalanes Rd	5,280	48	60	17.6	38	4	13	109	10	Trucks
									13	Vehicles
Acalanes Rd to Bore and Jack Pit near Sunnybrook Dr.	1,000	48	60	3.3	38	4	13	109	10	Trucks
									13	Vehicles
Highway 24 Undercrossing										
Bore and Jack Pit (northern portal, 50'x15'x15')	50	48	5	2.0	9	4	13	52	3	Trucks
									13	Vehicles
Bore and Jack Pipeline	500	60	10	10.0	1	2	13	32	1	Trucks
									13	Vehicles
Bore and Jack Pit (southern portal, 15'x15'x15')	15	48	5	0.6	9	4	13	52	3	Trucks
									13	Vehicles
Mt. Diablo Blvd. (*restricts vehicle traffic down to two of four lanes in vicinity of construction*)										
From Bore and Jack Pit to connection with Bryant PZ Piping near entrance to Lafayette Reservoir Recreation Area	2,000	48	60	6.7	38	4	13	109	10	Trucks
									13	Vehicles
Total Length	8,845									
MAXIMUM ONE-WAY TRIPS PER DAY =								**109**		
MAXIMUM ONE-WAY TRIPS PER HOUR =									**10**	**Trucks**
									13	**Vehicles**

Assumptions:
1. Haul trucks for soil disposal and import of new fill. Haul truck average 9 cubic yards per load
2. Material trucks for pipe, appurtence and equipment delivery
3. Worker vehicles consist of 9-person crew, and 4 vehicles for contractor superintendent, district inspector, city inspector, visitors.
4. The contractor would be able to install up to 60 feet per workday in paved areas
5. Excavated soil to be hauled off site and replaced by aggregate base in the street. In unpaved areas the soil will be stockpiled and replacec
6. For pipeline in roadway : Work schedule M-F 8:30 am to 4:30 pm
7. Trench width of 7.5 feet and trench depth of 11 feet.
8. Per lineal foot of 48" pipe: 3.06 CY of trench spoils will be hauled off-site and 2.59 CY of new fill will be imported
9. Per lineal foot of Bore and Jack pit: 8.33 CY of excavation, 7.86 CY backfil
10. Per lineal foot of Bore and Jack pipeline: 0.73 CY of excavation, no backfil
11. Doesn't show down time nor reflect total duration

B-OLA-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENTS
Trip Generation Estimate - Orinda-Lafayette Aqueduct - Tunnel Portion

B-OLA-2

Construction Phase	Approx. Duration (months)	Haul Trucks (per day)	Materials Trucks (per day)	Worker (per shift)	One-Way Trips (per day)	Max. One-Way Trips Per Hour		Comments
1. Mobilize/Develop Shaft Area/ Shaft Excavation (day shift only)	2.5	3	5	30	76	2 60	Trucks Autos	Equipment Deliveries Contractor (22); EBMUD (8)
2. Excavate Starter Tunnel and Sed Pond Riser Tunnel (3 shifts per day)	3	6	6	34	228	3 68	Trucks Autos	Materials and Equipment Deliveries Contractor (26); EBMUD (8)
3. Excavate Tunnel & Install Initial Tunnel Support (3 shifts per day)	6.5	41	8	34	302	12 68	Trucks Autos	Materials and Equipment Deliveries Contractor (26); EBMUD (8)
4. Excavate Exit Shaft (day shift only)	1	4	3	34	82	2 68	Trucks Autos	Equipment Deliveries Contractor (26); EBMUD (8)
5. Sed Pond Riser Shaft (day shift only); concurrent with other shaft work	1	1	1	3	10	1 6	Trucks Autos	Equipment Deliveries Driller Personnel Only
6. Install Final Lining (pipeline) for Tunnels and Shafts (day shift only)	11		79	42	242	16 84	Trucks Autos	Equipment Deliveries Contractor (34); EBMUD (8)
MAXIMUM ONE-WAY TRIPS PER DAY =					**302**			
MAXIMUM ONE-WAY TRIPS PER HOUR =						**16** **84**	**Trucks** **Autos**	

Assumptions:
1. Haul trucks average 12 CY for shafts, and 20 CY for tunnel work; muck disposal off-site
2. Concrete trucks average 9 CY.
3. Personnel counts are on a per-shift basis.
4. Off-Hauling of Spoils is assumed to occur during the Day shift only (8 hours for this estimate, except during Phase 6, when 10 hours [matches 8a-6p Noise ordinance])
5. Doesn't show down time nor reflect total duration

B-OLA-2

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Ardith Reservoir

B-ARRES-1

Construction Phase	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1	0	4	2	12	4	Trucks
						2	Vehicles
Excavation	3	84	0	5	178	24	Trucks
						5	Vehicles
Reservoir foundation & floor slab	2	0	42	15	114	11	Trucks
						15	Vehicles
Reservoir walls	12	0	8	12	39	2	Trucks
						12	Vehicles
Reservoir roof	4	0	42	12	108	11	Trucks
						12	Trucks
Field Testing and Startup	6	0	1	6	14	1	Trucks
						6	Vehicles
Backfilling	3	69	0	5	148	18	Trucks
						5	Vehicles
Site restoration	2	0	4	4	16	4	Trucks
						4	Vehicles
Access Road	1	0	10	8	36	3	Trucks
						8	Vehicles
Demobilization	1	0	4	4	16	4	Trucks
						4	Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**178**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**24**	**Trucks**
						15	**Vehicles**

Assumptions:
1. Truck and vehicle trip are peak rates.
2. Haul trucks are for soil disposal and import of new fill.
3. Off-hauling trucks average 9 cubic yards per load, one load every 5 minutes, with 7 hours production per day.
4. Backfilling trucks average 9 cubic yards per load, one load at approximately 6.5 minutes with 7.5 hour production per day.
5. 8,500 CY of Cut and 6,400 CY of Fill.
6. Material trucks are for forms, rebar, concrete, prestressing materials, paving, and equipment.
7. Concrete trucks average 9 cubic yards per load.
8. Worker vehicles consist of vehicles for trades, laborers, equipment operator, superintendent, foreman, district inspector
9. Work schedule: One shift, 8 hours, M-F between 7:00 am and 6:00 pm, with 7 hours of production per day.
10. Rates for reservoir floor slabs, walls, and roofs do not last the entire durations.
11. Reservoir construction peak rate durations: floor slabs -1 day, wall sections 2 weeks, roof-1day
12. Doesn't show down time nor reflect total duration

B-ARRES-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Donald Pumping Plant

B-DONPP-1

Construction Phase	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1	0	2	2	8	2	Trucks
						2	Vehicles
Excavation/Site Work	2	28	10	5	66	10	Trucks
						5	Vehicles
Pumping Plant Construction (concrete work)	2	0	7	10	34	2	Trucks
						10	Vehicles
Pumping Plant Construction	10	0	2	8	20	1	Trucks
						8	Vehicles
Backfill	1	24	0	5	58	6	Trucks
						5	Trucks
Landscaping	2	0	1	4	10	1	Trucks
						4	Vehicles
Demobilization	1	0	2	4	12	2	Trucks
						4	Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**66**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**10**	**Trucks**
						10	**Vehicles**

<u>Assumptions</u>:
1. Haul trucks for soil disposal and import of new fill.
2. Material trucks for building material, piping, paving, and equipment delivery
3. Haul trucks average 9 cubic yards; Concrete trucks average 9 cubic yards
4. Worker vehicles consist of vehicles for trades, laborers, equipment operator, superintendent, foreman, district inspector
5. Work schedule: One shift, 8 hours, M-F between 7:00 am and 6:00 pm
6. Excavation is about 1,200 cubic yards. Backfill is about 500 cubic yards
7. Doesn't show down time nor reflect total duration

B-DONPP-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Fay Hill Pumping Plant

B-FHPP-1

Construction Phase	Approx. Duration (weeks)	Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1	1	1	4	1	Trucks
					1	Vehicles
Site Work	2	0	2	4	0	Trucks
					2	Vehicles
Pumping Plant Construction	8	3	3	12	1	Trucks
					3	Vehicles
Landscaping	1	0	1	2	0	Trucks
					1	Vehicles
Demobilization	1	1	1	4	1	Trucks
					1	Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =				**12**		
MAXIMUM ONE-WAY TRIPS PER HOUR =					**1**	**Trucks**
					3	**Vehicles**

Assumptions:
1. Material trucks for building material, piping, paving, and equipment delivery
2. Concrete trucks average 9 cubic yards
3. Worker vehicles consist of vehicles for trades, laborers, equipment operator, superintendent, foreman, district inspector
4. Work schedule: One shift, 8 hours, M-F between 7:00 am and 6:00 pm
5. Doesn't show down time nor reflect total duration

B-FHPP-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Fay Hill Pipeline

B-FHPP-2

Construction Phase	Pipe length	Pipe diameter	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Rheem Boulevard	500	12	2	7	4	13	49	3 13	Trucks Vehicles
Total	500								
						MAXIMUM ONE-WAY TRIPS PER DAY =	49		
Total excavated material (CY) = 230						MAXIMUM ONE-WAY TRIPS PER HOUR =		**3** **13**	**Trucks** **Vehicles**

Assumptions:
1. Trench width of 2.5 feet and trench depth of 5 feet.
2. Haul trucks include trench pavement and soil disposal as well as fill import deliveries. Haul truck average 9 cubic yards per load.
3. Per lineal foot: 0.46 CY of pavement and trench spoils will be hauled off-site and 0.38 CY of new fill will be imported.
4. Material trucks trips per day include deliveries for: pipeline (1), appurtenance(1), paving(1) and equipment delivery (1) .
5. Worker vehicles consist (9) vehicles for crew, (1) contractor superintendent, (1) district inspector, (1) city inspector, (1) visitors.
6. The contractor would be able to install an average of about 80 feet of pipe each work day in paved areas.
7. Excavated soil to be hauled off site and replaced by aggregate base in the street. In unpaved areas the soil will be stockpiled and replaced.
8. Work schedule M-F 8:30 am to 4:30 pm.
9. One construction site along the alignment.
10. Doesn't show down time nor reflect total duration

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM

Trip Generation Estimate - Fay Hill Reservoir

B-FHRES-1

Construction Phase	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1	0	4	2	12	4	Trucks
						2	Vehicles
Temporary Tank Construction[1,2,3]	11	84	32	5	178	24	Trucks
						5	Vehicles
Demolition	3	0	7	8	30	2	Trucks
						8	Vehicles
Access Road & Excavation[1]	4	84	9	3	174	24	Trucks
						3	Vehicles
Retaining Wall[4]	6	0	5	10	30	5	Trucks
						10	Vehicles
Reservoir foundation, walls, roof[5]	13	0	15	5	40	12	Trucks
						5	Vehicles
Field Testing and Startup	6	0	1	6	14	1	Trucks
						6	Vehicles
Temporary Tank Demolition	4	0	1	5	12	1	Trucks
						5	Vehicles
Site restoration	2	0	4	4	16	4	Trucks
						4	Vehicles
Demobilization	1	0	4	4	16	4	Trucks
						4	Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**178**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**24**	**Trucks**
						10	**Vehicles**

Assumptions:

1. Bolted Steel, glass lined tank
2. Haul Trucks are for soil disposal and import of new fill.
3. Off-hauling trucks average 9 cubic yards per load, one load every 5 minutes, with 7 hours production per day.
4. Material trucks for forms, rebar, concrete, prestressing materials and equipment, shotcrete, paving,and reservoir equipment delivery.
5. Concrete trucks average 9 CY for foundation and roof and 7 CY for walls.
6. Worker vehicles for reservoir construction consist of vehicles for 3 trades and 3 laborers, equipment operator, contractor superintendent, foreman, district inspector, visitors.
7. Work schedule: One shift, 8 hours, M-F between 7:00 am and 6:00 pm.
8. Doesn't show down time nor reflect total duration

Notes:

[1] One-Way Trips (per day) for the Temporary Tank Construction and New Tanks' Access Road and Excavation exclude Material Trucks because it is assumed that the scheduling of Haul Trucks and Material Trucks will not coincide on the same day.

[2] 8,400 CY of Cut and No Fill. The Temporary Tank and the New Tank sites will require approximatley 1,500 and 6,900 CY, respectively of excavation. As a result, Haul trucks per day for temporary tank construction will be 2 days and for access & excavation 10 days.

[3] Number of trucks to deliver Temporary Tank foundation materials (32) is a peak number for just one day.

[4] Assume peak loading will occur with four pours of concrete footing for foundation of retaining wall (approximately 160 LF).

[5] Foundation Material Truck number is peak number for floor slab concrete pour. Assuming New Reservoir foundation will take place in two pours - one for each tank and each one taking one day to pour for a total of two days. Therefore, Material Truck trips (per day) of 15 for Reservoir foundation will occur for two days.

B-FHRES-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Glen Pipeline Improvements

B-GLENPL-1

Construction Phase	Pipe length	Pipe diameter	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Nordstrom Lane	700	12	1.8	7	4	13	49	3	Trucks
								13	Vehicles
Glen Road	825	12	2.1	7	4	13	49	3	Trucks
								13	Vehicles
Total	1,525								
						MAXIMUM ONE-WAY TRIPS PER DAY =	**49**		
Total excavated material (CY) = 702						**MAXIMUM ONE-WAY TRIPS PER HOUR =**		**3**	**Trucks**
								13	**Vehicles**

Assumptions:

1. Trench width of 2.5 feet and trench depth of 5 feet.
2. Haul trucks include trench pavement and soil disposal as well as fill import deliveries. Haul truck average 9 cubic yards per load.
3. Per lineal foot: 0.46 CY of pavement and trench spoils will be hauled off-site and 0.38 CY of new fill will be imported.
4. Material trucks trips per day include deliveries for: pipeline (1), appurtenance(1), paving(1) and equipment delivery (1) .
5. Worker vehicles consist (9) vehicles for crew, (1) contractor superintendent, (1) district inspector, (1) city inspector, (1) visitors.
6. The contractor would be able to install an average of about 80 feet of pipe each work day in paved areas.
7. Excavated soil to be hauled off site and replaced by aggregate base in the street. In unpaved areas the soil will be stockpiled and replaced.
8. Work schedule M-F 8:30 am to 4:30 pm.
9. One construction site along the alignment.
10. Doesn't show down time nor reflect total duration
11. A limited number of truck trips would be associated with the related project - Decommissioning Glen Reservoir. This project would involve 1) closing the inlet pipeline within the valve pit, 2) then water would continue to flow out of the check valve on the outlet pipe allowing the reservoir to draw down to 50-70% of full, 3) next a portable pump would be installed to pump out the reservoir into the distribution system, continuing until the tank is approximately 2 feet full, 4) the remaining water would be discharged to the sanitary sewer. This entire process would take approximately 2 to 3 weeks with a crew of 1 to 3 people using pick-up trucks for transportation. No heavy equipment would be required. The structures onsite including would remain in their current state unless EBMUD decides to sell the property which is not currently under consideration.

B-GLENPL-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Happy Valley Pumping Plant

B-HVPP-1

Construction Phase	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1	0	2	2	8	2	Trucks
						2	Vehicles
Site Work	2	0	0	5	10	0	Trucks
						5	Vehicles
Pumping Plant Construction	2	0	7	10	34	2	Trucks
(concrete work)						10	Vehicles
Pumping Plant Construction	10	0	2	8	20	1	Trucks
						8	Vehicles
Landscaping	2	0	1	4	10	1	Trucks
						4	Vehicles
Demobilization	1	0	2	4	12	2	Trucks
						4	Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**34**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**2**	**Trucks**
						10	**Vehicles**

Assumptions:

1. Material trucks for building material, piping, paving, and equipment delivery.
2. Concrete trucks average 9 cubic yards
3. Worker vehicles consist of vehicles for trades, laborers, equipment operator, superintendent, foreman, district inspector
4. Work schedule: One shift, 8 hours, M-F between 7:00 am and 6:00 pm
5. Doesn't show down time nor reflect total duration

B-HVPP-1

Trip Generation Estimate - Happy Valley Pipeline

B-HVPP-2

Construction Phase	Pipe length	Pipe diameter	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Miner Rd. (Oak Arbor to Lombardy Ln)	1,400	16	3.5	7	4	13	49	3 13	Trucks Vehicles
Lombardy Ln (Miner Rd. to Sleepy Hollow Ln)	650	16	1.6	7	4	13	49	3 13	Trucks Vehicles
Lombardy Ln (Sleepy Hollow to Van Ripper Ln.)	3,225	16	8.1	7	4	13	49	3 13	Trucks Vehicles
Lombardy Ln (Van Ripper Ln - Proposed Happy Valley PP)	500	16	1.3	7	4	13	49	3 13	Trucks Vehicles
Total	5,775								
						MAXIMUM ONE-WAY TRIPS PER DAY =	**49**		
Total excavated material (CY) = 2,657						**MAXIMUM ONE-WAY TRIPS PER HOUR =**		**3** **13**	**Trucks** **Vehicles**

<u>Assumptions</u>:

1. Trench width of 2.5 feet and trench depth of 5 feet.
2. Haul trucks include trench pavement and soil disposal as well as fill import deliveries. Haul truck average 9 cubic yards per load.
3. Per lineal foot: 0.46 CY of pavement and trench spoils will be hauled off-site and 0.38 CY of new fill will be imported.
4. Material trucks trips per day include deliveries for: pipeline (1), appurtenance(1), paving(1) and equipment delivery (1) .
5. Worker vehicles consist (9) vehicles for crew, (1) contractor superintendent, (1) district inspector, (1) city inspector, (1) visitors.
6. The contractor would be able to install an average of about 80 feet of pipe each work day in paved areas.
7. Excavated soil to be hauled off site and replaced by aggregate base in the street. In unpaved areas the soil will be stockpiled and replaced.
8. Work schedule M-F 8:30 am to 4:30 pm.
9. One construction site along the alignment.
10. Doesn't show down time nor reflect total duration

B-HVPP-2

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Highland Reservoir

B-HIGHRES-1

Construction Phase	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1	0	4	2	12	4 2	Trucks Vehicles
Excavation	7	84	0	5	178	24 5	Trucks Vehicles
Reservoir foundation & floor slab	3	0	20	15	70	5 15	Trucks Vehicles
Reservoir walls	12	0	8	12	40	2 12	Trucks Trucks
Reservoir roof	4	0	44	12	112	11 12	Trucks Trucks
Valve Pit & Piping	4	0	5	5	20	1 5	Trucks Vehicles
Field Testing and Startup	6	0	1	6	14	1 6	Trucks Vehicles
Backfilling	4	69	0	5	148	18 5	Trucks Vehicles
Site Restoration	7	4	4	6	28	8 6	Trucks Vehicles
Access Road	3	14	9	8	62	6 8	Trucks Vehicles
Demobilization	1	0	4	4	16	4 4	Trucks Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**178**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**24** **15**	**Trucks** **Vehicles**

Assumptions:
1. Truck and vehicle trip are peak rates.
2. Haul trucks are for soil disposal and import of new fill.
3. Excavation and Off-hauling trucks average 9 cubic yards per load, one load every 5 minutes, with 7 hours production per day
4. Backfilling trucks average 9 cubic yards per load, one load at approximately 6.5 minutes with 7.5 hour production per day
5. Backfilling trucks would travel on Construction Access Road to/from the Stockpile Area (i.e., would not use external roads)
6. 25,600 CY of Cut; 5,184 CY of stockpile and backfill; 20,416 CY offhauled.
7. Material trucks are for forms, rebar, concrete, prestressing materials, paving, and equipment
8. Concrete trucks average 9 cubic yards per load.
9. Aggregate base (for Access Road) will be delivered to site at a rate of 2 trucks per hour for 7 hours a day
10. Worker vehicles consist of vehicles for trades, laborers, equipment operator, superintendent, foreman, district inspector
11. Work schedule: One shift, 8 hours, M-F between 7:00 am and 6:00 pm, with 7 hours of production per day
12. Rates for reservoir floor slabs, walls, and roofs do not last the entire durations
13. Reservoir construction peak rate durations: floor slabs -1 day, wall sections 2 weeks, roof-1day
14. Doesn't show down time nor reflect total duration

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Highland Reservoir / Lafayette Reclaimed Water Pipelines

B-HIGHRES-2

Construction Phase	Pipe length	Pipe diameter	Production Rate (feet/day)	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
20" I/O only										
E3A tie-in to Mt Diablo Blvd.	150	20	80	0.4	4	4		15	1.9	Trucks
							12	24	12	Vehicles
Under Mt Diablo Blvd to Joint Pipe Alignment	260	20	80	0.7	10	4		28	3.5	Trucks
							13	26	13	Vehicles
(break in route=joint alignment)										
From Joint Pipe Alignment	120	20	120	0.2	8	4		24	3.0	Trucks
to Reservoir							12	24	12	Vehicles
20" I/O & 8" Reclaimed *(joint alignment)*										
Across Mt Diablo Blvd. and	240	20 & 8	50	1.0	13	4		33	4.2	Trucks
across Lafayette Res. In & Out Roads							13	26	13	Vehicles
Lafayett Reservoir, In Road to	970	20 & 8	120	1.6	12	4		32	4.0	Trucks
split of Joint Pipe Alignment							12	24	12	Vehicles
8" Reclaimed only										
Regulating Basin to Creek	150	8	80	0.4	2	4		12	1.5	Trucks
							12	24	12	Vehicles
Pipe Bridge Across Creek	100	8	0	7.0	1	4		10	1.3	Trucks
							6	12	6	Vehicles
Creek to Mt. Diablo Road	370	8	120	0.6	3	4		14	1.7	Trucks
							12	24	12	Vehicles
Mt. Diablo Rd. to Joint Pipe Alignment	220	8	80	0.6	7	4		21	2.6	Trucks
							13	26	13	Vehicles
(break in route=joint alignment)										
From Joint Pipe Alignment to Overflow Pipe	125	8	120	0.2	3	4		14	1.7	Trucks
							12	24	12	Vehicles
20" Overflow Line										
From Reservoir to Lafayette Reservoir	625	20	120	1.0	8	4		24	3.0	Trucks
							12	24	12	Vehicles
From Shore Line to Outlet Tower	540	20	200	0.5	0	4		8	1.0	Trucks
							6	12	6	Vehicles
							MAXIMUM ONE-WAY TRIPS PER DAY =	**33**		
Total off-hauled material (CY) = 1,376							**MAXIMUM ONE-WAY TRIPS PER HOUR =**		**4**	**Trucks**
									13	**Vehicles**

B-HIGHRES-2

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Highland Reservoir / Lafayette Reclaimed Water Pipelines

Assumptions:
1. Haul trucks include trench pavement and soil disposal as well as fill import deliveries. Haul truck average 9 cubic yards per loa
2. Material trucks trips per day include deliveries for: pipeline (1), appurtenance(1), paving(1) and equipment delivery (1
3. Worker vehicles consist (9) vehicles for crew, (1) contractor superintendent, (1) district inspector, (1) city inspector (on street), (1) visitor
4. The contractor would be able to install up to 120 feet of pipe each work day in unpaved areas and average about 80 feet per workday in paved area
Reduce to 60 feet/day for crossing roadways
5. Excavated soil to be hauled off site and replaced by aggregate base in the street. In unpaved areas, most soil will be stockpiled and re-use
except for imported pipe bedding material
6a. For pipeline in roadway : Work schedule M-F 8:30 am to 4:30 pm
6b. For pipeline on Lafayette Reservoir property : Work schedule M-F 7:00 am to 6:00 pm
7. One construction site along the alignment.
8a. 20" dia. pipeline trench width of 2.7 feet and average depth of 6.2 feet in paved and unpaved areas (42" min cover per ESP)
8" dia. pipeline trench width of 2 feet and average depth of 5.2 feet in unpaved areas. Reduce by 6" in stree
Combined trench width of 5.4 feet assumes special permission for spacing of 2.0 ft. between pipes & average depth 6.2 f
8b. Per lineal foot: 20" Pipe (in street) - 0.62 CY of trench spoils will be hauled off-site and 0.49 CY of new backfill will be importe
" " " 8" Pipe (in street) - 0.39 CY of trench spoils will be hauled off-site and 0.35 CY of new backfill will be importe
" " " Combined 20" & 8" Pipe (in street) - 1.24 CY of trench spoils hauled off-site and 1.05 CY new backfill importec
" " " 20" pipe (in new access Rd.) - 0.62 CY trench spoils; 0.30 CY stockpiled & resued and 0.32 CY off-hauled. 0.27 CY importe
8c. Per lineal foot: 20" Pipe (unpaved areas) - 0.62 CY trench spoils; 0.37 CY stockpiled & reused and 0.25 CY off-hauled. 0.17 CY import (bedding
" " " 8" Pipe (unpaved areas) - 0.39 CY trench spoils; 0.28 CY stockpiled & resued and 0.11 CY off-hauled. 0.10 CY import (bedding
" " " Combined 20" & 8" Pipe (unpaved) - 1.24 CY of trench spoils; 0.74 CY stockpiled & re-used and 0.5 CY off-hauled
Approx. 0.41 CY import (beddin
9. Doesn't show down time nor reflect total duratior

B-HIGHRES-2

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Leland Isolation Pipeline

B-LELPL-1

Construction Phase	Pipe length	Pipe diameter	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Lacassie Ave - N. California Blvd. to N. Main St.	700	24	2.8	8	4	13	51	3	Trucks
Total	700								
Total excavated material (CY) =	560								

Assumptions:
1. Trench width of 3.0 feet and an average trench depth of about 7 feet.
2. Haul trucks include trench pavement and soil disposal as well as fill import deliveries. Haul truck average 9 cubic yards per load.
3. Per lineal foot: 0.8 CY of pavement and trench spoils will be hauled off-site and 0.7 CY of new fill will be imported.
4. Material trucks trips per day include deliveries for: pipeline (1), appurtenance(1), paving(1) and equipment delivery (1) .
5. Worker vehicles consist (9) vehicles for crew, (1) contractor superintendent, (1) district inspector, (1) city inspector, (1) visitors.
6. The contractor would be able to install an average of about 50 feet of pipe each work day in paved areas.
7. Excavated soil to be hauled off site and replaced by aggregate base in the street.
8. Work schedule M-F 8:30 am to 4:30 pm.
9. One construction site along the alignment.
10. Doesn't show down time nor reflect total duration

B-LELPL-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Moraga Reservoir

B-MORRES-1

Construction Phase	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1	0	4	2	12	4	Trucks
						2	Vehicles
Excavation	8	84	0	5	178	24	Trucks
						5	Vehicles
Demolition	4	0	12	8	40	3	Trucks
						8	Vehicles
Reservoir foundation & floor slab	3	0	42	15	114	11	Trucks
						15	Vehicles
Reservoir walls	16	0	8	12	39	2	Trucks
						12	Vehicles
Reservoir roof	4	0	42	12	108	11	Trucks
						12	Trucks
Field Testing and Startup	6	0	1	6	14	1	Trucks
						6	Vehicles
Site restoration	2	0	4	4	16	4	Trucks
						4	Vehicles
Access Road	1	0	10	8	36	3	Trucks
						8	Vehicles
Demobilization	1	0	4	4	16	4	Trucks
						4	Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**178**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**24**	**Trucks**
						15	**Vehicles**

Assumptions:
1. Truck and vehicle trip are peak rates.
2. Haul trucks are for soil disposal and import of new fill.
3. Trucks average 9 cubic yards per load, one load every 5 minutes, with 7 hours production per day.
4. 12,700 CY of Cut and No Fill. 2,580 CY of demolition material
5. Material trucks are for forms, rebar, concrete, prestressing materials, paving, and equipment.
6. Concrete trucks average 9 cubic yards per load.
7. Worker vehicles consist of vehicles for trades, laborers, equipment operator, superintendent, foreman, district inspector
8. Work schedule: One shift, 8 hours, M-F between 7:00 am and 6:00 pm
9. Rates for reservoir floor slabs, walls, and roofs do not last the entire durations.
10. Reservoir construction peak rate durations: floor slabs -1 day, wall sections 2 weeks, roof-1day
11. Doesn't show down time nor reflect total duration

B-MORRES-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Moraga Road Pipeline

B-MORPL-1

Construction Phase	Pipe length	Pipe diameter	Production Rate (feet/day)	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Lafayette WTP to Moraga Road	5,840	36	120 40	9.7 *	15 17	4 4	13 13	65 68	5 13	Trucks Vehicles
Moraga Road (Nemea Ct to Sky-Hy Dr)	1,750	36	80	4.4	34	4	13	103	10 13	Trucks Vehicles
Moraga Road (Sky-Hy Dr to Rheem Blvd)	4,570	36	80	11.4	34	4	13	103	10 13	Trucks Vehicles
Moraga Road (through Rheem Blvd) *Jack and Bore*	400	36	40	2.0	17	4	13	68	5 13	Trucks Vehicles
Moraga Road (Rheem Blvd to Draeger Dr)	4,000	36	80	10.0	34	4	13	103	10 13	Trucks Vehicles
Bryant RCS from Bryant PZ to Leland PZ	800	48	80 40	2.0 *	15 22	4 4	13 13	64 78	5 13	Trucks Vehicles
Total	17,360									
							MAXIMUM ONE-WAY TRIPS PER DAY =	**103**		
Total excavated material (CY) = 27,722							**MAXIMUM ONE-WAY TRIPS PER HOUR =**		**10** **13**	**Trucks** **Vehicles**

*in Mount Diablo Boulevard

<u>Assumptions</u>:
1. Haul trucks include trench pavement and soil disposal as well as fill import deliveries. Haul truck average 9 cubic yards per load.
2. Material trucks trips per day include deliveries for: pipeline (1), appurtenance (1), paving (1) and equipment delivery (1).
3. Worker vehicles consist (9) vehicles for crew, (1) contractor superintendent, (1) district inspector, (1) city inspector, (1) visitors.
4. The contractor would be able to install up to 120 feet of pipe each work day in unpaved areas and average about 80 feet per workday in paved areas.
5. Excavated soil to be hauled off site and replaced by aggregate base in the street. In unpaved areas the soil will be stockpiled and replaced.

6a. For pipeline in roadway : Work schedule M-F 8:30 am to 4:30 pm
6b. For pipeline on Lafayette Reservoir property : Work schedule M-F 7:00 am to 6:00 pm
6c. For pipeline in Moraga Rd (Nemea to Sky-Hy): Maintain alternate one-way traffic flow past construction work zone.

7. One construction site along the alignment.

8a. 36" diameter pipeline trench width equals 4.9 feet and trench depth of 11.6 feet. 48" diameter pipeline width equals 5.9 feet.
8b. Per lineal foot: 36" Pipe (in street)- 2.1 CY of trench spoils will be hauled off-site and 1.76 CY of new backfill will be imported.
48" Pipe (in street)- 2.7 CY of trench spoils will be hauled off-site and 2.2 CY of new backfill will be imported.
8c. Per lineal foot: 36" Pipe (on Lafayette Reservoir Property)- 0.74 CY of trench spoils will be hauled off-site and 0.41 CY of new backfill will be imported.
48" Pipe (on Lafayette Reservoir Property)- 1.11 CY of trench spoils will be hauled off-site and 0.56 CY of new backfill will be imported.

9. Doesn't show down time nor reflect total duration

B-MORPL-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Sunnyside Pumping Plant

B-SUNPP-1

Construction Phase	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1	0	2	2	8	2 2	Trucks Vehicles
Site Work	2	0	0	5	10	0 5	Trucks Vehicles
Pumping Plant Construction (concrete foundation work)	2	0	7	10	34	2 10	Trucks Vehicles
Pumping Plant Construction	10	0	2	8	20	1 8	Trucks Vehicles
Landscaping	2	0	1	4	10	1 4	Trucks Vehicles
Demobilization	1	0	2	4	12	2 4	Trucks Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**34**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**2** **10**	**Trucks** **Vehicles**

Assumptions:
1. Material trucks for building material, piping, paving, and equipment delivery.
2. Concrete trucks average 9 cubic yards
3. Worker vehicles consist of vehicles for trades, laborers, equipment operator, superintendent, foreman, district inspector
4. Work schedule: One shift, 8 hours, M-F between 7:00 am and 6:00 pm
5. Doesn't show down time nor reflect total duration

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Tice Pumping Plant

B-TICEPP-1

Construction Phase	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1	0	2	2	8	2 2	Trucks Vehicles
Excavation/Site Work	2	28	10	5	66	10 5	Trucks Vehicles
Pumping Plant Construction (concrete work)	2	0	7	10	34	2 10	Trucks Vehicles
Pumping Plant Construction	10	0	2	8	20	1 8	Trucks Vehicles
Backfill	1	24	0	5	58	6 5	Trucks Trucks
Landscaping	2	0	1	4	10	1 4	Trucks Vehicles
Demobilization	1	0	2	4	12	2 4	Trucks Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**66**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**10** **10**	**Trucks** **Vehicles**

<u>Assumptions</u>:
1. Haul trucks for soil disposal and import of new fill.
2. Material trucks for building material, piping, paving, and equipment delivery.
3. Haul trucks average 9 cubic yards; Concrete trucks average 9 cubic yards
4. Worker vehicles consist of vehicles for trades, laborers, equipment operator, superintendent, foreman, district inspector
5. Work schedule: One shift, 8 hours, M-F between 7:00 am and 6:00 pm
6. Excavation is about 1,300 CY. Backfill is about 450 CY
7. Doesn't show down time nor reflect total duration

B-TICEPP-1

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Tice Pipeline

B-TICEPP-2

Construction Phase	Pipe length	Pipe diameter	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Boulevard Way									
Warren to Olympic Boulevard	2120	20	5.3	14	4	13	61	4	Trucks
								13	Vehicles
Olympic Boulevard									
Boulevard Way to Tice PP	600	20	1.5	14	4	13	61	4	Trucks
								13	Vehicles
	2720								
						MAXIMUM ONE-WAY TRIPS PER DAY =	**61**		
Total excavated material (CY) = 2,230						**MAXIMUM ONE-WAY TRIPS PER HOUR =**		**4**	**Trucks**
								13	**Vehicles**

Assumptions:
1. Trench width is approximately 3 feet and trench depth of 7.3 fee
2. Haul trucks include trench pavement and soil disposal as well as fill import deliveries. Haul truck average 9 cubic yards per load
3. Material trucks trips per day include deliveries for: pipeline (1), appurtenance(1), paving(1) and equipment delivery (1)
4. Worker vehicles consist (9) vehicles for crew, (1) contractor superintendent, (1) district inspector, (1) city inspector, (1) visitors
5. Work schedule M-F 8:30 am to 4:30 pm
6. 0ne construction site along the alignment.
7. Per lineal foot: 0.82 CY of pavement and trench spoils will be hauled off-site and 0.70 CY of new fill will be imported
8. The contractor would be able to install an average of about 80 feet of pipe each work day in paved areas
9. Excavated soil to be hauled off site and replaced by aggregate base in the street. In unpaved areas the soil will be stockpiled and replacec
10. Haul trucks average 9 CY; Concrete trucks average 9 CY;
11. Doesn't show down time nor reflect total duratior

WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM
Trip Generation Estimate - Withers Pumping Plant

B-WITHPP-1

Construction Phase	Approx. Duration (weeks)	Haul Trucks (per day)	Materials Trucks (per day)	Worker Vehicles (per day)	One-Way Trips (per day)	Max. One-Way Trips Per Hour	
Mobilization	1	0	2	2	8	2 2	Trucks Vehicles
Site Work	2	0	0	5	10	0 5	Trucks Vehicles
Retaining Wall Construction (concrete work and backfill)	4	42	7	10	118	12 10	Trucks Vehicles
Pumping Plant Construction (concrete work)	2	0	7	10	34	2 10	Trucks Vehicles
Pumping Plant Construction	10	0	2	8	20	1 8	Trucks Vehicles
Site Paving	2	0	4	6	20	4 6	Trucks Vehicles
Landscaping	2	0	1	4	10	1 4	Trucks Vehicles
Demobilization	1	0	2	4	12	2 4	Trucks Vehicles
MAXIMUM ONE-WAY TRIPS PER DAY =					**118**		
MAXIMUM ONE-WAY TRIPS PER HOUR =						**12** **10**	**Trucks** **Vehicles**

Assumptions:

1. Material trucks for building material, piping, paving, and equipment delivery.
2. Haul trucks are for soil disposal and import of new fill.
3. Excavation is about 780 CY. Backfill is about 260 CY
4. Haul trucks average 9 cubic yards per load, one load every 10 minutes with 7 hour production per day.
5. Concrete trucks average 9 cubic yards
6. Worker vehicles consist of vehicles for trades, laborers, equipment operator, superintendent, foreman, district inspector
7. Work schedule: One shift, 8 hours, M-F between 7:00 am and 6:00 pm
8. Doesn't show down time nor reflect total duration

B-WITHPP-1

APPENDIX C

Properties within 50 Feet of Centerline of Proposed Orinda-Lafayette Aqueduct – Tunnel Portion

APPENDIX C

Properties Within 50 Feet of Centerline of Proposed Orinda-Lafayette Aqueduct – Tunnel Portion

PROPERTY ADDRESS	ASSESSOR'S PARCEL NUMBER
Manzanita Drive	N/A
146 Manzanita Drive	263 090 023
140 Manzanita Drive	263 090 024
100' Right-of-Way Orinda Villa Park	N/A
38 Vista Del Mar Place	263 090 016
44 Vista Del Mar Place	263 090 017
41 Vista Del Mar Place	263 090 029
45 Vista Del Mar Place	263 120 034
49 Acacia Drive	263 120 017
51 Acacia Drive	263 120 018
39 Acacia Drive	263 120 020
43 Acacia Drive	263 120 019
53 Acacia Drive	263 120 016
55 Acacia Drive	263 120 015
56 Acacia Drive	263 131 020
59 Acacia Drive	263 120 014
77 Hacienda Circle	263 131 019
65 Hacienda Circle	263 131 010
66 Hacienda Circle	263 132 013
62 Hacienda Circle	263 132 012
58 Hacienda Circle	263 132 011
54 Hacienda Circle	263 132 010
100' Right-of-Way	N/A
Lot 703 (6')	Unknown
Lot 702 (1')	Unknown
140 Camino Don Miguel	263 141 009
147 Camino Don Miguel	263 142 012
151 Camino Don Miguel	263 142 011
Opp 160 Camino Don Miguel	263 142 023
160 Camino Don Miguel	263 143 009
164 Camino Don Miguel	263 143 003
165 Miner Road	263 160 005
2 Bien Venida	262 160 001
2 La Senda	262 142 007
21 La Noria	262 142 004
25 La Noria	262 142 003
27 La Noria	262 150 013
29 La Noria	262 150 002
33 La Noria	262 142 001
38 La Noria	262 122 016
30 La Noria	262 122 010
12' Path	N/A

PROPERTY ADDRESS	ASSESSOR'S PARCEL NUMBER
389 Camino Sobrante	262 122 013
390 Camino Sobrante	262 101 002
391 Camino Sobrante	262 122 015
43 Via Hermosa	262 102 004
39 Via Hermosa	262 102 001
35 Via Hermosa	262 093 008
31 Via Hermosa	262 093 009
40 Dos Posos	262 102 020
36 Dos Posos	262 102 018
32 Dos Posos	262 093 014
24 Dos Posos	262 093 015
16 Dos Posos	262 093 006
15 Dos Posos	262 091 023
11 Dos Posos	262 091 014
5 Dos Posos	262 091 016 & 015
12 Dos Posos	262 093 018
10' Path	N/A
228 Camino Sobrante	262 091 005
224 Camino Sobrante	262 091 004
220 Camino Sobrante	262 091 003
216 Camino Sobrante	262 091 002
Lake Cascades	262 300 003
208 Camino Sobrante	262 052 002
212 Camino Sobrante	262 052 003
19 Las Cascadas	262 052 010
14 Las Cascadas	262 051 008
18 Las Cascadas	262 051 009
22 Las Cascadas	262 051 010
26 Las Cascadas	262 051 023
6' Path	N/A
30 Las Cascadas	262 051 017
825 Ironbark Place	260 230 005
822 Ironbark Place	260 230 004
816 Ironbark Place	260 230 003
808 Ironbark Place	260 230 002
653 Ironbark Circle	260 221 025
659 Ironbark Circle	260 221 024
10' D E	Unknown
10' S E	Unknown
665 Ironbark Circle	260 221 023
671 Ironbark Circle	260 221 022
699 Ironbark Circle	260 221 017
694 Fox Run	260 240 011
684 Fox Run	260 240 027
674 FoxRun	260 240 009
664 Fox Run	260 240 008
650 Orindawoods Drive	260 300 007
4 Harran Circle	260 160 026
8 Harran Circle	262 160 003
5 Harran Circle	260 160 004
2 Altarinda Circle	260 160 008
8 Altarinda Circle	260 160 021
5' PG&E R/W	N/A
7 E Altarinda Drive	260 160 007
4 E Altarinda Drive	260 153 008
11 E Altarinda Drive	260 160 006
1 Altarinda Circle	260 160 022

APPENDIX D

Plans and Policies

TABLE D-1
CONTRA COSTA COUNTY – GENERAL PLAN POLICIES

Element		Policies
3 - Land Use		
Land Use Goals	3-A	To coordinate land use with circulation, development of other infrastructure facilities, and protection of agriculture and open space, and to allow growth and the maintenance of the County's quality of life. In such an environment all residential, commercial, industrial, recreational and agricultural activities may take place in safety, harmony, and to mutual advantage.
	3-C	To encourage aesthetically and functionally compatible development which reinforces the physical character and desired images of the County.
	3-27	Existing residential neighborhoods shall be protected from incompatible land uses and traffic levels exceeding adopted service standards.
5 - Transportation and Circulation		
Roadway and Transit Goals	5-C	To balance transportation and circulation needs with the desired character of the community.
	5-D	To maintain and improve air quality standards.
Roadway and Transit Policies	5-16	Emergency response vehicles shall be accommodated in development project design.
Scenic Routes Goals	5-R	To identify, preserve and enhance scenic routes in the County.
Scenic Routes Policies	5-35	Scenic corridors shall be maintained with the intent of protecting attractive natural qualities adjacent to various roads throughout the county
	5-37	Scenic views observable from scenic routes shall be conserved, enhanced, and protected to the extent possible.
	5-43	Provide special protection for natural topographic features, aesthetic views, vista, hills and prominent ridgelines at "gateway" sections of scenic routes. Such "gateways" are located at unique transition points in topography or land use, and serve as entrances to regions of the County.
	5-44	Aesthetic design flexibility of development projects within a scenic corridor shall be encouraged.
Scenic Routes Implementation Measures	5-ak	Develop and enforce guidelines for development along scenic routes to maintain the visual quality of those routes.
	5-am	Consider the visual qualities and character of the corridor in reviewing plans for new roads, road improvements, or other public projects. This should include width, alignment, grade, slope and curvatures of traffic islands and side paths, drainage facilities, additional setbacks, and landscaping.
7 - Public Facilities/Services		
Water Service Goals	7-F	To assure potable water availability in quantities sufficient to serve existing and future residents.
	7-G	To encourage the development of locally controlled supplies to meet the growth needs of the County.
	7-H	To encourage the conservation of water resources available to the County and to the State.
	7-I	To protect and enhance the quality of the water supplied to County residents.
Water Service Policies	7-16	Water service systems shall be required to meet regulatory standards for water delivery, water storage and emergency water supplies.
	7-17	Water service agencies shall be encouraged to establish service boundaries and to develop supplies and facilities to meet future water needs based on the growth policies contained in the County and cities' General Plans.

