4.12 Recreational Resources

4.12 Recreational Resources

4.12.1 Setting

Regional Overview

This section provides an overview of the distribution and type of park and recreational facilities within the WSIP study area (which extends from Oakdale Portal on the SFPUC regional water system in western Tuolumne County, west to San Francisco) and describes the specific recreational facilities that lie in the immediate vicinity of WSIP projects. This section also identifies goals and policies aimed at protecting and enhancing recreational resources (including parks and recreational facilities) that have been adopted by the local jurisdictions in which portions of the WSIP projects would be located. (Chapter 5, WSIP Water Supply and System Operations, describes recreation areas, facilities, and activities east of the WSIP study area in the Tuolumne River system and the eastern end of the SFPUC regional water system.)

There is a wide variety of recreational resources in the region, from small neighborhood parks designed for local residents to large regional parks that attract tourists from across the nation or around the world. Recreational resources also include formally designated parks and trails, open spaces where dispersed activities such as hiking and bird watching can take place, as well as bodies of water where boating, fishing, or swimming can be enjoyed. The WSIP study area also includes regional amenities such as San Francisco Bay and the Bay Trail, and numerous parks and recreational facilities managed by local jurisdictions, including cities, counties, and special park and open space districts. **Figure 4.12-1** shows the locations of major parks, local parks, and other recreational resources that could be affected by the WSIP.

Description of Recreational Resources by Region

San Joaquin Region

Tuolumne County

In Tuolumne County, the existing Oakdale Portal and the easternmost portion of the proposed SJPL System project (SJ-3) are located within the San Joaquin Region. However, no significant recreational resources are located near this segment of the regional system. Chapter 5 presents more information on recreational resources in areas farther east in Tuolumne County, where the regional system begins.

Stanislaus County

Stanislaus County manages 25 park and recreational areas, including five regional parks, eight fishing access points, and 11 neighborhood parks in the unincorporated portions of the county (Stanislaus County, 2007). Only two WSIP projects—the SJPL System (SJ-3) and SJPL Rehabilitation (SJ-4)—would involve construction in Stanislaus County (segments of the San Joaquin Pipeline west of Oakdale Portal). Chapter 5 describes recreational resources along

the lower Tuolumne River in Stanislaus County that could be affected by the proposed WSIP water supply or system operations.

San Joaquin County

San Joaquin County manages numerous parks and recreational facilities, including nine regional parks and 11 community and neighborhood parks. There are also two state parks in the county, as well as the San Joaquin National Wildlife Refuge. The refuge, located where the Tuolumne and Stanislaus Rivers meet the San Joaquin River, is an important wintering ground for migratory birds (San Joaquin County Parks and Recreation, 2007a; 2007b; USFWS, 2007b).

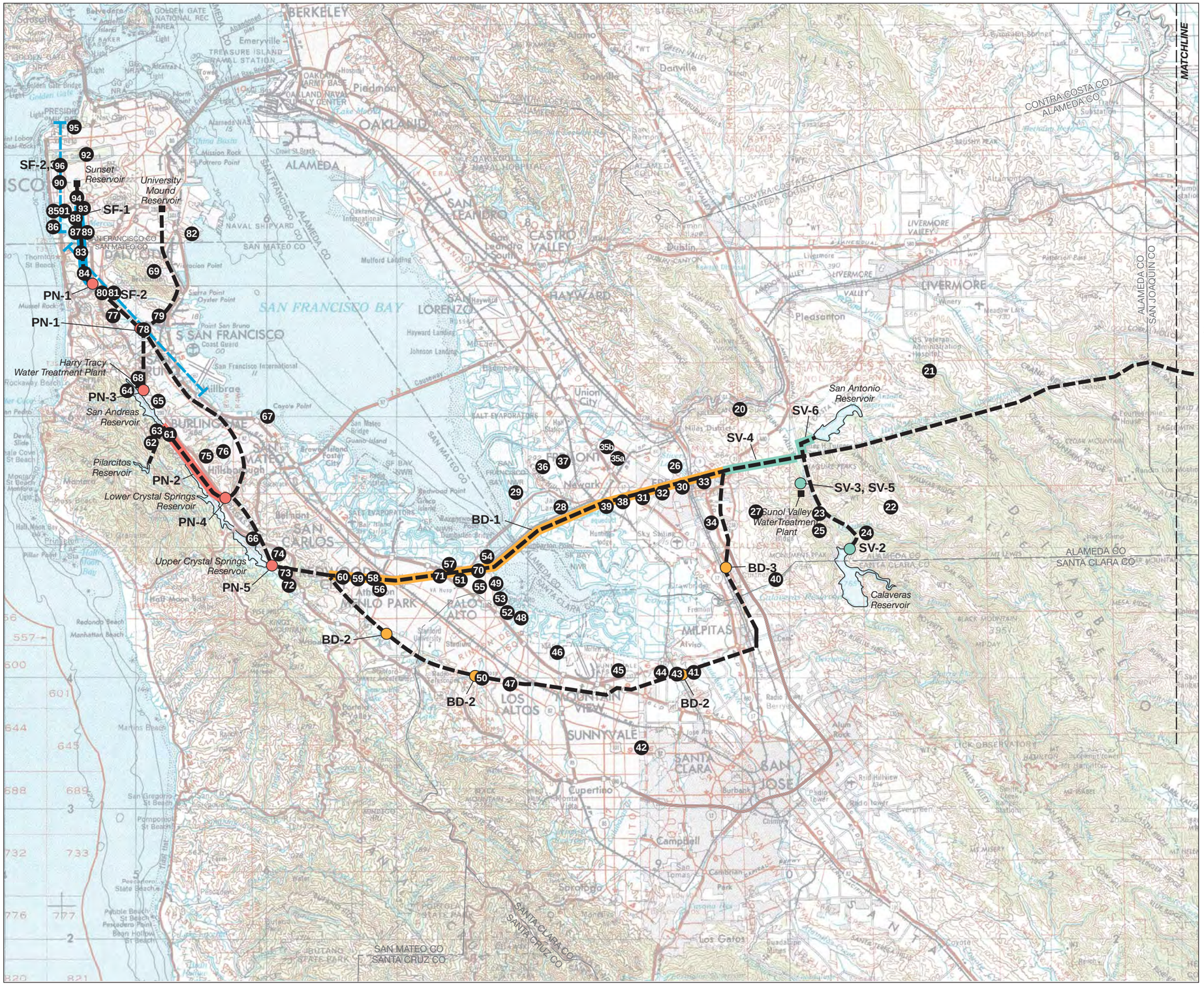
City of Modesto. The SJPL Rehabilitation project (SJ-4) could involve work on segments of pipeline that run beneath a three-mile-long linear park. This park, which extends from Semallon Drive to Sisk Road, has a developed asphalt bike path and greenway that follows the SFPUC right-of-way (Hetch Hetchy Trail). Two other city parks abut this trail: Wesson Ranch Park near the eastern end and Chrysler 99 Park near the western end. Facilities at Wesson Ranch Park include baseball and soccer fields, trails, a playground, and restrooms. Facilities at Chrysler 99 Park include a full basketball court, bleachers, and trails. Tracy Golf and Country Club. The private Tracy Golf and Country Club is located on South Chrisman Road near Tesla Portal. I-580 passes over this 18-hole golf course, creating a unique design (The Golf Courses.net, 2007). The SJPL System (SJ-3) and SJPL Rehabilitation (SJ-4) projects could affect this facility.

Sunol Valley Region

Regional Parks and Open Space

Alameda Watershed. The SFPUC-managed portion of the Alameda watershed encompasses approximately 36,000 acres of land, with 23,000 acres in Alameda County and 13,000 acres in Santa Clara County. The City and County of San Francisco (CCSF) owns about 30 percent of the watershed, including the San Antonio and Calaveras Reservoirs, where no public access is allowed. The CCSF leases some watershed land to the East Bay Regional Park District (EBRPD) for public recreational use, as described below. Policy WA10 in the SFPUC's *Alameda Watershed Management Plan* specifies certain day-use activities that are allowed by permit, including use of the Sunol Water Temple for events and supervised public access to roads and trails (SFPUC, 2001). The following projects would be located in the Alameda watershed: Alameda Creek Fishery, SV-1; Calaveras Dam, SV-2; 40-mgd Treated Water, SV-3; Treated Water Reservoirs, SV-5; and SABUP; SV-6. A portion of the Irvington Tunnel runs through Alameda watershed lands, but the New Irvington Tunnel project (SV-4) would be located outside the watershed lands. Section 5.4, Alameda Creek Watershed Streams and Reservoirs, also discusses recreational resources in the Alameda watershed.