**TABLE D-1 (Continued)
CONTRA COSTA COUNTY – GENERAL PLAN POLICIES**

Element	Policies	
7 - Public Facilities/Services		
Water Service Policies (cont.)	7-18	Water service agencies should generally be discouraged from constructing new water distribution infrastructure which exceeds future water needs based on the buildout projections of the County General Plan and city general plans.
	7-22	Water service agencies shall be encouraged to meet all regulatory standards for water quality prior to approval of any new connections to that agency.
	7-24	Opportunities shall be identified and developed in cooperation with water service agencies for use of non-potable water, including ground water, reclaimed water, and untreated surface water, for other than domestic use.
	7-27	The reclamation of water shall be encouraged as a supplement to existing water supplies.
Water Service Implementation Measures	7-p	Encourage water service agencies to require separate service connections and meters where large quantities of water are used for special purposes such as landscape irrigation.
	7-q	Encourage water agencies to provide potable water containing not more than 50 ppm sodium and 65 ppm chloride.
Sewer Service Goals	7-35	Opportunities for using reclaimed wastewater shall be identified and developed in cooperation with sewer service and water service agencies.
Drainage and Flood Control Goals	7-O	To protect and enhance the natural resources associated with creeks and the Delta, and their riparian zones, without jeopardizing the public health, safety, and welfare.
	7-P	To protect creeks and riparian zones identified as valuable from damage caused by nearby development activity.
Public Protection Goals	7-V	To provide a high standard of police protection services for all citizens and properties throughout Contra Costa County.
Public Protection Policies	7-59	A maximum response time goal for priority 1 or 2 calls of five minutes for 90 percent of all emergency responses in central business district, urban and suburban areas, shall be strived for by the sheriff when making staffing and beat configuration decisions.
Fire Protection Goals	7-Y	To ensure a high standard of fire protection, emergency, and medical response services for all citizens and properties throughout Contra Costa county.
	7-Z	To reduce the severity of structural fires and minimize overall fire loss.
Fire Protection Policies	7-62	The County shall strive to reach a maximum running time of 3 minutes and/or 1.5 miles from the first-due station, and a minimum of 3 firefighters to be maintained in all central business district (CBD), urban and suburban areas. (These areas are defined in Section 4).
	7-63	The County shall strive to achieve a total response time (dispatch plus running and set-up time) of five minutes in CBD, urban and suburban areas for 90 percent of all emergency responses.
	7-80	Wildland fire prevention activities and programs such as controlled burning, fuel removal, establishment of fire roads, fuel breaks and water supply, shall be encouraged to reduce wildland fire hazards.
Fire Protection Implementation Measures	7-au	Fire protection agencies shall be afforded the opportunity to review projects and submit conditions of project approval for consideration to determine whether: there is an adequate water supply for fire fighting; road widths, road grades and turnaround radii are adequate for emergency equipment; and structures are built to the standards of the Uniform Building Code, the Uniform Fire Code, other State regulations, and local ordinances regarding the use of fire-retardant material and detection, warning and extinguishment devices.

TABLE D-1 (Continued)
CONTRA COSTA COUNTY – GENERAL PLAN POLICIES

Element		Policies
7 - Public Facilities/Services (cont.)		
Solid Waste Management Goals	7-AG	To reduce the amount of waste disposed of in landfills by: 1) reducing the amount of solid waste generated (waste reduction); 2) reusing and recycling as much of the solid waste as possible; 3) utilizing the energy and nutrient value of the solid waste (waste to energy composting); and 4) properly disposing of the remaining solid waste (landfill disposal).
	7-H	To divert as much waste as feasible from landfills through recovery and recycling.
Solid Waste Management Policies	7-99	Solid waste hauling, with the exception of residential waste collection trucks, on collectors and local streets through residential areas should be avoided
Hazardous Waste Management Goals	7-AM	To eliminate the generation and disposal of hazardous waste materials to the maximum extent feasible, by: 1) reducing the use of hazardous substances and generation of hazardous waste at their source; 2) recovering and recycling the remaining waste for reuse; 3) treating those wastes not amenable to source reduction or recycling so that the environment and community health are not threatened by their ultimate disposal; 4) incinerating those wastes amenable to this technology; and 5) properly disposing of treated residuals in approved residual repositories.
8 - Conservation		
Overall Conservation Policies	8-1	Resource utilization and development shall be planned within a framework of maintaining a healthy and attractive environment.
	8-3	Watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.
	8-4	Areas designated for open space/agricultural uses shall not be considered as a reserve for urban uses and the 65 percent standard for non-urban uses must not be violated.
Agricultural Resources Goals	8-I	To minimize conflicts between agricultural and urban uses.
Agricultural Resources Policies	8-31	Urban development in the future shall take place within the Urban Limit Line and areas designated by this plan for urban growth.
Soil Resources Goals	8-P	To encourage the conservation of soil resources to protect their long-term productivity and economic value.
	8-Q	To promote and encourage soil management practices that maintain the productivity of soil resources.
Soils Resources Policies	8-63	Erosion control procedures shall be established and enforced for all private and public construction and grading projects.
	8-67	Lands having a prevailing slope above 26 percent shall require adequate special erosion control and construction techniques.
	8-68	Lands having a high erosion potential as identified in the Soil Survey shall require adequate erosion control methods for agricultural and other uses.
Soils Resources Implementation Measures	8-cd	Include erosion control measures for any discretionary project involving construction of grading near waterways or on lands with slopes exceeding 10 percent.
	8-cf	Require a soil conservation program to reduce soil erosion impacts for discretionary projects which could increase waterway or hillside erosion. Design improvements such as roads and driveways to retain natural vegetation and topography to the extent feasible.
Water Resources Goals	8-T	To conserve, enhance and manage water resources, protect their quality, and assure an adequate long-term supply of water for domestic, fishing, industrial and agricultural uses.

TABLE D-1 (Continued)
CONTRA COSTA COUNTY – GENERAL PLAN POLICIES

Element	Policies	
8 – Conservation (cont.)		
Water Resources Goals (cont.)	8-U	To maintain the ecology and hydrology of creeks and streams and provide an amenity to the public, while at the same time preventing flooding, erosion and danger to life and property.
	8-V	Preserve and restore natural waterways
General Water Resources Policies	8-74	Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.
	8-75	Preserve and enhance the quality of surface and groundwater resources.
	8-78	Where feasible, existing natural waterways shall be protected and preserved in their natural state, and channels which already are modified shall be restored. A natural waterway is defined as a waterway which can support its own environment of vegetation, fowl, fish and reptiles, and which appears natural.
	8-80	Wherever possible, remaining natural watercourses and their riparian zones shall be restored to improve their function as habitats.
	8-81	Fisheries in the streams within the County shall be preserved and re-established wherever possible.
Air Resources Goals	8-AA	To meet Federal Air Quality Standards for all air pollutants.
	8-AB	To continue to support Federal, State and regional efforts to reduce air pollution in order to protect human and environmental health.
Air Resources Policies	8-103	When there is a finding that a proposed project might significantly affect air quality, appropriate mitigation measures shall be imposed.
	8-104	Proposed projects shall be reviewed for their potential to generate hazardous air pollutants.
	8-105	Land uses which are sensitive to air pollution shall be separated from sources of air pollution.
9 - Open Space Element		
Overall Open Space Goals	9-A	To preserve and protect the ecological, scenic, and cultural/historic, and recreational resource lands of the County.
Overall Open Space Policies	9-2	Historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.
Scenic Resources Goals	9-D	Preserve and protect areas of identified high-scenic value, where practical, and in accordance with the Land Use Element map.
	9-E	Protect major scenic ridges, to the extent practical, from structures, roadways, or other activities which would harm their scenic qualities.
Scenic Resources Policies	9-12	In order to protect the scenic beauty of the County, developers shall generally be required to restore the natural contours and vegetation of the land after grading and other land disturbances. Public and private projects shall be designed to minimize damages to significant trees and other visual landmarks.
	9-15	In areas along major scenic ridges which are designated for open space use, the principals outlined in 9-19 through 9-26 shall apply.
	9-16	New water tanks that would harm the visual quality of a scenic ridge shall be buried, camouflaged or screened to mitigate their impacts.
	9-18	The construction of new structures on the top of major scenic ridges or within 50 feet of the ridgeline shall be discouraged.
	9-19	When development is permitted to occur on hillsides, structures shall be located in a manner which is sensitive to available natural resources and constraints.

TABLE D-1 (Continued)
CONTRA COSTA COUNTY – GENERAL PLAN POLICIES

Element		Policies
9 - Open Space Element (cont.)		
Scenic Resources Policies (cont.)	9-21	Any new development shall be encouraged to generally conform with natural contours to avoid excessive grading.
	9-22	All new land uses which are to be located below a major scenic ridge shall be reviewed with an emphasis on protecting the visual qualities of the ridge.
	9-24	The appearance of the County shall be improved by eliminating negative features such as non-conforming signs and overhead utility lines, and by encouraging aesthetically designed facilities with adequate setbacks and landscaping.
	9-27	Physical and visual public access to established scenic routes shall be protected.
Scenic Resource Implementation Measures	9-b	Carefully study and review and development projects which would have the potential to degrade the scenic qualities of major significant ridges in the County or the bay and delta shoreline.
	9-d	Where possible, structures shall not be built on top of any designated scenic ridgeline.
Historic and Cultural Resource Goals	9-32	Areas which have identifiable and important archaeological or historic significance shall be preserved for such uses, preferably in public ownership.
	9-34	Development surrounding areas of historic significance shall have compatible and high quality design in order to protect and enhance the historic quality of the area.
Parks and Recreation Facilities Policies	9-40	Major park lands shall be reserved to ensure that the present and future needs of the County's residents will be met and to preserve areas of natural beauty or historical interest for future generations. Apply the parks and recreation performance standards in the Growth Management Element.
	9-43	Regional-scale public access to scenic areas on the waterfront shall be protected and developed, and water-related recreation, such as fishing, boating, and picnicking, shall be provided.
Park and Recreation Facilities Implementation Measures	9-v	Develop a comprehensive and interconnected series of hiking, biking and riding trails in conjunction with cities, special districts, public utilities and county service areas.
10 - Safety Element		
Seismic Hazard Policies	10-4	In areas prone to severe levels of damage from ground shaking (i.e., Zone IV on Map 10-4), where the risks to life and investments are sufficiently high, geologic-seismic and soils studies shall be required as a precondition for authorizing public or private construction.
	10-5	Staff review of applications for development permits and other entitlements, and review of applications to other agencies which are referred to the County, shall include appropriate recommendations for seismic strengthening and detailing to meet the latest adopted seismic design criteria.
	10-6	Structures for human occupancy, and structures and facilities whose loss would substantially affect the public safety or the provision of needed services, shall not be erected in areas where there is a high risk of severe damage in the event of an earthquake.
	10-7	The County should encourage cooperation between neighboring government agencies and public and private organizations to give appropriate attention to seismic hazards to increase the effectiveness of singular and mutual efforts to increase seismic safety.
	10-12	Prohibit construction of structures for human occupancy, and structures whose loss would affect the public safety or the provision of needed services, over the trace of an active fault.
	10-13	In areas where active or inactive earthquake faults have been identified, the location and/or design of any proposed buildings, facilities, or other development shall be modified to mitigate possible danger from fault rupture or creep.

TABLE D-1 (Continued)
CONTRA COSTA COUNTY – GENERAL PLAN POLICIES

Element	Policies	
10 - Safety Element (cont.)		
Seismic Hazard Policies (cont.)	10-14	Preparation of a geologic report shall be required as a prerequisite before authorization of public capital expenditures or private development projects in areas of known or suspected faulting.
	10-15	To the extent practicable, the construction of structures requiring a high degree of safety and other critical structures shall not be allowed in an active or potentially active fault zone.
	10-16	When such a critical structure must be located in a fault zone, the structure shall be carefully sited, designed and constructed to withstand the anticipated earthquake stresses.
	10-18	This General Plan shall discourage urban or suburban development in areas susceptible to high liquefaction dangers and where appropriate subject to the policies in 10-20 below, unless satisfactory mitigation measures can be provided, while recognizing that there are low intensity uses such as water-related recreation and agricultural uses that are appropriate in such areas. (For the Bethel Island Area, the adopted specific plan policies will apply.)
	10-19	To the extent practicable, the construction of critical facilities, structures involving high occupancies, and public facilities shall not be sited in areas identified as having a high liquefaction potential, or in areas underlain by deposits classified as having a high liquefaction potential.
	10-20	Any structures permitted in areas of high liquefaction danger shall be sited, designed and constructed to minimize the dangers from damage due to earthquake-induced liquefaction.
	10-21	Approvals to allow the construction of public and private development projects in areas of high liquefaction potential shall be contingent on geologic and engineering studies which define and delineate potentially hazardous geologic and/or soils conditions, recommend means of mitigating these adverse conditions; and on proper implementation of the mitigation measures.
Seismic Hazard Implementation Measures	10-c	Require comprehensive geologic and engineering studies for any critical structure, whether or not it is located within a Special Studies Zone.
	10-d	Through the environmental review process, require geologic, seismic, and/or soils studies as necessary to evaluate proposed development in areas subject to groundshaking, fault displacement, or liquefaction.
	10-e	Evaluate and, where necessary, upgrade water distribution, sewage disposal, gas and electricity, communications and other service facilities in areas subject to seismic hazards.
Ground Failure and Landslide Hazard Goals	10-E	To minimize the risk of loss of life or injury due to landslides, both ordinary and seismically-induced.
Ground Failure and Landslide Hazard Policies	10-22	Slope stability shall be a primary consideration in the ability of land to be developed or designated for urban uses.
	10-23	Slope stability shall be given careful scrutiny in the design of developments and structures, and in the adoption of conditions of approval and required mitigation measures.
	10-24	Proposed extensions of urban or suburban land uses into areas characterized by slopes over 15 percent and/or generally unstable land shall be evaluated with regard to the safety hazard prior to the issuance of any discretionary approvals. Development on very steep open hillsides and significant ridgelines throughout the County shall be restricted, and hillsides with a grade of 26 percent or greater shall be protected through implementing zoning measures and other appropriate actions.
	10-26	Approvals of public and private development projects in areas subject to slope failures shall be contingent on geologic and engineering studies which define and delineate potentially hazardous conditions and recommend adequate mitigation.

TABLE D-1 (Continued)
CONTRA COSTA COUNTY – GENERAL PLAN POLICIES

Element	Policies	
10 - Safety Element (cont.)		
Ground Failure and Landslide Hazard Policies (cont.)	10-27	Soil and geologic reports shall be subject to the review and approval of the County Planning Geologist.
	10-29	Significant very steep hillsides shall be considered unsuitable for types of development which require extensive grading of other land disturbance.
	10-30	Development shall be precluded in areas when landslides cannot adequate be repaired.
Flood Hazard Goals	10-G	To ensure public safety by directing development away from areas which may pose a risk to life from flooding, and to mitigate flood risks to property.
General Policies	10-33	The areas designated on Figure 10-8 shall be considered inappropriate for conventional urban development due to unmitigated flood hazards as defined by FEMA. Applications for development at urban or suburban densities in areas where there is a serious risk to life shall demonstrate appropriate solutions or be denied.
	10-34	In mainland areas affected by creeks, development within the 100-year flood plain shall be limited until a flood management plan can be adopted, which may include regional and local facilities if needed. The riparian habitat shall be protected by providing a cross section of channel suitable to carry the 100-year flow. Flood management shall be accomplished within the guidelines contained in the Open Space/Conservation Element.
Flood Hazard Policies	10-58	Dams and levees should be designed to withstand the forces of anticipated (design) earthquakes at their locations.
	10-59	Important dams and coastal levees shall be regarded as critical facilities that should not be sited over the trace of an active or potentially active fault.
Flood Hazard Implementation Measures	10-s	Revise the creek setback ordinance for residential and commercial structures in order to prevent property damages from bank failure along natural water courses.
Hazardous Materials Goals	10-I	To provide public protection from hazards associated with the use, transport, treatment and disposal of hazardous substances.
Hazardous Materials Policies	10-61	Hazardous waste releases from both private companies and from public agencies shall be identified and eliminated.
Water Supply Goals	10-J	To ensure a continuous supply of safe water to county residents.
	10-K	To protect the quality, quantity, and productivity of water resources as vital resources for maintaining the public, ecological and economic health of the region.
	10-L	The safety of valuable underground water supplies for present and future users shall be ensured by preventing contamination.
Water Supply Policies	10-71	The County shall support local, regional, State, and Federal government efforts to improve water quality.
	10-72	The County shall support water quality standards adequate to protect public health in importing areas as a priority at least equal in status to support of Bay/Delta estuary water standards.
	10-73	Point sources of pollution shall be identified and controlled to protect adopted beneficial uses of water.
	10-74	Public ownership of lands bordering reservoirs shall be encouraged to safeguard water quality.
	10-81	New water storage reservoirs shall be encouraged in appropriate locations subject to adequate mitigation of environmental impacts.
Water Supply Implementation Measures	10-al	Encourage all water districts in their efforts to provide water supply safety for emergency and disaster uses by the most practicable means.
Public Protection Services and Disaster Planning Implementation Measures	10-as	Require projects which encroach into areas which are determined to have a high or extreme fire hazard, or which incorporate wildfire hazard areas, to be reviewed by the appropriate Fire Bureau to determine if special fire prevention measures are advisable.

TABLE D-1 (Continued)
CONTRA COSTA COUNTY – GENERAL PLAN POLICIES

Element		Policies
11- Noise Element		
Goals	11-B	To maintain appropriate noise conditions in all areas of the County.
	11-C	To ensure that new developments will be constructed so as to limit the effects of exterior noise on the residents.
Policies	11-1	New projects shall be required to meet acceptable exterior noise level standards as established in the Noise and Land Use Compatibility Guidelines contained in Figure 11-6. These guidelines, along with the future noise levels shown in the future noise contours maps, should be used by the county as a guide for evaluating the compatibility of “noise sensitive” projects in potentially noisy areas.
	11-2	The standard for outdoor noise levels in residential areas is a DNL of 60 dB. However, a DNL of 60 dB or less may not be achievable in all residential areas due to economic or aesthetic constraints. One example is small balconies associated with multi-family housing. In this case, second and third story balconies may be difficult to control to the goal. A common outdoor use area that meets the goal can be provided as an alternative.
	11-7	Public projects shall be designed and constructed to minimize long-term noise impacts on existing residents.
	11-8	Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.
	11-11	Noise impacts upon the natural environment, including impacts on wildlife, shall be evaluated and considered in review of development projects.
Implementation Measures	11-e	Noise mitigation features shall be incorporated into the design and construction of new projects or be required as conditions of project approval.

SOURCE: Contra Costa General Plan 2005-2020, 2005.

TABLE D-2
CITY OF LAFAYETTE – GENERAL PLAN POLICIES

Element	Goals/Policies	
I- Land Use		
Residential Neighborhood Goals	LU-2	Ensure that development respects the natural environment of Lafayette. Preserve the scenic quality of ridgelines, hills, creek areas, and trees.
	LU-5	Preserve and enhance the open space, scenic viewsheds, and semi-rural qualities around the residential entryways to Lafayette.
Public Facilities Goals	LU-15	Construct capital improvement projects in a manner harmonious with the character of surrounding areas.
	LU-16	Ensure that public utilities and telecommunications facilities are constructed in a visually unobtrusive manner.
Growth Management and Infrastructure Goals	LU-18	Coordinate with other jurisdictions to protect and restore environmental resources and to provide public services.
Cultural Resources Goals	LU-22	Preserve archaeological and historic resources
Public Facilities Policies	LU-15.1	Review Capital and Public Improvements: Review capital and public improvements to ensure that they are designed and built in a manner sensitive to the surrounding area.
	LU-15.2	Inter-Agency Coordination: Work with agencies who carry out capital improvements in the City to ensure that they are aware of, and comply with, the City's aesthetic standards and review procedures
Interjurisdictional Coordination Policies	LU-18.1	Interjurisdictional Participation: Participate in interjurisdictional planning. Program LU-18.1.1: Consider the regional implications of land use decisions when reviewing development proposals and revisions to the Zoning Ordinance or the General Plan. Program LU-18.1.2: Work with other public entities to ensure that development in their jurisdictions does not adversely impact Lafayette's ability to achieve its General Plan goals.
Growth Management and Infrastructure Policies	LU-18.2	Coordination of Public Services: Coordinate water supply, flood control, wastewater and solid waste disposal, soil conservation, and open space preservation with other jurisdictions to create the greatest public benefit and the least degree of environmental impact. Program LU-18.2.1: Periodically review level of service standards with the districts providing water supply, flood control, wastewater and solid waste disposal, soil conservation, and open space preservation.
	LU-20.7	Water: Coordinate planning with the East Bay Municipal Utility District (EBMUD) to ensure the availability of an adequate potable water supply to meet the needs of the future population. The standard for development review shall be the capacity to provide sufficient water to all residents and businesses in the City, as indicated by EBMUD. Program LU-20.7.1: Ensure that service agreements are in place that establish a level of service in accordance with this Plan and the EBMUD where development is proposed on lots that do not have principal frontage on an existing water main.
LU – Cultural Resources Policies	LU-22.1	Preserve Archaeological Resources: Protect archaeological resources. Program LU-22.1.1: Require that areas found to contain significant historic or prehistoric artifacts be examined by a qualified consulting archaeologist. Program LU-22.1.2: Continue to refer projects to Sonoma State University's Northwest Archaeological Resource Center. Program LU-22.1.6: When a site has been identified as having value as an archaeological resource, development shall be situated or designed to avoid impact on archaeological resources. This may be accomplished in any of the following ways: a. Siting improvements to completely avoid the archaeological site. b. Incorporating the site into a park or dedicated open space, or by deeding the site into a permanent conservation easement. c. "Capping" the site (i.e. covering the site with a layer of undisturbed soil) may be appropriate after the site has been thoroughly studied by a professional archaeologist and a report written on the resources found on the site.

TABLE D-2 (Continued)
CITY OF LAFAYETTE – GENERAL PLAN POLICIES

Element		Goals/Policies
I- Land Use (cont.)		
LU – Cultural Resources Policies (cont.)	LU-22.1 (cont.)	In the event that the site cannot be feasibly developed by avoidance of the resource, it can be developed if the site is completely studied by a professional archaeologist and that archaeologist determines that the site is not unique. The archaeologist will prepare a complete report on the site and its resources prior to any development being allowed. Program LU-22.1.7: In the event archaeological resources are uncovered on any construction project in the City, all work must be halted and an evaluation undertaken by a qualified archaeologist.
	LU-22.2	Historic Buildings, Sites, and Districts: Identify, recognize, and protect sites, buildings, structures, and districts with significant cultural, aesthetic, and social characteristics that are part of Lafayette's heritage.
II- Circulation		
Circulation Goals	C-2	Regulate traffic so as to preserve the peace and quiet of residential areas. Through-traffic tends to take the route of least resistance, often resulting in a high through volume of traffic taking residential streets located adjacent to busy traffic corridors. It is essential that through traffic on local streets be discouraged to protect the quality of life and safety of residential neighborhoods located adjacent to heavily-traveled corridors.
	C-5	Preserve and enhance the scenic quality of Lafayette's roads.
Circulation Policies	C-2.1	Manage Traffic Flow: Discourage diversion of through-traffic onto local streets.
III- Open Space and Conservation		
Open Space Goals	OS-1	Preserve areas of visual prominence and special ecological significance as Open Space.
	OS-3	Maintain the semi-rural character and beauty of the city by preserving its open and uncluttered natural topographic features.
	OS-4	Preserve areas with important biotic resources.
	OS-5	Preserve and protect creeks, streams, and other watercourses in their natural state. Streams, creeks and other riparian areas are considered to be in a natural state when they support their own environment of vegetation and wildlife and have not been concreted or otherwise channeled.
	OS-6	Improve water quality in watercourses.
	OS-7	Protect and preserve soil as a natural resource.
	OS-10	Improve air quality.
	OS-11	Reduce the consumption of non-renewable energy resources.
Open Space Policies	OS-1.1	Protection of Major Ridgelines. Preserve Major Ridgelines in their natural state as scenic resources and wildlife corridors. Program OS-1.1.1: Require a setback from the centerline of Major Ridgelines for all development including roads, grading, fencing, and introduced vegetation other than indigenous native vegetation, wherever feasible. The centerline of a ridge is the line running along the highest portion of the ridge. Program OS-1.1.2: Limit the height of structures near major ridgelines to a plane sloping downward at a 15-degree declination from the ridge.
	OS-1.2	Ridgeline Protection. Protect all ridgelines consistent with their function as scenic resources for the community and as wildlife corridors.
	OS-1.3	Conserve a Variety of Open Space Features: Protect areas of special ecological significance, including ridges, hillsides, woodlands, wildlife corridors, riparian areas, steep slopes, prominent knolls, swales, and rock outcroppings.
	OS-1.4	Specific Open Space Use Criteria: Leave in or restore open space areas to their natural state. Limit uses to those with minimal environmental impact.
	OS-1.5	Open Space for Wildlife Habitat: Preserve, protect, and where necessary, restore open space for wildlife habitat to assure the continued viability and health of diverse, natural animal and plant communities

TABLE D-2 (Continued)
CITY OF LAFAYETTE – GENERAL PLAN POLICIES

Element	Goals/Policies	
III- Open Space and Conservation (cont.)		
Open Space Policies (cont.)	OS-1.6	Continuous Open Spaces: Assemble open space areas from contiguous parcels to provide continuous scenic and wildlife corridors wherever feasible.
	OS-1.7	Open Space for Wildlife Corridors: Assure that adequate open space is provided to permit effective wildlife corridors for animal movement between open space areas, along watercourses, and on ridges.
	OS-3.1	Protect natural features of the lands: The character and natural features of hills, steep slopes, riparian areas, woodlands, and open areas will be preserved in as natural a condition as feasible. Program OS-3.1.1: Ensure that grading does not detract from the natural forms of hillsides and that development retains the ecological characteristics of the site. This includes prominent geological features, individual trees, woodland, riparian vegetation, rock outcroppings, streams, ponds, drainage swales, and other natural features. Minimize the disturbance or removal of vegetation. Program OS-3.1.2: Limit the scarring and cutting of hillsides caused by grading, especially for long roads and driveways.
	OS-3.2	Preserve the predominant views of the hill areas: Require that structures in identified environmentally sensitive areas be substantially concealed by existing vegetation or terrain when viewed from lower elevations, to the maximum extent feasible. Program OS-3.2.1: Require structures in identified environmentally sensitive areas be located away from prominent locations such as hilltops, knolls and open slopes, wherever feasible.
	OS 4.1	Riparian Vegetation: Preserve, protect, and restore riparian habitat, particularly the native, riparian woodland species and associated understory plants. Program OS-4.1.1: Maintain creek setbacks required in the zoning code for all structures along the City's watercourses. Program OS-4.1.2: Review development proposals for opportunities to require revegetation of riparian areas with plants indigenous to local riparian area. Emphasize plants that have habitat value.
	OS-4.2	Ridgelines: Protect native vegetation along ridgelines. Program OS-4.2.1: Require new planting to be predominantly native species indigenous to the area and appropriate to the immediate plant community, (grassland, chaparral, and oak woodland), within ridgeline protection areas.
	OS-4.3	Woodlands: Preserve existing woodlands and their associated vegetation. Program OS-4.3.2: Require replacement and maintenance of native trees and/or woodland areas when a project results in the loss of woodland habitat. Replace trees accidentally damaged or removed during construction with trees substantially larger than normally required. Program OS-4.3.3: Consider establishing an in-lieu mitigation program to allow off-site replacement of trees damaged or removed for development.
	OS-4.4	The Developed Landscape: Protect important groves of trees and significant existing vegetation. Encourage the planting of native, drought-tolerant and fire-resistant species, as well as the planting of herbaceous species that have a high wildlife value. Avoid the cutting of mature trees. Program OS-4.4.1: Require that site planning, construction and maintenance of new development preserve existing healthy trees and native vegetation to the maximum extent feasible. Program OS-4.4.2: Continue to use *Trees for Lafayette* by Russell Beatty as a guide to principles of planting in Lafayette and as a guide to appropriate tree species. Update and reprint the booklet. Program OS-4.4.3: Emphasize the use of native plants in the public landscape and right-of-way, where appropriate.
	OS-4.5	Biotic Resource Analysis: Require a biotic resource analysis prior to development of properties located within, or adjacent to, identified environmentally sensitive areas.
	OS-5.1	Stream bank stability: Protect stream bank stability.

TABLE D-2 (Continued)
CITY OF LAFAYETTE – GENERAL PLAN POLICIES

Element		Goals/Policies
III- Open Space and Conservation (cont.)		
Open Space Policies (cont.)	OS-6.1	Reduce Watercourse Pollution: Minimize pollutants in storm water runoff. Program OS-6.1.1: Enforce the Municipal Code prohibiting: (1) the discharge of any substances other than storm water into storm drains and creeks, (2) illicit dumping of wastes into storm drains and creeks, and (3) the dumping of debris and refuse in and near waterways and their riparian areas. Program OS-6.1.2: Consider adopting the erosion and sedimentation controls described in ABAG's *Manual of Standards for Erosion and Sediment Control*, published in June 1995. Program OS-6.1.3: Require that new development provide for source control and reduction of pollutants in conformance with the City's *Stormwater Management Program* and other National Pollutant Discharge Elimination System (NPDES) criteria. Program OS-6.1.4: Require that new development implement measures to control soil erosion and minimize runoff into creeks. As part of project review, include mitigation measures to reduce the potential pollutants in runoff.
	OS-7.1	Control Soil Erosion: Control soil erosion to prevent flooding and landslides, maintain water quality, and reduce public costs of flood control and watercourse maintenance. Program OS-7.1.1: Continue to require grading permits for new construction as a part of the development review process. Require soil erosion measures and a revegetation plan.
	OS-7.2	Reduce Soil Contamination: Reduce soil contamination from chemicals through careful regulation of the storage, transportation and use of chemicals.
	OS-10.2	Air Quality Standards: Seek to comply with State and Federal standards for air quality.
	OS-11.1	Energy Conservation Measures in Buildings: Encourage energy conservation in new development and the retrofit of existing structures.
IV- Parks and Recreation		
Parks and Recreation Policies	P-3.1	Complete the Trail System: Complete the trail system as shown on the *Lafayette Master Trails Plan* on file at the City offices and the Parks and Recreation Department. Program P-3.1.1: Work with the East Bay Regional Parks District (EBRPD), East Bay Municipal Utility District (EBMUD), Contra Costa County, adjacent cities, regional trail groups and other public agencies on trail planning issues. Program P-3.1.4: Where development is proposed on a parcel that includes a planned or proposed trail as shown on the *Lafayette Master Trails Plan*, the applicant shall be required to provide an easement or dedicate public right-of-way that can be used to construct a public trail per the *Lafayette Master Trails Plan*.
VI- Safety		
Safety Goals	S-1	Minimize risks to Lafayette residents and property from landslides and other geologic hazards. Program S.1.1 Slope and Soil Stability. Consider slope and soil stability when reviewing future projects. Development proposals in areas with landslide hazards shall be reviewed by an engineering geologist to determine whether the proposed development is feasible, and to define the required construction standards and mitigation measures. Program S-1.1.1: Require submittal and review of a site-specific geotechnical report for proposed development in areas identified on Map VI-1 as “Liquefaction potential possibly present” or on Map VI-2 as “Area of known slides and ground highly susceptible to sliding.” Development shall be supervised and certified by a geotechnical engineer, and where necessary, by an engineering geologist. Program S-1.1.2: Require financial protection for public agencies and individuals as a condition of development approval where geological conditions indicate a potential for ongoing maintenance costs related to the geological conditions. Program S-1.1.3: Require repair, stabilization, or avoidance of landslides, of areas of soil creep, and of possible debris flow as a condition of project approval. Program S-1.1.4: Require professional inspection of foundation and excavation, earthwork and other geotechnical aspects of site development during construction on those sites identified as being prone to moderate levels of slope instability.

TABLE D-2 (Continued)
CITY OF LAFAYETTE – GENERAL PLAN POLICIES

Element	Goals/Policies	
VI- Safety (cont.)		
Safety Policies (cont.)	S-1.2	Density and Location of Buildings: Limit building in areas with significant risk potential. Intensity of development shall be minimal in areas of high risk. Consider potential seismic or geologic hazards when determining building density and in siting dwellings.
	S-1.4	Creekbank Protection: Prohibit structures of any kind that might be impacted by creekbank slippage and erosion.
Seismic Hazard Goal	S-2	Minimize risks to Lafayette residents and property from earthquakes.
Seismic Hazard Policies	S-2.1	Seismic Hazards: New development, including subdivisions, new construction, and remodels or expansions of existing structures, shall minimize exposure to seismic hazards through site planning and building design.
	S-2.2	Areas of Significant Risk Potential: Locate construction of high density residential and other critical, high-occupancy or essential services buildings outside high risk zones.
Flood Hazard Goal	S-3	Reduce flood hazards.
Flood Hazard Policy	S-3.5	Building Location: Consider potential flood hazards when siting a building. Intensity of development shall be the lowest in areas of high risk.
Fire Hazard Goal	S-4	Minimize risks to Lafayette residents and property from fire hazards.
Fire Hazard Policies	S-4.1	Adequate Fire Protection: Enforce regulations and standards which contribute to adequate fire protection. Program S-4.1.1: Improve access and response time of emergency response vehicles. Program S-4.1.4 Restrict parking on narrow roads to allow access by emergency vehicles and to facilitate evacuation. Program S-4.1.6: Work with East Bay Municipal Utility District and the Contra Costa County Fire Protection District to ensure that there exists sufficient water flow in fire hydrants throughout Lafayette.
	S-4.2	Reducing Fire Risk From Development: Take measures to reduce fire risks from new and existing development as well as natural fire hazards. Program S-4.2.3: Encourage the East Bay Regional Parks District and the East Bay Municipal Utilities District to undertake vegetation management programs to reduce fire hazards on their properties. Program S-4.2.6: Establish buffer areas for buildings in high fire risk areas. Buffers can include site planning techniques, vegetation management plans and defensible space. Policy S-4.5 Vegetation Management Plan: Require development in a high fire risk area to have an approved vegetation management plan that includes native, drought tolerant, and fire resistant species.
Hazardous Materials Goal	S-5	Reduce the hazards of the storage, transportation and disposal of hazardous materials.
Police Services Goal	S-7	Maintain effective police services.
Police Services Policy	S-7.3	Response Time Standards: Strive to maintain a three-minute response time for all life-threatening calls and those involving criminal misconduct, and a seven minute response time for the majority of non-emergency calls.
Emergency Preparedness Goal	S-8	Provide adequate response and support services in the event of a major emergency or natural disaster.
Emergency Preparedness Policies	S-8.1	Program S-8.1.3: Maintain designated emergency evacuation routes in a passable condition at all times, as feasible.
	S-8.5	Program S-8.5.1: Maintain an emergency evacuation routes system. Consider establishing evacuation route standards, such as road widths. Program S-8.5.3: Maintain designated evacuation routes in a passable condition at all times, as feasible.

TABLE D-2 (Continued)
CITY OF LAFAYETTE – GENERAL PLAN POLICIES

Element		Goals/Policies
VII-Noise		
Noise Goal	N-1	Ensure that all new development is consistent with the standards for noise.
Noise Policies	N-1.1	General Noise Levels: The maximum allowable noise levels are established in this Chapter (see Fig. 1 Noise and Land Use Compatibility Standards)
	N-1.2	Reduce Noise Impacts: Avoid or reduce noise impacts first through site planning and project design. Barriers and structural changes may be used as mitigation techniques only when planning and design prove insufficient.
	N-1.3	Noise and Land Use Compatibility Standards: Ensure that all new noise sensitive development proposals be reviewed with respect to *Figure 1: Noise and Land Use Compatibility Standards*. Noise exposure shall be determined through actual onsite noise measurements.
	N-2	Work to reduce noise to acceptable levels where it now exceeds those standards.
	N-2.1	Reduce Outdoor Noise in Existing Residential Areas: Reduce outdoor noise in existing residential areas where economically and aesthetically feasible.
	N-2.2	Mitigate Noise Impacts: Mitigate noise impacts to the maximum feasible extent. Program N-2.2.1: Require acoustical studies and mitigation measures for new developments and roadway improvements which affect noise sensitive uses such as schools, hospitals, libraries and convalescent homes. Program N-2.2.2: Require acoustical studies of any project that would potentially generate non-transportation noise levels in a residential area such that noise levels would exceed the planning standards set forth in Program N-1.2.2.
VIII- Growth Management		
Goals	LU-19	Maintain the existing infrastructure essential to the public health and safety of the community.
	LU-20	Match the demand for public facilities and infrastructure generated by new development with the capacity of existing facilities, capital improvement programs and development mitigation programs.
Policies	LU-20.7	Water: Coordinate planning with the East Bay Municipal Utility District (EBMUD) to ensure the availability of an adequate potable water supply to meet the needs of the future population. The standard for development review shall be the capacity to provide sufficient water to all residents and businesses in the City, as indicated by EBMUD.

SOURCE: City of Lafayette General Plan, October 2002.

TABLE D-3
TOWN OF MORAGA – GENERAL PLAN POLICIES

Element	**Goals/Policies**	
Land Use Element		
Residential Goal	LU1	A high quality residential environment consisting primarily of detached single-family homes.
Residential Policies	LU1.1	Neighborhood Preservation. Protect existing residential neighborhoods from potential adverse impacts of new residential development and additions to existing structures.
	LU1.8	Slope Restrictions. The soil characteristics in Moraga are prone to landslide conditions which can cause damage to property, injury to persons, public cost and inconvenience; therefore, development shall be avoided on slopes of 20 percent or steeper, but may be permitted if supported by site-specific analysis. No new residential structures may be placed on after-graded average slopes of 25 percent or steeper within the development area, except that this provision shall not apply to new residential structures on existing lots that were either legally created after March 1, 1951 or specifically approved by the Town Council after April 15, 2002. All new non-MOSO lots shall contain an appropriate development area with an average after-graded slope of less than 25%. Grading on any non-MOSO land with an average predevelopment slope of 25% or more within the proposed development area shall be prohibited unless formally approved by the Town Council where it can be supported by site-specific analysis and shown that a minimum amount of grading is proposed in the spirit of and not incompatible with all other policies of the General Plan. Under the terms of the Moraga Open Space Ordinance, development is prohibited on slopes greater than 20 percent in areas designated MOSO Open Space. The Zoning Ordinance, Chapter 8.52 (Open Space District) of the Moraga Municipal Code, defines the methodology for MOSO Open Space designation.
	LU1.12	Residual Parcels as Open Space. Except in MOSO Open Space, residual parcels characterized by constraints such as geologic hazards, restricted access, an established riparian habitat, an historically significant feature or visibility from a scenic corridor shall be designated Non-MOSO Open Space. Residual parcels within designated MOSO Open Space shall remain designated MOSO Open Space as required by the Moraga Open Space Ordinance.
	LU1.13	Development on Residual Parcels. Permit the development of residual parcels only when it is found that such development will: 1) not have an adverse visual impact and is compatible with existing development; 2) provide properly sited open space; 3) generally provide for lots that are larger than the average lot size of adjacent subdivisions with setbacks from property lines greater than those in adjacent subdivisions; and 4) respect the natural features and development patterns of surrounding areas.
Institutional Goals	LU4	Promotion and preservation of public and private institutional uses that serve the public interest and enhance the quality of life in Moraga, including Saint Mary's College, churches, and public and private schools.
Institutional Policies	LU4.5	Facility Siting. Site institutional facilities so that they complement the natural environment and so that they will not intrude upon areas of adjacent land uses
Agricultural Goals	LU5	Promotion and preservation of Moraga's remaining agricultural resources as an important part of the Town's heritage and character.
Agricultural Policies	LU5.1	Agricultural Uses and Activities. Allow agricultural and horticultural uses and activities on lands within the Town so long as they are low intensity and compatible with adjacent uses. Examples include small orchards and cattle grazing.
	LU5.2	Preservation of Agricultural Resources. Strive to preserve the Town's remaining agricultural resources, such as pear and walnut orchards
Community Design Element		
Natural Setting Goal	CD1	Protection and preservation of the natural scenic qualities that make Moraga unique.

TABLE D-3 (Continued)
TOWN OF MORAGA – GENERAL PLAN POLICIES

Element	Goals/Policies	
Community Design Element (cont.)		
Natural Setting Policies	CD1.1	Location of New Development. To the extent possible, concentrate new development in areas that are least sensitive in terms of environmental and visual resources, including: a) Areas of flat or gently sloping topography outside of flood plain or natural drainage areas. b) The Moraga Center area and Rheem Park area. c) Infill parcels in areas of existing development.
	CD1.2	Site Planning, Building Design and Landscaping. Retain natural topographic features and scenic qualities through sensitive site planning, architectural design and landscaping. Design buildings and other improvements to retain a low visual profile and provide dense landscaping to blend structures with the natural setting.
	CD1.3	View Protection. Protect important elements of the natural setting to maintain the Town's semi-rural character. Give particular attention to viewsheds along the Town's scenic corridors, protecting ridgelines, hillside areas, mature native tree groupings, and other significant natural features. Consideration should be given to views both from within the Town and from adjacent jurisdictions. Likewise, the Town should work with adjacent jurisdictions to protect views from Moraga to adjacent areas.
	CD1.4	Canyon and Valley Areas. Protect the scenic and environmental qualities of canyon and valley areas to retain the Town's semi-rural character. Preserve both close-up and distant views of the natural hillside landscape from valley areas, and preserve significant linear open spaces in major canyons and grassland valleys with floodplain zones as the visual focus.
	CD1.5	Ridgelines and Hillside Areas. Protect ridgelines from development. In hillside areas, require new developments to conform to the site's natural setting, retaining the character of existing landforms preserving significant native vegetation and with respect to ridgelines, encourage location of building sites so that visual impacts are minimized. When grading land with an average slope of 20% of more, require 'natural contour' grading to minimize soil displacement and use of retainer walls. Design buildings and other improvements in accordance with the natural setting, maintaining a low profile and providing dense native landscaping to blend hillside structures with the natural setting.
Public Places Goal	CD2	A network of accessible and prominent public places with clear visual and circulation connections between them.
Public Places Policies	CD2.1	Public Places as Focal Points. Provide and maintain public parks and facilities that serve as community focal points, gathering places, and activity centers, with pedestrian and bicycle path connections to residential neighborhoods and commercial centers. Provide public views and inviting pedestrian entries into public places from adjacent streets and neighborhoods.
Scenic Corridor Goal	CD3	Scenic roadways leading into and through the Town that strengthen community identity and reflect Moraga's semi-rural character.
Scenic Corridor Policies	CD3.1	Designation of Scenic Corridors. Designate the following routes as the Town's 'Scenic Corridors': a) St. Mary's Road b) Canyon Road c) Moraga Way d) Moraga Road e) Rheem Boulevard f) Camino Pablo g) Bollinger Canyon Road
	CD3.2	Visual Character. Improve the visual character along Scenic Corridors with lighting, landscaping and signage.
	CD3.3	Gateways. Create prominent 'gateways' at Town entrance points with landscaping and signage improvements.

TABLE D-3 (Continued)
TOWN OF MORAGA – GENERAL PLAN POLICIES

Element	Goals/Policies	
Community Design Element (cont.)		
Scenic Corridor Policies (cont.)	CD3.6	Development Standards and Design Guidelines. Adopt development standards and design guidelines for Scenic Corridors to control site design and setbacks, landscaping, infrastructure locations, grading and signage.
Historic Resources Goal	CD7	Preservation of historically significant buildings and sites as a valued part of the community's character and a link to its past.
	CD7.1	Designation of Historic Resources. Identify and protect buildings, sites and other resources in the community that give residents a tie with the past, which may include: a) Hacienda de las Flores b) Older buildings at Saint Mary's College c) Trees with historical significance d) Moraga Ranch e) Moraga Barn
	CD7.2	Promote the preservation and conservation of historic buildings and sites, providing incentives as appropriate for their retention and rehabilitation.
	CD7.3	Adjacent Sites. Ensure that adjacent infill development is complementary to designated historic buildings and sites.
Traffic and Circulation Element		
Traffic Circulation and Safety Policies	C1.3	Effective Mitigation Measures. Ensure that traffic mitigation measures are specifically identified and reasonably demonstrated to be feasible and effective. Traffic mitigation measures may include a roadway or intersection improvement, public or private mass transportation improvement, or any other feasible solution that reduces trip volumes or enhances roadway capacity.
	C1.11	Emergency Vehicle Access. Maintain and improve critical transportation facilities for emergency vehicle access and emergency evacuation needs.
	C1.12	Right-of-Way Safety. Ensure that private recreational vehicles, trailers and other large vehicles are parked off the public right-of-way and out of the front building setback in order to promote traffic safety and good visibility.
Open Space and Conservation Element		
Open Space Preservation Goal	OS1	Preservation of as much open space land as possible, including protection of all major and minor ridgelines and lands that help meet residents' recreational needs.
Open Space Preservation Policies	OS1.2	Major Ridgelines. Moraga's major ridgelines are highly visible throughout the Town and are included within areas designated as MOSO Open Space on the General Plan Diagram.
	OS1.3	Development Densities in Open Space Areas. Any use of or development on lands designated on the General Plan Diagram or by the Moraga Open Space Ordinance as 'Public Open Space-Study' or 'Private Open Space' (now designated as MOSO Open Space in the General Plan Diagram) shall be limited to a maximum density of one (1) dwelling unit per twenty (20), ten (10), or five (5) acres, but in no case shall density on such lands exceed one (1) dwelling unit per five (5) acres. Areas identified as 'High Risk' areas, as defined by the Moraga Open Space Ordinance, shall be limited to a maximum density of one (1) dwelling unit per twenty (20) acres. Transfers of Development Rights (referred to as 'Density Transfer' as in MOSO) from any open space designation to other lands dwelling units be transferred to another open space designation or to 'High Risk' areas. The Town Council shall identify 'High Risk' areas after taking into account soil stability, history of soil slippage, slope grade, accessibility, and drainage conditions.
	OS1.4	Private Ownership and Use of Open Space Areas. Areas designated on the General Plan Diagram as MOSO Open Space or Non-MOSO Open Space may be retained in private ownership, may be used for such purposes as are found to be compatible with the corresponding open space designation and may or may not be accessible to the general public.

TABLE D-3 (Continued)
TOWN OF MORAGA – GENERAL PLAN POLICIES

Element	Goals/Policies	
Open Space and Conservation Element (cont.)		
Open Space Preservation Policies (cont.)	OS1.5	Development on Slopes and Ridgelines in Open Space Lands. In MOSO Open Space, development shall be prohibited on slopes with grades of twenty percent (20%) or greater and on the crests of minor ridgelines. The Town Council shall reduce the allowable densities on slopes of less than twenty percent (20%) through appropriate means such as requiring proportionally larger lot sizes or other appropriate siting limitations. For the purposes of this paragraph the term 'minor ridgeline' means any ridgeline, including lateral ridges, with an elevation greater than 800 feet above mean sea level, other than a major ridgeline.
	OS1.8	Open Space Access and Recreational Use. Where appropriate and consistent with other General Plan goals and policies, areas with a MOSO Open Space or Non-MOSO Open Space designation on the General Plan Diagram should be made available to the public for recreational use.
Environmental Quality Goal	OS2	Environmental quality in the future that is as good or better than today.
Environmental Quality Goals	OS2.1	Protection of Wildlife Areas. Prohibit development in locations where it will have a significantly adverse effect on wildlife areas. When development is permitted in the vicinity of wildlife areas, require implementation of appropriate mitigation measures to reduce any adverse impact upon the wildlife.
	OS2.2	Preservation of Riparian Environments. Preserve creeks, streams and other waterways in their natural state whenever possible.
	OS2.3	Natural Carrying Capacity. Require that land development be consistent with the natural carrying capacity of creeks, streams and other waterways to preserve their natural environment.
	OS2.4	Areas of Natural Significance. Preserve and protect, insofar as possible, areas that are recognized as having natural significance. These areas include but are not limited to: a) The Lake LaSalle area for its scenic value and wildlife habitat. b) Flicker Ridge for its significant contribution to the wildlife of the area and because it represents a unique knob-cone pine forest. c) Remaining laguna environment of Laguna de los Palos Colorados.
	OS2.5	Wildlife Corridors. To the extent possible, connect open space areas so that wildlife can have free movement through the area, bypass urban areas and have proper access to adjacent regional parks and related open space systems.
	OS2.8	Tree Preservation. Preserve and protect trees wherever they are located in the community as they contribute to the beauty and environmental quality of the Town.
	OS2.9	Tree-covered Areas. Preserve or substantially maintain in their present form certain tree-covered areas, especially with respect to their value as wildlife habitats, even if development in those areas is permitted. Give preference to the retention of original growth over replanting. These areas include, but are not limited to: d) Mulholland Hill (both northeast and southwest slopes) e) Indian Ridge f) Bollinger Canyon g) Sanders Ranch properties h) St. Mary's Road northeast of Bollinger Canyon Road i) The "Black Forest" area located northerly of the terminus of Camino Ricardo j) Coyote Gulch west of St. Mary's Road, to the north k) Wooded area to the east and south of St. Mary's Gardens l) Wooded area behind Donald Rheem School m) Wooded area on the ridge south of Sanders Drive.
	OS2.11	Recycling and Source Reduction. Enhance the long-term viability of natural resources and reduce the volume of material sent to solid waste sites by continuing source reduction and recycling programs, encouraging participation of all residents and businesses.

TABLE D-3 (Continued)
TOWN OF MORAGA – GENERAL PLAN POLICIES

Element	Goals/Policies	
Open Space and Conservation Element (cont.)		
Water Quality and Conservation Goal	OS3	Protection of water resources through protection of underground water aquifers and recharge areas; maintenance of watercourses in their natural condition; and efficient water use.
Water Quality and Conservation Policies	OS3.2	Polluting Materials. Prohibit the accumulation and dumping of trash, garbage, vehicle lubricant wastes and other materials that might cause pollution.
	OS3.5	Watercourse Preservation. Whenever possible, preserve and protect natural watercourse areas that will reflect a replica of flora and fauna of early historical conditions.
	OS3.7	Water Conservation Measures. Encourage water conservation in new building construction and retrofits, through measures such as low-flow toilets and drought tolerant landscaping.
	OS3.9	East Bay MUD Lands. Encourage the preservation of East Bay Municipal Utility District Lands for watershed use.
Air Quality Goal	OS4	Preservation and maintenance of air quality.
Air Quality Policies	OS4.1	Development Design. Conserve air quality and minimize direct and indirect emissions of air contaminants through the design and construction of new development. For example, direct emissions may be reduced through energy conserving construction that minimizes space heating, while indirect emissions may be reduced through uses and development patterns that reduce motor vehicle trips generated by the project.
	OS4.4	Landscaping to Reduce Air Quality Impacts. Encourage the use of vegetative buffers along roads to assist in pollutant dispersion.
Energy Conservation Goal	OS 5	Lower levels of energy consumption and use of more environmentally friendly energy alternatives.
Energy Conservation Policies	OS5.1	Building Standards. Require that all new buildings and additions be in compliance with the energy efficiency standards of the California Building Standards Code (Title 24, California Code of Regulations).
	OS5.2	Energy Conservation Measures. Encourage energy conservation in new construction and through retrofitting of existing buildings, utilizing passive solar design, use of alternative energy systems, solar space and water heating, adequate insulation, and other measures where feasible and cost effective.
Noise Goal	OS6	A peaceful and tranquil community.
Noise Policies	OS6.1	Acoustical Standards. Develop acoustical standards that properly reflect acceptable sound emission levels.
	OS6.2	Noise Levels. Ensure that noise from all sources is maintained at levels that will not adversely affect adjacent properties or the community, especially during evening and early morning hours. Reasonable exceptions may be made in the interest of public safety.
	OS6.3	Noise Sensitive Uses. Locate uses where they will be most acoustically compatible with elements of the man-made and natural environment.
	OS6.4	Noise Impacts of New Development. Ensure that new development will not raise noise levels above acceptable levels on the Town's arterials and major local streets.
	OS6.6	Temporary Noise Sources. Permit temporary noise generating activities such as construction only for the shortest reasonable duration and in locations that will have the least possible adverse effect.
	OS6.7	Vehicle Noise. Require that vehicles, including those used for recreational purposes, be used in such a manner that they will not intrude on the peace and quiet of residential areas. Reasonable exceptions may be made in the interest of public safety.

TABLE D-3 (Continued)
TOWN OF MORAGA – GENERAL PLAN POLICIES

Element	Goals/Policies	
Public Safety Element		
General Public Safety Goal	PS1	A semi-rural environment that is relatively free from hazards and as safe as practicable
General Public Safety Policies	PS1.1	Assessment of Risk. Include an environmental assessment of natural hazard risks in development proposals to permit an adequate understanding of those risks and the possible consequent public costs in order to achieve a level of 'acceptable risk.' Public costs should be expressed in terms of effect on life and property.
	PS1.3	High Risk Areas. Prohibit development in 'high risk' areas, which are defined as being (1) upon active or inactive slides, (2) within 100 feet of active slides, as defined in Figure 4 of the Safety Element Appendix, or (3) at the base of the centerline of a swale, as shown on the Town's Development Capability Map.
	PS1.4	Moderate Risk Areas. Avoid building in 'moderate risk'areas, which are defined as being (1) those areas within 100 yards of an active or inactive landslide, as defined by the Town's Landslide Map, or (2) upon a body of colluvium, as shown in Figure 2 of the Public Safety Element background information. Where it is not possible to avoid building in such areas entirely, due to parcel size and configuration, limit development accordingly through density regulations, subdivision designs that cluster structures in the most stable portions of the subdivision, site designs that locate structures in the most stable portion of the parcel, and specific requirements for site engineering, road design, and drainage control.
	PS1.5	Control of Nuisances and Unsafe Conditions. Identify any structures and conditions that are unsafe or constitute nuisances, and take measures to make them conform to appropriate safety codes or remove them.
	PS1.8	Hazardous Wastes. Require permits in accordance with State and Federal regulations any time that hazardous materials are proposed to be transmitted into, out of, or through the Town.
Police and Emergency Services Goal	PS2	A community environment that is free from crime and prepared for any potential disaster.
Police and Emergency Services Policies	PS2.1	Police Services. Provide police services to maintain the peace, respond to localized emergencies and calls for service, and undertake crime prevention within the Town.
Fire Safety and Emergency Services Goal	PS3	A high level of fire and life safety.
Fire Safety and Emergency Services Policies	PS3.3	Response Times. Provide a maximum emergency response driving time of 3 minutes and/or a travel distance of not more than 1.5 miles for response vehicles from the closest fire station to arrive and effectively control fires and respond to medical and other emergencies in the community.
	PS3.4	Fire Flows. Deploy the fire-fighting forces of the Moraga-Orinda Fire District to deliver a minimum fire flow in accordance with the adopted standards of the Moraga-Orinda Fire District. Major fires requiring fire flows in excess of the adopted standards will exceed the initial fire attack capability of local fire-fighting forces and structures involved in such fires are expected to incur major fire damage unless protected by fire resistive interiors and fire sprinkler systems.
	PS3.5	Development Review for Emergency Response Needs. Evaluate new development proposals to ascertain and mitigate problems associated with emergency response needs
	PS3.6	Fire Vehicle Access. Provide access for fire-fighting vehicles to all new developments in accordance with fire access standards of the Moraga-Orinda Fire District and Town of Moraga Ordinances.
	PS3.8	Fire Safety Devices in Buildings. Require the installation of appropriate fire safety devices in all structures at the time of original construction, additions, or remodeling, in accordance with adopted building codes and standards.

TABLE D-3 (Continued)
TOWN OF MORAGA – GENERAL PLAN POLICIES

Element	Goals/Policies	
Public Safety Element (cont.)		
Fire Safety and Emergency Services Policies (cont.)	PS3-10	Fire Protection Systems. Cooperate with the Moraga- Orinda Fire District to enforce requirements for built-in fire protection systems as required by ordinance, including specialized built-in fire protection systems that may be required based upon building size, use or location.
	PS3.12	Hazardous Fire Areas. Apply special fire protection standards to all new developments in hillside, open space, and wildland interface areas. Fire prevention measures such as removal of dry grass and brush, landscaping with fire and drought-resistant vegetation, provision of adequate water supplies and access for fire-fighting vehicles shall be required to reduce the risk of wildland fires. All new structures located in hazardous fire areas shall be constructed with fire resistant exterior materials consistent with applicable building codes and standards.
	PS3.13	Dry Grass and Brush Control. Require that all properties be maintained so as to preclude the existence of dry grass and brush that would permit the spread of fire from one property to another. Encourage preventive measures by homeowners to reduce fire risks.
	PS3.14	Fire Retardant Roofing. Require fire retardant roofing of Class B or better in all new construction and when replacing roofs on existing structures.
Seismic and Geologic Hazards Goal	PS4	Minimize risk to lives and property due to earthquakes and other geologic hazards.
Seismic and Geologic Hazards Policies	PS4.1	Development in Geologic Hazard Areas. Prohibit development in geologically hazardous areas, such as slide areas or near known fault lines, until appropriate technical evaluation of qualified independent professional geologists, soils engineers and structural engineers is completed to the Town's satisfaction. Allow development only where and to the extent that the geologic hazards have been eliminated, corrected or mitigated to acceptable levels.
	PS4.2	Development Review for Geologic Hazards. Require development proposals to address geologic hazards, including but not limited to landslide, surface instability, erosion, shrink-swell (expansiveness) and seismically active faults. Technical reports addressing the geologic hazards of the site shall be prepared by an independent licensed soil engineer, geologist and/or structural engineer, approved by the Town and at the expense of the developer. All technical reports shall be reviewed by the Town and found to be complete prior to approval of a development plan.
	PS4.5	Public Facilities and Utilities in Landslide Areas. Prohibit the financing and construction of public facilities or utilities in potential landslide areas.
	PS4.6	Construction Standards. Ensure that all new construction and applicable remodeling/reconstruction projects are built to established standards with respect to seismic and geologic safety.
	PS4.7	Construction Oversight. Adopt and follow procedures to ensure that the recommendations of the project engineer and the design and mitigating measures incorporated in approved plans are followed through the construction phase.
	PS4.9	Water Storage Reservoirs. Permit properly designed storage reservoirs for domestic water supply only in those locations that will pose no hazard to neighboring development.
	PS4.10	Grading. Grading for any purpose whatsoever may be permitted only in accordance with an approved development plan that is found to be geologically safe and aesthetically consistent with the Town's Design Guidelines. Land with a predevelopment average slope of 25% or greater within the development area shall not be graded except at the specific direction of the Town Council and only where it can be shown that a minimum amount of grading is proposed in the spirit of, and not incompatible with, the intention and purpose of all other policies of the General Plan. The Town shall develop an average slope limit beyond which grading shall be prohibited unless grading is required for landslide repair or slope stabilization.

TABLE D-3 (Continued)
TOWN OF MORAGA – GENERAL PLAN POLICIES

Element	Goals/Policies	
Public Safety Element (cont.)		
Seismic and Geologic Hazards Policies (cont.)	PS4.11	Retaining Walls. Discourage the use of retaining walls and other man-made grading features to mitigate geologic hazards, permitting them only when: Required to decrease the possibility of personal injury or property damage; Designed to blend with the natural terrain and avoid an artificial or structural appearance; Appropriately screened by landscaping; Designed to avoid creating a tunnel effect along roadways and to ensure unrestricted views for vehicular and pedestrian safety; and Designed to ensure minimal public and/or private maintenance costs.
	PS4.12	Maintenance of Hillside Areas. Facilitate successful long-term maintenance of hillside areas held as common open space.
Flooding and Streambank Erosion Goal	PS5	Minimal risk to lives and property due to flooding and streambank erosion.
	PS5.3	New Structures in Flood Hazard Areas. Avoid placing new structures within potentially hazardous areas along stream courses.
	PS5.5	Streambank Erosion and Flooding Potential. Reduce the potential for future streambank erosion and flooding by requiring appropriate mitigation measures.
	PS5.6	On-site Storm Water Retention. Require on-site storm water retention for new developments.
	PS5.7	Flood Control. Utilize flood control measures where appropriate to avoid damage to sensitive and critical slope areas, coordinating with the County Flood Control and Water Conservation District to evaluate watersheds and design flood control projects.
Facilities Element		
Parks and Recreation Goal	FS3	Parks and recreational facilities that respond to community needs and priorities and are consistent with Town resources.
Parks and Recreation Policies	FS3.9	Land Management. Manage parks, open space lands and trails in accordance with recognized land management principles.
	FS3.20	Trails Master Plan. Implement the Moraga Trails Master Plan through ownership and easements to establish and maintain a comprehensive trails network in the Town. Adjust the plan as necessary to take advantage of any new trail opportunities that may arise.
	FS3.22	Regional Trail System. Encourage and cooperate with other jurisdictions and agencies to develop and maintain a unified regional trail system, including hiking, biking and equestrian trails. Support development of regional trail projects such as the Bay Ridge Trail.
Growth Management Element		
Growth Mgmt Goals	GM1	Maintenance of approved Performance Standards for Town facilities, services and infrastructure.
Growth Mgmt Policies	GM1.4	Traffic Service Standards. Establish the LOS standard for all Moraga roads, urban and suburban, as a ‘high C’ (0.75 to 0.79 vehicle to capacity ratio).
	GM1.5	Other Performance Standards. Establish the following performance standards for other Town facilities, services and infrastructure. These standards pertain to the development review process and should not be construed as applying to existing developed lands. Proposed developments must include mitigation measures to assure that these standards or their equivalent are maintained. Modifications to these standards may be accomplished by a resolution of the Town Council. *Parks*. Five acres of parkland per 1000 residents. *Fire*. A fire station within 1.5 miles of all residential and nonresidential development in the Town, in the absence of appropriate mitigation measures.

TABLE D-3 (Continued)
TOWN OF MORAGA – GENERAL PLAN POLICIES

Element		Goals/Policies
Growth Management Element (cont.)		
Growth Mgmt Policies (cont.)	GM1.5 (cont.)	*Police*. Maintain a three-minute response time for all life threatening calls and those involving criminal misconduct. Maintain a seven-minute response time for the majority of non-emergency calls. *Sanitary Facilities*. The capacity to transport and treat residential and non-residential wastewater as indicated by the Central Contra Costa Sanitary District. *Water*. The capacity to provide sufficient water to all residents and businesses in the Town as indicated by the East Bay Municipal Utility District. *Flood Control*. Containment of the 100-year flood event (as determined by FEMA) by the flood control/drainage system.
XI- Action Plan (Included below is a selection of programs that put the General Plan's relevant goals and policies into action.)		
L. Intergovernmental Coordination		Coordinate with other relevant jurisdictions and agencies to address issues of mutual concern. Specific programs of intergovernmental coordination should include the following: *IP-L12* **Coordination with Utility Providers** Work collaboratively with utility service providers to support ongoing utility provision, maintenance and service improvements. Also, work with the East Bay Municipal Utility District (EBMUD) to preserve and protect watershed lands adjacent to the Town.

SOURCE: Town of Moraga General Plan, 2002.

TABLE D-4
CITY OF OAKLAND – GENERAL PLAN POLICIES

Element		**Policy**
Land Use and Transportation Element		
Objective	T1.8	The City should make efforts to re-route truck traffic away from neighborhoods, wherever possible, and enforce truck route controls.
Objective	N12	Providing Adequate infrastructure to meet the needs of Oakland's growing community
Policy	N12.1	The development of public facilities and staffing of safety-related services, such as fire stations, should be sequenced and timed to provide a balance between land use and population growth, and public services at all times
Open Space, Conservation, and Recreation Plan		
Open Space Element	OS-10.2	Minimizing Adverse Visual Impacts. Encourage site planning for new development which minimizes adverse visual impacts and takes advantage of opportunities for new vistas and scenic enhancement.
Conservation Element- Earth Resources	Objective CO-1	Soil Conservation. To protect and preserve soil as a resource for healthy plant, animal and human life.
Policy	CO-1.1	Soil Loss in New Development: Regulate development in a manner which protects soil from degradation and misuse or other activities which significantly reduce its ability to support plant and animal life. Design all construction to ensure that soil is well secured so that unnecessary erosion, siltation of streams, and sedimentation of water bodies does not occur.
Action	CO-1.1.1	Soil Related Development Controls. Maintain, enforce, and periodically review development controls affecting soil removal, including the Grading Ordinance and the Sedimentation and Erosion Control Ordinance.
Conservation Element – Water Resources	Objective CO-4	Water Supply. To maintain a water supply sufficient to meet local needs while minimizing the need to develop new water supply facilities.
Policy	C0-4.1	Water Conservation. Emphasize water conservation and recycling strategies in efforts to meet future demand.
Action	Co-4.1.1	Implementation of Urban Water Management Plan. Issue Administrative instructions to implement the water conservation strategies and programs outlined in the 1991 EBMUD UWMP at the local level. Develop a strategy to reduce the City's water consumption by 20% by the year 2005.
Policy	CO-6.1	Creek Management. Protect Oakland's remaining natural creek segments by retaining creek vegetation, maintaining creek setbacks, and controlling bank erosion. Design future flood control projects to preserve the natural character of creeks and incorporate provisions for public access, including trails, where feasible. Strongly discourage projects which bury creeks or divert them into concrete channels.
Conservation Element- Plant and Animal Resources	Objective CO-7	Protection of Native Plant Communities.
Policy	CO-7.1	Protection of Native Plant Communities. Protect native plant communities, especially oak woodlands, redwood forests, native perennial grasslands, and riparian woodlands, from the potential adverse impacts of development. Manage development in a way which prevents or mitigates adverse impacts to these communities.
Policy	Co-7.4	Tree Removal. Discourage the removal of large trees on already developed sites unless removal is required for biological, public safety, or public works reasons.
Objective	CO-9	Rate, Endangered and Threatened Species
Policy	CO-9.1	Habitat Protection. Protect rare, endangered, and threatened species by conserving and enhancing their habitat and requiring mitigation of potential adverse impacts when development occurs within habitat areas.
Conservation Element- Air Resources	Objective CO-12	To improve air quality in Oakland and the surrounding Bay Region.

TABLE D-4 (Continued)
CITY OF OAKLAND – GENERAL PLAN POLICIES

Element	Policy	
Open Space, Conservation, and Recreation Plan (cont.)		
Policy	CO-12.6	Control of Dust Emissions. Require Construction, demolition and grading practices which minimize dust emissions
Conservation Element	CO-13	Energy Resources. To manage Oakland's energy resources as efficiently as possible, reduce consumption of non-renewable resources, and develop energy resources which reduce dependency on fossil fuels.
Policy	CO-13.3	Construction Methods and Materials. Encourage the use of energy-efficient construction and building materials. Encourage site plans for new development which maximize energy efficiency.
Noise Element		
Policy	1	Ensure the compatibility of existing, and especially, of proposed development projects not only with neighboring land uses but also with their surrounding noise environment.
Action	1.1	Use the noise-land use compatibility matrix (reference Figure 6 in the Noise Element) in conjunction with the noise contour maps to evaluate the acceptability of residential and other proposed land uses and also the need for any mitigation or abatement measures to achieve the desired degree of acceptability.
	1.2	Continue using the City's zoning regulations and permit to limit the hours of operation of noise-producing activities which create conflicts with residential uses and to attach noise-abatement requirements to such activities.
Policy	2	Protect the noise environment by controlling the generation of noise by both stationary and mobile noise sources.
Policy	3	Reduce the community's exposure to noise by minimizing the noise levels that are received by Oakland residents and others in the City. (This policy addresses the reception of noise whereas Policy 2 addresses the generation of noise.)
Safety Element		
Geologic Hazard Policy	GE-4	Work to reduce potential damage from earthquakes to "lifeline" utility and transportation systems.
Action	GE-4.2	As knowledge about the mitigation of geologic hazards increases, encourage public and private utility providers to develop additional measures to further strengthen utility systems against damage from earthquakes, and review and comment on proposed mitigation measures.
Fire Hazard Policy	FI-1	Maintain and enhance the city's capacity for emergency response, fire prevention, and fire fighting.
Action	FI-1.7	Along with the East Bay Municipal Utility District, review the extent to which recommendations from the district's 1994 infrastructure policy study on needed improvements to the water distribution system were implemented.
Action	FI-3.4	Along with EBMUD, review the extent to which recommendations from the utility's district's 1993 study on its preparation and response to the 1991 firestorm were implemented.
Hazardous Materials Policy	2	Minimize the potential risks to human and environmental health and safety associated with the past and present use, handling, storage and disposal of hazardous materials
	HM 2-.4	Ensure implementation of policies and actions in the land use and transportation element designed to integrate land use and transportation planning and to promote alternative transportation options; and policies in the open space, conservation and recreation element designed to encourage transportation alternatives and land use patterns that reduce automobile dependence.
HM Policy	HM-3	Seek to prevent industrial and transportation accidents involving hazardous materials, and enhance the city's capacity to respond to such incidents.
	HM-3.1	Continue to enforce regulations limiting truck travel through certain areas of the city to designated routes, and consider establishing time-based restrictions on truck travel on certain routes to reduce the risk and potential impact of accidents during peak traffic hours.

TABLE D-4 (Continued)
CITY OF OAKLAND – GENERAL PLAN POLICIES

Element	Policy	
Safety Element (cont.)		
Flood Hazards Action	FL-1.3	Comply with all applicable performance standards pursuant to the 2003 Alameda countywide National Pollutant Discharge Elimination System municipal stormwater permit that seek to manage increases in stormwater runoff flows from new development and redevelopment construction projects.
	FL1.4	Continue to enforce the grading, erosion and sedimentation ordinance by prohibiting the discharge of concentrated stormwater flows by other than approved methods.
	FL-1.5	Continue to enforce provisions under the creek protection, water management and discharge control ordinance designed to keep watercourses free of obstructions and protect drainage facilities.

SOURCE: City of Oakland General Plan, Land Use and Transportation Element (1998), Safety Element (2004), Noise Element (2005), and OSCAR Element (2004).

TABLE D-5
CITY OF ORINDA – GENERAL PLAN POLICIES

Element	**Policy**	
2.1 - Land Use Element		
Guiding Policies	2.1.1.A.	Maintain the semi-rural character of Orinda
	2.1.1.B.	Maintain the dominance of wooded and open ridges and hillsides
	2.1.5.C.3	The East Bay Municipal Utility District Land may be the subject of a separate development plan if and when such property is not to be used for utility purposes. At such time, uses on this property shall be limited to recreation, open space; “affordable” multi-family housing or other uses as may be approved by the City, subject to approval of a plan for the site, and appropriate environmental review.
2.2 - Open Space, Parks, Schools, and Utilities Element		
Guiding Policies	2.2.1.A.	Support preservation of EBMUD watershed lands
	2.2.1.C	Retain steep or unstable slopes as open space
	2.2.1.D.	Retain creeks and wildlife access corridors as open space for preservation of natural resources, consistent with flooding control.
	2.2.1.E.	Retain existing private and public recreational open space, and acquire additional land for public park development to meet the needs for all sectors of Orinda and all age groups in the community. A minimum of five acres of land for each 1,000 city residents should be devoted to public park and recreational purposes but more may be needed.
	2.2.1.G.	Preserve a nature study area at Wagner Ranch School
Guiding Policies	2.2.4.B.	Seek cooperation of PG&E and EBMUD in managing landholdings to maximize community benefit and visual attractiveness, consistent with utility needs.
2.3 – Circulation Element		
Guiding Policies	2.3.1.C	Strive to retain the existing peak hour level of service (LOS) of “C” or better at those intersections where is now prevails and improve the LOS at all other intersections.
	2.3.1.G.	It is the goal of the City of Orinda to preserve and retain, in the most natural condition possible, scenic vehicular entryways, routes, and corridors in the community.
Implementing Policies	2.3.2.A.	Consider requiring transportation management system measures that may include carpooling, shuttle buses or staggered work hours to reduce traffic impacts where appropriate.
	2.3.2.P.	The following routes are designated Scenic Corridors on the General Plan: 1. Moraga Way from its intersection with Camino Pablo south to the City limits; 2. Camino Pablo from its intersection with Santa Maria Way north to the City limits; 3. Highway 24, designated as a California Scenic Highway within Orinda City Limits.
	2.3.2.Q.	Special care shall be taken to provide a well landscaped and open feeling along Scenic Corridors, especially at the entrance to the City, utilizing such techniques as generous landscaped setbacks and open space acquisition, where appropriate.
	2.3.2.R.	Any proposed development or subdivision along a Scenic Corridor or Scenic Highway shall be designed to blend with and permit the natural environment to be maintained as the dominate visual element. It shall not lessen the scenic value of existing visual elements.
	2.3.2.S.	Where structures are permitted, they shall be designed to blend in and permit the natural environment to be maintained as the dominant visual element.
	2.3.2.T.	Because Highway 24 is a freeway that bisects Orinda, it merits special consideration to maintain its integrity as a California Scenic Highway as it passes through Orinda.
4.1 - Conservation Element		
Guiding Policies	4.1.1.A.	Preserve Orinda’s historic structures and sites, unique trees and landforms.
	4.1.1.B.	Preserve rare and endangered species.