East Bay Regional Parks. The EBRPD has jurisdiction over numerous regional parks located in Alameda and Contra Costa Counties. Several major EBRPD facilities encompassing thousands of acres of parks and open space are clustered in the East County/Sunol Valley area, including Del Valle Regional Park, Ohlone Regional Wilderness, Sunol Regional Wilderness, Vargas Plateau Regional Preserve, and Mission Peak Regional Park. The long-term goal of the EBRPD is to adopt land use plans to guide the management and use of all of its facilities. The EBRPD has adopted a land use plan for Del Valle Regional Park; other land use plans are in draft form at various stages of planning.



20 Sunol Water Temple
21 Del Valle Regional Parks
22 Ohlone Regional Wilderness
23 Sunol Regional Wilderness
24 Little Yosemite
25 Alameda Creek
26 Vargas Plateau Regional Preserve
27 Mission Peak Regional Park
28 San Francisco Bay Trail
29 Don Edwards San Francisco Bay National Wildlife Refuge
30 Central Park
31 Azeveda Park
32 Noll Park (Knoll Park)
33 Mission San Jose Park
34 Warm Springs Recreation Center (Warm Springs Park)
35a Quarry Lakes Regional Recreation Area
35b Alameda Creek Regional Trail
36 Coyote Hills Regional Park
37 Ardenwood Regional Preserve
38 Birch Grove Park
39 Ash Street Park
40 Ed R. Levin County Park
41 Lower Guadalupe River Trail
42 Central Park
43 Lick Mill Park
44 Fairway Glen Park
45 Sunnyvale Baylands Park
46 Shoreline at Mountain View Regional Park
47 Adobe Creek
48 Palo Alto Baylands Nature Preserve
49 Cooley Landing
50 Gunn High School
51 Jack Farrell Park
52 Bell Street Park
53 Martin Luther King Jr. Park
54 Costano High School
55 Cesar Chavez High School
56 Burgess Park
57 Bayfront Park
58 Fleishman Park
59 Hawes Park
60 Red Morton Park
61 Crystal Springs Golf Course
62 Fifield-Cahill Ridge Trail
63 Sawyer Camp Trail
64 Sweeny Ridge Trail
65 San Andreas Trail
66 Crystal Springs Trail
67 Coyote Point Recreational Area
68 Junipero Serra Park
69 San Bruno Mountain State and County Park
70 Ravenswood Open Space Preserve
71 Flood Park
72 Edgewood Park Nature Preserve
73 Pulgas Ridge Open Space Preserve
74 Pulgas Water Temple
75 Burlingame Country Club
76 Hillsborough Country Club
77 SFPUC Linear Park
78 Orange Memorial Park
79 Paradise Valley Park
80 Sterling Park Community Center
81 Cypress Hills Golf Course
82 Candlestick Point State Recreation Area
83 David R. Rowe Park
84 Skate Park
85 Lake Merced, Harding Park Golf Course
86 Olympic Country Club
87 Lake Merced Golf and County Club
88 San Francisco Golf Club
89 San Francisco State University
90 West Sunset Playground
91 South Sunset Playground
92 Golden Gate Park
93 San Francisco Zoo
94 Pine Lake and Stern Grove Park
95 Lincoln Park Golf Course
96 Francis Scott Key School Playground

Existing System Corridor
Existing System Facility
Proposed Facility Corridor
Proposed Facility Site
Proposed Facility, General Location

Note: See Figure 4.1-2 for full Project Names

0 5
Miles

SOURCE: Mara Feeney & Associates, 2006; ESA + Orion JV, 2006; USGS 1978

Figure 4.12-1a
Parks and Recreational Resources, San Francisco, Peninsula, Bay Division, and Sunol Regions

13 Fox Grove Regional Park
14 Tuolumne River Regional Park
15 Tracy Golf and Country Club
16 Hetch Hetchy Trail Linear Park
17 Wesson Ranch Park
18 Chrysler 99 Park
19 San Joaquin National Wildlife Refuge

Existing System Corridor
Existing System Facility
Proposed Facility Corridor
Proposed Facility Site
Proposed Facility, General Location

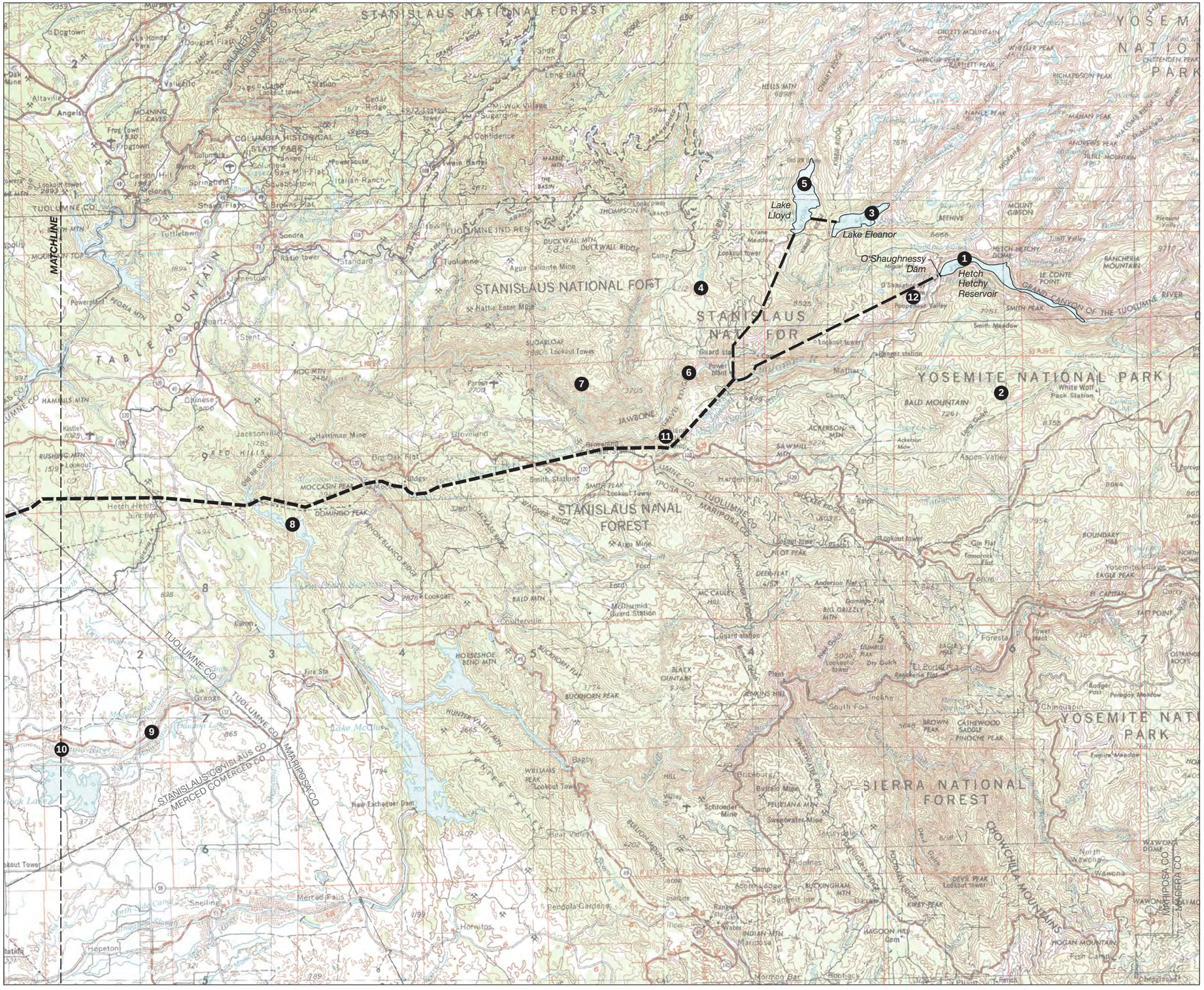
Note: See Figure 4.1-2 for full Project Names

0 — 5
Miles

SOURCE: Mara Feeney & Associates, 2006; ESA + Orion JV, 2006; USGS 1969

SFPUC Water System Improvement Program . 203287

Figure 4.12-1b
Parks and Recreational Resources, San Joaquin Region



1 Hetch Hetchy Reservoir
2 Yosemite National Park
3 Lake Eleanor
4 Stanislaus National Forest
5 Cherry Reservoir (Lake Lloyd)
6 Cherry Creek Run (Tuolumne River)
7 Lumsden Run (Tuolumne River)
8 Don Pedro Reservoir and Recreation Area
9 LaGrange Regional Park
10 Turlock Lake State Recreation Area
11 Lumsden and South Fork Campgrounds
12 Poopenaut Valley

Existing System Corridor
Existing System Facility
Proposed Facility Corridor
Proposed Facility Site
Proposed Facility, General Location

Note: See Figure 4.1-2 for full Project Names

0 5
Miles

SOURCE: Mara Feeney & Associates, 2006; ESA + Orion JV, 2006; USGS 1970

SFPUC Water System Improvement Program . 203287

Figure 4.12-1c
Parks and Recreational Resources, Hetch Hetchy Region

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The 6,858-acre Sunol Regional Wilderness lies between San Antonio Reservoir and Calaveras Reservoir, with Alameda Creek running through it. Recreational activities in this wilderness area include hiking, bike riding, and horseback riding (EBRPD, 2007). Part of the Sunol Regional Wilderness is located on Alameda watershed lands leased from the CCSF. The Calaveras Dam project (SV-2) could affect this recreational area.