TABLE D-5 (Continued)
CITY OF ORINDA – GENERAL PLAN POLICIES

Element		Policy
4.1 - Conservation Element (cont.)		
Guiding Policies (cont.)	4.1.1.C.	Preserve valuable wildlife habitats, particularly riparian habitats.
	4.1.1.D.	Preserve oak woodlands and other native trees, and encourage planting and reforesting of oaks and other natives in hillside areas.
	4.1.1.E.	Protect creeks from siltation, pollution, and debris buildup to minimize the danger of flooding in storms, to retain the aesthetic and habitat values of the creeks in their natural state, and enhance and restore them where possible. Prohibit major channelization.
	4.1.1.F.	Achieve aesthetically sensitive grading that conforms to the natural contours, ensures safety and preserves trees and other vegetation to the greatest practical extent.
	4.1.1.G.	Protect visually prominent ridgelines and hillsides from development.
	4.1.1.H.	Protect San Pablo Reservoir and Briones Reservoir from pollution and siltation resulting from development within the Planning Area.
	4.1.1.J.	Open space to the north and west of the Planning Area adjacent to watershed areas and parks shall be preserved.
	4.1.1.L.	Promote energy conservation programs and practices.
	4.1.1.M.	Encourage preservation of EBMUD land for watershed and recreation use.
	4.1.1.N.	Encourage under grounding of power lines and replacement of utility towers with single poles.
Implementing Policies	4.1.2.A.	Conduct an archival study of resources, map the general locations of resources, and review development proposals to determine the potential impacts on archaeological and historic resources and the need for more detailed study. Require additional study of development proposals on sites with moderate probability that such resources exist.
	4.1.2.B.	Adopt a Landmarks Preservation Ordinance to protect structures, sites and areas having a special historical, architectural, natural, or aesthetic interest or value.
	4.1.2.C.	Require environmental habitat assessment for any major development determined to be in an environmentally sensitive area. The assessment will include an on-site inspection, and a written description of any habitats, plant and animal species observed, species likely to be present, likely impacts of the proposed project, and mitigation measures which will preserve the habitats.
	4.1.2.E.	Preserve drainage easements along creeks in order to protect adjacent buildings from flooding, and to preserve valuable riparian vegetation. Where riparian vegetation has to be disturbed for construction, revegetation with local riparian species is required. The City shall develop design Policies for development near creeks.
	4.1.2.H	Review development proposals to ensure site design and construction methods that minimize soil erosion and volume and velocity of surface runoff, and mitigate impacts on properties below. Soil erosion can result in siltation of creeks and eventual siltation in San Pablo Reservoir. Erosion can be controlled by limiting surface runoff, minimizing exposure of raw soil during storm season, early mulching and seeding of slopes, and temporary or permanent siltation ponds. Stream bank erosion can be prevented using upstream detention basins and siltation basins.
	4.1.2.I.	Limit development in the proximity of reservoirs to prevent siltation and water contamination.
	4.1.2.J.	Encourage the conservation of energy through the promotion of solar design, and recycling of newspaper, aluminum and bottles. Provisions should be made to allow for a conveniently located and screened recycling area in the downtown.

TABLE D-5 (Continued)
CITY OF ORINDA – GENERAL PLAN POLICIES

Element	Policy	
4.2 – Safety Element		
Guiding Policies	4.2.1.A.	Geologic and seismic hazards shall be mitigated or development shall be located away from geologic and seismic hazards in order to preserve life and protect property.
	4.2.1.D.	Provide public protection from hazards associated with the use, storage and transportation of hazardous materials.
Implementing Policies	4.2.2.A.	A geotechnical investigation and report, including assessments of seismic and landslide risks shall be required for new development in Orinda, including single-family residences unless exempted by the City of Orinda. Any other facility that could create a geologic hazard, such as a road on hillside terrain, must also have such an investigation.
	4.2.2.B.	Evidence of probable geologic hazard will require a geotechnical study by a registered soil engineer or registered geologist to be reviewed by geotechnical consultants selected by the City.
	4.2.2.I.	Reduce the level of risk from toxic and hazardous materials in Orinda by regulating the transportation and storage of these materials into, and out of Orinda, and through an educational program on the proper disposal methods for hazardous, toxic and polluting materials.
	4.2.2.N.	Cooperate with other agencies to assure adequate medical and other emergency services.
4.3 – Noise Element		
Guiding Policies	4.3.1.A.	Where practical, mitigate traffic noise to acceptable levels.
	4.3.1.B.	Prevent unnecessary noise from all sources.
Implementing Policies	4.3.2.C.	Develop ordinance to limit noise created by temporary activities such as building construction to the shortest duration possible, and to daytime hours whenever possible. All reasonable noise mitigation measures would be used.

SOURCE: City of Orinda General Plan, 1989. Last Amended 11-15-94

TABLE D-6
CITY OF WALNUT CREEK – GENERAL PLAN POLICIES

Element	Policy	
Quality of Life Element		
Neighborhoods and Residential Areas	Goal 1	Protect and enhance the quality of life in the city's residential neighborhoods.
Neighborhoods and Residential Areas	Policy 1.1	Protect and enhance the distinctive characteristics of each neighborhood.
Neighborhoods and Residential Areas	Policy 1.4	Require that development is compatible with surrounding uses.
Natural Environment and Public Space Element		
Open Space	Goal 1	Maintain and enhance open space lands.
Open Space	Policy 1.1	Protect, manage and improve open space lands.
Open Space	Action 1.1.2	Work with other public agencies (such as water districts, adjacent cities, and park districts) in managing, operating, linking and providing access to open space.
Open Space	Policy 1.2	Protect and enhance the natural environment.
Open Space	Action 1.2.1	Identify, protect, restore, and enhance sensitive biological and wetland resources and areas critical for habitat and habitat connectivity.
Open Space	Action 1.2.2	Strive to eliminate non-native plant species and expand areas with native plants.
Open Space	Policy 1.3	Promote a variety of appropriate activities on open space lands.
Open Space	Action 1.3.2	Allow on open space lands, only facilities, structures, and activities compatible with conservation, preservation, and education.
Open Space	Policy 2.4	As development projects arise, strive to preserve existing private open space lands under private ownership, and to provide public access to these private open spaces.
Creeks	Goal 3	Maintain and enhance the area's creek systems, their riparian environments, and their recreational amenities.
Creeks	Policy 3.1	Restore riparian corridors and waterways throughout the city.
Trails	Goal 4	Provide a system of safe, well-developed, well connected, and well maintained trails.
Trails	Policy 4.1	Plan for a full complement of interconnected trails and paths for walkers, joggers, bicyclists, and equestrians, from the regional trails to downtown trails and paths.
Trails	Action 4.1.1	Work with the County, the East Bay Regional Park District, and other agencies to develop trail links between residential areas and parks, creeks, transportation, schools, open space, shopping, and various public facilities.
Trails	Action 4.1.2	Link adjacent urban or open space trails and nearby open spaces owned by various agencies.
Trails	Policy 4.2	Maintain and improve the trails system, including to and within the open space lands.
Trails	Action 4.2.1	Provide consistent, clear signage for all trails and at all trailheads.
Built Environment Element		
Archaeological Resources	Goal 24	Protect and conserve archaeological and paleontological resources.
Archaeological Resources	Policy 24.1	Review the potential for the presence of archaeological and paleontological resources and remains in or near identified archaeological sites.

TABLE D-6 (Continued)
CITY OF WALNUT CREEK – GENERAL PLAN POLICIES

Element		Policy
Built Environment Element (cont.)		
Archaeological Resources	Action 24.1.1	Require (a) review by the California Archaeological Inventory, Northeast Information Center, Sonoma State University, of all major new projects and all projects of any size within 660 feet of a site identified on the City's map of sensitive archaeological sites and (b) add appropriate mitigations as conditions of project approval as may be recommended by the California Archaeological Inventory.
Archaeological Resources	Action 24.1.2	Require developers to halt all work if cultural resources are encountered during a project, and to retain a qualified archaeologist to evaluate and make recommendations for conservation and mitigation.
Historical Resources	Goal 25	Maintain and enhance Walnut Creek's historic resources.
Historical Resources	Policy 25.1	Foster the preservation, restoration, and compatible reuse of historically significant structures and sites.
Protecting Nature in Development	Policy 26.1	"Preserve Open Space/ Agricultural Lands, as defined in this Ordinance"[1] by: (1) "prohibiting Development on existing slopes with grades of twenty percent (20%) or greater, or within 75 vertical feet of any Ridgeline, or within the area surrounding any Native Tree for a distance of one and one-half times the distance from the trunk to the drip-line, which slopes and areas shall be preserved in their natural state; (2) limiting Development to detached, single-family residential housing and normal appurtenances, with a maximum density of one (1) dwelling unit per ten (10) acres; (3) requiring that any permitted Development be located and constructed in such a manner as to prevent visual impacts on scenic vistas and existing neighborhoods; and (4) prohibiting the cutting of and damage to any Native Tree."
Protecting Nature in Development	Policy 26.2	Incorporate natural features such as trees, hillsides, and rock outcroppings into new development.
Protecting Nature in Development	Policy 26.3	Preserve and add to the city's tree canopy.
Protecting Nature in Development	Policy 26.4	Protect tree resources on public and private property.
Protecting Nature in Development	Policy 26.5	Protect tree groves (especially oaks) and their understories.
Protecting Nature in Development	Action 26.5.3	Set standards for—and require new developments to have— adequate tree canopy.
Sustainability	Goal 27	Promote "green" development and redevelopment.
Sustainability	Policy 27.1	Encourage resource-efficient building techniques, materials, and technologies in new construction and renovation.
Conservation	Goal 28	Promote energy conservation.
Conservation	Goal 29	Promote water conservation.
Waste Reduction	Action 30.2.7	Require the recycling of construction waste for all City and private projects.
Air and Water Quality	Goal 31	Strive to meet State and federal air-quality standards for the region.
Air and Water Quality	Action 31.3.1	Control emission of dust from construction sites.
Air and Water Quality	Goal 32	Meet or exceed State and federal water-quality standards.
Air and Water Quality	Action 32.1.4	Prohibit development in areas particularly susceptible to erosion and sediment loss.
Air and Water Quality	Action 32.3.1	Reduce the amount of impervious surfaces in new development and redevelopment. (See Safety and Noise Action 2.1.1.)

TABLE D-6 (Continued)
CITY OF WALNUT CREEK – GENERAL PLAN POLICIES

Element	Policy	
Built Environment Element (cont.)		
Air and Water Quality	Action 32.3.2	Require that impervious surfaces not drain directly into storm drains. (See Safety and Noise Action 2.1.1.)
Air and Water Quality	Policy 32.5	Encourage preservation of natural water bodies and drainage systems.
Air and Water Quality	Action 32.5.3	Require participation in offsite or regional programs—including stream restoration—that provide water-quality benefits within the same watershed, wherever development and/or redevelopment projects disturb natural water bodies or drainage systems.
Transportation Element		
Growth Management Standards	Goal 3	Maintain a transportation network that provides mobility for all ages and abilities and for all areas of the community.
Growth Management Standards	Policy 3.1	Maintain the level of service standards for roadways shown in Figure 2 for the City's transportation network.
Growth Management Standards	Action 3.1.1	Except as modified by Chapter 4 Policy 9.2, require that new development meet intersection LOS standards.
Growth Management Standards	Action 3.2.1	Manage and coordinate construction projects to minimize traffic delays.
Neighborhood Traffic and Parking	Goal 4	Protect residential neighborhoods from through-traffic, speeding, and nonresidential parking.
Neighborhood Traffic and Parking	Policy 4.1	Manage arterial and collector traffic to minimize adverse affects on neighborhoods.
Neighborhood Traffic and Parking	Policy 4.2	Discourage through-traffic on local streets and collectors.
Neighborhood Traffic and Parking	Action 4.2.1	Selectively use alternative street designs to discourage through traffic.
Neighborhood Traffic and Parking	Policy 4.3	Prevent encroachment of nonresidential parking in existing neighborhoods.
Walking	Policy 6.3	When utility rights-of-way, drainage, or other corridors are established, obtain dedications of land or easements, where appropriate, for paths that would enhance the pedestrian system.
Safety and Noise Element		
Seismic and Other Geologic Hazards	Goal 1	Protect life and property from geologic hazards.
Seismic and Other Geologic Hazards	Policy 1.1	Reduce the potential effects of seismic and other geologic hazards, including slope instability.
Seismic and Other Geologic Hazards	Action 1.2.5	For development proposals submitted in areas near high or very high liquefaction-susceptibility areas, require a geotechnical evaluation to identify hazard mitigation measures needed to reduce the risk to life and property from liquefaction-induced hazards.
Flooding	Goal 2	Reduce the potential for flooding in flood-prone areas.
Flooding	Policy 2.1	Reduce the risk of property damage and personal injury due to flooding.
Flooding	Action 2.1.1	Limit the amount of impervious surface in flood-prone areas.
Flooding	Action 2.1.2	Limit runoff in flood-prone areas.
Hazardous Materials	Goal 3	Reduce dangers from hazardous materials.
Hazardous Materials	Policy 3.1	Facilitate the proper disposal of hazardous materials.

TABLE D-6 (Continued)
CITY OF WALNUT CREEK – GENERAL PLAN POLICIES

Element	Policy	
Safety and Noise Element (cont.)		
Hazardous Materials	Policy 3.4	Work with federal and state authorities to ensure that any transport of hazardous materials through Walnut Creek is at the highest standard of safety.
Hazardous Materials	Action 3.4.1	Designate hazardous-material carrier routes that direct hazardous materials away from populated and other sensitive areas.
Hazardous Materials	Action 3.4.2	Prohibit hazardous-materials transport vehicles from parking on city streets.
Hazardous Materials	Action 3.4.3	Require, as much as possible, that new pipelines and other channels carrying hazardous materials be placed to avoid residential areas and, in particular, areas where the population is less mobile (e.g., convalescent homes).
Hazardous Materials	Policy 3.5	Require that soils, groundwater, and buildings affected by hazardous-material releases from prior land uses, and lead and asbestos potentially pre-sent in building materials, will not have the potential to adversely affect the environment or the health and safety of residents.
Hazardous Materials	Action 3.5.1	Require an environmental investigation for hazardous materials when reviewing applications for new development in former commercial or industrial areas.
Hazardous Materials	Policy 3.6	Require that new development and redevelopment protect public health and safety from hazardous materials
Hazardous Materials	Action 3.6.1	Require environmental investigations stipulated by State and County regulations for potential hazardous material releases from prior uses, as well as for lead and asbestos present in building materials.
Fire Hazards	Goal 4	Strive to prevent and reduce damage related to fire hazards.
Fire Hazards	Policy 4.1	Regulate projects in high-risk areas.
Fire Hazards	Policy 4.2	Work with the Contra Costa County Fire Protection District to ensure adequate fire response times and address other fire-related issues in the Planning Area.
Fire Hazards	Action 4.2.1	Require that all new development or redevelopment plans be submitted to the Fire District for review.
Fire Hazards	Action 4.2.2	Require greenbelt zones and fire-resistant landscaping and building materials in developments in and on the edges of higher risk areas.
Fire Hazards	Action 4.2.3	Establish minimum road widths and clearances around structures in high, very high, and extreme fire risk areas.
Public Safety	Goal 5	Promote public safety.
Public Safety	Policy 5.5	Seek ways to reduce police service demands through project design enhancements.
Public Safety	Action 5.5.1	Incorporate crime-reduction and public-safety features in the design and planning of private and public projects.
Public Safety	Action 5.5.2	Submit all discretionary permits to the Police Department for analysis of and recommendations to reduce impacts on police services.
Water Supply	Goal 7	Work with the water districts to ensure safe and adequate water supplies for the Planning Area.
Water Supply	Policy 7.1	Work with water agencies to secure water supplies to serve the Planning Area's growing number of residents and employees.
The Urban Noise Environment	Goal 8	Provide compatible noise environments for new development, redevelopment, and condominium conversions.
The Urban Noise Environment	Action 8.2.1	For new single-family residential projects, use a standard of 60 Ldn for exterior noise in private use areas.
The Urban Noise Environment	Action 8.2.2	For new multifamily residential projects and for the residential component of mixed-use development, use a standard of 65 Ldn in outdoor areas, excluding balconies.

TABLE D-6 (Continued)
CITY OF WALNUT CREEK – GENERAL PLAN POLICIES

Element	Policy	
Safety and Noise Element (cont.)		
The Urban Noise Environment	Action 8.2.3	Strive for a maximum interior noise levels at 45 Ldn in all new residential units.
The Urban Noise Environment	Goal 9	Control excessive noise sources in existing development.
The Urban Noise Environment	Action 9.1.1	Require the evaluation of noise mitigation measures for projects that would cause a substantial increase in noise.
The Urban Noise Environment	Action 9.2.2	Control vehicle-related noise.

[1] Measure P, Ord. 1781, 11/5/91, Section 3.f.

SOURCE: City of Walnut Creek General Plan, 2006.

TABLE D-7
EBMUD WATERSHED MASTER PLAN – APPLICABLE POLICIES AND GUIDELINES

Management Program	**Goals/Policies**	
I- Natural Resource Management Programs		
Water Quality Element	Goal	Maximize reservoir water quality to comply with current and anticipated future drinking water regulations
	Objectives	Maintain the high quality of water stored in District reservoirs
		Ensure that surface runoff from District lands meet state water quality standards
Erosion Control Guidelines	WQ.7	Develop and implement erosion control standards and BMPs to reduce soil erosion, sedimentation, and nutrient impacts throughout the watershed. Standards and BMPs should be adhered to by all staff, contractors, researchers, recreationists, visitors, and others performing construction, maintenance, or other activities on watershed lands.
	WQ.8	Conduct erosion control analysis and planning before initiating construction or other land disturbance activities.
	WQ.11	Prevent construction-related water quality impacts such as erosion from exposed soil and pollutants from equipment.
Recreation, Roads and Trails Guidelines	WQ.27	Evaluate stream crossings with respect to water quality. Identify and implement measures to control sediment, pollutants, or other sources of water quality degradation from entering watercourses.
Buffer Areas Guidelines	WQ.32	Establish buffer zones or setbacks from watershed margins along sensitive urban interface areas to ease the encroaching development pressures on the watershed core and to protect the watershed, tributary streams, and reservoirs. Identify areas that are likely to be developed and consider alternative protection strategies.
	WQ..34	Identify activities adjacent to the developed watershed interface that may affect water quality, such as agriculture, construction, recreation, and rights-of-way. Implement pollution prevention practices (e.g., improving the vegetative buffer between District lands and urban development).
	WQ.35	Protect riparian corridors from direct and indirect water quality impacts. Direct impacts include cattle access, trail crossings, and loss of vegetation. Indirect impacts may include overgrazing, runoff from prescribed burns, animal waste, and runoff from trails and roads.
Reservoirs Guidelines	WQ.37	Stabilize and vegetate shoreline areas and drawdown zones, where necessary and feasible. Use drainage structures, grading, planting, or other site-specific methods to control erosion as needed. Implement BMPs when conducting land-disturbing activities.
Biodiversity Element	Goal	Maintain and enhance biological resource values on District lands through active management and careful coordination with other resource management programs.
	Objectives	Maintain, enhance and where feasible restore plant and animal communities, populations, and species.
		Implement an ecosystem management approach that maintains and enhances natural ecological processes.
		Apply an adaptive management strategy using inventory, management, monitoring, and research.
		Coordinate all resource management programs to ensure that biological resources are protected.
Threatened & Endangered, Special Status Species Guidelines	Bio.1	Enhance habitat for threatened and endangered species as financially feasible.
	Bio.3	Monitor listed species populations and conduct site surveys using monitoring methods identified in the District's *Biological Survey Studies* program (Stebbins 1996).

TABLE D-7 (Continued)
EBMUD WATERSHED MASTER PLAN – APPLICABLE POLICIES AND GUIDELINES

Management Program	Goals/Policies	
I- Natural Resource Management Programs (cont.)		
Habitats and Vegetation Types of High Biological Value Guidelines	Bio.4	Design and control management activities to limit fragmentation of common vegetation types.
	Bio.5	Designate and protect heritage native trees and trees with outstanding characteristics.
	Bio.6	Maintain and, where necessary, enhance habitat suitability for wildlife movement in key corridors.
	Bio.7	Participate in coordinated resource management planning efforts with other local land management agencies to conserve regional biodiversity by maintaining regional movement corridors (e.g., the Caldecott Tunnel corridor) and management of large landscape units. Include a water quality specialist during coordinated resource management planning.
	Bio.8	Identify high-priority sites for habitat restoration based primarily on water quality protection and on the value of restored habitats and location relative to important wildlife use areas and corridors.
	Bio.9	Identify key habitat areas necessary for protection and management of special-status plants and animals. Provide buffer areas to reduce disruption of nesting and roosting areas for raptors, herons, egrets, and other sensitive wildlife species.
	Bio.19	Avoid use of non-native species for erosion control and other re-vegetation that are invasive or that inhibit recovery of native habitats.
Management Coordination Procedures	Bio.21	While planning and implementing resource management actions, apply the following coordination guidelines to meet state and federal legal requirements for threatened and endangered species: • if listed species are likely to be affected, consult with the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and • Game (DFG) as required and implement measures required by USFWS and DFG to avoid take and other financially feasible measures to protect other special-status species.
	Bio 22	In conducting management activities, evaluate effects on species (prioritized according to guideline BIO.1) of proposed management activities (e.g., changes to water system operations, watershed management activities, construction of new facilities and public access) according to the following guidelines: • query GIS for information on known occurrences of listed and other special-status species and special communities and general habitat types in the project area, • identify potential species that could be affected by the proposed action based on known species' occurrences, the habitat type within which the project occurs, and the habitats used by the species (see Table 2-3 for habitat occurrences of species), • assess impact occurrence using the District's Biological Survey Studies protocols (Stebbins 1996), and • evaluate project impacts and identify opportunities to avoid, mitigate, or compensate for impacts, including species- and project-specific buffers to protect plant and animal species from adverse effects of management activities; evaluate consistency with other EBWMP direction.
	Bio.24	Ensure that all District projects that directly impinge on blue line streams, as defined under California Fish and Game Code Sections 1601 and 1603, receive appropriate permits from DFG prior to disturbance.
Fire and Fuel Management Element	Goal	Protect human life and property and provide for public safety, and protect and enhance water quality, other natural resources, and watershed land uses.
	Objective	Provide an appropriate level of fire protection for all watershed lands, emphasizing protection of life, public safety, and property values in interface areas.

TABLE D-7 (Continued)
EBMUD WATERSHED MASTER PLAN – APPLICABLE POLICIES AND GUIDELINES

Management Program	Goals/Policies	
Community Use Management Programs		
Developed Recreation and Trails Element	Goal	Continue to provide a high-quality recreational experience to users of watershed lands that does not compromise the District's goals for water quality and watershed management protection. Provide reasonable access routes between watershed lands and adjacent open space areas consistent with all District resource management goals. Provide equal access to recreational opportunities for users from a wide range of socioeconomic backgrounds and physical abilities where feasible and practical. Ensure that the continuation or modification of recreational use creates as little financial burden on the District and its ratepayers as is practical.
	Objectives	Offer recreational experiences that complement and are consistent with the protection of District watershed lands and water bodies. Provide opportunities for reasonable use of natural watershed attributes.
		Ensure a high quality of recreational experience on District lands by reducing user conflicts, promoting safety and courtesy, and controlling overcrowding.
		Promote environmental values in recreational use and management.
		Ensure that currently permitted or new recreational activities do not increase the potential for additional soil erosion, landscape modification, or pollutant loading, or adversely affect other watershed or reservoir resources.
		Where feasible, provide trail links to the surrounding regional open space network that do not conflict with resource protection priorities.
		Give priority to those recreational uses that serve the broadest spectrum of the population while maintaining consistency with water quality, biodiversity, fiscal responsibility, and public safety goals.
Guidelines	DRT.4	Close recreational facilities and trails as needed to protect sensitive wildlife species (e.g., nesting birds), curtail soil erosion, protect water quality, reduce fire hazards, and address other public safety concerns.
Cultural Resources Element	Goal	Avoid adversely affecting sensitive cultural resources while implementing District activities on watershed lands, and establish relationships with local Native American groups.
	Objectives	Identify, preserve, and protect significant cultural resources.
		Maintain an ongoing relationship with Native Americans who have ancestral ties to District lands.
	CR.1	Designate staff contact persons to act as liaisons with the Native American community. The contact persons' roles are to convey to District employees the need to protect the cultural resources of District watershed lands and to determine the appropriate level and timing of further coordination with interested Native Americans.
	CR.2	Negotiate a memorandum of understanding with local Native American groups regarding the disposition of Native American artifacts and remains, should any be discovered.
	CR.4	Identify resources that have a high potential for vandalism and ensure that they are protected.
	CR.5	Avoid disturbing significant cultural resource sites and sites of unknown significance, where feasible. Require fire management and other watershed personnel to protect known cultural resource sites during management activities.
	CR.6	Follow the requirements of CEQA Section 21083.2 when undertaking or approving watershed activities.
	CR.7	Conduct records searches and surveys before beginning ground-disturbing activities.
	CR.8	Maintain an inventory of cultural resources in compliance with applicable laws and regulations, including confidentiality requirements

TABLE D-7 (Continued)
EBMUD WATERSHED MASTER PLAN – APPLICABLE POLICIES AND GUIDELINES

Management Program	Goals/Policies	
Community Use Management Programs (cont.)		
Cultural Resources Element (cont.)	CR.9	Document the procedures to be used if potentially significant cultural resources or human remains are discovered accidentally.
	CR.10	Designate areas that are sensitive because of their potential to contain buried cultural resources and ensure that these areas are monitored during surface-disturbing activities.
	CR.11	If sites cannot be avoided or if the boundaries of a site are unknown, consult a qualified archaeologist (including tribal experts designated by the tribe) for recommendations. Recommendations may include covering or “capping” sites with a protective layer of material, recovering data through research and excavation, performing subsurface testing to determine the extent of a site, and relocating or reconstructing historic structures.
Visual Resources Element		
	Goal	Limit the negative visual effects of District activities on watershed lands by ensuring that valuable and rare visual resources are protected from degradation during other management activities.
	Objectives	Maintain and protect the general character and visual qualities of watershed lands.
		Maintain and protect the visual qualities experienced from reservoir surfaces on which public access is permitted.
		Maintain and protect the visual qualities viewed from specific public use areas, public trails, and public roads within watershed lands.
		Maintain and protect the visual qualities viewed from key public viewpoints located adjacent to District lands.
		Maintain and develop a unified visual quality and unity in structures, signs, and other improvements on watershed lands.
Guidelines	VR.1	Review new land use proposals to ensure that they are consistent with the watershed’s visual character, outside of important viewing areas, or screened from important views from reservoir surfaces, shoreline locations, public trails, roads, and key public viewing areas.
	VR.2	Retain viable shoreline vegetation where it occurs on reservoirs.
	VR.4	Develop design standards for all development, including recreational facilities, District buildings, watershed signs, and other physical improvements to reflect a strong, unified visual character. Design standards should specify general architectural character, material types, acceptable colors, structure heights, roof configurations and overhangs, uniform site furnishings (e.g., benches, trash receptacles, bicycle racks, and bollards), and uniform sign treatment. Require all proposed new development to conform to design standards. Retrofit existing development, to the extent feasible, to conform to design standards.
	VR.5	Develop native plant restoration standards and apply these to all development as appropriate. Plant restoration standards should specify the use of natives where available for all site restoration and the replacement of nonnative plant materials with native plant materials to the extent feasible and compatible with fire protection needs. Non-natives may be used where site natives are unavailable for a specific application.
	VR.6	Cluster watershed development and uses to reduce visual intrusions into natural watershed lands and to reduce adverse visual effects on intervening watershed lands.
	VR.9	Coordinate with EBRPD, Alameda and Contra Costa Counties, and other adjacent jurisdictions that have significant open space resources to develop common goals and guidelines for preserving and strengthening the regional visual landscape.

TABLE D-7 (Continued)
EBMUD WATERSHED MASTER PLAN – APPLICABLE POLICIES AND GUIDELINES

Management Program	Goals/Policies	
Watershed Management Area Direction – *San Pablo Reservoir Watershed*		
Management Direction Developed Recreation and Trails (DRT)	SP.23	Maintain the District recreational trail system in the current configuration and with the current use rules and regulations and a permit system.
	SP.24	Develop a Bay Area Ridge Trail connector that crosses District property approximately west and north of San Pablo Reservoir.
	SP.25	Designate the Inspiration Trail and Bear Creek Trail system that crosses south of San Pablo Reservoir as a District-controlled portion of the American Discovery Trail and Mokelumne Coast to Crest Trail. The operation and types of uses permitted on these trails will be consistent with District rules and regulations.
Visual Resources	SP.26	Prohibit management practices, with the exception of the phased elimination of the Monterey pines surrounding the reservoir, or development proposals that would require large-scale modifications to portions of the San Pablo watershed landscape that are highly visible from San Pablo Dam Road, the San Pablo Dam recreation area, Old San Pablo Dam Road, Inspiration Trail, proposed regional trail connectors, and the reservoir surface.
	SP.29	Consider effects on visual quality when proposing watershed management activities in high-priority visual resource areas on Sobrante and San Pablo Ridges.
	SP.30	Formalize visual quality guidelines with EBRPD that emphasize protection of visually sensitive areas on San Pablo Ridge at Tilden Regional Park/Nature Area, Wildcat Canyon Regional Park, and Kennedy Grove Park.
Watershed Management Area Direction – *Lafayette Reservoir Watershed*		
Visual Resources	L.11	Maintain the current visual character of the Lafayette Reservoir watershed by restricting additional recreational development (with the exception of the food service facilities), maintaining and improving existing watershed facilities and signs to reflect a unified recreation area design, and developing a cooperative agreement with the Cities of Orinda and Lafayette to avoid additional development encroachment near the current looped trail system.
	L.12	Use California “site natives” in any supplemental plantings of woody species in the undeveloped areas of the park. Use appropriate District recommended drought-tolerant species in the developed areas. Give highest priority to fire-resistant species.
Management Direction for Interjursidictional Coordination		
General Management	Objectives	Encourage policy discussions between local jurisdictions to resolve common interface issues, work on revisions to local general plans that address interface issues important to the District, formalize District review and comment on general plan revisions, specific development proposals, and environmental review actions, and promote District participation in overall land use planning and the decision-making processes of adjacent jurisdictions.
		Strengthen the understanding of District staff and staff of adjacent jurisdictions regarding important interface issues.
		Develop mutually agreed-upon interface guidelines that could be incorporated into the planning documents of adjacent jurisdictions, primarily for protection of water quality, emergency response, and fire and fuels management.
Management Guidelines	1	Establish and formalize a central point of contact for adjacent jurisdictions wishing to contact the District and for District contacts to adjacent Jurisdictions, and
	2	Formalize an internal procedure for: • District staff communication with adjacent jurisdictions and • Coordinated staff review and comment on planning actions, development proposals, and environmental review in adjacent jurisdictions.

TABLE D-7 (Continued)
EBMUD WATERSHED MASTER PLAN – APPLICABLE POLICIES AND GUIDELINES

Management Program	Goals/Policies	
Management Direction for Interjursidictional Coordination (cont.)		
Management Guidelines (cont.)	7	Continue coordination with adjacent jurisdictions and participation in coordinated efforts to maintain communication among agencies with water quality interests related to District-owned watershed lands.
East Bay Regional Park District	EB.1	Coordinate with EBRPD on the planning and management of all regional parks that are within or coincident with District reservoir watersheds to address issues pertaining to water quality, wildfire, public encroachment, viewshed, and wildlife movement in the Caldecott Tunnel corridor.

SOURCE: East Bay Municipal Utility District, Watershed Master Plan, 1996.

APPENDIX E

Biological Resources – Special-Status Species

TABLE E-1
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
		SPECIES LISTED OR PROPOSED FOR LISTING		
Invertebrates				
Vernal pool fairy shrimp *Branchinecta lynchi*	FT/--	Grassland vernal pools	**Absent**. Suitable habitat not present in project area.	March-April
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT/--	Serpentine bunchgrass grassland	**Absent**. Suitable habitat not present in project area. Not known from project area (EBMUD, 1994).	March-May
Callippe silverspot butterfly *Speyeria callippe callippe*	FE/--	Found in native grasslands with *Viola pedunculata* as larval food plant	**Absent**. Suitable habitat not present in project area.	Spring
Fish				
Tidewater goby *Eucyclogobius newberryi*	FT/CSC	Shallow waters of bays and estuaries	**Absent**. Suitable habitat not present in project area.	Year-round
Steelhead – Central California Coast (ESU) *Oncorhynchus mykiss*	FT/CSC	Unblocked Bay Area and coastal rivers and streams	**Moderate Potential**. Species may occur within San Pablo Creek downstream from San Pablo Reservoir adjacent to Sobrante WTP and within St. Mary's Road/Rohr Road Pipeline area. Non-listed hatchery-released rainbow trout occur in San Pablo Reservoir and may move into San Pablo Creek adjacent to Orinda WTP (EBMUD, 1994).	Year-round
Winter-run Chinook salmon *Oncorhynchus tshawytscha*	FE/CE	Unblocked Bay Area and coastal rivers and streams	**Absent**. Suitable habitat not present in project area.	Winter
Amphibians				
California red-legged frog *Rana aurora draytonii*	FT/CSC	Breed in stock ponds, pools, and slow-moving streams with emergent vegetation for escape cover and egg attachment	**Moderate Potential**. Protocol survey of Lafayette Creek between Bentley School and Lafayette WTP did not identify this species (Beeman, 2001). However, species is known to occur within ponds in Laguna Creek east of Moraga Road (CNDDB, 2005) and within Dutra Creek (tributary to San Pablo Creek) approximately one mile north of Orinda WTP (EBMUD, date). Potential habitat located in Lauterwasser Creek and its tributaries along Happy Valley Pumping Plant and Pipeline, Las Trampas Creek along Tice Valley Pipeline, Laguna Creek between Campolindo Drive and Via Granada and other drainages that cross the Moraga Road Pipeline, within San Pablo Creek adjacent to the Sobrante WTP, within San Ramon Creek in the New Leland Pressure Zone Reservoir and Pipeline area, the San Pablo Pipeline area and the Saint Mary's Road/Rohr Road Pipeline area. Low potential habitat is located within San Pablo Creek near the Orinda WTP and its two tributaries between the ballfield area and the Orinda WTP.	Year-round

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
		SPECIES LISTED OR PROPOSED FOR LISTING		
Amphibians (cont.)				
California tiger salamander *Ambystoma californiense*	FT/CSC	Wintering sites occur in grasslands occupied by burrowing mammals; breed in ponds and vernal pools	**Absent.** Suitable habitat not present in project area	November-May
Reptiles				
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT/CT	Inhabits open to partially open scrub communities, including coyote bush scrub and chamise chaparral on primarily south-facing slopes	**Low to Moderate Potential.** Marginal coastal scrub habitat present along Moraga Road Pipeline. Coastal scrub in other areas is not suitable for this species. Protocol trapping surveys at Lafayette Reservoir did not identify this species; species presence considered unlikely within Lafayette Reservoir watershed (Swaim, 2000). San Pablo Pipeline area and the Saint Mary's Road/Rohr Road Pipeline located within critical habitat for this species (USFWS, 2005a). Species has moderate potential to occur in these areas.	Spring
Birds				
Little willow flycatcher *Empidonax traillii brewsteri*	FSC/CE	Rare to locally uncommon summer resident in wet meadows and montane riparian habitats from 600 to 2,440 m (2,000-8,000 feet) in elevation and a common spring (mid-May to early June) and fall (mid-August to early September) migrant at lower elevations, primarily in riparian habitats, throughout the state exclusive of the North coast	**Low Potential.** Suitable habitat not present in project area.	May-August
American peregrine falcon *Falco peregrinus anatum*	FSC/CE	Forages in marshes and grasslands. Nesting habitat includes high, protected cliffs and ledges near water	**Low Potential**. May forage over Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Moraga Road Pipeline and San Pablo Pipeline (EBMUD, 1994 and 2005b). No suitable nesting habitat in project area.	Year-round
Bald eagle[1] *Haliaeetus leucocephalus*	FT/CE	Nests and forages on inland lakes, reservoirs, and rivers; winter foraging at lakes and along major rivers	**Moderate Potential**. Known to winter along Lafayette Reservoir outside of project area and potentially within San Pablo Pipeline area (EBMUD, 1994 and 2005b). May occasionally roost near Highland Reservoir Pipeline and Moraga Road Pipeline.	Winter

[1] The bald eagle was proposed for delisting by the U.S. Fish and Wildlife Service on July 6, 1999.

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
		SPECIES LISTED OR PROPOSED FOR LISTING		
Birds (cont.)				
Bank swallow *Riparia riparia*	--/CT	Requires vertical banks and cliffs with fine-textured or sandy soils near water for nesting, forages over grassland, shrubland and other open areas.	**Low Potential.** Suitable habitat not present in project area.	March-August
Plants				
Pallid manzanita *Arctostaphylos pallida*	FT/CE/ 1B	Broadleaved upland forest, cismontane woodland, closed-cone coniferous forest, chaparral, and coastal scrub. Found in siliceous shale, sand, or gravelly substrates.	**Low Potential.** Known to occur in Alameda and Contra Costa counties. Although it occurs in the Upper San Leandro Watershed basins; no suitable habitat at project sites due to development or past disturbance.	December–March
Robust spineflower *Chorizanthe robusta* var. *robusta*	FE/--/ 1B	Coastal scrub, coastal sand dunes, openings in oak woodlands with sandy or gravelly soil	**Low Potential.** No suitable habitat at project sites.	April-September
Presidio clarkia *Clarkia franciscana*	FE/CE/ 1B	Coastal scrub, grassland (ultramafic)	**Low Potential.** No ultramafic soils. No suitable habitat at project sites.	May-July
Santa Cruz tarplant *Holocarpha macradenia*	FT/CE/1B	Coastal scrub, coastal sand dunes, openings in oak woodlands with sandy or gravelly soil	**Low potential.** Naturally occurring populations have been extirpated from the Bay Area (CNPS, 2001). A transplanted population near San Pablo area has not persisted.	June-October
Contra Costa goldfields *Lasthenia conjugens*	FE/--/1B	Moist grasslands, vernal pools	**Low Potential.** No suitable habitat at project sites due to development or past disturbance. The Moraga Pipeline supports grassland within and near the Lafayette Recreation Area. Not known to occur in EBMUD watershed based on past surveys (EBMUD 1994, EBMUD, 2005a).	March-June
San Francisco popcorn-flower *Plagiobothrys diffusus*	FSC/CE/1B	Coastal prairie and valley and foothill grassland	**Low Potential.** No suitable habitat at project sites due to development or past disturbance. The Moraga Pipeline supports grassland within and near the Lafayette Recreation Area. Not known to occur in EBMUD watershed based on past surveys (EBMUD 1994, EBMUD, 2005a).	April–June
Adobe sanicle *Sanicula maritima*	--/CR/1B	Grows in meadow and seeps, valley and foothill grasslands, chaparral, and coastal prairie	**Low Potential.** No suitable habitat at project sites due to development or past disturbance. The Moraga Pipeline supports grassland within and near the Lafayette Recreation Area. Not known to occur in EBMUD watershed based on past surveys (EBMUD 1994, EBMUD, 2005a).	February-May
California seablite *Suaeda californica*	FE/--/1B	Coastal salt marshes and swamps	**Low Potential.** No suitable habitat at project sites.	July-October

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
FEDERAL OR STATE SPECIES OF SPECIAL CONCERN				
Invertebrates				
Bridges' coast range shoulderband *Helminthoglypta nickliniana bridgesi*	FSC/--	Inhabits open hillsides under tall grasses and weeds, prefers rock piles	**Low Potential.** Suitable habitat not present in project area.	Year-round
Ricksecker's water scavenger beetle *Hydrochara rickseckeri*	FSC/--	Found in freshwater ponds, seeps, vernal pools and slow moving streams	**Low Potential.** Suitable habitat not present in project area.	January-July
Curved-foot hygrotus diving beetle *Hygrotus curvipes*	FSC/--	Found in vernal pools and alkali flats	**Absent.** Suitable habitat not present in project area.	January-July
California linderiella *Linderiella occidentalis*	FSC/--	Seasonal pools in intact grasslands where alluvial soils are underlain by hardpan or in sandstone depressions	**Absent.** Suitable habitat not present in project area.	Winter months
San Francisco lacewing *Nothochrysa californica*	FSC/--	Found beneath sandstone rocks in open oak grasslands	**Low Potential.** Suitable habitat not present in project area.	Spring
Mimic tryonia *Tryonia imitator*	FSC/--	Coastal lagoons and salt marshes	**Absent.** Suitable habitat not present in project area.	Year-round
Amphibian				
Foothill yellow-legged frog *Rana boylii*	FSC/CSC	Streams with quiet pools absent of predatory fish	**Low to Moderate Potential**. Historic occurrences in Lafayette Creek and San Pablo Creek, presumed extirpated within EBMUD watershed lands (EBMUD, 1994). Potential habitat located in Las Trampas Creek along Tice Pipeline, Lauterwasser Creek near Happy Valley Pumping Plant and Pipeline, San Pablo Creek near Sobrante WTP, and the Saint Mary's Road/Rohr Road Pipeline area.	April-June
Western spadefoot toad *Spea hammondii*	FSC/CSC	Grasslands or valley-foothill hardwood woodlands with shallow temporary ponds for breeding	**Absent.** Suitable habitat not present in project area.	February-August
Reptiles				
Silvery legless lizard *Anniella pulchra pulchra*	FSC/CSC	Moist sandy or loose loamy soils in areas with sparse vegetation.	**Low Potential** Suitable habitat not present in project area.	April- September

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
		FEDERAL OR STATE SPECIES OF SPECIAL CONCERN		
Reptiles (cont.)				
Western pond turtle *Clemmys marmorata*	FSC/CSC	Freshwater ponds and slow streams edged with sandy soils for laying eggs	**Moderate Potential**. Survey of Lafayette Creek between Bentley School and Lafayette WTP did not identify this species (Beeman, 2001). Known to occur in Lafayette Reservoir (EBMUD, 1994 and 2005). Potential habitat located in Lafayette Creek near Lafayette WTP, Lafayette Reclaimed Water Pipeline and Orinda-Lafayette Aqueduct, Lauterwasser Creek along Happy Valley Pumping Plant and Pipeline, Las Trampas Creek along Tice Valley Pipeline, Laguna Creek between Campolindo Drive and Via Granada along the Moraga Road Pipeline, within San Pablo Creek adjacent to the Sobrante WTP, within San Ramon Creek in the New Leland Pressure Zone Reservoir and Pipeline area, the San Pablo Pipeline area, the Saint Mary's Road/Rohr Road Pipeline area, and within Lafayette Reservoir at terminus of Highland Pipeline. Low potential habitat is located within San Pablo Creek near the Orinda WTP and its two tributaries between the ballfield area and the Orinda WTP.	Year-round
California horned lizard *Phrynosoma coronatum frontale*	FSC/CSC	Patchy open areas with sandy soils	**Low Potential** Suitable habitat not present in project area. Not known from project area (EBMUD, 1994).	Year-round
Birds				
Cooper's hawk *Accipiter cooperi*	--/CSC	Nests in riparian growths of deciduous trees and live oak woodlands	**High Potential**. Known to breed and winter in near Lafayette Reservoir and San Pablo Reservoir (EBMUD, 1994). Riparian and woodland habitat at Lafayette WTP, Orinda WTP, Walnut Creek WTP, Sobrante WTP, Upper San Leandro WTP, Orinda-Lafayette Aqueduct, Ardith Reservoir and Donald Pumping Plant, Fay Hill Reservoir, Pumping Plant and Pipeline Improvements, Glen Pipeline Improvements, Happy Valley Pumping Plant and Pipeline, Highland Reservoir and Pipeline, Lafayette Reclaimed Water Pipeline, Leland Isolation Pipeline and Bypass Valves (Danville Pumping Plant), Moraga Reservoir, Moraga Road Pipeline, New Leland PZ Reservoir and Pipeline, Sunnyside Pumping Plant, Tice Pumping Plant and Pipeline, Withers Pumping Plant, St. Mary's Road/Rohr Road Pipeline area and San Pablo Pipeline area may support this species.	Year-round

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
		FEDERAL OR STATE SPECIES OF SPECIAL CONCERN		
Birds (cont.)				
Sharp-shinned hawk *Accipiter striatus*	--/CSC	Nests in riparian growths of deciduous trees and live oaks	**High Potential**. Known to occur near Lafayette Reservoir (Loughman, 2002). Riparian and woodland habitat at Lafayette WTP, Orinda WTP, Walnut Creek WTP, Sobrante WTP, Upper San Leandro WTP, Orinda-Lafayette Aqueduct, Ardith Reservoir and Donald Pumping Plant, Fay Hill Reservoir, Pumping Plant and Pipeline Improvements, Glen Pipeline Improvements, Happy Valley Pumping Plant and Pipeline, Highland Reservoir and Pipeline, Lafayette Reclaimed Water Pipeline, Leland Isolation Pipeline and Bypass Valves (Danville Pumping Plant), Moraga Reservoir, Moraga Road Pipeline, New Leland PZ Reservoir and Pipeline, Sunnyside Pumping Plant, Tice Pumping Plant and Pipeline, Withers Pumping Plant, St. Mary's Road/Rohr Road Pipeline, and San Pablo Pipeline may support this species.	Year-round
Tricolored blackbird *Agelaius tricolor*	FSC/CSC	Riparian thickets and emergent vegetation	**Low Potential**. Project area provides marginal habitat for this species. Species not known from project area (CNDDB, 2005; EBMUD, 1994, 2005a and 2005b).	Spring
Bell's sage sparrow *Amphispiza belli belli*	FSC/CSC	Inhabits low, fairly dense stands of shrubs, including chamise chaparral and coastal sage scrub	**Moderate Potential.** Moraga Road Pipeline and San Pablo Pipeline provide suitable habitat.	Year-round
Golden eagle *Aquila chrysaetos*	--/CSC	Nests in canyons and large trees in open habitats	**Moderate Potential.** Observed near Lafayette Reservoir and San Pablo Reservoir (Loughman, 2002; EBMUD, 2005b). Ornamental Monterey pines, woodland and grassland along Highland Reservoir and Pipeline, Lafayette Reclaimed Water Pipeline, Moraga Road Pipeline, Fay Hill Reservoir, St. Mary's Road/Rohr Road Pipeline area and San Pablo Pipeline area provide suitable nesting and foraging habitat. Sunnyside Pumping Plant area may provide potential foraging habitat.	Year-round
Burrowing owl *Athene cunicularia*	FSC/CSC	Nests in mammal burrows in open, sloping grasslands	**Low to Moderate Potential**. No known occurrences from the project area (CNDDB, 2005; EBMUD, 1994). Moraga Road Pipeline, Fay Hill Reservoir, New Leland PZ Reservoir and Pipeline, St. Mary's Rohr Road Pipeline and San Pablo Pipeline grassland provides potential nesting and foraging habitat.	Year-round

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
FEDERAL OR STATE SPECIES OF SPECIAL CONCERN				
Birds (cont.)				
Oak titmouse *Baeolophus inornatus*	FSC/--	Nests in oak woodlands, forests, riparian habitats supporting oaks	**High Potential.** Known to occur at Lafayette Reservoir (EBMUD, 2005). May occur within oak woodlands and riparian habitat at Lafayette WTP, Orinda WTP, Walnut Creek WTP, Sobrante WTP, Orinda-Lafayette Aqueduct, Ardith Reservoir and Donald Pumping Plant, Glen Pipeline Improvements, Happy Valley Pumping Plant and Pipeline, Highland Reservoir and Pipeline, Lafayette Reclaimed Water Pipeline, Leland Isolation Pipeline and Bypass Valves (Danville Pumping Plant), Moraga Reservoir, Moraga Road Pipeline, New Leland PZ Reservoir and Pipeline, Sunnyside Pumping Plant, Tice Pumping Plant and Pipeline, Withers Pumping Plant, St. Mary's Road/Rohr Road Pipeline, and San Pablo Pipeline.	March-July
Ferruginous hawk *Buteo regalis*	--/CSC	Forages in open grasslands and agricultural areas; breeds north of California.	**Low Potential**. May forage over grasslands along Moraga Road Pipeline, and Fay Hill Reservoir.	Winter
Northern harrier *Circus cyaneus*	--/CSC	Builds nest on ground in tall grasses, wet meadows and marshy habitats. Fairly common in open areas near wetland habitats	**Moderate Potential**. Winter resident near Lafayette Reservoir and San Pablo Reservoir (Loughman, 2002; EBMUD 2005b). Grassland habitat along Moraga Road Pipeline, Fay Hill Reservoir and wetlands along San Pablo Pipeline may support this species.	Year-round
Yellow warbler *Dendroica petechia brewsteri*	--/CSC	Nests in riparian corridors with willows or other dense foliage and low, open canopy	**Low to Moderate Potential.** Riparian habitat within Laguna Creek east of the Moraga Road Pipeline between Campolindo Drive and Via Granada provides marginal nesting habitat for this species. Known to occur near San Pablo Pipeline (EBMUD, 2005b). May occur in St. Mary's Road/Rohr Road Pipeline area.	April–August
White-tailed kite *Elanus leucurus*	FSC/3511	Nests near wet meadows and open grasslands in dense oak, willow or other large tree stands.	**Moderate Potential**. Known to occur near Lafayette Reservoir and San Pablo Reservoir (Loughman, 2002; EBMUD, 2005b). Grassland, woodland and riparian habitat at Fay Hill Reservoir, Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Moraga Road Pipeline, New Leland PZ Reservoir and Pipeline, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline area may support this species.	March-July

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
FEDERAL OR STATE SPECIES OF SPECIAL CONCERN				
Birds (cont.)				
Pacific-slope flycatcher *Empidonax difficilis*	FSC/--	Warm moist woodlands, including valley foothill and montane riparian, coastal and blue oak woodlands, and montane hardwood-conifer habitats	**Moderate Potential**. May occur within oak woodlands and riparian habitat at Lafayette WTP, Orinda WTP, Walnut Creek WTP, Sobrante WTP, Orinda-Lafayette Aqueduct, Glen Pipeline Improvements, Happy Valley Pumping Plant and Pipeline, Highland Reservoir and Pipeline, Lafayette Reclaimed Water Pipeline, Leland Isolation Pipeline and Bypass Valves (Danville Pumping Plant), Moraga Reservoir, Moraga Road Pipeline, New Leland PZ Reservoir and Pipeline, Sunnyside Pumping Plant, Tice Pumping Plant and Pipeline, Withers Pumping Plant, and St. Mary's Road/Rohr Road Pipeline area. Species also observed near San Pablo Reservoir (EBMUD, 2005b); may occur along San Pablo Pipeline.	Summer
California horned lark *Eremophila alpestris actia*	--/CSC	Nests and forages in short-grass prairie, mountain meadow, coastal plain, fallow fields, and alkali flats	**Moderate Potential.** Moraga Road Pipeline, Fay Hill Reservoir, Sunnyside Pumping Plant, New Leland PZ Reservoir and Pipeline, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline areas provide suitable grassland nesting and foraging habitat.	March–July
Merlin *Falco columbarius*	--/CSC	Breeds outside California, inhabits coastlines, open grasslands, savannahs, and woodlands	**Moderate Potential.** Observed near Lafayette Reservoir and San Pablo Reservoir (Loughman, 2002; EBMUD, 2005bb). May occur along Fay Hill Reservoir, Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Moraga Road Pipeline and San Pablo Pipeline in winter or during migration.	September–May
Saltmarsh common yellowthroat *Geothlypic trichas sinuosa*	FSC/CSC	Saline and freshwater marshes	**Low Potential**. Suitable emergent marsh habitat is not present in project area. Species not known from project area (CNDDB, 2005; EBMUD, 1994, 2005a and 2005b).	Year-round
Yellow-breasted chat *Icteria virens*	--/CSC	Nests in dense riparian thickets of willows, vine tangles, and dense brush associated with streams, swampy ground and the borders of small ponds.	**Low to Moderate potential.** Riparian habitat within Laguna Creek east of the Moraga Road Pipeline between Campolindo Drive and Via Granada provides marginal nesting habitat for this species. St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline may support this species.	March–September
Loggerhead shrike *Lanius ludovicianus*	FSC/CSC	Nests in shrublands and forages in open grasslands	**High Potential.** Known from San Pablo Reservoir area (EBMUD, 2005bb). Moraga Road Pipeline, New Leland PZ Reservoir and Pipeline, Walnut Creek WTP, Sunnyside Pumping Plant, Fay Hill Reservoir, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline areas provide suitable grassland and scrub habitat.	March-Sept.

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
FEDERAL OR STATE SPECIES OF SPECIAL CONCERN				
Birds (cont.)				
Lewis' woodpecker *Melanerpes lewis*	FSC/--	Nests in cavities of dead or burned out trees primarily in oak savannah, and open riparian woodland habitats	**Low Potential**. Suitable woodland habitat is not present in project area.	Winter
Osprey *Pandion haliaetus*	--/CSC	Requires tall snags or living trees adjacent to or over water for nesting; also will nest on poles or cliffs	**Low to Moderate Potential.** Known to occur adjacent to Lafayette Reservoir and San Pablo Reservoir (EBMUD, 1994 and 2005b). Project sites do not provide suitable aquatic foraging habitat but species may occasionally roost near Highland Reservoir and Pipeline, Moraga Road Pipeline and San Pablo Pipeline.	March-June
American white pelican *Pelecanus erythrorhynchos*	--/CSC/--	Winters on salt ponds, large lakes, and estuaries; loafs on open water during the day; roosts at night along water's edge, sandbars	**Low Potential.** Known to occur within and along edges of San Pablo Reservoir (EBMUD, 2005b); species is not expected to utilize habitats within San Pablo Pipeline.	Winter
Double-crested cormorant *Phalacrocorax auritus*	--/CSC	Occurs in coastal estuaries, salt ponds, and inland reservoirs and lakes.	**Low Potential.** Known to occur within Lafayette Reservoir (EBMUD, 1994). Project sites do not provide suitable perching or aquatic habitat. Project activities associated with the Highland overflow pipeline will avoid the Lafayette Reservoir Intake Tower and roosting habitat for this species.	Year-round
Rufous hummingbird *Selasphorus rufus*	FSC/--	Inhabits riparian areas, open woodlands, chaparral, and other habitat with nectar-producing flowers; breeding does not occur in San Francisco Bay Area	**Moderate Potential.** Woodland and riparian habitat at Lafayette WTP, Orinda WTP, Walnut Creek WTP, Sobrante WTP, Orinda-Lafayette Aqueduct, Glen Pipeline Improvements, Happy Valley Pumping Plant and Pipeline, Lafayette Reclaimed Water Pipeline, Leland Isolation Pipeline and Bypass Valves (Danville Pumping Plant), Highland Reservoir and Pipeline, Moraga Reservoir, Moraga Road Pipeline, New Leland PZ Reservoir and Pipeline, Sunnyside Pumping Plant, Tice Pumping Plant and Pipeline, Withers Pumping Plant, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline may provide foraging habitat for this species.	Summer
Allen's hummingbird *Selasphorus sasin*	FSC/--	Inhabits coastal scrub, valley foothill hardwood and riparian habitats	**Moderate Potential.** Coastal scrub, woodland and riparian habitat at Lafayette WTP, Orinda WTP, Walnut Creek WTP, Sobrante WTP, Upper San Leandro WTP, Orinda-Lafayette Aqueduct, Glen Pipeline Improvements, Ardith Reservoir and Donald Pumping Plant, Happy Valley Pumping Plant and Pipeline, Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Moraga Reservoir, Moraga Road	January–July

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
FEDERAL OR STATE SPECIES OF SPECIAL CONCERN				
Birds (cont.)				
			Pipeline, New Leland PZ Reservoir and Pipeline, Sunnyside Pumping Plant, Tice Pumping Plant and Pipeline, Withers Pumping Plant, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline may support this species.	
Bewick's wren *Thryomanes bewickii*	FSC/--	Inhabits chaparral, may move to adjacent riparian and edges of woodland habitats	**High Potential.** Observed near Lafayette Reservoir and San Pablo Reservoir (Loughman, 2002; EBMUD, 2005b). Coastal scrub and woodland within the Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Orinda WTP, Orinda-Lafayette Aqueduct, Moraga Road Pipeline, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline may support this species.	Year-round
California thrasher *Toxostoma redivivum*	FSC/--	Moderate to dense chaparral, open valley foothill riparian thickets	**Moderate Potential.** Observed near Lafayette Reservoir (Loughman, 2002). Coastal scrub, woodland and riparian habitat within the Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Moraga Road Pipeline, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline may support this species.	Year-round
Mammals				
Pallid bat *Antrozous pallidus*	--/CSC/--	Inhabits a variety of habitats ranging from desert scrub to grasslands to coniferous and mixed hardwood forests. In northern and central CA, associated primarily with oak woodlands. Feeds mostly on ground-dwelling arthropods.	**Low to Moderate Potential.** May forage over and roost near Orinda/Lafayette Aqueduct, Fay Hill Reservoir, Walnut Creek WTP, Highland Reservoir and Pipeline, Moraga Road Pipeline, and Tice Pumping Plant and Pipeline.	March–August
Pacific western big-eared bat *Corynorhinus townsendii townsendii*	FSC/CSC	Highly associated with mines and caves, found in a variety of habitats ranging from oak woodlands to mixed coniferous forests, to low desert scrub.	**Moderate Potential**. Woodland habitats at Walnut Creek WTP, Orinda WTP, Orinda-Lafayette Aqueduct, Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Moraga Road Pipeline, Tice Pumping Plant and Pipeline, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline may support this species.	February-August
Berkeley kangaroo rat *Dipodomys heermanni berkeleyensis*	FSC/--	Open grassy hilltops and open spaces in chaparral and blue oak/gray pine woodland	**Low Potential.** Suitable habitat is not present in the project area. Presumed extirpated in majority of project area (EBMUD, 1994).	Year-round

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
FEDERAL OR STATE SPECIES OF SPECIAL CONCERN				
Mammals (cont.)				
Greater western mastiff bat *Eumops perotis californicus*	FSC/CSC	Primarily distributed along the western Sierra Nevada in all habitats with significant rock outcrops and formations.	**Low Potential**. Suitable breeding habitat is not present in the project area.	February-August
Mountain lion *Felis concolor*	--/3511	Forests, woodlands and brushy habitats, typically avoids open habitats	**High Potential.** Known to occur in vicinity of Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Moraga Road, and San Pablo Pipelines (EBMUD, 1994 and 2005b)	Year-round
Small-footed myotis bat *Myotis ciliolabrum*	FSC/--	Forages over grasslands and roosts in caves and rock crevices	**Low Potential**. Fay Hill Reservoir, Walnut Creek WTP and Moraga Road Pipeline may provide suitable foraging habitat.	February-August
Long-eared myotis bat *Myotis evotis*	FSC/--	Inhabits woodlands and forests up to approximately 8,200 feet in elevation, roosts in crevices and snags	**Moderate Potential**. Coastal scrub and woodland habitats at Walnut Creek WTP, Orinda WTP, Orinda-Lafayette Aqueduct, Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Moraga Road Pipeline, Tice Pumping Plant and Pipeline, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline may support this species.	February-August
Fringed myotis bat *Myotis thysandodes*	FSC/--	Inhabits a variety of woodland habitats, roosts in crevices or caves, and forages over vegetation and along forest edges	**Moderate Potential**. Coastal scrub, woodland and riparian habitats at Lafayette WTP, Orinda WTP, Walnut Creek WTP, Sobrante WTP, Orinda-Lafayette Aqueduct, Fay Hill Reservoir, Glen Pipeline Improvements, Happy Valley Pumping Plant and Pipeline, Lafayette Reclaimed Water Pipeline, Leland Isolation Pipeline and Bypass Valves (Danville Pumping Plant), Highland Reservoir and Pipeline, Moraga Road Pipeline, New Leland PZ Reservoir and Pipeline, Sunnyside Pumping Plant, Tice Pumping Plant and Pipeline, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline may support this species.	February-August
Long-legged myotis bat *Myotis volans*	FSC/--	Inhabits a wide variety of habitats ranging from coastal forests to Joshua tree woodlands, day roosts in hollow trees and snags. Forages over open areas on moths, beetles and other flying insects	**Moderate Potential**. Woodland habitats at Walnut Creek WTP, Orinda WTP, Orinda-Lafayette Aqueduct, Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Moraga Road Pipeline, Tice Pumping Plant and Pipeline, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline may support this species.	February-August
Yuma myotis *Myotis yumanensis*	FSC/--	Found throughout California, particularly associated with most low elevation reservoirs; forages on emergent aquatic insects over relatively still water	**Moderate Potential**. Woodland and riparian habitats along Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, Moraga Road Pipeline, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline may support this species.	February-August

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
FEDERAL OR STATE SPECIES OF SPECIAL CONCERN				
Mammals (cont.)				
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	FSC/CSC	Forests with moderate canopy and moderate to dense understory	**High Potential**. Species is locally abundant (Hartwell, 2005b) and was observed along Moraga Road Pipeline, Orinda WTP and Happy Valley Pumping Plant and Pipeline. Woodland and riparian habitats at Lafayette WTP, Sobrante WTP, Orinda-Lafayette Aqueduct, Glen Pipeline Improvements, Tice Pumping Plant and Pipeline, Lafayette Reclaimed Water Pipeline, Highland Reservoir and Pipeline, St. Mary's Road/Rohr Road Pipeline and San Pablo Pipeline likely support this species as well.	Year-round
American badger *Taxidea taxus*	--/CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils	**Low Potential.** Historic occurrences in project area but considered extirpated (EBMUD, 1994).	Year-round
Plants				
Bent-flowered fiddleneck *Amsinckia lunaris*	FSLC/--/1B	Coastal bluff scrub, woodland, and valley and foothill grassland	**Moderate Potential.** Known to occur in EBMUD watershed basin (EBMUD, 1994). Potential occurrence along undeveloped portion of Moraga Pipeline.	March–June
Alkali milk-vetch *Astragalus tener var tener*	FSC/--/1B	Alkali flats, valley grasslands	**Low Potential.** No suitable habitat in EBMUD WTTIP Area.	March-June
San Joaquin spearscale *Atriplex joaquiniana*	FSC/--/1B	Chaparral scrub, meadows, valley and foothill grassland (alkaline)	**Low Potential.** No suitable habitat in EBMUD WTTIP Area.	
Big-scale balsamroot *Balsamorhiza macrolepis var macrolepis*	FSLC/--/1B	Cismontane woodland, grassland	**Moderate Potential.** Potentially occurs in EBMUD watershed basin (EBMUD, 1994). Potential occurrence along undeveloped portion of Moraga Pipeline.	March-June
Mt. Diablo fairy-lantern *Calochortus pulchellus*	--/--/1B	Woody and shrubby slopes of chaparral, cismontane and riparian woodland, and valley and foothill grassland	**Moderate Potential.** Known to occur in EBMUD watershed basin (EBMUD, 1994). Potential occurrence along undeveloped portion of Moraga Pipeline.	April–June
Franciscan thistle *Cirsium andrewsii*	--/--/4	Broadleafed upland forests, coastal bluff scrub, sometimes on serpentinite	**Moderate Potential.** Known to occur in EBMUD watershed basin (EBMUD, 1994). Potential occurrence along undeveloped portion of Moraga Pipeline.	June-July
Mt. Diablo bird's-beak *Cordylanthus nidularius*		Open, dry chaparral (serpentine)	**Low Potential.** No suitable habitat in EBMUD WTTIP Area.	July-August

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
		FEDERAL OR STATE SPECIES OF SPECIAL CONCERN		
Plants (cont.)				
Western leatherwood *Dirca occidentalis*	--/--/1B	Broadleafed upland forests, closed-cone coniferous forests, chaparral, cismontane woodland, North coast coniferous forests, riparian forests, riparian woodland; mesic sites	**Moderate Potential.** Known to occur in EBMUD watershed basin (EBMUD, 1994). Potential occurrence along undeveloped portion of Moraga Pipeline and in riparian corridors along creeks and associated tributaries near Lafayette WTP, Orinda WTP, Sobrante WTP, Orinda-Lafayette Aqueduct, Glen Pipeline Improvements, Happy Valley Pumping Plant and Pipeline, Highland Reservoir and Pipeline, Lafayette Reclaimed Water Pipeline, Moraga Road Pipeline, Tice Pumping Plant and Pipeline project sites and program-level projects..	January-April
Tiburon buckwheat *Eriogonum luteolum* var. *caninum*	--/--/3	Chaparral, meadows, valley and foothill grassland (serpentine)	**Low Potential.** Known to occur in EBMUD watershed basin (EBMUD, 1994). No suitable habitat in EBMUD WTTIP Area.	June-September
Round-leaved filaree *Erodium macrophyllum*	--/--/2	On clay soils in woodland and valley and foothill grasslands	**Low Potential.** Known to occur in EBMUD watershed basin (EBMUD, 1994). No suitable habitat in EBMUD WTTIP Area.	March–May
Fragrant fritillary *Fritillaria liliacea*	FSC/--/1B	Coastal scrub, valley and foothill grassland, coastal prairie; on heavy clay soils, often on ultramafic soils	**Low Potential.** Potentially occurs in EBMUD watershed basin (EBMUD, 1994). No suitable habitat in EBMUD WTTIP Area.	February-April
Diablo rock-rose *Helianthella castanea*	FSC/--/ 1B	Openings in chaparral and broadleaved upland forest	**Moderate Potential.** Known to occur in EBMUD watershed basin (EBMUD, 1994). Potential occurrence along undeveloped portion of Moraga Pipeline.	April-June
Loma Prieta hoita *Hoita strobilina*	--/--/1B	Chaparral, cismontane woodland, riparian woodland (serpentine/mesic)	**Low Potential.** No suitable habitat in EBMUD WTTIP Area.	May-October
Kellogg's horkelia *Horkelia cuneata* ssp. *sericea*	FSC/--/1B	Closed-cone coniferous forests, coastal scrub	**Moderate Potential.** Not known to occur in EBMUD watershed basin (EBMUD, 1994). Potential occurrence along undeveloped portion of Moraga Pipeline.	April-September
Northern California black walnut *Juglans hindsii*	FSC/--/1B	Riparian forest and woodlands	**Moderate Potential.** Not known to occur in EBMUD watershed basin (EBMUD, 1994). Potential occurrence in riparian corridors along creeks and associated tributaries at Lafayette WTP, Orinda WTP, Sobrante WTP, Orinda-Lafayette Aqueduct, Glen Pipeline Improvements, Happy Valley Pumping Plant and Pipeline, Highland Reservoir and Pipeline, Lafayette Reclaimed Water Pipeline, Moraga Road Pipeline, Tice Pumping Plant and Pipeline project sites and program level projects.	April-May

TABLE E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE EBMUD WTTIP PROJECT AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
		FEDERAL OR STATE SPECIES OF SPECIAL CONCERN		
Plants (cont.)				
Hall's bush mallow *Malacothamnus hallii*	--/--/4	Chaparral	**Low Potential.** No suitable habitat in EBMUD WTTIP Area.	May-September
Oregon meconella *Meconella oregana*	FSC/--/1B	Coastal prairie, coastal scrub	**Moderate Potential.** Not known to occur in EBMUD watershed basin (EBMUD, 1994). Potential occurrence along undeveloped portion of Moraga Pipeline.	March-April
Robust monardella *Monardella villosa ssp. globosa*	--/--/1B	Cismontane woodland, openings in chaparral	**Low Potential.** No suitable habitat in EBMUD WTTIP Area.	June-July
Slender-leaved pondweed *Potamogeton filiformis*	--/--/2		**Low Potential.** No suitable habitat in EBMUD WTTIP Area.	
Most beautiful jewelflower *Streptanthus albidus* ssp. *peramoenus*	FSC/--/1B	Serpentine grassland, chaparral	**Low Potential.** Known to occur in EBMUD watershed basin (EBMUD, 1994). No suitable habitat in EBMUD WTTIP Area.	April-June
Saline clover *Trifolium depauperatum* var. *hydrophilum*	--/--/1B	Valley and foothill grassland (mesic, alkaline); vernal pools	**Low Potential.** No suitable habitat in EBMUD WTTIP Area.	April-June

STATUS CODES:

Federal Categories (U.S. Fish and Wildlife Service)
FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FPE = Proposed for Listing as Endangered
FPT = Proposed for Listing as Threatened
FC = Candidate for Federal Listing
FSC = Former Federal Species of Concern
FSLC =Former species of local concern or conservation importance
BPA = Federal Bald Eagle Protection Act

California Native Plant Society (CNPS)
List 1A = Plants presumed extinct in California
List 1B = Plants rare, threatened, or endangered in California and elsewhere
List 2 = Plants rare, threatened, or endangered in CA
List 3 = Plants about which more information is needed
List 4 = Plants of limited distribution

State Categories (California Department of Fish and Game)
CE = Listed as Endangered by the State of California
CT = Listed as Threatened by the State of California
CR = Listed as Rare by the State of California

3511 = A Fully Protected Species
CSC = California Species of Special Concern

SOURCE: CDFG, 2005; CNPS, 2005; EBMUD, 2005a, 2005b, and 1994; USFWS, 2005; Zeiner et al., 1990; ESA 2005.

APPENDIX F

Recorded Cultural Resources In EBMUD Database

RECORDED HISTORIC RESOURCES IN EBMUD DATABASE

	Site Name	Prehistoric Archaeological Resource (Y/N)	Historic Archaeological Resource (Y/N)	Historic Architectural Resource (Y/N)
1	Ala-422	Y	N	N
2	Ala-423h	N	Y	N
3	Ala-429h	N	Y	N
4	Ala-481h	Y	Y	Y
5	Ala-527h	N	Y	Y
6	Ala-528h	N	Y	Y
7	Ala-529h	N	Y	N
8	Cco-307	Y	N	N
9	*Cco-401*	*Y*	*N*	*N*
10	Cco-402	Y	N	N
11	Cco-403h	Y	Y	N
12	Cco-404h	Y	N	Y
13	Cco-405h	Y	Y	N
14	Cco-406	Y	N	N
15	Cco-407h	Y	Y	N
16	Cco-408h	Y	Y	N
17	*Cco-409h*	*N*	*Y*	*N*
18	Cco-410h	N	Y	N
19	Cco-411	Y	N	N
20	Cco-412h	N	Y	N
21	Cco-526h (Buckhorn Ranch)	N	Y	Y
22	Cco-549	Y	N	N
23	Cco-Iso-12	Y	N	N
24	Cco-Iso-7 And Cco-Iso-8	Y	N	N
25	Chabot Filtration Plant	N	N	Y
26	Chabot's House	N	Y	Y
27	Dickenson House	N	Y	Y
28	Felipe Briones Adobe	N	Y	Y
29	Hampton's Grave	N	N	Y
30	*Lafayette Reservoir Dam*	*N*	*N*	*Y*
31	Lake Chabot Dam	N	N	Y
32	Mendonca Ranch	N	Y	Y
33	Mohring Homestead	N	N	Y
34	Nunes Jr. Homestead	N	Y	N
35	Nunes Sr. Back Ranch	N	Y	Y
36	*Orinda Filter Plant*	*N*	*N*	*Y*
37	*Orinda Park Hotel*	*N*	*Y*	*N*
38	*Orinda Park School*	*N*	*Y*	*N*
39	'Possible Sites'	Y	N	N
40	Rowland Ranch EBMUD Headquarters	N	Y	Y
41	Sanders Ranch	N	N	Y
42	Tormey Homestead	N	Y	Y
43	Tormey Homestead	N	Y	Y
44	Upper San Leandro Dam	N	Y	N
45	Valle Vista House	N	Y	Y
46	Valle Vista Structures	N	Y	Y
47	*Wagner Ranch House*	*N*	*Y*	*N*
48	Water Temple	N	N	Y

Italicized Cultural Sites are located in the vicinity of various EBMUD WTTIP project components

SOURCE: EBMUD GIS Department, 2005.

RECORDED HISTORIC RESOURCES IN THE CITIES OF ORINDA, LAFAYETTE, AND MORAGA

	Name	Location	Listing
Orinda			
1	California and Nevada Railroad Terminus (Bryant Station)	Bates Blvd./Davis Street	CA (5S), L
2	Casa Verana	112 Camino Pablo	CA (5S)
3	Casa Vieja	8 Casa Vieja	CA (3S)
4	Cedar of Lebanon Tree	10 Irwin Way	CA (5S)
5	Delaveaga Home	12 Bien Venida	CA (3S), L
6	First Orinda Firehouse	107 Orinda Way	CA (5S)
7	Fish Ranch Site	Gateway Blvd.	CA (5S)
8	Hampton's Grave	Bear Creek Road/Briones Reservoir Watershed (EBMUD land)	CA (5S)
9	Hershell-Spillman Merry-Go-Round	Grizzly Peak Road/Tilden Park (Orinda vicinity)	NR, CA (1S)
10	Jenkins (Alexander) House (Old Yellow House)	209 Moraga Way	CA (3S)
11	Merrill, Charles W., House	407 Camino Sobrante	NR, CA (1S)
12	Moraga (Joaquin) Adobe	24 Adobe Lane	NR, CA, L (1S)
13	Miner Ranch	Miner Road and Sleepy Hollow Lane area	CA (5S), L
	Miss Graham's Riding Academy	63 Orinda Way	CA (5S)
14	Old Moraga School Site	200 Moraga Way	CA (5S)
15	Old Tunnel	Old Tunnel Road	CA (5S)
16	Orinda Country Club	315 Camino Sobrante	CA (3S)
17	*Orinda Filter Plant*	*190 Camino Pablo (EBMUD)*	*CA (7) L*
18	*Orinda Park School Site*	*Camino Pablo/Bear Creek Road*	*CA (5S)*
19	*Orinda Park Hotel Site*	*Camino Pablo /Bear Creek Road*	*CA (7L/5S)*
20	Orinda Store	Orinda Way	CA (5S)
21	Orinda Theater & American Trust Bank	10 Moraga Way	CA (2 S2)
22	Orinda Union School	26 Orinda Way	CA (4S)
23	Santa Maria Church Site	Camino Pablo/Miner Road	CA (5S), L
24	Sullivan Ranch and Home	607 El Toyonal Road	CA (4S), L
25	*Wagner Ranch and Home*	*Camino Pablo/Bear Creek Road*	*CA (5S)*
Lafayette			
1	Comstock/Bronston	811 Topper Lane	CA (7N)
2	Elam Brown Grist Mill Wheel	Mt. Diablo Blvd/Moraga Road/Plaza Way	CA (5S2), L
3	Elam Brown house site	985 Hough Street	CA (7), L
4	Daley House	3306 Moraga Road	CA (7N)
5	Garrett Building	3565 Mt. Diablo Blvd	CA (7N), L
6	Geils Building	3531 Plaza Way	(7), L
7	Friendship Farm	3350 Woodland Way	(3S)
8	James Bickerstaff home site	3615 Mt. Diablo Blvd	L
9	Lafayette Cemetery	3300 Mt. Diablo Blvd	CA (7N) L
10	Lafayette Grammar School	950 Moraga Road	CA (7N), L
11	Lafayette Plaza/Elam and Margaret Brown Plaza	Mt. Diablo Blvd/Moraga Road/Plaza Way	CA (5S2), L
12	Lafayette United Methodist Church	955 Moraga Road	L
13	Locust Trees (10)	¾ mile up Happy Valley Road, east side	CA (5S2)
14	Pioneer Store (former)	3535 Plaza Way	CA (7), L
15	Police Station	1004 Thompson Road	CA (6Z3)
16	Second Schoolhouse	3535 Mt. Diablo Blvd	L
17	Small red frame building	995 Hough/Lafayette Circle	L
18	Shreve's Store (former)	3535 Plaza Way	CA, L
19	Stone Plaque	Happy Valley Road	L
20	Way Side Inn Thrift Shop	3521 Golden Gate Way	L (7N)
21	Town Hall Theater	3535 School Street	L (3S)

RECORDED HISTORIC RESOURCES IN THE
CITIES OF ORINDA, LAFAYETTE, AND MORAGA (Continued)

	Name	Location	Listing
Moraga			
1	*Carrick House*	*Moraga-Lafayette trail/Saint Mary's Road*	*L*
2	Courter House/Mason's Store site	Larch Avenue/Canyon Road	L
3	Eucalyptus Globulus Tree	Camino Ricardo	CA (5S2)
3	*Hacienda de Las Flores*	*2100 Donald Drive*	*CA (7N),L*
4	Moraga Barn	1002 Viader Street/Moraga Way	CA (7), L
5	Moraga Ranch	School Street/Moraga Way	L
6	*Saint Mary's College*	*1928 Saint Mary's Road*	*L*
7	*Willow Spring School (site)*	*Saint Mary's Road/Moraga Road*	*CA (7N), L*

NR = National Register, CR = California Register, L = Local Landmark
Italicized Cultural Sites are located in the vicinity of various EBMUD WTTIP project components
Source: OHP, 2005

APPENDIX G

City of Oakland Noise Mitigation Measures

APPENDIX G
City of Oakland Noise Mitigation Measures

Noise Mitigation Measure 1: The project sponsor shall require construction contractors to limit standard construction activities as required by the City Building Department. Such activities are generally limited to between 7:00 a.m. and 7:00 p.m. Monday through Friday, with pile driving and/or other extreme noise generating activities greater than 90 dBA limited to between 8:00 a.m. and 4:00 p.m. Monday through Friday, with no extreme noise generating activity permitted between 12:30 p.m. and 1:30 p.m. No construction activities shall be allowed on weekends until after the building is enclosed, without prior authorization of the Building Services Division, and no extreme noise generating activities shall be allowed on weekends and holidays.