San Francisco Bay Area

San Francisco Bay and the Bay Trail span multiple WSIP regions.

San Francisco Bay. San Francisco Bay offers a wide variety of dispersed recreational opportunities for residents of and visitors to the counties and cities surrounding the bay. Approximately 40 publicly and privately owned marinas ring the bay, and there are numerous designated and informal access or launching points for boating, windsurfing, kayaking, jet-skiing, and swimming, as well as piers and other access locations for fishing. The preferred pipeline alignment for the BDPL Reliability Upgrade (BD-1) crosses the southern portion of San Francisco Bay, in an area used for recreational activities such as boating, kayaking, fishing, swimming, bird watching, and sightseeing.

The Bay Trail. Senate Bill 100, passed in 1987, directed the Association of Bay Area Governments (ABAG) to identify an alignment and develop a plan to create a public trail system encircling San Francisco Bay. The *Bay Trail Plan*, adopted by ABAG in 1989, proposed a continuous 400-mile corridor that would eventually link the shorelines of all nine Bay Area counties and 47 cities around San Francisco and San Pablo Bays. Since its adoption, the *Bay Trail Plan* has received widespread public support as a means of preserving and enhancing public access to the San Francisco Bay waterfront. Most of the jurisdictions along the proposed trail alignment have adopted the plan and incorporated the appropriate Bay Trail segments into their local plans and policies. When complete, the Bay Trail corridor will be 500 miles long.

Development of the Bay Trail is overseen by the Bay Trail Project, a nonprofit organization established in 1990. The Bay Trail Project does not own land or easements; instead, it encourages local jurisdictions to construct and maintain segments of the Bay Trail, often in partnership with other local nonprofit groups. Approximately 290 miles, or just over half of the envisioned trail, has been completed. Some portions of the Bay Trail are paved pathways, while others consist of dirt trails or sidewalks. The main trail, referred to as the "spine trail," follows the San Francisco Bay shoreline to the extent possible. Where it is not able to follow the shoreline, "spur trails" provide access from the spine trail to points of interest along the waterfront. In addition, "connector trails" provide links to other nearby recreational facilities, residential neighborhoods and employment centers (Association of Bay Area Governments Bay Trail Project, 2005). Segments of the Bay Trail exist near the proposed pipeline alignments for the BDPL Reliability Upgrade (BD-1) project.

Bay Division Region

Regional Parks and Open Space

San Francisco Bay and the Bay Trail spans the WSIP's Bay Division, Peninsula, and San Francisco Regions.

Don Edwards San Francisco Bay National Wildlife Refuge. The Don Edwards San Francisco Bay National Wildlife Refuge, located on the eastern shore of San Francisco Bay, was the first urban national wildlife refuge in the United States. The refuge, established in 1974 and managed by the U.S. Fish and Wildlife Service, is located along the Pacific Flyway, which attracts millions of shorebirds and waterfowl annually. It encompasses 30,000 acres of open bay, salt pond, salt marshes, mudflats, and upland and vernal pool habitats in portions of San Mateo, Santa Clara, and Alameda Counties. The area attracts hundreds of thousands of visitors annually and offers hiking trails, boating, fishing, and hunting as well as interpretive programs, an environmental education center, and a visitor center (USFWS, 2007a). The preferred pipeline alignment for the BDPL Reliability Upgrade project (BD-1) crosses this refuge.

City of Fremont

The City of Fremont manages several recreational facilities located in or adjacent to the proposed alignment for the BDPL Reliability Upgrade project (BD-1), including Central Park, Azeveda Park, Noll Park, and Mission San Jose Park. The popular Central Park has playground areas, picnic sites, softball fields, snack bars, soccer fields, tennis courts, fishing, boat rentals, a boat launch, boat storage, walking trails, a golf driving-range, dog park, basketball courts, and a skate park. Central Park encompasses 450 acres, and Lake Elizabeth covers an additional 83 acres (City of Fremont, 2007a). Azeveda Park, located at 39450 Royal Palm Drive, is a neighborhood park and playground (City of Fremont, 2007b; Fremont Online.org, 2007a). Noll Park and Mission San Jose Parks are also neighborhood parks, located at 39600 Sundale Drive and 43545 Bryant Street, respectively. Mission San Jose Park, located behind Mission San Jose Elementary School, includes a playing field and baseball diamond (Fremont Online.org, 2007b). The BDPL Reliability Upgrade project could affect these parks. The Warm Springs Recreation Center, located at 47300 Fernald Street in Fremont, is a 6,000-square-foot center in a 12-acre park. It contains a multipurpose room and meeting room, and also has an outdoor gazebo (City of Fremont, 2007c). The BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3) and New Irvington Tunnel (SV-4) projects would also be located in Fremont.

City of Newark

There are 272 acres of park and recreational areas within Newark city limits and three important regional recreational areas adjacent to the city: Don Edwards San Francisco Bay National Wildlife Refuge, Coyote Hills Regional Park, and Ardenwood Regional Preserve (City of Newark, 1992). The BDPL Reliability Upgrade project (BD-1) could affect two community parks in Newark—Birch Grove Park and Ash Street Park. Birch Grove Park is located at 38080 Birch Street and contains approximately 15 acres. Facilities include play structures, a water element, a fenced softball playing field, basketball court, lighted tennis courts, picnic facilities, and restrooms (City of Newark, 2007). Ash Street Park, located at 37365 Ash Street, encompasses approximately six acres

and includes play structures, softball practice fields, a basketball court, picnic facilities, restroom facilities, and a horseshoe pit. The privately operated Viola Blythe Community Center and a Head Start preschool facility are also situated on the park grounds (City of Newark, 2007). The BDPL Reliability Upgrade project could affect Birch Grove and Ash Street Parks.

Santa Clara County General Plan

The Santa Clara County General Plan envisions a "necklace of parks" composed of regional parks and community parks linked by recreational trails and scenic highways. Agencies working to achieve this goal include the Midpeninsula Regional Open Space District, the County Parks Department, the California Department of Parks and Recreation, and the Don Edwards San Francisco Bay National Wildlife Refuge (Santa Clara County, 1994). An overview of the recreational resources in Santa Clara County cities that could be affected by the WSIP projects is provided below.

City of Milpitas

Milpitas has approximately 160 acres of park and recreational facilities in the form of community, neighborhood, special-use, regional, and school parks as well as private recreational facilities. The 1,539-acre Ed R. Levin County Park, which lies on the border between Alameda and Santa Clara Counties, is partially within the city of Milpitas. This park offers areas for picnicking, fishing, hiking, cycling, horseback riding, and hang gliding (Santa Clara County Parks, 2007). An alternative site for the BDPL 3 and 4 Crossovers project (BD-2) would be located in Milpitas.

City of San Jose

San Jose has over 16,300 acres of public parkland within its sphere of influence. These parklands include federal, county, and city lands, the majority of which are County-owned hillside open space, creekside park chains, and the federally owned Don Edwards San Francisco Bay National Wildlife Refuge. The City manages approximately 4,000 acres of parks that form a "greenbelt" of open space around the urban area. Utility corridors and water supply reservoirs are an integral part of San Jose's recreational resources (City of San Jose, 2005). The Lower Guadalupe River Trail is a six-mile trail along the Guadalupe River. The trail program is governed by the City of San Jose; however, portions of the trail extend into Santa Clara. Developed and planned portions of the trail are in the vicinity of the BDPL 3 and 4 Crossovers project (BD-2) (City of San Jose and Santa Clara Valley Water District, 2006).

City of Santa Clara

Santa Clara has 39 parks and playgrounds, providing 277 acres of municipal parkland and 458 acres of open space (City of Santa Clara, 2007). The largest park is the 52-acre Central Park. The City supports plans for a regional "park chain" along the Guadalupe River. A portion of the Hetch Hetchy Aqueduct traverses the northern part of the city, and this right-of-way corridor is designated as open space. A BDPL 3 and 4 Crossovers (BD-2) crossover facility would be located along the Guadalupe River in the vicinity of several small neighborhood parks, including Lick Mill Park and Fairway Glen Park (City of Santa Clara, 2002).

City of Sunnyvale

Sunnyvale has approximately 838 acres of parks and open space, of which 351 acres are owned by the City and 177 acres are owned by Santa Clara County (City of Sunnyvale, 1997). Sunnyvale's largest park is Baylands Park, which adjoins the Don Edwards San Francisco Bay National Wildlife Refuge. An alternative site for BDPL 3 and 4 Crossovers project (BD-2) would be located in the vicinity of this park. The Baylands Park encompasses approximately 200 acres of preserved wetlands and community park features. Over 70 acres are developed parkland, and the remainder is protected wetland. The Bay Trail passes along the north and eastern sides of the park (City of Sunnyvale, 2007).