Noise Mitigation Measure 2: To reduce daytime noise impacts due to construction, the project sponsor shall require construction contractors to implement the following measures:

- Equipment and trucks used for project construction shall utilize the best available noise control techniques (*e.g.*, improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).
- Impact tools (*e.g.*, jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible.
- Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.

Noise Mitigation Measure 3: To further mitigate potential pile driving and/or other extreme noise generating construction impacts, a set of site-specific noise attenuation measures shall be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures shall be submitted for review and approval by the City to ensure that maximum feasible noise attenuation will be achieved. These attenuation measures shall include as many of the following control strategies as feasible:

- Erect temporary plywood noise barriers around the construction site, to shield adjacent uses;
- Implement "quiet" pile driving technology (such as pre-drilling of piles, the use of more than

one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;

- Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site;
- Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings; and
- Monitor the effectiveness of noise attenuation measures by taking noise measurements.

Noise Mitigation Measure 4: Prior to the issuance of each building permit, along with the submission of construction documents, the project sponsor shall submit to the City Building Department a list of measures to respond to and track complaints pertaining to construction noise. These measures shall include:

- A procedure for notifying the City Building Division staff and Oakland Police Department;
- A plan for posting signs on-site pertaining to permitted construction days and hours and complaint procedures and who to notify in the event of a problem;
- A listing of telephone numbers (during regular construction hours and off-hours);
- The designation of an on-site construction complaint manager for the project;
- Notification of neighbors within 300 feet of the project construction area at least 30 days in advance of pile-driving and/or other extreme noise-generating activities about the estimated duration of the activity; and
- A preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm that noise mitigation and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

With the adoption of these noise mitigation measures, the project’s impacts are considered to be less than significant.

APPENDIX H

Hazards and Hazardous Materials

APPENDIX H
Hazards and Hazardous Materials

This appendix supplements the information provided in Section 3.11 of the EIR. It provides an overview of the hazardous materials regulatory framework, including wildland fire and relevant tunnel classification and safety regulations. Relevant state, federal, and local statutes are discussed. This appendix also documents regulatory databases reviewed to identify permitted hazardous materials uses and environmental cases within ASTM search distances from where substantial excavation would be conducted and within ¼-mile of the proposed tunnel and pipeline alignments.

Regulatory Framework

Hazardous materials and hazardous wastes are extensively regulated by various federal, state, regional, and local regulations, with the major objective of protecting public health and the environment. This section summarizes the overall regulatory framework governing hazardous materials management.

Federal Regulations – General Hazardous Materials

The U.S. Environmental Protection Agency (U.S. EPA) is the lead agency responsible for enforcing federal regulations that affect public health or the environment. The primary federal laws and regulations include: the Resource Conservation and Recovery Act of 1974 (RCRA); the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA); and the Superfund Act and Reauthorization Act of 1986 (SARA). Federal statutes pertaining to hazardous materials and wastes are contained in the Code of Federal Regulations (40 CFR).

RCRA was enacted in 1974 to provide a general framework for the national hazardous waste management system, including the determination of whether hazardous wastes are being generated, techniques for tracking wastes to eventual disposal, and the design and permitting of hazardous waste management facilities. The Hazardous and Solid Waste Amendment was enacted in 1984 to better address hazardous waste; this amendment began the process of eliminating land disposal as the principal hazardous waste disposal method. Other specific areas covered by the amendment include regulation of carcinogens, listing and delisting of hazardous wastes, permitting for hazardous waste facilities, and leaking underground storage tanks.

CERCLA, also known as Superfund, was enacted in 1980 to ensure that a source of funds was available to clean up abandoned hazardous waste sites, compensate victims, address releases of hazardous materials, and establish liability standards for responsible parties. SARA amended

CERCLA in 1986 to increase the Superfund budget, modify contaminated site clean up criteria and schedules, and revise settlement procedures. SARA also provides a regulatory program and fund for underground storage tank cleanups and Emergency Planning and Community Right- to-Know Program (EPCRA).

In 1976, Congress passed the Toxic Substances Control Act (TSCA) which was implemented in 1979. This act governs the manufacture, processing, distribution in commerce, use, cleanup, storage, and disposal of PCBs. Since 1978, the U.S. EPA has promulgated numerous rules further addressing all aspects of the life cycle of PCBs. The most recent rule was the Final Rule: Amendments to the TSCA PCB Disposal Regulations Including Amendments to the PCB Notification and Manifesting Rule promulgated on June 24, 1999. This rule is deregulatory in nature and provides individuals with more flexibility in their PCB disposal practices while continuing to provide protection from unreasonable risk.

State and Regional Regulations – General Hazardous Materials

The California Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board (RWQCB) are the primary state agencies regulating hazardous materials in California. These agencies are part of the Cal EPA. The RWQCB is authorized by the State Water Resources Control Board to enforce provisions of the Porter - Cologne Water Quality Control Act of 1969. This act gives the RWQCB authority to require groundwater investigations when the quality of groundwater or surface waters of the state is threatened, and to require remediation of the site, if necessary. The DTSC is authorized by the U.S. EPA to regulate the management of hazardous substances including the remediation of sites contaminated by hazardous substances.

California hazardous materials laws incorporate federal standards but are often stricter than federal laws. The primary state laws include: the California Hazardous Waste Control Law (HWCL), the state equivalent of RCRA; and the Carpenter-Presley-Tanner Hazardous Substance Account Act (HSAA), the state equivalent of CERCLA. State hazardous materials and waste laws are contained in the California Code of Regulations, Titles 22 and 26.

The HWCL, enacted in 1972 and administered by the DTSC, is the basic hazardous waste statute in California and has been amended several times to address current needs, including bringing the state law and regulations into conformance with federal laws. This act implements the RCRA "cradle-to-grave" waste management system in California but is more stringent in its regulation of non-RCRA wastes, spent lubricating oil, small quantity generators, transportation and permitting requirements, as well as in its penalties for violations. The HWCL also exceeds federal requirements by mandating the recycling of certain wastes, requiring certain generators to document a hazardous waste source reduction plan, requiring permitting for federally exempt treatment of hazardous wastes by generators, and stricter regulation of hazardous waste facilities.

The HSAA, enacted in 1981, addresses similar concerns as CERCLA. The primary difference is in how liability is assigned for a site with more than one responsible party. This is important for petroleum clean up sites because federal law is usually used to force responsible party cleanups; state law is used for petroleum cleanup sites which are exempt from CERCLA.

Other relevant State of California statutes include:

- The Toxic Pit Cleanup Act of 1984 and the Toxic Injection Well Act of 1985 which were established to provide a regulatory framework for open pits or injection wells as a means of hazardous waste or disposal;
- The Hazardous Waste Management Act of 1986 which coordinates the state's implementation of federal landfill bans and authorizes landfill bans for non-RCRA hazardous wastes;
- The Aboveground Petroleum Storage Act of 1989 which requires the owner or operator of aboveground petroleum storage tanks to file a storage statement with the State Water Resources Control Board (SWRCB) if tank storage exceeds 10,000 gallons and holds petroleum or petroleum product which is liquid at ambient temperatures. In addition, the tank or tanks must be registered if they are subject to federal requirements; this potentially expands the requirement for a storage statement to any tank over 660 gallons or aggregate storage of 1,320 gallons;
- The Hazardous Waste Source Reduction and Management Act which required large quantity generators to document hazardous wastes being generated and to prepare a documented waste reduction plan beginning in 1991;
- The Hazardous Waste Treatment Permitting Reform Act of 1992 which required a permit for any hazardous waste treatment by a generator beginning on April 1, 1993. This statute established a new tiered permitting program whereby on-site treatment facilities are permitted or authorized to operate subject to different levels of regulatory requirements depending on the nature and size of the treatment activity. Amendments to this statute adopted in 1993-96 have enacted certain exemptions and modified compliance requirements.; and
- The Hazardous Waste Management Reform Act of 1995 which required the DTSC to revise its regulations to more closely conform to federal hazardous waste identification criteria and essentially eliminate land disposal restrictions for California-only hazardous wastes among other major changes. However, many of these changes have been deferred to a DTSC advisory committee for further study and are not expected to be implemented for several years, and in certain cases, not at all.

The Bay Area Air Quality Management District (BAAQMD), a regional regulatory agency, may impose specific requirements on remediation activities to protect ambient air quality from dust or other airborne contaminants.

Local Regulations – General Hazardous Materials

In accordance Chapter 6.11 of the Health and Safety Code (Section 25404, et seq.), local regulatory agencies have assumed authority and responsibility for the administration and enforcement of the unified hazardous waste and hazardous materials management program. The purpose of this legislation was to simplify environmental reporting by streamlining the number of regulatory agency contacts a facility must maintain and requiring the use of more standardized forms and reports. The Contra Costa County Health Services Department is the administering agency for the Certified Uniform Program Agency (CUPA) program in Contra Costa County and the Oakland Fire Department is the CUPA for Oakland. As the CUPA, these agencies are responsible for the following environmental programs:

- Hazardous materials business plans (Chapter 6.95 of the Health and Safety Code, Section 25501, et seq.);
- The California accidental release prevention program for acutely hazardous materials (Chapter 6.95 of the Health and Safety Code, Section 25531, et seq.);
- State Uniform Fire Code requirements (Section 80.103 of the Uniform Fire Code as adopted by the State Fire Marshall pursuant to Health and Safety Code, Section 13143.9);
- Underground storage tanks (Chapter 6.7 of the Health and Safety Code, Section 25280, et seq.);
- Aboveground storage tanks (Health and Safety Code Section 25270.5(c); and
- Hazardous waste generator requirements (Chapter 6.5 of the Health and Safety Code, Section 25100, et seq.).

Wildland Fire Regulations

The California Public Resources Code includes fire safety regulations that would apply to construction activities at the Withers Pumping Plant because the site is in an area designated by the California Department of Forestry and Fire Protection as a Wildland Area That May Contain Substantial Forest Fire Risks and Hazards and to construction activities at the Orinda Water Treatment Plant, Happy Valley Pumping Plant and Pipeline, Sunnyside Pumping Plant, and parts of the Glenn Pipeline Improvements because these sites are located in areas designated as a Very High Fire Hazard Severity Zone. These regulations are described below.

In accordance with §4427 of the Public Resources Code, the use of equipment from which a spark, fire or flame may be produced is prohibited on days when burning permits are required unless (1) all flammable material has been removed to a distance of 10 feet and (2) appropriate fire suppression equipment including a round point shovel and backpack pump water-type fire extinguisher are ready for use at the immediate area during the operation. The types of equipment covered by this restriction include any motor, engine, boiler, stationary equipment, welding equipment, cutting torches, tarpots, or grinding devices. This requirement does not apply to portable power saws and other portable tools powered by a gasoline-fueled internal combustion engine.

In accordance with §4428 of the Public Resources Code, the use of vehicles, machines, tools, or equipment powered by an internal combustion engine operated on hydrocarbon fuels in an industrial operation located near any forest, brush, or grass-covered land is prohibited from April 1 to December 1 of any year, or at any other time when ground litter and vegetation will sustain combustion permitting the spread of fire without providing and maintaining the appropriate equipment exclusively designated for fire fighting purposes. The required equipment includes:

- A sealed box of tools located within the operating area, at a point accessible in the event of a fire. The tool box shall contain one backpack pump-type fire extinguisher filled with water, two axes, two McLeod fire tools, and a sufficient number of shovels so that each employee at the operation can be equipped to fight fire.
- One or more serviceable chain saws of 3 ½ or more horsepower with a cutting bar of 20 inches in length or longer shall be immediately available within the operating area, or a full set of timber felling tools shall be located in the fire tool box.
- Each passenger vehicle used on the operation shall be equipped with one shovel and one ax, and any other vehicle or tractor used in the operation shall be equipped with one shovel.

In accordance with §4431 of the Public Resources Code, the use of portable saws, augers, drills, tamper, or other portable tool powered by a gasoline fueled internal combustion engine is prohibited on forest-, brush-, or grass-covered lands within 25 feet of any flammable material when burning permits are required without providing the required fire suppression equipment. The required equipment includes one serviceable round point shovel or one serviceable fire extinguisher; this equipment must be maintained within 25 feet of the operation of the tool, with unrestricted access for the operator from the point of operation.

In accordance with §4442 of the Public Resources Code, use of equipment equipped with an internal combustion engine that uses hydrocarbon fuels is prohibited on forest-, brush-, or grass-covered lands unless the equipment is equipped with a spark arrester.[1]

Tunnel Classification And Safety

Requirements for tunnel safety are addressed in The California Labor Code, Division 5, Part 9, Tunnel and Mine Safety. Safety requirements that apply to tunnels classified as gassy, as specified in the California Labor Code, include:

- Any tunnel classified as gassy shall operate under special procedures adopted by the board, as well as rules, regulations, special orders, or general orders for nongassy underground mines and tunnels.
- Tests for gas or vapors are required prior to each shift and hourly during actual operation. If a mechanical excavator is used, gas tests are required prior to removal of muck or material and before any cutting or drilling in tunnels where explosives are used. A log shall be maintained for inspection by the division showing the results of each test. Whenever a tunnel excavation approaches a geologic formation in which there is a likelihood of encountering gas or water, a probe hole at least 20 feet ahead of the tunnel face shall be maintained.
- Whenever gas levels in excess of 10 percent of the lower explosive limit are encountered initially in a tunnel, the division shall be notified immediately. The chief of the Division of Industrial Safety or his authorized representative may waive subsequent notification for gas readings less than 20 percent of the lower explosive limits upon a finding that adequate ventilation and other safety measures are in place to assure employee safety.

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1 A spark arrester is a device that prohibits exhaust gasses from the internal combustion engine (which contain carbon particles) from passing through the impeller blades where it could cause a spark. A carbon trap is commonly used to retain carbon particles from the exhaust.

- The Division of Industrial Safety may order work to be halted until adequate testing can be conducted to determine the level hazard from gases or vapors.
- The Division of Industrial Safety shall review plans for electrical lighting and power for equipment and may require changes.
- Smoking is prohibited and the employer shall be responsible for collecting all personal sources of ignition such as lighters and matches from employees entering the tunnel.
- Whenever there is any ignition of gas or vapor, all work shall cease, employees shall be removed, and reentry shall be prohibited except for rescue purposes until the division has conducted an inspection and authorized reentry.
- All workers shall be removed immediately if the level of gas in the tunnel reaches 20 percent of the lower explosive limit and the division shall be notified immediately. No one shall reenter the tunnel until approval is given by the division.
- All employees shall be informed of any special orders made by the division following an inspection. Such notice shall be given before entering the tunnel. A copy of any orders subsequently written by the division shall be posted and all employees shall be notified at a safety meeting called by the safety representative before they are permitted to start work.
- Ventillation shall include continuous exhausting of fumes and air, unless and alternative ventilation plan which is as effective or better is approved by the Division of Industrial Safety. Fans for this purpose shall be placed at the surface, and shall be reversible from a single switch at the portal. These requirements shall not preclude the use of auxiliary fans to supply more air or greater exhaust to a tunnel.
- A “kill” button capable of cutting off all electrical equipment shall be maintained. The safety representative or his designated representative shall cut off power at any time gas or vapor levels reach 20 percent of the lower explosive limit or more. Before work is restarted every employee underground shall be informed of the level of gas or vapor recorded, and a permanent record shall be called to the surface and retained in a special log.

The Division of Industrial Safety shall determine the number of fire extinguishers necessary and their locations.

An escape chamber or alternate escape route shall be maintained within 5,000 feet of the tunnel face or areas being used to excavate material. Workers shall be provided with emergency rescue equipment and trained in its use.

Risk Management – Hazardous Materials Business Plans and Inventories

Businesses that handle hazardous materials over certain threshold quantities are required by the State of California to submit an HMBP to the local CUPA agency. This document is used by city emergency response agencies for chemical emergency planning. The HMBP includes an inventory of hazardous materials used, and it is required to include the following:

- specific details on the facility covered by the plan, such as name and address;

- an inventory of hazardous materials used and stored;
- a site and facility layout;
- emergency response procedures;
- procedures for immediate notification of the administering agency in the event of an emergency;
- evacuation plans in the event of an emergency;
- a description of the training employees have received in the evacuation and safety procedures; and
- identification of local emergency medical assistance.

Above Ground Storage Tanks

Title 40 of the Code of Federal Regulations, Section 112 also contains requirements for above ground storage of petroleum products. In accordance with these regulations, a petroleum tank of greater than 660 gallons or aggregate storage of over 1,320 gallons, which could reasonably discharge to a navigable water, is required to have a Spill Control and Countermeasure Plan (U.S. EPA Region IX, San Francisco, has taken a conservative stance, that virtually any large oil spill in California will enter federally regulated waters). The plan would include appropriate spill containment or equipment used to divert spills from sensitive areas, a discussion of facility specific requirements for the storage system, inspections and a record keeping system, security for the system, and personnel training.

Waste Disposal

All California landfills have been segregated by regulatory authority into the categories of Class I, Class II and Class III facilities. Class I facilities can accept hazardous wastes with chemical levels below the federal land disposal restriction (land ban) treatment standards. Class II and III facilities can accept non-hazardous wastes that meet acceptance criteria determined by the state for organic and inorganic compounds. Each landfill has individual acceptance criteria and the appropriate disposal site for a waste would be determined on the basis of the classification of the waste and individual landfill acceptance criteria.

In accordance with state and federal regulations, a waste is hazardous if it:

- Is a listed hazardous waste as defined in RCRA; or
- Exhibits the characteristics of ignitability, corrosivity, reactivity, or toxicity as defined in the California Code of Regulations.

Hazardous materials and hazardous wastes are defined in the California Code of Regulations, Title 22, Sections 66260 through 66261.10. A waste is considered toxic if it contains certain metals or organic substances at concentrations greater than federal toxicity regulatory levels using a test method called the TCLP;2 if it contains certain substances at concentrations greater than the state regulatory levels, including the total threshold limit concentration TTLC3 or the STLC;[4] if it contains specified carcinogenic substances at a single or combined concentration of 0.001 percent; or if toxicity testing indicates toxicity greater than specified criteria.

Class II and III landfills in the Bay Area have acceptance criteria for lead that are lower than the TCLP or STLC. Soil with total petroleum hydrocarbon concentrations above the detection limit must be disposed of at an appropriate landfill facility or treated to reduce the levels of petroleum hydrocarbons in the soil. In general, soil with total petroleum hydrocarbon levels up to 100 milligrams per kilogram can be disposed of at a Class III disposal facility. If the concentration is between 100 and 1,000 milligrams per kilogram, it can be disposed of at a Class II disposal facility; and if the concentration is greater than 1,000 milligrams per kilogram, Class I disposal would be required.

The California Department of Toxic Substances Control has classified friable, finely divided and powdered wastes containing greater than one- percent asbestos as a hazardous waste.[5] A friable waste can be reduced to powder or dust under hand pressure when dry. Non-friable asbestos-containing wastes are not considered hazardous and are not subject to regulation under Title 22, Division 4.5 of the California Code of Regulations. The management of these wastes would still be subject to any requirements or restrictions which may be imposed by other regulatory agencies. The state standard for classification of asbestos wastes is contained in Section 66261.24 of Title 22 of the California Code of Regulations. Asbestos is not currently regulated as a hazardous waste under the RCRA; because of this it is considered a non-RCRA waste. Asbestos wastes, totaling more than 50 pounds, must be transported by a registered waste hauler to an approved treatment, storage or disposal facility.

Wastes containing asbestos may be disposed of at any landfill which has waste discharge requirements issued by the RWQCB that allow disposal of asbestos-containing materials, provided that the wastes are handled and disposed of in accordance with the Toxic Substances Control Act, the Clean Air Act's National Emission Standards for Hazardous Air Pollutants, and Title 22 of the Code of California Regulations (Division 4.5). The Department of Toxic Substances Control also has treatment standards for asbestos-containing wastes, which require

2 A waste would be considered hazardous if it contains a soluble concentration of the specified substance at a concentration greater than the federal toxicity characteristic level specified in CCR, Title 22, Section 66261.24 (a)(i). The soluble concentration is determined using the TCLP, which involves a 20-to-1 dilution of the sample. Because of this, the total concentration of a substance would need to exceed 20 times the TCLP level for the soluble concentration to possibly be greater than the TCLP level.

3 In accordance with CCR, Title 22, Section 66261.24(a)(2), a waste would be considered hazardous on the basis of toxicity if it contains the specified substance at a total concentration greater than the TTLC.

4 In accordance with CCR, Title 22, Section 66261.24(a)(2), a waste would be considered hazardous on the basis of toxicity if it contains the specified substance at a soluble concentration greater than the STLC. The soluble concentration is determined by performing a Waste Extraction Test, which involves at 10-to-1 dilution of the sample. Because of this, the total concentration of a substance would need to exceed 10 times the STLC for the soluble concentration to possibly be greater than the STLC.

5 California Department of Toxic Substances Control, Fact Sheet, Asbestos Handling, Transport and Disposal, October 1993.

submittal of a notification and certification form to the land disposal facility as well as wetting and containment of the asbestos-containing materials.

The owner of properties where hazardous wastes are produced or abatement would occur must have a Hazardous Waste Generator Number assigned by and registered with the California Department of Toxic Substances Control in Sacramento. The contractor and hauler of the material are required to file a Hazardous Waste Manifest, which details the hauling of the material from the site and the disposal of the material.

Hazardous Materials Worker Safety Requirements

The Federal Occupational Safety and Health Administration (Fed OSHA) and the California Safety and Health Administration (Cal OSHA) are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. The federal regulations pertaining to worker safety are contained in the Code of Federal Regulations, Title 29 (29 CFR) as authorized in the Occupational Safety and Health Act of 1970. They provide standards for safe workplaces and work practices, including standards relating to hazardous materials handling. In California, Cal OSHA assumes primary responsibility for developing and enforcing workplace safety regulations; Cal OSHA standards are generally more stringent than federal regulations.

The state regulations concerning the use of hazardous materials in the workplace are included in Title 8 of the California Code of Regulations, which contain requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal OSHA also enforces hazard communication program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information relating to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees at hazardous waste sites.

Regulatory Database Review

A regulatory database review was conducted to identify permitted hazardous materials usage and environmental cases within the ¼ mile of the tunnel alignment (EDR, 2005a – 2005q). The databases reviewed are listed in Tables HAZ-1 and HAZ-2 with the date of each database reviewed. Each database is described in the following sections.

Federal Regulatory Databases

Federal agencies publish numerous lists of sites that track permitted uses of hazardous materials and environmental cases. The lists reviewed for this EIR are summarized in Table H-1. They include:

- The National Priority List (NPL) which is a subset of the CERCLIS database (described below) and includes priority sites for cleanup under the federal Superfund Program;

TABLE H-1
FEDERAL REGULATORY DATABASES REVIEWED

Name of List	Responsible Agency	Acronym	Date of List
National Priority List	USEPA	NPL	7/1/05
Proposed National Priority List Sites	USEPA	Proposed NPL	4/27/05
Superfund Consent Decrees	USEPA	CONSENT	12/14/04
Records of Decision	USEPA	ROD	6/8/05
Federal Superfund Liens	USEPA	NPL LIENS	10/15/91
National Priority List Deletions	USEPA	Delisted NPL	7/1/05
Comprehensive Environmental Response, Compensation, and Liability Information System	USEPA	CERCLIS	6/27/05
CERCLIS- No Further Remedial Action Planned	USEPA	CERCLIS NFRAP	5/17/05
Engineering Controls Site List	USEPA	US ENG CONTROLS	1/10/05
Toxic Chemical Release Inventory System	USEPA	TRIS	12/31/03
Emergency Response Notification System	USEPA	ERNS	12/31/04
Hazardous Materials Information Reporting System	USDOT	HMIRS	6/27/05
Resource Conservation and Recovery Act (RCRA)	USEPA	RCRA	5/20/05
Biennial Reporting System	USEPA	BRS	12/31/03
RCRA Corrective Action Sites	USEPA	CORRACTS	6/28/05
RCRA Administrative Action Tracking System	USEPA	RAATS	4/17/95
Department of Defense Sites	USGS	DOD	10/1/03
Formerly Used Defense Sites	USACOE	FUDS	12/31/04
Facility Index System	USEPA	FINDS	7/11/05
PCB Activity Database System	USEPA	PADS	3/30/05
Toxic Substances Control Act	USEPA	TSCA	12/31/02
Federal Insecticide, Fungicide and Rodenticide Act/TSCA	USEPA	FTTS	7/15/05
Federal Insecticide, Fungicide and Rodenticide Act/TSCA	USEPA	FTTS INSP	7/15/05
Section 7 Tracking System	USEPA	SSTS	12/31/03
Material Licensing Tracking System	NRC	MLTS	7/14/05
Underground Storage Tanks on Indian Land	USEPA	INDIAN UST	4/18/05
Leaking Underground Storage Tanks on Indian Land	USEPA	INDIAN LUST	6/2/05
Indian Reservations	USGS	INDIAN RESERV	10/1/03
Mines Master Index File	MSHA	MINES	5/13/05
Uranium Mill Tailings Sites	USDOE	UMTRA	12/29/04
Open Dump Inventory	USEPA	ODI	6/30/85

SOURCE: EDR, 2005a – 2005q

- The Proposed NPL sites (Proposed NPL) which includes sites proposed for addition to the NPL;
- Superfund Consent Decrees (CONSENT) which includes NPL sites with major legal settlements that establish responsibility and standards for cleanup;
- Records of Decision (ROD) list which includes NPL sites where a record of decision has been developed that mandates a permanent remedy and includes technical and health information to aid in the cleanup of the site;
- Federal Superfund Liens (NPL LIENS) list which includes sites where the US EPA has filed liens against real property to recover remedial action expenditures or the property owner has been issued a notification of potential liability;
- NPL Delisted sites (Delisted NPL) which includes sites that have been removed from the NPL because no further response is required in accordance with criteria contained in the National Oil and Hazardous Substances Pollution Contingency Plan;
- The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) which tracks potentially contaminated properties identified under CERCLA and SARA;
- The CERCLIS No Further Action (CERCLIS-NFRAP) database which lists sites where, following an initial investigation, no contamination was found, contamination was removed quickly, or the contamination was not serious enough to require federal Superfund action or NPL consideration. As part of the U.S. EPA's Brownfields Program, these sites have been removed from the CERCLIS database to lift unintended barriers to redevelopment;
- The Engineering Controls Site List (US ENG CONTROLS) which includes sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods that prevent human contact with or a release to the environment of hazardous materials left in-place at a site.
- The Toxic Chemical Release Inventory System (TRIS) which identifies sites which release chemicals to the air, water, or land as required by Title III of the Superfund Amendments and Reauthorization Act of 1986;
- The Emergency Response Notification System (ERNS) which identifies spills of oil or hazardous substances reported pursuant to Section 103 of CERCLA as amended, Section 311 of the Clean Water Act, and sections 300.51 and 300.65 of the National Oil and Hazardous Substances Contingency Plan;
- The Hazardous Materials Information Reporting System (HMIRS) which includes hazardous material spill incidents that were reported to the US Department of Transportation;
- Resource Conservation and Recovery Act (RCRA) which includes facilities permitted to handle hazardous wastes under RCRA including treatment, storage, and disposal facilities (RCRA - TSD); large quantity generators which report generation of greater than 1000 kilogram per month of non-acutely hazardous waste or 1 kilogram per month of acutely hazardous waste (RCRA-LQG); and small quantity generators which report generation of less than 1000 kilogram per month of non-acutely hazardous waste or 1 kilogram per month of acutely hazardous waste (RCRA-SQG);

- Biennial Reporting System (BRS) which is a national system administered by the EPA that collects data on the generation and management of hazardous wastes. RCRA Large Quantity Generators and Treatment, Storage, and Disposal facilities are included;
- RCRA Corrective Action Sites (CORRACTS) which includes RCRA permitted facilities that are undergoing corrective action. A corrective action order is issued, when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. Corrective actions may be required beyond the facility's boundary and can be required regardless of when the release occurred, even if it predates RCRA;
- RCRA Administrative Action Tracking System (RAATS) which includes enforcement actions taken under RCRA pertaining to major violations including administrative and civil actions brought by the US EPA;
- Department of Defense Sites (DOD) which includes federally owned or administered lands, administered by the Department of Defense, that have an area equal to or greater than 640 acres of the United States, Puerto Rico, and the US Virgin Islands;
- Formerly Used Defense Sites (FUDS) which includes formerly used defense site properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions;
- Facility Index System (FINDS) which includes facility information and “pointers” to other sources that contain more detail. The following databases are included in FINDS: Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); Enforcement Dockets (DOCKET); Federal Underground Injection Control (FURS); Criminal Docket System (C-Docket); Federal Facilities Information System (FFIS); State Environmental Laws and Statutes (STATE); and PCB Activity Database System (PADS);
- PCB Activity Database System (PADS) which includes generators, transporters, commercial storers, and/or brokers and disposers of PCBs who are required to notify the USEPA of such activities;
- Toxic Substances Control Act (TSCA) list which includes manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list;
- Federal Insecticide, Fungicide, and Rodenticide Act/TSCA (FTTS) list which includes administrative cases and pesticide enforcement actions and compliance actions related to the Federal Insecticide, Fungicide, and Rodenticide Act;
- Federal Insecticide, Fungicide, and Rodenticide Act/TSCA (FTTS INSP) list which includes inspection information for cases regulated under the Federal Insecticide, Fungicide, and Rodenticide Act;
- Federal Insecticide, Fungicide, and Rodenticide Act/TSCA Section 7 Tracking System (SSTS) list which includes registered pesticide producing establishments required to submit a report to the U.S. EPA annually.
- The Material Licensing Tracking System (MLTS) which includes sites that possess or use radioactive materials which are subject to Nuclear Regulatory Commission licensing requirements;

- The Underground Storage Tanks on Indian Land (Indian UST) list which includes permitted UST facilities on Indian land;
- Leaking Underground Storage Tanks on Indian Land (INDIAN LUST) which includes leaking underground storage tanks on Indian land in Arizona, California, New Mexico, and Nevada;
- Indian Reservations (INDIAN RESERV) which includes Indian administered lands of the United States that have an area equal to or greater than 640 acres;
- Mines Master Index File (MINES) which includes properties that have been involved in mining including coal mining, quarrying, or sand and gravel operations;
- Uranium Mill Tailings Sites (UMTRA) which includes former uranium ore mining sites where large piles of mill tailings remained after the uranium had been extracted from the ore; and
- Open Dump Inventory (ODI) which is defined as a disposal facility that does not comply with one or more parts of Title 40 of the Federal Code of Regulations, Parts 257 or 258.

State Regulatory Databases

Regulatory databases to track the status of environmental cases are maintained by several state agencies including the DTSC, RWQCB, SWRCB, Cal IWMB, and the Cal OES. The SWRCB also maintains databases that identify registered ASTs and permitted USTs and the DTSC maintains a list identifying facilities that conduct dry cleaning operations. The state databases reviewed for this EIR are summarized in Table H-2. They include:

- The Annual Work Plan (AWP), formerly known as the Bond Expenditure Plan, identifies hazardous substance sites targeted for cleanup;
- The California Bond Expenditure Plan (CA BOND EXP PLAN) includes sites for which a site-specific expenditure plan has been prepared for the appropriation of California Hazardous Substance Cleanup Bond Act of 1984 funds. This list is no longer updated;
- List of Deed Restrictions (DEED) which lists sites which have been issued deed restrictions because of the presence of hazardous substances;
- The Spills, Leaks, Investigation, and Cleanup Cost Recovery Listing (SLIC Reg2) which include various sites within the jurisdiction of the San Francisco Bay RWQCB;
- Statewide SLIC Cases (SLIC) which is maintained by the State Water Resources Control Board and includes a statewide list of SLIC cases;
- Calsites (CAL-SITES), which was previously referred to as the Abandoned Sites Program Information System (ASPIS), identifies potential hazardous waste sites, which are then screened by the DTSC for further action. Sites on this list which are designated for no further action by the DTSC were removed from this list in 1996;
- Voluntary Cleanup Program Properties (VCP) which includes low threat level properties with either confirmed or unconfirmed releases and the project proponents have requested that the DTSC oversee investigation and/or cleanup activities;

TABLE H-2
STATE AND LOCAL REGULATORY DATABASES REVIEWED

Name of List	Responsible Agency	Acronym	Date of List
Annual Work Plan	DTSC	AWP	8/8/05
California Bond Expenditure Plan	DHS	CA BOND EXP PLAN	1/1/89
List of Deed Restrictions	DTSC	DEED	8/2/05
Spills, Leaks, Investigation, and Cleanup Cost Recovery Listing	CRWQCB	SLIC Reg2	9/30/04
Statewide SLIC Cases	SWRCB	SLIC	7/11/05
Calsites	DTSC	CAL-SITES	8/8/05
Voluntary Cleanup Program Properties	DTSC	VCP	8/8/05
Properties Needing Further Evaluation	DTSC	NFE	8/8/05
Leaking Underground Storage Tank Information System	SWRCB	LUST	7/11/05
Fuel Leak List	CRWQCB	LUST Reg2	9/30/04
Solid Waste Information System	Cal IWMB	SWF/LF	6/13/05
Waste Management Unit Database	SWRCB	WMUDS/SWAT	4/1/00
Cortese Hazardous Waste and Substances Sites List	Cal EPA	CORTESE	4/1/01
Toxic Pits Cleanup Act Sites	SWRCB	TOXIC PITS	7/1/95
Waste Discharge System	SWRCB	CA WDS	6/20/05
Proposition 65 Records	SWRCB	NOTIFY 65	10/21/93
No Further Action Determination	DTSC	NFA	5/4/05
Unconfirmed Properties Referred to Another Agency	DTSC	REF	5/4/05
School Property Evaluation Program	DTSC	SCH	5/4/05
California Hazardous Material Incident Report System	Cal OES	CHMIRS	12/31/03
Hazardous Waste Information System	Cal EPA	HAZNET	12/31/02
Active UST Facilities	SWRCB	CA UST	7/11/05
Facility Inventory Database	Cal EPA	CA FID UST	10/31/94
Hazardous Substance Storage Container Database	SWRCB	HIST UST	10/15/90
Aboveground Petroleum Storage Tank Facilities	SWRCB	AST	8/1/05
Dry Cleaner Facilities	DTSC	DRY CLEANERS	4/18/05
Emissions Inventory Data	CARB	EMI	12/31/03
Statewide Environmental Evaluation and Planning System	SWRCB	SWEEPS UST	6/1/94
Alameda County Underground Storage Tanks	ACEHD	Underground Tanks	10/24/05
Alameda County Contaminated Sites	ACEHD	CS	8/16/05
Contra Costa County Site List	CCHSD	SL	6/13/05

SOURCE: EDR, 2005a – 2005q

- Properties Needing Further Evaluation (NFE) which includes properties that are suspected of being contaminated, but contamination has not been confirmed. These sites would be assessed using the DTSC Preliminary Endangerment Assessment process;
- The Leaking Underground Storage Tank Information System (LUST) which is an inventory of sites with reported leaking underground storage tank incidents maintained by the State Water Resources Control Board.
- The Fuel Leak List (LUST Reg2) which tracks remediation status of known leaking underground tanks;
- The Solid Waste Information System (SWF/LF) which includes a list of active, inactive or closed solid waste disposal sites, transfer facilities, or open dumps, as legislated under the Solid Waste Management and Resource Recovery Act of 1972;
- The Waste Management Unit Discharge System (WMUDS/SWAT) which tracks waste management units. The list contains sites identified in the following databases: Facility Information; Scheduled Inspections Information; Waste Management Unit Information; SWAT Program Information; SWAT Report Summary Information; Chapter 15 Information; Chapter 15 Monitoring Parameters; TPCA Program Information; RCRA Program Information; Closure Information; and Interested Parties Information;
- Cortese Hazardous Waste and Substances Sites List (CORTESE) which includes sites designated be the State Water Resources Control Board (LUST cases), Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (CAL-SITES);
- Toxic Pits Cleanup Act Sites (TOXIC PITS) which includes sites suspected of containing hazardous substances where cleanup has not yet been completed;
- The Waste Discharge System (CA WDS) which lists sites which have been issued waste discharge requirements;
- Proposition 65 Records (NOTIFY 65) which include facility notifications about any release which could threaten drinking water and thereby expose the public to a potential health risk;
- No Further Action Determination (NFA) which includes properties at which the DTSC has made a clear determination that the property does not pose a problem to the environment or to public health;
- Unconfirmed Properties Referred to Another Agency (REF) which includes properties where contamination has been confirmed and which were determined not to require direct DTSC Site Mitigation Program action or oversight. Accordingly, these sites have been referred to another state or local agency;
- School Property Evaluation Program (SCH) which includes proposed and existing school sites that are being evaluated by DTSC for possible hazardous material contamination. In some cases, these properties may be listed in the Cal-Sites category depending on the level of threat they pose to public health and safety or to the environment;
- California Hazardous Materials Incident Reporting System (CHMIRS) which includes reported hazardous materials accidental releases or spills;

- The Hazardous Waste Information System (HAZNET) which includes facility and manifest data for sites that file hazardous waste manifests with the DTSC. The information contained in the database is based on manifests submitted without correction, and therefore may contain some invalid information;
- The Active UST Facilities list (CA UST) which lists registered USTs;
- The Facility Inventory Database (CA FID UST) which is a historical listing of active and inactive underground storage tank locations. Local records should contain more current information;
- The Hazardous Substance Storage Container Database (HIST UST) which is a historical listing of UST sites. Local records should contain more specific information;
- The Aboveground Petroleum Storage Tank Facilities database (AST) which lists registered ASTs;
- The Dry Cleaner Facilities database (DRY CLEANERS) which lists drycleaner related facilities that have EPA identification numbers;
- Emissions Inventory Database (EMI) which includes sites for which the California Air Resources Board and local air pollution control agencies have collected toxic and criteria pollutant emission data; and
- The Statewide Environmental Evaluation and Planning System (SWEEPS) which is a listing of underground storage tank sites that was prepared for the SWRCB in the early 1980s, but is no longer maintained or updated.

Local Regulatory Databases

The Contra Costa County Health Services Department Site List (SL) tracks sites in Contra Costa County with USTs as well as hazardous waste generators and facilities that have submitted a hazardous materials business plan. This database is listed in Table HM-2. Alameda County Underground Storage Tank List identifies sites in Alameda County with permitted underground storage tanks and the Contaminated Sites list tracks sites with leaking underground storage tanks as well as other sites with known soil or groundwater contamination.

Other Databases Reviewed and Features Identified

In addition to the regulatory databases described above, the database review included review of the Former Manufactured Gas Site database provided by Real Property Scan, Inc. and identified oil/gas pipelines and electrical transmission lines, sensitive receptors, flood zones, and wetlands.

Specific Permitted Uses, Environmental Cases, and Spill Sites

Information from each environmental database was compiled by address to identify specific facilities permitted for hazardous materials uses, environmental cases, and spill sites. This level of analysis is important for the evaluation of hazardous materials impacts because many sites can be listed in more than one database. Compiled information for permitted hazardous materials uses, environmental cases, and reported spill sites is summarized in Tables H-3, H-4, and H-5, respectively.

TABLE H-3
SPECIFIC PERMITTED USE SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database													
			RCRA LQG	RCRA SQG	UST	CA FID UST	HIST UST	SWEEPS	AST	Contra Costa SL	DRY CLEANERS	WDS	EMI	HAZNET	FINDS	Other Site Nos.
Lafayette Water Treatment Plant																
TP	EBMUD Lafayette Water Treatment Plant	3848 Mt. Diablo Blvd.		X	X	X	X	X	X	X		X		X	X	A1, A2, A3, A4, A5, A6, A7, A8, A9, A10
11	Sylvan Rife	3793 Sundale Rd.								X						
Total Number of Sites			0	1	1	1	1	1	1	2	0	1	0	1	1	
Orinda Water Treatment Plant																
TP	EBMUD Orinda Water Treatment Plant	190 Camino San Pablo	X		X		X	X		X		X		X	X	A2, A3, A4, A5, A8, A9
A6	Robison Prezioso Inc.	190 Camino Pablo												X		
A7	ECS Claims Administrator	190 Camino Pablo												X		
B10	EBMUD Briones Pumping Plant	470 Manzanita Dr.								X				X		
15	Jorgenson Industries	40 Acacia Dr.								X						
Total Number of Sites			1	0	1	0	1	1	0	3	0	1	0	4	1	
Walnut Creek WTP																
TP	EBMUD Walnut Creek Water Treatment Plant	2201 Larkey Lane	X	X		X	X	X	X	X		X	X	X	X	
Total Number of Sites			1	1	0	1	1	1	1	1	0	1	1	1	1	
Sobrante Water Treatment Plant																
TP	EBMUD Sobrante Water Treatment Plant	5500 Amend Rd.	X		X	X	X	X	X	X		X	X	X	X	8
TP	PG&E Valley View Substation	5500 Amend Rd.								X						
B9	City of Richmond	5201 Valley View Rd.								X						
Total Number of Sites			1	0	1	1	1	1	1	3	0	1	1	1	1	

See last page of table for list of abbreviations used.

TABLE H-3 (Continued)
SPECIFIC PERMITTED USE SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database													
			RCRA LQG	RCRA SQG	UST	CA FID UST	HIST UST	SWEEPS	AST	Contra Costa SL	DRY CLEANERS	WDS	EMI	HAZNET	FINDS	Other Site Nos.
Upper San Leandro Water Treatment Plant																
TP	EBMUD Upper San Leandro Water Treatment Plant	7700 Greenly Dr.	X			X	X	X	X			X		X	X	
TP	Poly Cal Plastic, Inc.	7700 Greenly Dr.											X	X		
Total Number of Sites			1	0	0	1	1	1	1	0	0	1	1	2	1	
Orinda-Lafayette Tunnel/Pipeline																
7	Gene Worthington	4045 Los Arabis Rd								X				X		
8	Contra Costa Fire Station #16	4007 Los Arabis Dr.			X	X	X	X		X						
10	Jorgenson Industries	40 Acacia Dr.								X						
11	PG&E Las Aromas Substation	30 Las Aromas Rd.								X						
12	Mary Lyons	383 Camino Sobrante												X		
13	Verizon Wireless / Lafayette	4104 El Nido Ranch Rd.								X						
18	Orinda Country Club	315 Camino Sobrante								X				X		16
20	EBMUD Orinda Water Treatment Plant/ Robinson Prezioso / ECS Claims Administrator	190 Camino Pablo	X		X		X	X		X		X		X	X	19
21	Darryl Raines	7 Camino Lenada												X		
22	City of Orinda	176 Camino Pablo												X		
23	Formerly La Roche, Inc.	969 Acalanese Rd.								X						
24	Marion Bottomely	6 Mira Loma												X		
26	CCCSD / Lower Orinda Pumping Station	18 Miner Rd.								X						
28	Patricia Samborn Bryant	63 La Cuesta												X		
29	Temple Isaiah Religious School	3800 Mt. Diablo Blvd.												X	X	
32	EBMUD Lafayette Water Treatment Plant / Lafayette Filter Plant	3848 Mt. Diablo Blvd.		X	X	X	X	X	X	X		X		X	X	
33	Douglas McNeil DDS	915 Village Center												X		
35	EBMUD	4 Madera Ln												X		37
Total Number of Sites			1	1	3	2	3	3	1	10	0	2	0	12	3	

TABLE H-3 (Continued)
SPECIFIC PERMITTED USE SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database													
			RCRA LQG	RCRA SQG	UST	CA FID UST	HIST UST	SWEEPS	AST	Contra Costa SL	DRY CLEANERS	WDS	EMI	HAZNET	FINDS	Other Site Nos.
Ardith Reservoir and Donald Pumping Plant																
1	Import Motors	4 Cielo Ct.		X										X	X	
Total Number of Sites			0	1	0	0	0	0	0	0	0	0	0	1	1	
Fay Hill Pumping Plant and Pipeline Improvements																
A2	Unocal Service Station / Rheem Valley Unocal #3937/Tosco Corporation Station #305/Rheem Valley 76 #253937	398 Rheem Blvd.		X	X			X		X				X	X	A1, A3, A4, A5, A6, A7, A8
A9	Shell Oil Co. / Eric Accomozzo	383 Rheem Blvd.		X		X	X	X		X						E22
B12	Exxon/ Texaco / X-Tek Automotive/ Moraga Beacon	425 Moraga Rd.			X	X	X	X		X				X		B10, B11, 28
A13	Rheem Valley Automotive Inc. / Thomas Scrubb	455 Center St.								X				X		A14
A15	Park Express Cleaners	382 Park St.									X					
C16	Rheem Center Martinizing	482 Center St.											X		X	
C17	Rheem Center 1 Hr. Martinizing	492 Center St.		X						X	X		X	X	X	C18
20	Autohaus Stuttgart	388 Moraga Rd.												X		
D21	Lori's Perfect Tan	552 Center St.												X		
D26	Rheem Valley Cleaners	568 Center St.		X						X	X		X		X	D25
D27	Comcast Cable	570 Center St.								X						
E24	Rheem Theater	350 Park St.								X						
E29	Advanced Mobil Solutions	375 Rheem Blvd.												X		
F30	Exxon Service Station #7-994	530 Moraga Rd.		X		X	X	X		X				X	X	
F31	Moraga / Orinda Fire District Station	555 Moraga Rd.								X						
G32	Longs	580 Moraga Rd.		X						X				X	X	G33
G34	Dry Clean USA / Moraga	586 Moraga Rd.								X						
Total Number of Sites			0	6	2	3	3	4	0	12	3	0	3	9	6	

TABLE H-3 (Continued)
SPECIFIC PERMITTED USE SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database													
			RCRA LQG	RCRA SQG	UST	CA FID UST	HIST UST	SWEEPS	AST	Contra Costa SL	DRY CLEANERS	WDS	EMI	HAZNET	FINDS	Other Site Nos.
Fay Hill Reservoir																
NO PERMITTED USES IDENTIFIED WITHIN ASTM SEARCH DISTANCES																
Glen Pipeline																
1	City of Concord	3601 Deer Hill Rd.												X		
2	CCC Corporation Yard	999 Blanche LN.								X						
A3	City of Lafayette	1012 S. Thompson Rd.												X		
A4	City of Lafayette	1004 S. Thompson Rd.												X		
5	Pacific Bell	3610 Happy Valley		X			X	X		X			X	X	X	
6	Winchell's Private Residence	1 Via Oneg								X						
B7	GMW #163	953 Mt. View								X						
C9	Wentling Camera and Video / Wolf Camera #1313	3631 Mt. Diablo Blvd.								X				X		B31
D10	Lafayette Town Center Assn	3598 Mt. Diablo Blvd.												X		
B11	Meinbress Residence	3603 Happy Valley Rd.								X						
E14	Christopoulos Properties	3590 Mt. Diablo Blvd.												X		F38
D17	Shell	3603 Mt. Diablo Blvd.		X	X	X	X	X		X				X		C12, D15, D16, E13, H44
D19	Texaco/ Lafayette Beau / Texaco Refining and Marketing/ Prestige Auto	3599 Mt. Diablo Blvd.		X		X	X	X		X				X	X	D18, D20, F36, F39, H45
B24	Chevron Station #95890	3632 Mt. Diablo Blvd.		X	X		X			X				X	X	G39, G40, G41, B21, B22, B23, B25
E26	Lafayette Town Center	3588 Mt. Diablo Blvd.								X						
E28	Lafayette Town Center / Le Gas-South	3589 Mt. Diablo Blvd.				X	X	X		X				X		E27, F37
F30	One Hour Martinizing / Chevron Products USA	3580 Mt. Diablo Blvd.		X						X	X		X	X	X	F29
F32	Photo Fast	3577 Mt. Diablo Blvd.								X						
G35	Lescure Company Inc.	3667 Mt. Diablo Blvd.				X	X	X		X						G34, 66

TABLE H-3 (Continued)
SPECIFIC PERMITTED USE SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

			Database														
EDR Site No.	**Site Name**	**Address**	**RCRA LQG**	**RCRA SQG**	**UST**	**CA FID UST**	**HIST UST**	**SWEEPS**	**AST**	**Contra Costa SL**	**DRY CLEANERS**	**WDS**	**EMI**	**HAZNET**	**FINDS**	**Other Site Nos.**
40	21st & RST Building	3575 Mt. Diablo Blvd.		X											X	
44	Bedford Real Estate Investment	270 Lafayette Cir.												X		
I46	Arco/ A&A Services Inc.	3658 Mt. Diablo Blvd.				X	X	X		X				X		B8, I45
J47	Ohn H Devor MD	970 Dewing Ave.												X		
J49	Robert Herman DDS Inc.	963 Dewing Ave.												X		
K50	Lafayette Motor Sports	3670 Mt. Diablo Blvd.												X		
K54	Diamond K Building Supply	3671 Mt. Diablo Blvd.								X		X				
K55	Carlo's Automotive Repair	3672 Mt. Diablo Blvd.												X		
K58	Pacific Bell	3675 Mt. Diablo Blvd.		X		X	X	X		X					X	
79	Brooks Creative Services	3717 Mt. Diablo Blvd.												X		
Total Number of Sites			0	7	2	6	8	7	0	17	1	1	2	19	6	
Happy Valley Pumping Plant and Pipeline																
2	SRI Transport	74 Lombardy Lane		X											X	
A4	Peter Zischke	515 Miner Rd.								X				X		A3
6	Ohn Newacheck	21 Tappan Lane					X	X		X				X		
10	Ann Liphart	1 Oak Arbor Rd.												X		
D14	Rosenberg Property	12 El Sueno Rd.								X				X		D15
Total Number of Sites			0	1	0	0	1	1	0	3	0	0	0	4	1	
Highland Reservoir and Pipeline and Lafayette Reclaimed Water Pipeline																
A1	EBMUD Lafayette Water Treatment Plant	3648 Mt. Diablo Blvd.		X	X	X	X	X	X	X		X		X	X	A2, A3, A4, A5, A6, A7, A8, A9, A10
11	Sylvan Rife	3793 Sundale Rd.								X						
B12	Temple Isaiah Religious School	3800 Mt. Diablo Blvd.												X	X	B13
14	Douglas McNeil DDS	915 Village Center												X		
Total Number of Sites			0	1	1	1	1	1	1	2	0	1	0	3	2	

TABLE H-3 (Continued)
SPECIFIC PERMITTED USE SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database													
			RCRA LQG	RCRA SQG	UST	CA FID UST	HIST UST	SWEEPS	AST	Contra Costa SL	DRY CLEANERS	WDS	EMI	HAZNET	FINDS	Other Site Nos.
Leland Isolation Pipeline																
A1	Benson's Radiator Service	1551 La Cassie Ave.								X				X		A2
B5	Pacific Bell/Walnut Creek	1755 Locust St.		X	X	X	X	X		X			X	X	X	B4, B3
C6	Unocal Service Station #7005	1823 North Main St.				X		X								
C11	Dirito Bros/Braner-Sloane Motors, Inc.	1840 North Main St.		X		X	X	X		X			X	X	X	C7, C8, C9, C10, C12, C13
D14	Walnut Creek/ Don Young Ford	1800 North Main St.				X	X	X					X		X	D15, D16
E17	Unocal	1322 North Main St.					X			X						
F18	Ken Stevenson	1717 California Blvd.												X		
E19	Target #329/Unocal Service Station #7005/Target #1208	1871 North Main St.								X				X		E20, E21, E22, E23
25	Steed Motors, Inc.	1750 North Main St.												X		
E26	Walnut Creek Nissan/ Walnut Creek Datsun Service Department/Dirito Bros Walnut Creek	1890 North Main St.				X	X	X		X						E27, E28
29	City of Walnut Creek	511 Lawrence Wy.												X		
G30	Custom Blueprint	1657 California Blvd. N.								X						
G31	Not Reported/Sprint Walnut Creek	1646 N. California St.								X						F24
H32	Walnut Creek Honda/Parker Rob Chevrolet Annex	1410 Arroyo Wy.								X						H33
I35	Parker Robb Chevrolet Inc.	1707 North Main St.		X		X	X	X		X			X	X	X	I34
K38	Stead Motors Service Center/ Springs and Bertino Body Shop	1413 Carlback Ave.								X			X	X	X	K40, K39
J41	Walnut Creek Substation/PG&E Walnut Creek Substation	1371 Arroyo Wy.		X						X					X	J42, J37
43	Sherwin-Williams Co.	1666 Locust St.		X											X	
L44	SRS Development	1756 Broadway				X				X						L61
L45	Walnut Creek Super Print	1770 N. Broadway								X						
K46	Walnut Creek Ford	1400 Carlback Ave.		X	X	X		X		X				X	X	K47, K48, K49

TABLE H-3 (Continued)
SPECIFIC PERMITTED USE SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database													
			RCRA LQG	RCRA SQG	UST	CA FID UST	HIST UST	SWEEPS	AST	Contra Costa SL	DRY CLEANERS	WDS	EMI	HAZNET	FINDS	Other Site Nos.
M50	Xtra Oil Company	1980 Main St.			X	X		X		X						M51, M52, Q70
53	Locusts Street Properties / Equity Concept Development Co.	1535 Giamona								X				X		I36
N54	PW Houvy						X									
O55	Walnut Creek City of Public Works	1666 North Main St.		X						X				X	X	O56, O57
P62	USA Gasoline Corp #0863/ Walnut Creek Ygnacio Shell	265 Ygnacio Valley Rd.		X	X	X	X	X		X				X	X	P58,P59, P62,P63,P64, P65, P66
P67	Nichols Chiropractic Office, Inc.	245 Ygnacio Valley Blvd.												X		
N68	City of Walnut Creek-At DMV Park	1910 N. Broadway												X		
69	Daily Printing	1618 Locust St.								X						
R71	Doctors Office	590 Ygnacio Valley Blvd.												X		
S72	Contra Costa Fire Station #1	1330 Civic Dr.			X	X	X	X		X				X		S73, S74, S75
Q78	Pembroke Real Estate/Fidelity Walnut Creek Properties	2001 North Main St.											X	X		Q77
S79	Civic Arts Education	1313 Civic Dr.												X		
U81	Don M. Morris DDS MS, Inc.	1981 N. Broadway												X		
V83	Pacific Bell	1270 Arroyo Wy.		X											X	
V84	Comcast Cable	1267 Arroyo Wy.								X						
84	Fashion Cleaners	581 Ygnacio Valley Rd.		X						X	X		X	X	X	T82
W86	Lepore Inc. / Quality Hour Photo	1601 North Main St.		X						X				X	X	W85
U87	Exxon Ras 72302	605 Ygnacio Valley Rd.											X	X		R76
Total Number of Sites			0	11	5	12	8	10	0	24	1	0	8	23	13	
Leland Bypass Valve																
TP	East Bay Municipal Utility District / Danville Pumping Plant/EBMUD Danville Pumping Plant	2055 Danville Blvd.							X	X			X		X	B4, B5, B6, B7
3	Young Residence	2099 Danville Blvd.								X						
Total Number of Sites			0	0	0	0	0	0	1	2	0	0	1	0	1	

TABLE H-3 (Continued)
SPECIFIC PERMITTED USE SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database													
			RCRA LQG	RCRA SQG	UST	CA FID UST	HIST UST	SWEEPS	AST	Contra Costa SL	DRY CLEANERS	WDS	EMI	HAZNET	FINDS	Other Site Nos.
Moraga Reservoir																
1	EBMUD	310 Claudia Ct.												X		
Total Number of Sites			0	0	0	0	0	0	0	0	0	0	0	1	0	
Moraga Road Pipeline																
1	Temple Isaiah Religious School	3800 Mt. Diablo Blvd.												X	X	
2	EBMUD Lafayette Water Treatment Plant/ Lafayette Filter Plant	3848 Mt. Diablo Blvd.		X	X	X	X	X	X	X		X		X	X	
3	Douglas McNeil DDS	915 Village Center												X		
4	Sylvan Rife	3793 Sundale Rd.								X						
5	Owen O'Neil	3611 Powell Dr.								X						
5	Claude Hutchison	3615 Powell Dr.												X		
9	Campolindo High School	300 Moraga Rd.		X						X				X	X	8
10	Acalanes Maintenance Yard/ Acalanes Union High School/Acalanes Service Center/ Trans Maintenance	310 Moraga Rd.	X		X	X	X	X		X		X		X	X	11
13	Autohaus Stuttgart	388 Moraga Rd.												X		
14	Advanced Mobil Solutions	375 Rheem Blvd.												X		
14	Rheem Theater	350 Park St.								X						
15	Shell Oil Co./ Eric Accomozzo	383 Rheem Blvd.		X		X	X	X		X						14
15	Unocal Service Station/ Rheem Valley Unocal #3937/Tosco Corp	398 Rheem Blvd.		X	X			X		X				X	X	
16	Park Express Cleaners	382 Park St.									X					
17	Rheem Center Martinizing	482 Center St.											X		X	
17	Rheem Valley Automotive Inc./ Thomas Scrubb	455 Center St.								X				X		
17	Rheem Center 1 Hr. Martinizing	492 Center St.		X						X	X		X	X	X	
18	Exxon/ Texaco/ X-Tek Automotive/ Moraga Beacon	425 Moraga Rd.			X	X	X	X		X				X		12

TABLE H-3 (Continued)
SPECIFIC PERMITTED USE SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database													
			RCRA LQG	RCRA SQG	UST	CA FID UST	HIST UST	SWEEPS	AST	Contra Costa SL	DRY CLEANERS	WDS	EMI	HAZNET	FINDS	Other Site Nos.
19	Lori's Perfect Tan	552 Center St.												X		
19	Comcast Cable	570 Center St.								X						
19	Rheem Valley Cleaners	568 Center St.		X						X	X		X		X	
20	Exxon Service Station #7-994	530 Morga Rd.		X		X	X	X		X				X	X	
20	Dry Clean USA/ Moraga	586 Moraga Rd.								X						
20	Moraga/ Orinda Fire District	555 Moraga Rd.								X						
20	Longs	580 Moraga Rd.		X						X				X	X	
21	Lamorinda Cleaners	629 Moraga Rd.								X	X		X	X	X	
24	Miramonte High School	750 Moraga Rd.												X		
Total Number of Sites			1	8	4	5	5	6	1	18	4	2	4	17	11	
New Leland Pressure Zone Reservoir and Pipeline																
A1	Smart SMR of California Inc./New Cingular Wireless Services	60 Layman Ct.								X						A2
3	Young Residence	2099 Danville Blvd.								X						
B7	East Bay Municipal Utility District/Danville Pumping Plant/Ebmud Danville Pumping Plant	2055 Danville Blvd.							X	X			X		X	B4, B5, B6
C8	Walnut Creek School District	2050 Vanderslice Ave.												X	X	C9
Total Number of Sites			0	0	0	0	0	0	1	3	0	0	1	1	2	
Sunnyside Pumping Plant																
NO PERMITTED USES IDENTIFIED WITHIN ASTM SEARCH DISTANCES																
Tice Pumping Plant and Pipeline																
A2	Contra Costa Fire Protectioin	2273 Whyte Park Ave.				X	X	X		X				X		28
B3	Cottage Veterinary Hospital	1590 Boulevard Way												X		
B11	Tice Valley Texaco/ Golden State Service Station/ Saranap Filling Station/ Franks Auto Repair	1601 Tice Valley Blvd.		X	X	X	X	X		X				X	X	B4, B13, B15, B16

TABLE H-3 (Continued)
SPECIFIC PERMITTED USE SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database													
			RCRA LQG	RCRA SQG	UST	CA FID UST	HIST UST	SWEEPS	AST	Contra Costa SL	DRY CLEANERS	WDS	EMI	HAZNET	FINDS	Other Site Nos.
B5	Shell/ Ames Gillespie	1600 Tice Valley Blvd.				X	X	X		X						B8, B14
B6	Military Family Housing/ American Cleaners/ Mobil Service Station	2400 Olympic Blvd.		X		X	X	X		X			X	X	X	B7, B9, B10, B12, D23
C17	Dr. Kenneth Brown DDS	2231 Olympic Blvd.												X		
C18	Christopher A Wolter DDS	2229 Olympic Blvd.												X		
C19	Diablo Muir Podiatry Group	2227 Olympic Blvd.												X		
C20	Christopher Thompson DDS	2225 Olympic Blvd.												X		
B21	Tice Valley Medical Center	1607 Tice Valley Blvd.												X		
D24	Bay Area Rescue Mission	2424 Olympic Blvd.												X		
25	James McGeehon	2460 Warren Blvd.						X		X						
E27	Tamarind Place Associates LP	1343 Boulevard Way												X		
29	Ruane Hayashi	3 Abbey Ct.												X		
F31	Cal Metcalf	1299 Boulevard Way								X						F32
F33	Amesterdam Art	1279 Boulevard Way												X		
38	Professional Resource Management	1136 Saranap Space		X						X						
Total Number of Sites			0	3	1	4	4	5	0	7	0	0	1	13	2	
Withers Pumping Plant																
TP	Grayson Reservoir														X	
Total Number of Sites			0	0	0	0	0	0	0	0	0	0	0	1	0	*

List of abbreviations:

AST: Aboveground Petroleum Storage Tank Facilities
CA FID UST: Facility Inventory Database
Contra Costa SL: Sites regulated under the CUPA program
DRY CLEANERS: Cleaner Facilities Database
EMISSIONS: Sites with data on toxic and criteria pollutant emissions
FINDS: Facility Index System
HAZNET: Hazardous Waste Information System
HIST UST: Hazardous Substance Storage Container Database
RCRA LQG: Resource Conservation and Recovery Act, Large Quantity Generator
RCRA SQG: Resource Conservation and Recovery Act, Small Quantity Generator
SWEEPS: Statewide Environmental Evaluation and Planning System
UST: Permitted Underground Storage Tank
WDS: Waste Discharge System

SOURCES: EDR, 2005a - 2005q; Orion Environmental Associates

TABLE H-4
SPECIFIC ENVIRONMENTAL CASES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database										
			AWP	CASLIC	CALSITES	VCP	Alameda County CS	CERCLIS NFRAP	REF	Notify 65	LUST	CORTESE	Other Site Nos.
Lafayette Water Treatment Plant													
NO ENVIRONMENTAL CASES IDENTIFIED WITHIN ASTM SEARCH DISTANCES													
Orinda Water Treatment Plant													
TP	EBMUD Orinda Water Treatment Plant	190 Camino San Pablo										X	A2, A3, A4, A5, A8, A9
16	Couchman Property	122 Canon Dr.									X	X	
Total Number of Sites			0	0	0	0	0	0	0	0	1	2	
Walnut Creek Water Treatment Plant													
NO ENVIRONMENTAL CASES IDENTIFIED WITHIN ASTM SEARCH DISTANCES													
Sobrante Water Treatment Plant													
12	CA Autism Foundation	27 Carter Ct.				X							
13	CA Autism Foundation	3592 Morning Side Dr.				X							
Total Number of Sites			0	0	0	2	0	0	0	0	0	0	
Upper San Leandro Water Treatment Plant													
TP	EBMUD Upper San Leandro Water Treatment Plant	7700 Greenly Dr.					X				X	X	
13	Exxon	8008 Mountain Blvd.					X				X	X	
B15	Gallagher & Burke	7100 Mountain Blvd.					X				X	X	B14
C16	Oakland Naval Hospital	8750 Mountain Blvd.	X		X		X	X			X	X	C17
Total Number of Sites			1	0	1	0	4	1	0	0	4	4	
Orinda-Lafayette Tunnel/Pipeline													
20	EBMUD Orinda Water Treatment Plant/ Robinson Prezioso / ECS Claims Administrator	190 Camino Pablo										X	19
31	Couchman Property	122 Canon Dr.									X	X	
Total Number of Sites			0	0	0	0	0	0	0	0	1	2	

See last page of table for list of abbreviations used.

TABLE H-4 (Continued)
SPECIFIC ENVIRONMENTAL CASES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database										
			AWP	CASLIC	CALSITES	VCP	Alameda County CS	CERCLIS NFRAP	REF	Notify 65	LUST	CORTESE	Other Site Nos.
Ardith Reservoir and Donald Pumping Plant													
NO ENVIRONMENTAL CASES IDENTIFIED WITHIN ASTM SEARCH DISTANCES													
Fay Hill Pumping Plant, Pipeline Improvements, and Reservoir													
A2	Unocal Service Station / Rheem Valley Unocal #3937 / Tosco Corporation Station #305/Rheem Valley 76 #253937	398 Rheem Blvd.									X	X	A1, A3, A4, A5, A6, A7, A8
A9	Shell Oil Co. / Eric Accomozzo	383 Rheem Blvd.									X	X	E22
B12	Exxon / Texaco / X-Tek Automotive / Moraga Beacon	425 Moraga Rd.									X	X	B10, B11, 28
E24	Rheem Theater	350 Park St.									X	X	
F30	Exxon Service Station #7-994	530 Moraga Rd.									X	X	
Total Number of Sites			0	0	0	0	0	0	0	0	5	5	
Glen Pipeline													
2	CCC Corporation Yard	999 Blanche LN.									X	X	
5	Pacific Bell	3610 Happy Valley									X	X	
D17	Shell	3603 Mt. Diablo Blvd.									X	X	C12, D15, D16, E13, H44
D19	Texaco / Lafayette Beau / Texaco Refining and Marketing / Prestige Auto	3599 Mt. Diablo Blvd.									X	X	D18, D19, D20, F36, F39, H45
B24	Chevron Station #95890	3632 Mt. Diablo Blvd.									X	X	G39, G40, G41, B21, B22, B23, B24, B25
E26	Lafayette Town Center	3588 Mt. Diablo Blvd.									X		
E28	Lafayette Town Center / Le Gas-South	3589 Mt. Diablo Blvd.										X	E27, F37
F30	One Hour Martinizing / Chevron Products USA	3580 Mt. Diablo Blvd.										X	F29
G35	Lescure Company Inc.	3667 Mt. Diablo Blvd.									X	X	G34, 66
I46	Arco / A&A Services Inc.	3658 Mt. Diablo Blvd.									X	X	B8, I45
K54	Diamond K Building Supply	3671 Mt. Diablo Blvd.									X	X	
K58	Pacific Bell	3675 Mt. Diablo Blvd.									X	X	
Total Number of Sites			0	0	0	0	0	0	0	0	10	11	

TABLE H-4 (Continued)
SPECIFIC ENVIRONMENTAL CASES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database										
			AWP	CASLIC	CALSITES	VCP	Alameda County CS	CERCLIS NFRAP	REF	Notify 65	LUST	CORTESE	Other Site Nos.
Happy Valley Pumping Plant and Pipeline Improvements													
D14	Rosenberg Property	12 El Sueno Rd.									X	X	D15
Total Number of Sites			0	0	0	0	0	0	0	0	1	1	
Highland Reservoir and Pipeline and Lafayette Reclaimed Water Pipeline													
NO ENVIRONMENTAL CASES IDENTIFIED WITHIN ASTM SEARCH DISTANCES													
Leland Isolation Pipeline and Bypass Valve													
B5	Pacific Bell/Walnut Creek	1755Locust St.									X	X	B4, B3
C11	Dirito Bros / Braner-Sloane Motors, Inc.	1840 North Main St.									X	X	C7, C8, C9, C10, C12, C13
E17	Unocal	1322 North Main St.									X	X	
I35	Parker Robb Chevrolet Inc.	1707 North Main St.									X	X	I34
L44	SRS Development	1756 Broadway									X	X	L61
M50	Xtra Oil Company	1980 Main St.								X	X	X	M51, M52, Q70
P62	USA Gasoline Corp #0863 / Walnut Creek Ygnacio Shell	265 Ygnacio Valley Rd.									X		P58, P59, P60, P63, P64, P65, P66
U87	Exxon Ras 72302	605 Ygnacio Valley Rd.									X	X	R76
88	L'il Bear Car Wash #1	604 Ygnacio Valley Wy.									X	X	
89	Anderson Oldsmobile GMC	635 Ygnacio Valley Rd.									X	X	
Total Number of Sites			0	0	0	0	0	0	0	1	10	9	
Moraga Reservoir													
NO ENVIRONMENTAL CASES IDENTIFIED WITHIN ASTM SEARCH DISTANCES													
Moraga Road Pipeline													
10	Acalanes Maintenance Yard / Acalanes Union High School / Acalanes Service Center / Trans Maintenance	310 Moraga Rd.									X	X	11
14	Rheem Theater	350 Park St.									X	X	
14	Shell Oil Co. / Eric Accomozzo	383 Rheem Blvd.									X	X	15
15	Unocal Service Station / Rheem Valley Unocal #3937 / Tosco Corp	398 Rheem Blvd.									X	X	

TABLE H-4 (Continued)
SPECIFIC ENVIRONMENTAL CASES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database: AWP	CASLIC	CALSITES	VCP	Alameda County CS	CERCLIS NFRAP	REF	Notify 65	LUST	CORTESE	Other Site Nos.
18	Exxon / Texaco / X-Tek Automotive / Moraga Beacon	425 Moraga Rd.									X	X	12
20	Exxon Service Station #7-994	530 Morga Rd.									X	X	
Total Number of Sites			0	0	0	0	0	0	0	0	6	6	
New Leland Pressure Zone Reservoir and Pipeline													
NO ENVIRONMENTAL CASES IDENTIFIED WITHIN ASTM SEARCH DISTANCES													
Total Number of Sites													
Sunnyside Pumping Plant													
NO ENVIRONMENTAL CASES IDENTIFIED WITHIN ASTM SEARCH DISTANCES													
Tice Pumping Plant and Pipeline													
B11	Tice Valley Texaco / Golden State Service Station/ Saranap Filling Station / Franks Auto Repair	1601 Tice Valley Blvd.									X	X	B4, B13, B15, B16
B5	Shell/ Ames Gillespie	1600 Tice Valley Blvd.									X	X	B8, B14
B6	Military Family Housing / American Cleaners / Mobil Service Station	2400 Olympic Blvd.										X	B7, B9, B10, B12, D23
E26	Walkers Hydraulics	1360 Boulevard Way									X	X	
F31	Cal Metcalf	1299 Boulevard Way									X	X	F32
Total Number of Sites			0	0	0	0	0	0	0	0	4	5	
Withers Pumping Plant													
1	Facility 11006-1	2099 Reliez Valley Rd.										X	
Total Number of Sites			0	0	0	0	0	0	0	0	0	1	

List of Abbreviations:

Alameda County CS: Alameda County Contaminated Sites List
AWP: Annual Work Plan
CAL-SITES: Calsites
CASLIC: Spills, Leaks, Investigation, and Cleanup Cost Recovery Listing
CERCLIS NFRAP: Comprehensive Environmental Response, Compensation, and Liability Information System, sites designated for no further action
CORTESE: Cortese Hazardous Waste and Substances Site List
LUST: Leaking Underground Storage Tank Site
NOTIFY 65: Proposition 65 Records
REF: sites that do not to require direct DTSC Site Mitigation Program and have been referred to another agency
VCP: Voluntary Cleanup Program Property

SOURCES: EDR, 2005a - 2005q; Orion Environmental Associates

TABLE H-5
SPECIFIC SPILL SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database			Other Site Nos.
			ERNS	CHMIRS	HMRIS	
Lafayette Water Treatment Plant						
TP	EBMUD Lafayette Water Treatment Plant/ Lafayette Filter Plant	3848 Mt. Diablo Blvd.		X		
TP	EBMUD Lafayette Water Treatment Plant	3648 Mt. Diablo Blvd.		X		
Total Number of Sites			0	2	0	
Orinda Water Treatment Plant						
TP	EBMUD Orinda Water Treatment Plant	190 Camino San Pablo	X	X		A2, A3, A4, A5, A8, A9
Walnut Creek Water Treatment Plant						
TP	EBMUD Walnut Creek Water Treatment Plant	2201 Larkey Lane		X		
Sobrante Water Treatment Plant						
TP	EBMUD Sobrante Water Treatment Plant	5500 Amend Rd.		X		
Upper San Leandro Pumping Plant						
TP	Poly Cal Plastic, Inc.	7700 Greenly Dr.		X		
Orinda-Lafayette Tunnel/Pipeline						
9	Not Reported	1050 Upper Happy Valley		X		
15	Not Reported	Highway 24		X		
20	EBMUD Orinda Water Treatment Plant / Robinson Prezioso / ECS Claims Administrator	190 Camino Pablo	X	X		19
22	Not Reported	Ardilla Rd./ Camino Pablo		X		
30	Not Reported	174Canon Dr.		X		
32	EBMUD Lafayette Water Treatment Plant / Lafayette Filter Plant	3848 Mt. Diablo Blvd.		X		
Total Number of Sites			1	6	0	
Ardith Reservoir and Donald Pumping Plant						
NO SPILLS IDENTIFIED AT PROPERTY						
Fay Hill Pumping Plant and Pipeline Improvements						
19	Not Reported	374 Park St.		X		
Fay Hill Reservoir						
NO SPILLS IDENTIFIED AT PROPERTY						
Glen Pipeline Improvements						
E14	Christopoulos Properties	3590 Mt. Diablo Blvd.	X			F38

See last page of table for list of abbreviations used.

TABLE H-5 (Continued)
SPECIFIC SPILL SITES
WATER TREATMENT AND TRANSMISSION IMPROVEMENT PROGRAM EIR

EDR Site No.	Site Name	Address	Database			Other Site Nos.
			ERNS	CHMIRS	HMRIS	
Happy Valley Pumping Plant and Pipeline						
1	Not Reported	10 Lombardy Lane		X		
Highland Reservoir and Pipeline and Lafayette Reclaimed Water Pipeline						
NO SPILL SITES IDENTIFIED AT PROPERTY OR WITHIN 1/4-MILE OF PIPELINE						
Leland Isolation Pipeline						
G31	Not Reported/Sprint Walnut Creek	1646 N. California St.		X		F24
O55	Walnut Creek City of Public Works	1666 North Main St.		X		O56, O57
T80	Not Reported	Corner of N. Broadway		X		
Total Number of Sites			0	3	0	
Leland Bypass Valve						
NO SPILL SITES IDENTIFIED AT PROPERTY						
Moraga Reservoir						
NO SPILL SITES IDENTIFIED AT PROPERTY						
Moraga Road Pipeline						
2	EBMUD Lafayette Water Treatment Plant/ Lafayette Filter Plant	3848 Mt. Diablo Blvd.		X		
6	Not Reported	730 Moraga Rd.		X		
7	Not Reported	100 Calle la Mesa	X			1
9	Campolindo High School	300 Moraga Rd.		X		8
16	Not Reported	374 Park St.		X		
22	Not Reported	Moraga Rd./ Donald Dr.		X		
23	Not Reported	715 Moraga Rd.		X		
Total Number of Sites			1	6	0	
New Leland Pressure Zone Reservoir and Pipeline						
NO SPILL SITES IDENTIFIED AT PROPERTY OR WITHIN 1/4-MILE OF PIPELINE						
Sunnyside Pumping Plant						
NO SPILL SITES IDENTIFIED AT PROPERTY						
Tice Pumping Plant and Pipeline						
22	Not Reported	120 Carol Place		X		
Withers Pumping Plant						
NO SPILL SITES IDENTIFIED AT PROPERTY						

List of Abbreviations:
CHMIRS: California Hazardous Materials Incident Reporting System
ERNS: Emergency Response Notification System
HMIRS: Hazardous Materials Information Reporting System

SOURCES: EDR, 2005a - 2005q; Orion Environmental Associates

References – Appendix H

Environmental Data Resources (EDR), 2005a. *The EDR Radius Map with GeoCheck, Ardith Reservoir and Donald Pumping Plant, Leslee Lane, Orinda, CA, 94563 September 30.*

________, 2005b. *The EDR Radius Map with GeoCheck, Fay Hill Improvements, Rheem Blvd./Moraga Rd., Moraga, CA, 94556. September 30.*

________, 2005c. *The EDR Radius Map with GeoCheck, Happy Valley Improvements, Lombardy/Tarry Ln., Orinda, CA, 94563. September 30.*

________, 2005d. *The EDR Radius Map with GeoCheck, Lafayette WTP and Highland Reservoir, 3848 Mount Diablo Boulevard, Lafayette, CA, 94549. September 30.*

________, 2005e. *The EDR Radius Map with GeoCheck, Moraga Reservoir, Fernwood Dr./Draeger Dr., Moraga, CA, 94556. September 30.*

________, 2005f. *The EDR Radius Map with GeoCheck, New Leland Reservoir and Bypass Valve, Rudgear Rd./Broadway, Walnut Creek CA, 94596. September 30.*

________, 2005g. *The EDR Radius Map with GeoCheck, Orinda WTP, Miner Rd./Don Miguel, Orinda, CA, 94563. September 30.*

________, 2005h. *The EDR Radius Map with GeoCheck, Sobrante Water Treatment Plant, 5500 Amend Rd., El Sobrante, CA, 94803. September 30.*

________, 2005i. *The EDR Radius Map with GeoCheck, Sunnyside Pumping Plant and Pipeline, Sundown/Silver Oak, Orinda, CA, 94563 September 30.*

________, 2005j. *The EDR Radius Map with GeoCheck, Tice Pumping Plant and Pipeline, Tice Valley Blvd./Olympic Blvd, Walnut Creek, CA, 94595. September 30.*

________, 2005k. *The EDR Radius Map with GeoCheck, Walnut Creek WTP, 2201 Larkey Ln., Walnut Creek, CA, 94597. September 30.*

________, 2005l. *The EDR Radius Map with GeoCheck, Withers Pumping Plant, Silver Hill Way/Reliez Valley, Pleasant Hill, CA, 94549. September 30.*

________, 2005m. *The EDR Radius Map with GeoCheck, Leland Isolation Pipeline, Lacassie Ave/California Blvd, Walnut Creek, CA, 94596. October 3.*

________, 2005n. *The EDR Radius Map with GeoCheck, Upper San Leandro WTP, 7700 Greenly Dr., Oakland, CA, 94605 October 3..*

________, 2005o. *The EDR Radius Map with GeoCheck, Glen Pipeline Improvements, Happy Valley Rd./Baker Lane, Lafayette, CA, 94549. October 4.*

________, 2005p. *The EDR Radius Map with GeoCheck, Moraga Pipeline, Moraga, CA, 94556, October 5.*

________, 2005q. *The EDR Radius Map with GeoCheck, Orinda-Lafayette Tunnel/Pipeline, Lafayette, CA, 94549. November 21.*

APPENDIX I

Secondary Effects of Growth

APPENDIX I
Secondary Effects of Growth

Summary of Secondary Effects of Growth

Table I-1 summarizes the secondary effects of growth in the Lamorinda/Walnut Creek area. The information presented in Table I-1 is derived from the following environmental documents:

- City of Lafayette, *City Council Resolution 2002-055 Certifying an Environmental Impact Report Prepared for the Lafayette General Plan Revision and Adopting Environmental Findings Pursuant to the California Environmental Quality Act, Statement of Overriding Considerations and a Mitigation Monitoring Program*, October 28, 2002.