City of Mountain View

Mountain View has 21 recreational facilities encompassing 768 acres, the largest of which is the Shoreline at Mountain View Regional Park (consisting of 662 acres). The Hetch Hetchy Aqueduct runs through the city, and Rex Manor mini-park is located along this right-of-way corridor (City of Mountain View, 1992). An alternative site for BDPL 3 and 4 Crossovers project (BD-2) would be located in Mountain View.

City of Los Altos

Los Altos has 32 acres of parks and an additional 127 acres of open space (City of Los Altos, 2002). An alternative location for one of the BDPL 3 and 4 Crossovers (BD-2) crossover facilities would be located near Adobe Creek in Los Altos, where there is a bike trail along the Hetch Hetchy Aqueduct.

City of Palo Alto

According to the City of Palo Alto, the city has a total of 4,358 acres of parkland and open space areas, including 32 urban parks encompassing approximately 200 acres and several large open-space and nature preserves. Foothill Park is approximately 1,400 acres and the Arastradero Preserve is approximately 610 acres (City of Palo Alto, 2007). The City of Palo Alto owns the wetlands south of Cooley Landing (in East Palo Alto) in the vicinity of the BDPL Reliability Upgrade (BD-1) pipeline alignment (City of Palo Alto, 1998). A BDPL Nos. 3 and 4 Crossovers (BD-2) crossover facility would be adjacent to the sports fields at Gunn High School.

City of East Palo Alto

The City of East Palo Alto owns and operates three parks, encompassing of a total of 14 acres. These parks include Jack Farrell Park, Bell Street Park, and Martin Luther King Jr. Park. Jack Farrell Park is the closest city park to the Hetch Hetchy Aqueduct (City of East Palo Alto, 1999); however, Costano School and Cesar Chavez School are also located near the aqueduct as well as near the proposed BDPL Reliability Upgrade (BD-1) alignment.

City of Menlo Park

The City of Menlo Park owns and operates approximately 231 acres of parkland. Most of its recreational facilities are concentrated at the Burgess Park Complex within the Civic Center. The largest City-maintained park is Bayfront Park, which provides 155 acres for passive recreational

use (City of Menlo Park, 1994). The BDPL Reliability Upgrade project (BD-1) would be located in Menlo Park.

City of Redwood City

Redwood City owns and operates 30 parks, including small neighborhood parks, larger multi-use parks, a dog park, a skate park, and two outdoor pools (City of Redwood City, 2007a). The BDPL Reliability Upgrade project (BD-1) is in the vicinity of Fleishman Park, Hawes Park, and Red Morton Park. The 0.64-acre Fleishman Park has play equipment, a play area, picnic area, barbeque pits, and restrooms (City of Redwood City, 2007b). Hawes Park contains ball fields and restroom facilities on 1.59 acres (City of Redwood City, 2007b). Red Morton Park encompasses 30.89 acres and has pools, ball fields, play areas and equipment, picnic areas, barbeque pits, tennis courts, basketball courts, and restroom facilities (City of Redwood City, 2007b). An alternative site for the BDPL 3 and 4 Crossovers project (BD-2) could also be located in Redwood City (City of Redwood City, 1991).

Town of Atherton

The BDPL 3 and 4 Crossovers project (BD-2) would be located in Atherton.

Peninsula Region

The Peninsula Region offers numerous park and recreational facilities, including the SFPUC-managed Peninsula watershed lands, state and county parks, city parks, and numerous regional facilities managed by the Midpeninsula Regional Open Space District. Major regional recreational resources are described below, followed by brief descriptions of the park and recreational facilities in cities potentially affected by WSIP projects. (Section 5.5, San Francisco Peninsula Streams and Reservoirs, discusses recreational resources and activities within the Peninsula watershed that could be affected by the proposed WSIP water supply and system operations.)

Regional Parks and Open Space

SFPUC Peninsula Watershed and Crystal Springs Park. The 23,000-acre SFPUC-managed portion of the Peninsula watershed has limited public access but offers several popular recreational opportunities, including Crystal Springs Golf Course and two popular trails (Fifield-Cahill Ridge Trail and Sawyer Camp Trail). Since 2003, Fifield-Cahill Ridge Trail has been open to the public on a reservation-only basis, with groups of up to 20 people led by docents three days a week. When the SFPUC fenced off the watershed lands in the vicinity of Crystal Springs Reservoir, it left the six-mile Sawyer Camp Trail open to the public for non-motorized recreational use. This trail, once a notable travel route along the Peninsula, is visited by approximately 300,000 people each year (San Mateo County, 2007a). Several other public trails border the watershed area, including Sweeny Ridge Trail, San Andreas Trail, and Crystal Springs Trail (SFPUC, 2007c). Sweeny Ridge Trail is open to the public and crosses Fifield-Cahill Ridge Trail (SFPUC, 2007a). The CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4), and Pulgas Balancing Reservoir (PN-5) projects are located in this watershed.

Coyote Point. Coyote Point Recreational Area is a popular waterfront regional park managed by the San Mateo County Parks and Recreation Department. The park is located on San Francisco Bay in the city of San Mateo, and portions of the Bay Trail traverse the park. Activities include picnicking, swimming, kayaking, windsurfing, bicycling, jogging, fishing, boating, and sailing, as well as watching airplanes take off and land at nearby San Francisco International Airport. The Coyote Point Museum, located in the park, provides environmental education programs (San Mateo County, 2007b).

Junipero Serra Park. San Mateo County also manages the 108-acre Junipero Serra Park, located between Millbrae and San Bruno on Crystal Springs Road. Facilities include picnic areas, campsites, shelter buildings, and trails. The park is known for its spectacular views as well as spring wildflowers (San Mateo County, 2007e). The HTWTP Long-Term project (PN-3) would be adjacent to this park.

San Bruno Mountain State and County Park. San Bruno Mountain State and County Park has eight trails traversing 2,326 acres of land and 12 miles of hiking, horseback riding, and jogging trails. The park is jointly operated by the California Department of Parks and Recreation and the County Parks Department (San Mateo County, 2007f). The Groundwater Projects (SF-2) could be located near this park.

Ravenswood Open Space Preserve. Ravenswood Open Space Preserve is managed by the Midpeninsula Regional Open Space District, which manages approximately 50,000 acres of open space in 25 preserves in San Mateo and Santa Clara Counties (Midpeninsula Regional Open Space District, 2007a). Ravenswood Open Space Preserve consists of 373 acres of marshland and trails located south of the Dumbarton Bridge on San Francisco Bay, in the vicinity of the BDPL Reliability Upgrade (BD-1) pipeline alignment (Midpeninsula Regional Open Space District, 2007c).

Flood Park. Flood Park, located in Menlo Park and managed by San Mateo County, offers 21 acres of parkland, with many large native oak and bay trees. Picnicking, softball, tennis, horseshoes, volleyball, and petanque are popular activities in the park (San Mateo County, 2007d). Flood Park is adjacent to the BDPL Reliability Upgrade (BD-1) alignment.

Edgewood Park Nature Preserve. Edgewood Park Nature Preserve, managed by San Mateo County, is located in Redwood City at Edgewood and Old Stage Roads. This 467-acre park offers hiking and sightseeing and is well known for its spring wildflower blooms (San Mateo County, 2007c). This park is in the vicinity of the BDPL Reliability Upgrade (BD-1) alignment.

Pulgas Ridge Open Space Preserve. The Pulgas Ridge Open Space Preserve, managed by the Midpeninsula Open Space Regional District, is located near San Carlos, northwest of Edgewood County Park and across the Junipero Serra freeway from Pulgas Water Temple. The preserve encompasses 366 acres with three miles of trails. Some lands adjacent to Pulgas Ridge are not open to the public (Midpeninsula Regional Open Space District, 2007b).

City Parks and Recreational Facilities

City of East Palo Alto. See description under Bay Division Region, above.

City of Menlo Park. See description under Bay Division Region, above.

City of Redwood City. See description under Bay Division Region, above.

City of San Carlos. San Carlos has 15 parks totaling 143 acres. Fourteen are developed parks, providing ball diamonds, basketball courts, dog exercise areas, hiking trails, horseshoe pits, jogging paths, picnic tables, play equipment, recreation centers, soccer fields, and tennis courts. One park, the Chilton Property, is open space land. The general plan identifies three community parks and 12 neighborhood parks (City of San Carlos, 1992; 2007). The BDPL Reliability Upgrade project (BD-1) would be located in San Carlos.

Town of Woodside. A portion of the SFPUC's Peninsula watershed land lies adjacent to the town of Woodside. Woodside sponsors recreational programs and classes, but has no publicly owned recreational facilities in the vicinity of any proposed program features. An alternate site for the BDPL 3 and 4 Crossovers project (BD-2) would be located in Woodside.