- City of Orinda, *City of Orinda General Plan, Volume 2: Technical Supplement and Environmental Impact Report*, May 20, 1987*; Resolution No. 29-87 Certifying Completion, Review, and Consideration of the Final EIR for the Orinda General Plan*, May 20, 1987.

- City of Walnut Creek, *Walnut Creek General Plan 2025 Final Environmental Impact Report*, December 9, 2005.

- Town of Moraga, *Moraga 2000 General Plan Update Final Environmental Impact Report*, February 2001; *Resolution 21-2002 in the Matter of Town Council Action to Certify the Environmental Impact Report and Adopt the Moraga 2002 General Plan Update*, June 4, 2002.

- Contra Costa County, *Findings Related to Certification of Environmental Impact Report for General Plan and Adoption of General Plan*, January 29, 1991.

TABLE I-1
MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

	Contra Costa County	City of Lafayette	Town of Moraga	City of Orinda	City of Walnut Creek
Impact / Mitigation	**Contra Costa County General Plan**[a]	**Lafayette General Plan**[b]	**Moraga General Plan**[c]	**Orinda General Plan**[d]	**Walnut Creek General Plan**[e]
Land Use					
Impacts					
• Conflicts between residential and commercial land uses. (S)			x		
• Incompatible residential densities. (S)			x		
• Increased in population could adversely affect existing residents and businesses. (S)		x			
• Alteration of the character of the downtown area. (S)		x			
• Inconsistencies with existing uses. (S)	x				
Mitigation Measure					
• General Plan amendment and rezoning.	x				
• Ensure that site planning, architecture, color, materials and landscaping contribute to the community identify and small town character.		x			
• Develop residential densities to reflect and maintain character of existing neighborhoods.		x			
• Maintain existing Sphere of Influence boundaries.		x			
• Policies encourage additional commercial development in the downtown area.		x			
• Work with the county and neighboring cities and other agencies in planning for public services an d coordinating future development.		x			
• Amend zoning ordinances/ limit development intensities.					
• Require architectural design guidelines.					
• Incorporate mandatory performance-based development standards for uses in Moraga Center and Rheem Specific Plan areas.			x		
Agricultural Resources					
Impact					
• Conversion of agricultural land to urban uses and loss of open space. (U)	x				
Mitigation Measure					
• Urban development shall take place in areas designated for urban growth.	x				
• Protect agriculture to assure balance in land use.	x				

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

	Contra Costa County	City of Lafayette	Town of Moraga	City of Orinda	City of Walnut Creek
Impact / Mitigation	**Contra Costa County General Plan[a]**	**Lafayette General Plan[b]**	**Moraga General Plan[c]**	**Orinda General Plan[d]**	**Walnut Creek General Plan[e]**
Traffic and Transportation					
Impact					
• Degradation of levels of service on local roadways and state and interstate routes. (U)	x				
• Adverse project and/or cumulative vehicular impacts on freeway. traffic/travel speeds. (U)			x		x
• Increased Traffic on Highway 24 (U)		x			
• Project and/or cumulative impacts to local roadways and intersections that would result in unacceptable levels of service. (U)	x				x
• Impacts to local roadways and intersections. (S)		x			
• Impacts for intersections in adjacent community. (U)			x		
• Increased demand for bike lanes, walkways, and other means of alternative transport. (S)		x			
• Increased volumes on local roadways. (S)	x	x			
• Increased accident potential along roadway. (S)		x			
Mitigation Measures					
• Implement Traffic Impact Fee Programs (as required by Measure C-88).	x				
• Roadway and/or intersection improvements or additions, including reconfiguring or widening some roadways to accommodate more lanes.	x				x
• Caltrans should widen I-580 and affected off- and on-ramps.	x				
• Include a transit service plan with provisions for alternative transportation; e.g. efficient buses, BART connections, bikepaths/pedestrian walkways, ridesharing, telecommuting, etc./ provide public transit amenities in new development	x				
• Require a Transportation System Management Plan (TSMP) or Transportation Implementation Program.					x
• Establish level of service standards and goals.		x			
• Periodically review traffic management plans to ensure consistency with goals and policies of the General Plan.		x			
• Limit development to that which can be adequately served by Lafayette's circulation system.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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• Require new developments to pay their fair share of circulation improvements.		x			
• Seek to reduce vehicle trips by promoting alternatives to the single-occupant automobile.		x			
• Take measures to increase use of public transit.		x			
• Participate in regional transportation planning in order to minimize adverse impacts on the city's circulation system.		x			
• Seek funding from federal, state, and regional agencies for transportation projects that will alleviate congestion and enhance the livability of the community.		x			
• Work toward achieving the city's transportation service objectives on roads such as Highway 24 and the city's portion of Pleasant Hill Road.		x			
• Plan for and implement changes to the roadway system so that the system is safe and efficient for all modes of travel while preserving the semi-rural character of the community.		x			
• Place a higher priority on safety, encouraging pedestrian-oriented design and scale, and on maintaining the quality of life and identity of residential neighborhoods than on accommodating through traffic.		x			
• Continue to provide a system whereby residents can address automobile, bicycle and pedestrian issues.		x			
• Maintain roadway to provide for the public's safety.		x			
• Improve the safety of the roadway system.		x			
• Work with residents, businesses, and property owners who wish to improve traffic safety and solve circulation problems.		x			
• Discourage diversion of through-traffic onto local streets.		x			
• Continue to update and implement the Master Walkways Plan.		x			
• Seek to maintain the city's walkways to avoid hazard.		x			
• Encourage bicycling by making it easier and safer for people to travel by bicycle.		x			
• Coordinate with existing transportation agencies.	x				x
• Reduce freeway congestion.			x		
• Reduce regional intersection congestion.			x		

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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Air Quality					
Impacts					
• Inconsistency with BAAQMD thresholds of significance as a result of population increases under the plan exceeding ABAG projections (upon which regional air quality plans are based) and increases in vehicle miles traveled (VMT) at a faster rate than population growth. (U)					x
• Wood smoke from residential uses allowed under the plan would increase particulate emissions and worsen existing air pollution problems. (U)					x
• New or increased emissions resulting from plan implementation would increase air pollution and cause a deterioration in regional air quality. (S)	x	x			x
• Construction related impacts from dust and vehicle exhaust emissions. (S)					x
• Exposure of sensitive receptors to source of toxic air contaminants (S).					x
Mitigation Measures					
• Work with BAAQMD to implement Regional Clean Air Plan.		x			
• Improve air quality by reducing the use of single-occupant automobiles.		x			
• Specific plan incorporates features that reduce impacts.	x				
• Implement Transportation Demand Measures (carpooling, transit, etc.).	x				
• Exercise interagency cooperation to integrate air quality planning efforts with transportation, transit, etc.	x				
• Maintain consistency among specific development plans and regional transportation and growth management plans.	x				
• Encourage mixed-use development.	x				
• Require linkage between growth of housing and job opportunities.	x				
• Require projects with sensitive receptors near freeways to conduct project-specific analyses of health risks from mobile sources of toxic air contaminants, evaluate the adequacy of project setbacks, and if necessary identify mitigation measures.					x
• Require construction emission control measures recommended by the BAAQMD.					x

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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Noise					
<u>Impact</u>					
• Significant increase in noise for some existing residents from increased traffic. (S)	x				x
• Increased noise levels from increased automobile traffic, public transit, aircraft, trains, stationary noise sources, and construction activities.		x			
• Location of new noise-sensitive development in areas with excessive noise levels and/or exposure of new or existing residences and other noise-sensitive land uses to excessive noise or vibration levels.		x			x
• The Gateway Boulevard proposal will create noise impacts. (S)				x	
<u>Mitigation Measure</u>					
• Specific or General Plan incorporates features that reduce impacts.	x				x
• The County shall require noise studies. Major development projects which exceed "normally acceptable" standards shall contribute their prorated share to the cost of noise mitigation measures.	x				
• Locate sensitive land uses outside 60 dB-Ldn contour lines.	x				
• Employ noise-reducing construction practices	x				x
• Ensure that development is consistent with established maximum allowable noise levels.		x			
• Avoid or reduce noise impacts first through site planning and project design. Use barriers and structural changes as mitigation techniques only when planning and design prove insufficient.		x			
• Establish exterior and interior noise level standards and review all new noise-sensitive development proposals with respect to established noise and land use compatibility standards.		x			x
• Detailed environmental review and evaluation of mitigating design features will occur prior to approval of the Gateway Valley Specific Plan, which must be prepared.				x	
• Require a standard of 40-45 Ldn for indoor noise level for all new residential development including hotels and motels, and a standard of 55 Ldn for outdoor noise, except near the freeway.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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• Mitigate noise impacts to the maximum extent feasible (through implementation of identified programs).		x			
Public Services					
Law Enforcement					
<u>Impact</u>					
• Development would require additional law enforcement officers, equipment and facilities/police services. (S)	x	x	x		
<u>Mitigation Measures</u>					
• Strive to maintain response time standards; consider alternatives and efficiency measures to ensure adequate police service. .		x			
• Review all development proposals for impacts on the ability to achieve police service standards, and require mitigation measures if necessary.		x			
• Work with the county and neighboring communities to improve police service to the community.		x			
• Specific Plan incorporates features that reduce impacts.	x				
• Impose development impact fees.			x		
Fire Protection					
<u>Impacts</u>					
• Increased risks of wildfires.		x			
• Need for additional fire fighters, equipment and facilities/fire protection services. (S)	x	x	x		
<u>Mitigation Measures</u>					
• Specific Plan incorporates features that reduce impacts.	x				
• Project proponent should dedicate and/or construct additional fire stations to serve planning area.	x				
• Review of fire prevention measures and project design by applicable Fire district to ensure compliance with safety standards.	x				

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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• Review development plans for impacts on fire service standards; require fair share payments and or mitigation measure to ensure standards are maintained; maintain fees at a level to adequately finance fire protection costs.		x			
• Enforce regulations and standards that contribute to adequate fire protection.		x			
• Take measure to reduce fire risks.		x			
• Participate in mutual aid agreements with the county and state fire-fighting agencies.		x			
• Require development in a high fire risk area to have an approved vegetation management plan that includes native, drought-tolerant, and fire-resistant species.		x			
• Establish a high fire risk overlay zoning district in high fire risk areas where a vegetation management is required.		x			
• Development Impact Fees.			x		
Emergency Services					
Impacts					
• Increased demand for emergency medical response		x			
Mitigation Measures					
• Periodically review Emergency Operations Plan to assure that it meets current needs in the event of a major disaster; ensure that the emergency operations center is adequate and well equipped.		x			
• Cooperate with the county's Emergency Preparedness Plan.		x			
• Make information available to residents on methods to reduce dangers of hazards and encourage involvement in neighborhood prevention and emergency response groups; identify and publicize evacuation routes.		x			
• Strictly enforce regulations governing storage of hazardous materials.		x			
• Develop, in cooperation with county and neighboring communities regulations prohibiting through-transport by truck of hazardous materials on local streets, and requiring this activity to be limited to state highways.		x			
• Provide measures to protect residents from the hazards associated with the transportation, storage, and disposal of hazardous materials.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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Schools					
Impacts					
• Demand for school facilities may exceed available capacity. (S)	x				
• Increase demand for schools. (S)		x	x		
Mitigation Measures					
• Specific Plan incorporates features that reduce impacts.	x				
• Impose development impact fees.			x		
• Coordinate planning with the local school districts to ensure students are adequately served.		x			
• Review new development for conformance with applicable performance standards.		x			
• Work with County and cities to identify and acquire a community college site.	x				
• Require childcare facilities in compliance with Contra Costa County childcare ordinance.	x				
Library Facilities					
Impacts					
• Increased need for library facilities. (S)	x		x		
Mitigation Measures					
• Impose development impact fees.			x		
Parks and Recreation					
Impacts					
• Increase demand for recreational facilities. (S)			x		
• Need for new parks and recreational facilities and/or managed open space. (S)	x	x			
• Potential barrier to proposed extensions of the city's trail system.		x			
• Need for additional bike lane and bike paths.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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Mitigation Measures					
• Expand current park areas, establish new parks, and/or collect in-lieu park fees for development and management of parks.	x				
• Acquire and design parks in accordance with a comprehensive, community-wide vision of recreation needs and appropriate to a semi-rural and largely built-out community.		x			
• Develop system of high quality, well-designed parks and recreational facilities that take advantage of the city's semi-rural character.		x			
• Fund operation, maintenance, and improvements for parks, trails and recreation facilities through a variety of funding mechanisms outside the General Fund.		x			
• Maintain the community center as a multi-use facility.		x			
• Locate recreational, educational, and cultural programs throughout the community.		x			
• Complete the trail systems as shown on the city's Master Trails Plan, locating and designing trails to meet specific criteria; encourage residents to use the trail system.		x			
• Continue to update and implement the city's Master Walkways Plan.		x			
• Encourage bicycling by making it easier and safer to travel by bicycle.		x			
• Impose development impact fees.			x		
• Ensure that open space areas managed by EBRPD or other appropriate entity.	x				
• Specific Plan incorporates features that reduce impacts.	x				
• Apply maximum standard for parks to new development; review new development for conformance with parks performance standards.		x			
Water					
Impacts					
• Increased demand for water supply, storage systems, and/or water service extensions. (S)	x	x			
• Impacts resulting from cumulative increase in water demand relative to finite sources available in northern California. (U)					x

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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Mitigation Measures					
• Promote water conservation and recycling.	x				
• Coordinate planning with EBMUD to ensure availability of adequate supply to meet the needs of future population.		x			
• Review new development for conformance with applicable performance standards.		x			
• Develop a water conservation program.		x			
Wastewater					
Impacts					
• Lack of wastewater adequate collection and/or treatment facilities. (S)	x	x			
• Lack of wastewater disposal capacity. (S)	x				
• Substantial increase in wastewater generation. (S)	x				
• Generation of additional wastewater.		x			
Mitigation Measures					
• Coordinate planning with the county sanitary district for continued availability of adequate sewage collection, treatment and disposal facilities.		x			
• Review new development for conformance with applicable performance standards.		x			
• Connect to district's sewage disposal system.	x				
• Specific Plan incorporates features that reduce impacts.	x				
Solid and Hazardous Waste Management					
Impacts					
• Impacts of siting solid waste facilities. (S)	x				
• Generation of significant/additional amounts of solid waste. (S)	x	x			
• Additional burden on hazardous waste collection facilities. (S)	x				

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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Mitigation Measures					
• Implement policies and measures to mitigate effects of landfill siting, including landfill traffic and compliance with existing plans and policies.	x				
• Review development projects for their impacts on goals contained in the city's Source Reduction and Recycling Element and Household Hazardous Waste Element.		x			
• Review development projects for conformance with applicable performance standards.		x			
• Implement measures to encourage and facilitate recycling and resource recovery.	x	x			
Utility Service					
Impacts					
• Increased demand for electrical, natural gas and telephone service. (S)	x	x			
Mitigation Measures					
• Specific Plan incorporates features that reduce impacts.	x				
Housing/Jobs					
• Effects of population growth on housing. (S)		x			
Mitigation Measures					
• Implement policies actions and programs to improve existing housing supply.		x			
• Encouraged mixed use in downtown area, allow second units per City ordinance, and recommend infill development.		x			
• Implement programs to provide housing for seniors, disabled people, and others with special housing needs; provide density bonuses for first-time home buyers and housing for very-low income households.		x			
• Prohibitions are established on bias based on race, age, gender, sexual orientation, marital status, or national origin.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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Energy Resources					
Impacts					
• Residential, commercial and industrial growth under the plan would significantly increase energy consumption. (U)	x				
• Consumption of energy during construction and operation. (S)		x			
Mitigation Measures					
• Require demonstration projects of cost-effective conservation techniques and conservation site planning, building design and landscaping.	x				
• Encourage energy conservation in new development and the retrofit of existing structures.		x			
Mineral Resources					
Impacts					
• Reduction in the availability of local and regional aggregate resources (construction aggregate and cement). (U)				x	
Mitigation Measures					
• None; benefits of avoiding adverse impacts of mining and avoiding delay in proposed development that would be necessary if mining were allowed outweigh the adverse impact on aggregate resources.				x	
Visual and Aesthetic Resources					
Impacts					
• Substantial alteration of Valley's visual character. (U)	x				
• Substantial alteration of the Valley's visual character. (S)	x				
• Loss of visually prominent open space. (S)	x				
• Impacts to scenic resources/aesthetics from loss of open space. (S)		x			
• Redevelopment of downtown area could clash with scale and character of that area. (S)		x			
• Potentially offensive views at city entryways. (S)		x			
• Views of Mt. Diablo and hillsides and surrounding the City. (S)		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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• Lighting effects on nighttime views. (S)		x			
• Substantial alteration the character of the project area as a scenic route. (S)	x				
• Limited on-site views of open space. (S)	x				
• The Gateway Boulevard proposal would create adverse visual impacts. (S)				x	
• Inconsistencies with the scale and character of existing residential neighborhoods.		x			
Mitigation Measures					
• Approved grading and landscaping plans.	x				
• Emphasize retention of the prominent natural features on project sites.	x				
• Preserve and protect major ridgelines in their natural state as scenic resources and wildlife corridors.		x			
• Protect areas of special ecological significance, including ridges, hillsides, woodlands, wildlife corridors, riparian areas, steep slopes, prominent knolls swales, and rock outcroppings.		x			
• Develop strategy to expand public ownership and stewardship of key parcels.		x			
• Protect the character and patterns of development of residential neighborhoods.		x			
• Ensure that site planning, architecture, color, materials, and landscaping contribute to community identity and small town character.		x			
• Use lighting to develop a sense of security and enhance architecture. Lighting should not overpower the surrounding environment.		x			
• Enhance the appearance of downtown with well-designed public spaces.		x			
• Ensure that signs contribute to the attractiveness of downtown.		x			
• Commercial entryways to the City should be distinctive and attractive and should convey a positive image of the community.		x			
• Preserve and reclaim creeks in the downtown area and specific creeks as primary visual corridors in specified areas.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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• Preserve scenic views of Mt. Diablo and hillsides from Downtown Lafayette.		x			
• Downtown core amenities shall have a distinctive appearance and shall be pedestrian-friendly.		x			
• Regulate building height in the Downtown Core to preserve its scale and identity.		x			
• Site planning in the Downtown Core fosters a pedestrian-friendly environment through zero or reduced front setbacks and access to the rear through alleyways, paseos, small plazas.		x			
• Provide pedestrian-friendly retail environment through the exclusive use of retail on the ground floor.		x			
• Preserve “character areas” with the downtown core.		x			
• A long-range vision for the East End Commercial Area will guide the establishment of zoning regulations and the review of the site-specific development projects.		x			
• Implement policies for specific areas including changes to street design to improve safety, appearance, and operation; preservation of multi-family uses in areas; and encouragement of well designed office uses.		x			
• Review capital and public improvements to ensure they are designed and built in a manner sensitive to the surrounding area.		x			
• Work with agencies to ensure they are aware of and comply with the city’s aesthetic standards and review procedures.		x			
• Residential and commercial entryways to the City should be distinctive and attractive features of the City’s landscape.		x			
• Require that properties are well maintained and nuisances are abated.		x			
• Land use densities should not adversely affect the significant natural features of the hill areas.		x			
• Preserve important visual and functional open space by requiring development to be clustered on the most buildable portions of lots, minimizing grading for building sites and roads.		x			
• Structures in the hillside overlay area shall be sited and designed to be substantially concealed when viewed from below from publicly owned property.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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• Development should be characterized by good functional design.		x			
• Public and private infrastructure should reinforce the semi-rural qualities of residential neighborhoods.		x			
• Detailed environmental review and evaluation of mitigating design features will occur prior to approval of the Gateway Valley Specific Plan, which must be prepared.				x	
• Specific Plan incorporates features that reduce impacts.	x				
• Water tanks and other utilities should be located away from visually prominent areas and integrated with residential development wherever possible.	x				
Geology, Soils and Seismicity					
Earthquake Hazard					
Impacts					
• Potential for structural damage and injury or loss of life due to ground rupture and/or impacts from strong groundshaking, including liquefaction. (S)	x		x		
• Increase of persons affected by seismic activity.			x		
Mitigation Measures					
• Submit a detailed geotechnical report including an analysis of the liquefaction potential for the area with applications for approval of final development plans.	x				
• Prepare geologic hazard evaluations and incorporate appropriate design measures into each development project.			x		
• Minimize exposure of new development to seismic hazards through site planning and design.		x			
• Specific or General Plan incorporates features that reduce impacts.	x				
• Do not site residential, commercial or institutional structures closer than 50' from a fault trace judged to be capable of ground rupture.	x				
• Locate construction of high density residential and other critical, high-occupancy, or essential services outside of high risk zones.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

	Contra Costa County	City of Lafayette	Town of Moraga	City of Orinda	City of Walnut Creek
Impact / Mitigation	**Contra Costa County General Plan[a]**	**Lafayette General Plan[b]**	**Moraga General Plan[c]**	**Orinda General Plan[d]**	**Walnut Creek General Plan[e]**
Grading and Erosion					
Impacts					
• Increased short-term and long-term erosion potential. (S)	x				
• Compaction and paving over of natural soils. (S)	x				
Mitigation Measures					
• Prepare a grading and design plan that includes an erosion control and rehabilitation plan.	x				
• Specific Plan incorporates features that reduce impacts.	x				
• Design all cut-and-fill slopes, engineered fills, roads, structural foundations and underground utilities to accommodate estimated settlement without failure.	x				
Landslide and Soil Hazard					
Impacts					
• Landslides on the site have the potential to cause significant damage to improvements and, in extreme cases loss of life. (S)	x				
• Result in damage or exposure to hazards caused by unstable slope conditions (S)			x	x	
• Increased effect of slope failure hazard. (S)		x			
• Aggravate creekbank slumping problems. (S)		x			
Mitigation Measures					
• The design-level geotechnical report must address the impacts of slope instability and expansive soils with respect to planned improvements.	x				
• Prepare slope stability assessments, site grading plans, and landslide mitigation designs.			x		
• Include slope repair contingency plans for existing landslide areas.	x				
• Consider slope and soil stability when reviewing future projects.		x			
• Require repair, stabilization, or avoidance of landslides, areas of soil creep, and possible debris flow as a condition of project approval.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

	Contra Costa County	City of Lafayette	Town of Moraga	City of Orinda	City of Walnut Creek
Impact / Mitigation	**Contra Costa County General Plan[a]**	**Lafayette General Plan[b]**	**Moraga General Plan[c]**	**Orinda General Plan[d]**	**Walnut Creek General Plan[e]**
• Limit building in areas with significant risk potential.		x			
• Detailed environmental review and evaluation of mitigating design features will occur prior to approval of the Gateway Valley Specific Plan, which must be prepared.				x	
• Protect streambank stability.		x			
Hydrology and Water Quality					
Impacts					
• Erosion and increased runoff from impermeable surfaces. (S)		x			
• Increase of urban runoff pollutants and degradation of existing surface water quality. (S)		x	x		
• Waterway sedimentation from soil erosion. (S)		x			
• Increase in existing flood hazards. (S)	x				
• Expose people or structures to increased potential for flooding, bank erosion, and/or sedimentation. (S)			x		
• Flood hazards from future development within the floodplain (S)		x			
• Flooding due to increased runoff from impermeable surfaces. (S)		x			
Mitigation Measures					
• Develop a Master Drainage/Flood Control Plan.	x				
• Implement runoff and drainage control measures.			x		
• Implement water quality standards and best management practices.			x		
• Control soil erosion to prevent flooding and landslides, maintain water quality, and reduce costs of flood control and watercourse maintenance.		x			
• Minimize pollutants in stormwater runoff.		x			
• Maintain unobstructed water flow in the storm drainage system.		x			
• Protect streambank stability.		x			
• Perform existing and on-going water quality investigation.	x				
• Reduce flood risks by maintaining effective flood drainage systems and regulating construction.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

	Contra Costa County	City of Lafayette	Town of Moraga	City of Orinda	City of Walnut Creek
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• In the review of flood control for proposed new development, establish as a standard the flood recurrence interval used by the county Flood Control District.		x			
• In cooperation with the county Flood Control and Water Conservation District and the California Department of Fish and Game, develop a long-term management plan for addressing creekbank stability on Las Trampas Creek, Grizzly Creek, and other creeks with bank slumping problems.		x			
• Explore all available sources of funding to ensure that adequate funding exists to finance improvements to storm drainage facilities.		x			
Biological Resources					
Impacts					
• Loss/fragmentation of wildlife habitat. (S)					
• Permanent direct habitat loss and accompanying reduction or elimination of dependent wildlife, including some special status species.(S)	x				x
• Impacts on special status species and their required habitat. (S)		x			
• Loss of mature, native trees, including grand trees. (S)		x			
• Displacement of riparian or other wetland habitat. (S)		x			
• Creation due to future development of man-made barriers to animal migration routes and travel routes between nesting, roosting, escape, and forage habitat. (S)		x			
• Introduction of aggressive non-native species to city habitats. (S)		x			
• Changes in the plant and animal communities living in or using Lafayette. (S)		x			
Mitigation Measures					
• Require biotic resource analysis prior to development of properties located within or adjacent to identified environmentally sensitive areas.		x			
• Preserve, protect, and, where necessary, restore open space for wildlife habitat to assure the continued viability and health of diverse, natural animal and plant communities.		x			
• Assemble open space areas from contiguous parcels to provide continuous scenic and wildlife corridors wherever feasible.		x			

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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• Assure that adequate open space is provided to permit effective wildlife corridors for animal movement between open space areas, along watercourses, and on ridges.		x			
• Preserve, protect, and restore riparian habitat, particularly the native, riparian woodland species and associated understory plants.		x			
• Review development proposals for opportunities to require revegetation of riparian areas with plants indigenous to local riparian areas. Emphasize plants that have habitat value.		x			
• Protect native vegetation along ridgelines.		x			
• Preserve existing woodlands and their associated vegetation.		x			
• Protect important groves of trees and significant existing vegetation.		x			
• Provide on-site replacement of habitat.	x				
• The County shall encourage no net loss of riparian and seasonal wetlands.	x				
• The project should include a net reduction in grazing.	x				
• The County should reduce habitat fragmentation, compensate for the loss of habitat and maintain large tracts of foraging and habitat.	x				
Cultural Resources					
<u>Impacts</u>					
• Cause substantial adverse change in the significance of a historical or archaeological resource. (S)			x		
• Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (S)			x		
• Disturb any human remains, including those interred outside of formal cemeteries. (S)			x		
<u>Mitigations</u>					
• Protect archaeological resources.		x			
• Stop work if human remains are found and notify the county coroner's office.			x		

TABLE I-1 (Continued)
SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL AND SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORTS IN PROJECT AREA

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• Identify, recognize and protect sites, buildings, structures, and districts with significant cultural, aesthetic, and social characteristics that are part of the community's heritage.		x			

a Contra Costa County, Findings Related to Certification of Environmental Impact Report for General Plan and Adoption of General Plan, January 29, 1991
b City of Lafayette, City Council Resolution 2002-055 Certifying an Environmental Impact Report for the Lafayette General Plan and Adopting Environmental Findings Pursuant to the California Environmental Quality Act, Statement of Overriding Considerations and a Mitigation Monitoring Program, October 28, 2002.
c Town of Moraga, Moraga 2000 General Plan Update Final Environmental Impact Report, February 2001; Resolution 21-2002 in the Matter of Town Council Action to Certify the Environmental Impact Report and Adopt the Moraga 2002 General Plan Update, June 4, 2002.
d City of Orinda, City of Orinda General Plan, Volume 2: Technical Supplement and Environmental Impact Report, May 20, 1987; City Council Resolution 29-87 Certifying Completion, Review, and Consideration of the Final EIR for the Orinda General Plan, May 20, 1987.
e City of Walnut Creek, *Walnut Creek General Plan 2025 Final Environmental Impact Report*, December 9, 2005.

APPENDIX J
Alternatives

Maps

Happy Valley Pumping Plant Alternative Sites

Highland Reservoir Alternative Sites

Sunnyside Pumping Plant Alternative Sites

Tice Pumping Plant Alternative Sites

New Leland Pressure Zone Reservoir Alternative Sites

SOURCE: EBMUD

EBMUD Water Treatment and Transmission Improvements Program . 204369

Happy Valley Pumping Plant Alternative Sites

SOURCE: EBMUD

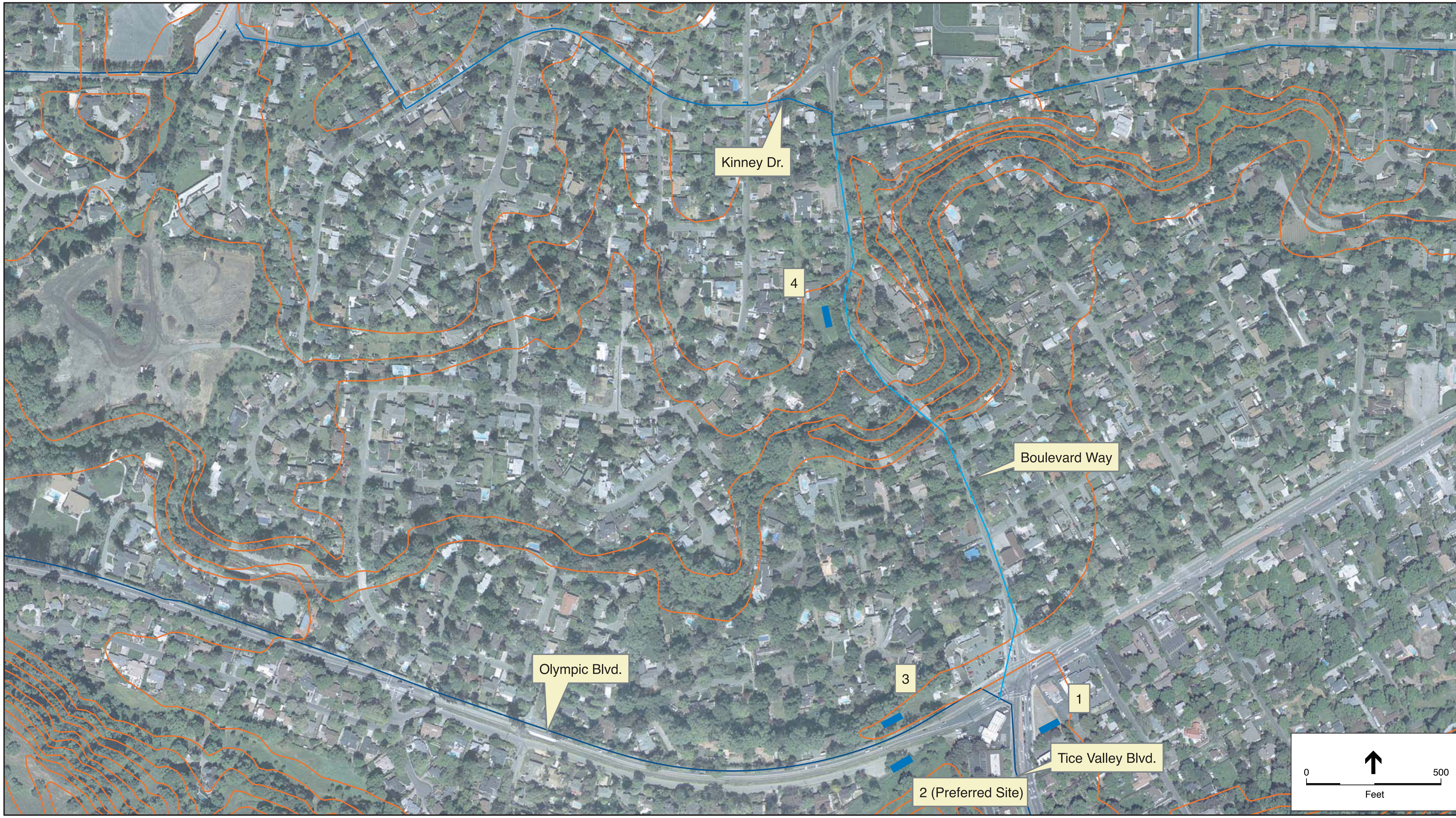
EBMUD Water Treatment and Transmission Improvements Program . 204369

Highland Reservoir Alternative Sites

SOURCE: EBMUD

EBMUD Water Treatment and Transmission Improvements Program . 204369

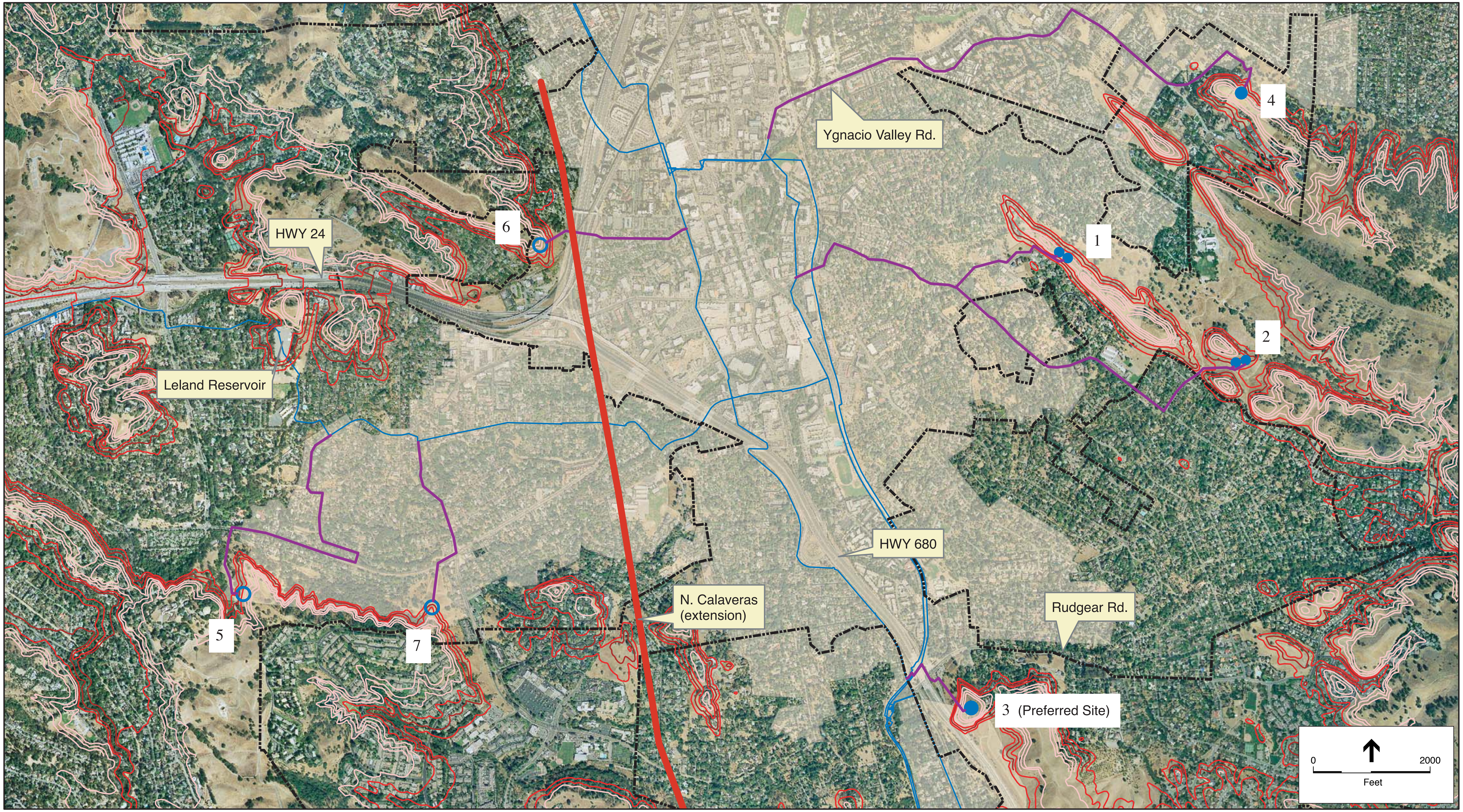
Sunnyside Pumping Plant Alternative Sites



SOURCE: EBMUD

EBMUD Water Treatment and Transmission Improvements Program . 204369

Tice Pumping Plant Alternative Sites



SOURCE: EBMUD

EBMUD Water Treatment and Transmission Improvements Program . 204369

New Leland Pressure Zone Reservoir Alternative Sites