City of San Mateo. The City of San Mateo owns 30 park sites, three open space areas, and two inaccessible open space areas, for a total of over 500 acres of parkland (City of San Mateo, 1991).

Town of Hillsborough. There are limited public parks and recreational facilities within Hillsborough, including two parks and a water conservation garden. The town also has 258 acres of open space that cannot be developed, improved, or sold (Town of Hillsborough, 2007b). Open space areas are not available for public access (Town of Hillsborough, 2007a). Private facilities such as the 110-acre Burlingame County Club and the Hillsborough Racquet Club provide additional recreational facilities, and many town residents have large lots with private recreational amenities. Nearby regional recreational areas and open space include Crystal Springs Reservoir and Coyote Point County Recreation Area. The CS/SA Transmission project (PN-2) would be located near the town of Hillsborough.

City of Burlingame. Burlingame has 17 parks and playgrounds, some of which are located near the CS/SA Transmission project (PN-2) (City of Burlingame, 2007). The 1.9-acre Village Park on Eastmoor Road has restroom facilities, a playground, picnic facilities, and basketball courts. The 5.9-acre Ray Park on Balboa Way provides a playground, picnic area, basketball courts, softball fields, tennis courts, and restroom facilities. The Groundwater Projects (SF-2) could also be located in Burlingame.

City of Millbrae. The City of Millbrae owns and operates 12 parks encompassing approximately 44 acres of parkland. Over 165 acres of parkland are available to city residents, when the Civic Center, the unimproved Spur Property, a portion of Junipero Serra Park, and school playgrounds and playfields are included. Millbrae's shoreline parks provide significant links to the Bay Trail (McElroy, 2001).Green Hills Park, on the corner of Ludeman Lane and Magnolia Avenue, provides picnic tables and benches, barbeque pits, and a group picnic area; other amenities

include restrooms, par course, jogging path, children's play equipment, open playing field, conversation place, horseshoe pit, bocce ball court, and open space (City of Millbrae, 2007). Although the CS/SA Transmission project (PN-2) and HTWTP Long-Term (PN-3) would not be located in Millbrae, they would be close to its city limits. The Groundwater Projects (SF-2) could also be located in Millbrae.

City of San Bruno. San Bruno has 18 parks encompassing approximately 90 acres. City residents also use Junipero Serra Park and some local school grounds, although not all school grounds are available for public use (City of San Bruno, 1984). Forest Lane Park, located near I-380 and Huntington Avenue has a grassy area, basketball court, play area, and picnic and barbeque area (City of San Bruno, 2007). Although the CS/SA Transmission (PN-2) and HTWTP Long-Term (PN-3) projects would not be located in San Bruno, they would be close to its city limits. The Groundwater Projects (SF-2) could also be located in San Bruno.

City of South San Francisco. South San Francisco has approximately 320 acres of parks and open space, 70 acres of which are developed, 169 acres of open space, and 81 acres of school lands (City of South San Francisco, 1999). According to the Parks, Public Facilities and Services Element of the general plan, the overall amount of open space in the city appears adequate to meet the community's needs, but the amount of developed parkland is inadequate. The general plan proposes an additional 108 acres of parkland, including a six-acre SFPUC Linear Park in the Winston-Serra area of the city. The corridor is already under development as a linear park, from the city's western boundary to Hickey Boulevard (City of South San Francisco, 1999). The 21-acre Orange Memorial Park, located on Orange Avenue and Tennis Drive, contains a children's play area, community building, restrooms, picnic tables, picnic shelter, five tennis courts, ball fields, basketball courts, walking trails, soccer fields, an indoor swimming pool, sculpture garden, and bocce ball courts (City of South San Francisco, 2006). Paradise Valley Park provides 1.2 acres, including a children's play area, Boys Club, restrooms, picnic tables, ball fields, and basketball courts. The park is located on Hillside Boulevard (City of South San Francisco, 2006). The Baden and San Pedro Valve Lots (PN-1) and Groundwater Projects (SF-2) could affect recreational facilities in South San Francisco.

Town of Colma. Colma has three public recreational facilities occupying 0.5 acres of land. The largest is the Sterling Park Community Center. The private Cypress Hills Golf Course adds an additional 76 acres of parkland. The town's eastern border is adjacent to the San Bruno Mountain State and County Park, and the town supports access to all trails along this border. The Colma General Plan states that a pedestrian path should be considered along the San Francisco Water Company right-of-way between Serramonte Boulevard and Collins Avenue (Town of Colma, 2000). The Groundwater Projects (SF-2) would be located in Colma.

City of Brisbane. Brisbane owns very few recreational facilities, but the city is surrounded by open space for outdoor recreation (City of Brisbane, 1994). The Open Space Element of the general plan states that, although Brisbane meets or exceeds current standards for parks and open space based on acreage per thousand persons, residents desire additional open space facilities. There are numerous goals and policies in the Open Space Element, as well as in the Recreation

and Community Services Element, aimed at maximizing the use of existing recreational and open spaces and developing new recreational and open spaces. The City proposes to use the lagoon, bayfront, and marsh for recreational and educational purposes, consistent with the sensitivity of the resources. The plan also states the goal of extending the trail system to include aquatic areas, creating a shoreline recreational trail along San Francisco Bay from Sierra Point to the Candlestick Point State Recreation Area, in cooperation with regional efforts. Once the water environment is determined to be safe, development of water-related passive recreation is encouraged at the Brisbane Lagoon, including public access facilities adjacent to the lagoon. Richard Firth Memorial Park, located on Glen Park Way, contains several concrete statues and a picnic area. Community Park, located at Old County Road and San Francisco Street, contains four picnic areas, restrooms, and a children's playground (City of Brisbane, 2007; Carmick, 2006). The Groundwater Projects (SF-2) could be located in Brisbane.

City of Daly City. Daly City has 71 acres of public recreation land and over 180 acres of private recreation lands. The general plan encourages the National Park Service to incorporate City-owned property along the coast into the Golden Gate National Recreation Area (City of Daly City, 1987). David R. Rowe Park on Midway Avenue provides ball fields, basketball courts, and recreational facilities for rent (Daly City Online, 2007). On the west side of I-280, a City-owned skate park on Sullivan Avenue provides skateboarding ramps and rails (SFGoKids.com, 2007). The Baden and San Pedro Valve Lots (PN-1), SAPL 3 Installation (SF-1), and Groundwater Projects (SF-2) could affect Daly City's recreational facilities.

San Francisco Region

City of San Francisco

The city, state, and federal property permanently dedicated to open space uses in San Francisco encompasses approximately 4,090 acres, or 5.5 acres per 1,000 San Francisco residents. The Recreation and Open Space Element of the San Francisco General Plan (CCSF, 1998) states a goal to increase the per capita supply of public open space within the city, but acknowledges that this is a challenge given existing development patterns, high population density, and relatively small land mass (28,918 acres). About half of the City-owned recreational and open space acreage is composed of a few large open space areas, which are enjoyed by residents throughout the city and region as well as by tourists. The other half is made up of smaller open spaces distributed throughout the city and used by residents of the immediate area. The SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), and Recycled Water Projects (SF-3) would be located in San Francisco. Parks that could be affected by the WSIP projects are described below.

Golden Gate National Recreation Area (Lake Merced). The recreational areas of the Golden Gate National Recreation Area at Lake Merced are managed by the San Francisco Recreation and Park Department under an agreement with the SFPUC. This agreement was created in 1950, naming the SFPUC to manage the water aspects of Lake Merced. Lake Merced is located near Skyline and Lake Merced Boulevards and is composed of four interconnected freshwater lakes. Recreational activities include walking, jogging, and boating. Developed facilities include the Lake Merced Sports Center, the 18-hole public Harding Park Golf Course (Harding Park, 2007),

the 18-hole Jack Fleming Municipal Golf Course, and the Pacific Rod and Gun Club, with skeet and trap ranges (SFPUC, 2007b). There are several other private golf clubs in the Lake Merced vicinity, including Olympic Country Club to the south, Lake Merced Golf & Country Club to the southeast, and San Francisco Golf Club to the east, as well as athletic facilities associated with San Francisco State University. The alignment for the SAPL 3 Installation (SF-1) through the San Francisco Golf Course and adjacent to the Lake Merced Golf & Country Club, and the Groundwater Projects (SF-2) could affect Harding Park Golf Course.

West Sunset Playground and Recreation Center and South Sunset Playground. The West Sunset Playground and Recreation Center, located at Ortega Street and 39th Avenue, provides two baseball fields, a softball field, basketball and tennis courts, and a soccer field. This unique, bi-level playground is heavily used by the community (Go City Kids, 2007b). The South Sunset Playground could also be affected. The Groundwater Projects (SF-2) could affect these playgrounds.

Golden Gate Park. San Francisco's Golden Gate Park provides 1,017 acres of parkland, including tennis courts, playgrounds, biking and skating facilities, a rose garden, casting ponds for anglers, the Buffalo Paddock in the northwest corner of the park, and boating facilities at Stow Lake. The park is heavily used by city residents and is also popular with regional residents and visiting tourists. Various SFPUC wells and the Golden Gate Storage Tank, involved in the Groundwater Projects (SF-2) and Recycled Water Project (SF-3), are located in the park (CCSF, 2007b; Go City Kids, 2007a).

As indicated in the Golden Gate Park Master Plan, the former Richmond-Sunset Treatment Plant, which is currently a staging area for the Recreation and Park Department, would be restored to include an additional soccer field, a picnic area, a small parking area, log storage, and reforestation areas. The site is located in the western area of Golden Gate Park (CCSF, 2007a). A Recycled Water Project (SF-3) alternative could affect this area.

San Francisco Zoo. San Francisco Zoo is one of the Bay Area's most popular cultural and recreational attractions. Recreational facilities include a carousel, a miniature steam train, several cafes, and open space. The San Francisco Recreation and Park Department works in partnership with the San Francisco Zoological Society to maintain and govern the zoo (San Francisco Zoo, 2007). The Groundwater Projects (SF-2) could affect an overflow parking lot at the zoo.

Pine Lake Park/Stern Grove. Pine Lake Park and Stern Grove, a 64-acre open space area, forms a long valley that drops 100 feet in elevation from the city street above. There are numerous recreational activities, including summer concerts, receptions, picnic events, tennis, horseshoes, and croquet. The popular "Sundays at the Grove" concert series is attended annually by more than 175,000 patrons. The park has plans for improvements, including redesign of the outdoor concert area, restoration of buildings (including historic structures), enhancement of disabled access to park facilities, lake and wildlife habitat restoration, playground and tennis courts repairs, and utility and infrastructure improvements (CCSF, 2007c). The Groundwater Projects (SF-2) could affect the park.

Lincoln Park Golf Course. Lincoln Park Golf Course was constructed in 1928 and provides the public with an 18-hole course on a native landscape of rolling hills forested with cypress and pine trees. The Recycled Water Projects (SF-3) would affect the golf course.

Regulatory Framework

Local Plans and Policies

Refer to Section 4.2, Plans and Policies, regarding the application of local land use plans and policies to implementation of the WSIP.

4.12.2 Impacts

Significance Criteria

The CCSF has not formally adopted significance standards for impacts related to recreation, but generally considers that implementation of the proposed program would have a recreational impact if it were to:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated (Secondary impacts of growth are evaluated in Chapter 7, Growth-Inducement Potential and Indirect Effects of Growth)

- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment (Secondary impacts of growth are evaluated in Chapter 7)

- Physically degrade existing recreational resources (Evaluated in this section)

The physical degradation of existing resources could occur if the WSIP were to:

- Remove or damage existing recreational resources directly

- Cause environmental impacts (such as air quality or noise effects) that would indirectly result in deterioration in the quality of the recreational experience

- Disrupt access to existing recreation facilities (which would divide a community from some of the established amenities used by its members)

Impacts on parks are discussed in this section. Impacts on other public facilities are addressed in Section 4.3, Land Use and Visual Quality; Section 4.8, Traffic, Transportation, and Circulation; and Section 4.11, Public Services and Utilities.

Approach to Analysis

Local planning documents and maps (including topographic maps, local street maps, and maps available electronically via the internet) were reviewed to identify the recreational resources in the study area that, because of their proximity, could be directly or indirectly affected by the WSIP projects. Existing recreational plans and policy documents, as well as scoping comments received from recreational resource management agencies and other interested parties on the WSIP Draft PEIR Notice of Preparation, were also reviewed.

To determine potential direct effects of WSIP projects construction activities and/or land acquisition, project areas were compared with the locations of identified recreational resources. Potential indirect effects on recreational resources were identified through the same means, as well as by reviewing the impact findings from Section 4.3, Land Use and Visual Quality; Section 4.5, Hydrology and Water Quality; Section 4.9, Air Quality; and Section 4.10, Noise and Vibration. Indirect impacts that would typically result from other physical impacts and could adversely affect the recreational experience include the following: removal of vegetation that could alter views (Section 4.3, Land Use and Visual Quality); construction-related noise that could affect hiking or nature appreciation (Section 4.10, Noise); or impeded access to hiking trails (Section 4.8, Traffic, Transportation, and Circulation).

Impact Summary by Region

Table 4.12-1 presents a summary of potential impacts on recreational resources associated with the WSIP projects.

Construction Impacts

Impact 4.12-1: Temporary conflicts with established recreational uses during construction.

Construction activities (such as the creation of new temporary staging areas or open-trench construction of pipelines) could temporarily disrupt access to or use of recreational facilities in the WSIP study area. Construction of pipelines, tunnels, dams, and other WSIP facilities could require excavation in areas with established recreational uses or could affect access to existing parks or other recreational facilities. Construction activities that could affect recreational resources are addressed by facility type below.

Pipelines. In some of the affected jurisdictions, formal or informal linear parks or trails have been developed or are proposed for development along the SFPUC right-of-way. Other communities have designated the SFPUC right-of-way as open space. In some instances, there are recreational amenities such as private golf courses in or adjacent to the right-of-way. Since additional pipeline construction would occur along portions of this right-of-way, existing recreational facilities or uses of this area could be disrupted.

Where feasible, WSIP pipeline construction would be accomplished using standard open-cut or cut-and-cover construction methods, progressing at a rate of approximately 120 feet per day in

urban areas and 160 feet per day in rural areas; where there are no obstructions or road crossings, the pipeline construction could progress at a rate of up to 300 feet per day. Staging areas would also be required for stockpiling supplies and equipment close to the construction area. Depending on the location of staging areas and the timing of pipeline construction, these activities could

TABLE 4.12-1
POTENTIAL IMPACTS AND SIGNIFICANCE – RECREATIONAL RESOURCES

Projects	Project Number	Impact 4.12-1: Temporary conflicts with established recreational uses during construction	Impact 4.12-2: Conflicts with established recreational uses due to facility siting and project operation
San Joaquin Region			
Advanced Disinfection	SJ-1	N/A	N/A
Lawrence Livermore Supply Improvements	SJ-2	N/A	N/A
San Joaquin Pipeline System	SJ-3	PSM	N/A
Rehabilitation of Existing San Joaquin Pipelines	SJ-4	PSM	N/A
Tesla Portal Disinfection Station	SJ-5	N/A	N/A
Sunol Valley Region			
Alameda Creek Fishery Enhancement	SV-1	LS	N/A
Calaveras Dam Replacement	SV-2	LS	N/A
Additional 40-mgd Treated Water Supply	SV-3	N/A	N/A
New Irvington Tunnel	SV-4	PSM	N/A
SVWTP – Treated Water Reservoirs	SV-5	N/A	N/A
San Antonio Backup Pipeline	SV-6	N/A	N/A
Bay Division Region			
Bay Division Pipeline Reliability Upgrade	BD-1	PSM	N/A
BDPL Nos. 3 and 4 Crossovers	BD-2	PSM	N/A
Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault	BD-3	N/A	N/A
Peninsula Region			
Baden and San Pedro Valve Lots Improvements	PN-1	N/A	N/A
Crystal Springs/San Andreas Transmission Upgrade	PN-2	PSM	N/A
HTWTP Long-Term Improvements	PN-3	N/A	N/A
Lower Crystal Springs Dam Improvements	PN-4	LS	N/A
Pulgas Balancing Reservoir Rehabilitation	PN-5	LS	N/A
San Francisco Region			
San Andreas Pipeline No. 3 Installation	SF-1	PSM	PSM
Groundwater Projects	SF-2	PSM	PSM
Recycled Water Projects	SF-3	PSM	PSM

LS = Less than Significant impact, no mitigation required
PSM= Potentially Significant impact, can be mitigated to less than significant
N/A = Not Applicable

cause adverse (although temporary) impacts on recreational resources, including the temporary loss of facility access, temporary removal of facilities, or the longer term loss of lawns or landscaped areas, which could take time to be restored after construction is completed.

Tunnels. Unlike pipeline construction, tunneling would not affect parks, open space, or recreational areas, except in the vicinity of the entry and exit portal locations, which would also serve as construction staging areas. Recreational resources could be adversely affected if the portals were located on or near existing parks and recreational facilities, or if access to these areas

were disrupted by construction traffic or construction activities. Similarly, the noise and dust generated by tunneling and associated equipment could reduce the quality of the recreational experience at nearby facilities, depending on where the portals are sited in relation to established recreational uses.

Vaults, Valve Lots, and Crossover Facilities. These facilities would be constructed at isolated locations near existing SFPUC facilities along the regional system. Design would vary by location, but facilities would typically occupy approximately 4,000 square feet and would be partially or completely buried. Control buildings might be constructed to house associated electrical facilities, and crossover structures could require permanent discharge or drainage piping for maintenance or emergency repairs. Construction activities would generally be confined to the immediate site vicinity. If these facilities were located in or near areas of established recreational use, they could temporarily disrupt recreational resources (during construction).

Pump Stations. The WSIP includes construction of new pump stations and upgrades to existing pump stations along the regional system. Upgrading existing pump stations, which would involve removing existing equipment and replacing it with new equipment, is not likely to adversely affect recreational resources. New pump stations could adversely affect resources if they are located in areas with established recreational uses.

Treatment Facilities. The WSIP includes upgrades and expansion of existing treatment facilities at two treatment plants as well as the system's primary disinfection facility, and construction of a new secondary disinfection facility. Proposed upgrades at existing treatment plants would occur within the existing property boundaries and are not likely to affect offsite recreational resources. Impacts associated with new facility construction would depend on the site location in relation to established recreational uses in the area.

Storage Facilities. The WSIP calls for improvements to water storage facilities, including water reservoirs and dams. Some storage facility sites are open to the public, and projects located in these areas could affect recreational access. Other storage facilities are closed to the public, and projects located in these areas would not likely affect recreational facilities.

As mentioned above, a criterion for impacts on recreational resources is the disruption of access to existing recreation facilities. For this analysis, if access to a recreational site would be closed during construction, the impact would be potentially significant, even with SFPUC construction measures such as those requiring neighborhood notice and traffic plans. However, if a WSIP project would temporarily close one access route to a recreational site but another access route remained opened to the public, the impact would be less than significant.

If a WSIP project would construct facilities through or adjacent to a recreational facility and disrupt access to part or all of the recreational facility, the impact, although temporary, would be potentially significant.

If there is not enough detail about a WSIP project to assess its impacts on recreational resources, a conservation determination of potentially significant is made in this analysis.

In general, potentially significant impacts could be reduced to a less-than-significant level through coordination with golf course and other recreational facility managers (Measure 4.12-1) and implementation of various mitigation measures to address traffic, air quality, and noise issues. Recreational resources in the vicinity of the WSIP projects are identified by region below and summarized in **Table 4.12-2**.

San Joaquin Region

Impact 4.12-1: Temporary conflicts with established recreational uses during construction		
Advanced Disinfection	SJ-1	N/A
Lawrence Livermore	SJ-2	N/A
SJPL System	SJ-3	PSM
SJPL Rehabilitation	SJ-4	PSM
Tesla Portal Disinfection	SJ-5	N/A

Of the five WSIP projects in the San Joaquin Region, the SJPL System (SJ-3) and SJPL Rehabilitation (SJ-4) projects could affect recreational resources during construction.

The SJPL System (SJ-3) would construct valve houses at Oakdale and Tesla Portals, two crossover facilities, and approximately 16 to 22 miles of pipeline (a minimum of 6 miles of pipeline west of Oakdale Portal in Tuolumne and Stanislaus Counties, and 10 miles of pipeline east of Tesla Portal in Stanislaus and San Joaquin Counties, including in the vicinity of Tracy Golf and Country Club). Construction would take place over approximately three years. Most construction would occur within the existing SFPUC right-of-way, but additional right-of-way could be required. Additional land could also be acquired for power supply facilities associated with crossovers, depending on the final locations selected.

Temporary, but *potentially significant* impacts associated with the SJPL System and SJPL Rehabilitation projects could be reduced to a less-than-significant level through implementation of SFPUC Construction Measures #1, #3, #5, #6, and #10 (neighborhood notice, air quality, traffic, noise, and site restoration), mitigation measures identified in Chapter 6 (under 4.8, Traffic, Transportation, and Circulation; 4.9, Air Quality; and 4.10, Noise and Vibration), as well as coordination with golf course managers/recreational facility managers and provision of temporary access (Measure 4.12-1). These measures would provide park and recreation facility managers with an opportunity to notify recreationists of any anticipated disruption of resource access or use. Separate, project-level CEQA review would be conducted on these projects to determine if potential recreation impacts would occur and, if appropriate, to refine mitigation measures to address site-specific conditions.

The Advanced Disinfection (SJ-1) and Tesla Portal Disinfection (SJ-5) projects would install disinfection facilities at the SFPUC's existing Tesla Portal, which is currently used for water system purposes, so these projects would not affect recreational resources. New water filtration facilities for the Lawrence Livermore project (SJ-2) would be constructed at the SFPUC's existing Thomas Shaft property in San Joaquin County and would not affect existing recreational uses. Therefore, this impact would *not apply* to these projects.

TABLE 4.12-2
PUBLIC PARKS AND RECREATIONAL FACILITIES IN THE PROJECT VICINITY

Projects	Potentially Affected Recreational Resources
SJ-1: Advanced Disinfection	None
SJ-2: Lawrence Livermore Supply Improvements	None
SJ-3: San Joaquin Pipeline System	Tracy Golf and Country Club
SJ-4: Rehabilitation of Existing San Joaquin Pipelines	Tracy Golf and Country Club; Hetch Hetchy Trail Linear Park; Wesson Ranch Park and Chrysler 99 Park (in Modesto); San Joaquin National Wildlife Refuge
SJ-5: Tesla Portal Disinfection Station	None
SV-1: Alameda Creek Fishery Enhancement	Alameda Creek
SV-2: Calaveras Dam Replacement	Sunol Regional Wilderness
SV-3: Additional 40-mgd Treated Water Supply	None
SV-4: New Irvington Tunnel	Mission Peak Regional Park
SV-5: SVWTP – Treated Water Reservoirs	None
SV-6: San Antonio Backup Pipeline	None
BD-1: Bay Division Pipeline Reliability Upgrade	Don Edwards San Francisco Bay Regional Wildlife Refuge; Ravenswood Open Space Preserve; San Francisco Bay Trail; local parks in Fremont, Newark, San Mateo County, and Redwood City; numerous school properties in East Palo Alto, Fremont, Menlo Park, Newark, and Redwood City
BD-2: BDPL Nos. 3 and 4 Crossovers	Guadalupe River trails in Ulistac Natural Area; Gunn High School
BD-3: Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault	None
PN-1: Baden and San Pedro Valve Lots Improvements	None
PN-2: Crystal Springs/San Andreas Transmission Upgrade	Crystal Springs Golf Course Sawyer Camp Trail
PN-3: HTWTP Long-Term Improvements	None
PN-4: Lower Crystal Springs Dam Improvements	Trails and passive uses along Canada Road; site-seeing from the San Mateo County Bridge
PN-5: Pulgas Balancing Reservoir Rehabilitation	Pulgas Water Temple
SF-1: San Andreas Pipeline No. 3 Installation	Direct impacts on the San Francisco Golf Club; indirect impacts on Lake Merced Golf & Country Club and Daly City Skatepark
SF-2: Groundwater Projects	South Sunset Playground; West Sunset Playground; and Francis Scott Key School playground; Golden Gate Park; Lake Merced (and Harding Park Golf Course); San Francisco Zoo; and Pine Lake/Stern Grove (all in San Francisco)
SF-3: Recycled Water Projects	San Francisco Zoo; Lincoln Park

Sunol Valley Region

Impact 4.12-1: Temporary conflicts with established recreational uses during construction		
Alameda Creek Fishery	SV-1	LS
Calaveras Dam	SV-2	LS
40-mgd Treated Water	SV-3	N/A
New Irvington Tunnel	SV-4	PSM
Treated Water Reservoirs	SV-5	N/A
SABUP	SV-6	N/A

Within the Sunol Valley Region, construction of three of the proposed WSIP projects could affect recreational resources or the quality of the recreational experience in the Sunol Regional Wilderness, which lies between Calaveras and San Antonio Reservoirs. The remaining Sunol Valley Region projects would involve construction or upgrades on existing SFPUC property or at existing facilities, minimizing the potential for impacts on nearby recreational resources.

The Alameda Creek Fishery project (SV-1) would involve construction of facilities to recapture water that is released for fishery enhancement in Alameda Creek. Construction in the vicinity of Alameda Creek could temporarily disrupt access to the creek for dispersed recreational activities such as fishing or picnicking; however, since this disruption would be temporary and alternative locations for these activities are available, this impact would be *less than significant*.

The Calaveras Dam project (SV-2) is a major construction project that would replace the existing Calaveras Dam and restore the capacity of Calaveras Reservoir. Calaveras Road, designated as a scenic route by Alameda and Santa Clara Counties, would be closed to the public during an estimated three-year construction period, blocking access to the Sunol Regional Wilderness from the south during that time. Access to the Sunol Regional Wilderness from the north would remain open during project construction. Because this disruption to recreational access would be temporary and an alternate route into the wilderness area would be available, this impact would constitute a *less than significant*, indirect effect on established recreational uses. Implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, air quality, traffic, and noise) would also help ensure that potential impacts on this resource are less than significant.

Construction of New Irvington Tunnel (SV-4) would take place over approximately three to four years. The project would require construction of two new tunnel portals and associated construction staging areas. The new east portal would be about 75 feet south of the Alameda West Portal, and the new west portal would be about 175 feet south of the existing Irvington Portal. The project would tunnel below a portion of Mission Peak Regional Park, but is not expected to affect surface facilities. This project would end east of Mission Boulevard and would not directly affect schools in the vicinity of Mission Boulevard in Fremont. However, there could be *potentially significant*, indirect impacts on these schools associated with construction-related traffic on local roadways, air pollutant emissions, and increased noise. Implementation of the SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, air quality, traffic, and noise), as well as mitigation measures identified in Chapter 6 (under 4.8, Traffic, Transportation, and Circulation; 4.9, Air Quality; and 4.10, Noise and Vibration) would help to reduce potential impacts to a less-than-significant level. Two projects in this region (40-mgd Treated Water, SV-3, and Treated Water Reservoirs, SV-5) would construct new facilities or upgrade existing equipment

within the fenceline of SFPUC properties. The SABUP project (SV-6) would not affect any public parks or recreational facilities. Therefore, this impact would *not apply* to these three projects.

Bay Division Region

Impact 4.12-1: Temporary conflicts with established recreational uses during construction		
BDPL Reliability Upgrade	BD-1	PSM
BDPL 3 and 4 Crossovers	BD-2	PSM
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	N/A

Of the WSIP projects proposed for construction in the Bay Division Region, the BDPL Reliability Upgrade project (BD-1) would have the greatest potential impact on recreational facilities in the area. The preferred pipeline alignment for the new Bay Division Pipeline (No. 5) would pass beneath the Don Edwards San Francisco Bay Regional Wildlife Refuge, with an approximately five-mile tunnel segment installed beneath marshlands and San Francisco Bay. The two cut-and-cover sections of pipeline (approximately seven miles from the Irvington Tunnel Portal to the Newark Valve House and nine miles from the Ravenswood Valve House to the Pulgas Tunnel Portal) would be located within the existing SFPUC right-of-way. The Ravenswood Open Space Preserve and San Francisco Bay Trail are also located in the vicinity of the Ravenswood Valve House.

Recreational amenities in the vicinity of the pipeline alignment for the BDPL Reliability Upgrade project (BD-1) include Agua Caliente Creek, Central Park, Azeveda Park, Noll Park, and Mission San Jose in Fremont; Flood Park in Menlo Park; Ash Park and Birch Grove Park in Newark; Edgewood Park, Fleishman Park, Hawes Park, and Red Morton Park in Redwood City; and local parks in San Mateo County. Recreational facilities may also be present at numerous school properties, including Chadbourne School, Durham School, Fremont School, Irvington School, Mission San Jose School, Joseph Azeveda Elementary School, and Walters Junior High School in Fremont; Cesar Chavez Academy and Costano School in East Palo Alto; Bell Haven Elementary School and James Flood Magnet School in Menlo Park; Bunker Elementary School in Newark; and Fair Oaks School, Hawes School, Gill School, and West Bay Christian Academy in Redwood City. While none of these recreational resources would be directly affected, indirect (temporary, construction-related) impacts would be *potentially significant*. Implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, air quality, traffic, and noise), as well as coordination with golf course/recreational facility managers (Measure 4.12-1) would reduce this impact to a less-than-significant level.

The BDPL 3 and 4 Crossovers project (BD-2) would involve construction of pipeline crossovers at three separate locations along a 32-mile stretch of the existing Bay Division Pipeline. One of these crossover locations is adjacent to the Guadalupe River in San Jose, in the recently restored Ulistac Natural Area (formerly the Fairway Glen Golf Course) across from Lick Mill Park. Another is located near Barron Creek, adjacent to the running track and sports fields at Gunn High School in Palo Alto. These track and field facilities can be used by the public when not being used for school purposes (Jacoubowsky, 2006). The third crossover would be located at Bear Gulch Reservoir in Atherton, which is not accessible to the public. All crossovers would be constructed within existing SFPUC right-of-way (with the possible exception of outfall facilities), so direct impacts on recreational facilities are not expected. However, because construction could temporarily disrupt the enjoyment of nearby recreational resources, impacts would be *potentially*

significant. Implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, air quality, traffic, and noise), mitigation measures identified in Chapter 6 (under 4.8, Traffic, Transportation, and Circulation; 4.9, Air Quality; and 4.10, Noise and Vibration), as well as coordination with golf course managers/recreational facility managers (Measure 4.12-1) would help to reduce potential impacts to a less-than-significant level. These conditions and measures would provide park and recreation facility managers with an opportunity to notify recreationists of any anticipated disruption of resource access or use.

The BDPL 3 and 4 Seismic Upgrade at Hayward Fault project (BD-3) would not affect established recreational uses in the vicinity, so this impact would *not apply* to this project.

Peninsula Region

Impact 4.12-1: Temporary conflicts with established recreational uses during construction

Baden and San Pedro Valve Lots	PN-1	N/A
CS/SA Transmission	PN-2	PSM
HTWTP Long-Term	PN-3	N/A
Lower Crystal Springs Dam	PN-4	LS
Pulgas Balancing Reservoir	PN-5	LS

Two of the proposed Peninsula Region projects would be located on SFPUC facility sites that are not accessible to the public. However, three of the WSIP projects in this region are located on or close to existing recreational facilities and thus have the potential to disrupt (directly or indirectly) established recreational uses.

The CS/SA Transmission project (PN-2) would replace approximately 1,350 feet of pipeline and renew the remaining pipeline (through lining, coating, new manholes and valves, etc.) that conveys water from Crystal Springs Reservoir to the Harry Tracy Water Treatment Plant (WTP) through San Andrea Reservoir. If the pipeline is replaced, all work would occur within SFPUC Peninsula watershed lands; however, the alignment could pass through Crystal Springs Golf Course, roughly paralleling Sawyer Camp Trail, with portions of the pipeline alignment touching the trail alignment. Construction traffic and staging areas could also affect access to and/or enjoyment of Sawyer Camp Trail and Crystal Springs Golf Course, resulting in *potentially significant* impacts. Implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, air quality, traffic, and noise), and coordination with golf course and other recreational facility managers to ensure facility managers notify recreationists of anticipated access or use disruptions (Measure 4.12-1) would reduce this impact to a less-than-significant level.

The Lower Crystal Springs Dam project (PN-4) would make dam safety improvements to Lower Crystal Springs Dam, including raising the dam parapet wall and lengthening the spillway crest. The areas where the improvements are proposed are not accessible to the public. The project would be coordinated with San Mateo County's replacement of the County Bridge (which is built on the crest of the dam and provides sightseeing opportunities) as well as a nearby parking lot and vista point overlooking the reservoir. Indirect impacts related to the recreational enjoyment of the area would be *less than significant*. Implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, air quality, traffic, and noise) would also help ensure that potential impacts related to recreational enjoyment are less than significant.

The Pulgas Balancing Reservoir project (PN-5) would replace the Pulgas Channel with an enlarged channel and replace the roof of the existing Pulgas Balancing Reservoir and associated equipment. The reservoir is located on SFPUC watershed land west of I-280 and east of Cañada Road in unincorporated San Mateo County, southeast of Pulgas Water Temple. Pulgas Channel crosses under Cañada Road and extends southwestward, near the south side of the parking lot for the water temple. Construction activities would occur over a total of four years and would be confined to the vicinity of the existing reservoir structure. Replacement of the Pulgas Channel is not expected to directly affect recreational uses in the water temple area, unless recreational parking is reduced during construction. However, if access to the temple's parking lot is restricted during channel construction, the impact on this recreational use could be *less than significant*. Implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, air quality, traffic, and noise) would also help ensure that potential impacts related to the recreational enjoyment of this area are less than significant.

The Baden and San Pedro Valve Lots project (PN-1) would involve seismic upgrades or repairs at valve lot locations and other facility locations (within SFPUC fencelines) that would not disrupt nearby recreational uses. The HTWTP Long-Term project (PN-3) would involve modifications at the Harry Tracy WTP and would not affect established recreational uses of the area. Therefore, this impact would *not apply* to these projects.

San Francisco Region

Impact 4.12-1: Temporary conflicts with established recreational uses during construction		
SAPL 3 Installation	SF-1	PSM
Groundwater Projects	SF-2	PSM
Recycled Water Projects	SF-3	PSM

All WSIP projects in the San Francisco Region would potentially affect parks and recreational resources.

The SAPL 3 Installation project (SF-1) would replace the Baden-Merced Pipeline in Daly City by extending San Andreas Pipeline No. 3 from the San Pedro Valve Lot to Merced Manor Reservoir in San Francisco. Following the alignment of the existing Baden-Merced Pipeline, the project would pass in the vicinity of numerous parks and recreational facilities. Project construction would occur for almost two years and would disrupt two major recreational resources, the Lake Merced Golf & Country Club and the San Francisco Golf Club. Construction would disrupt use of the San Francisco Golf Club during the construction period, since the alignment would pass directly through the course, and time would be needed to restore the greens and fairways to a usable condition after construction is completed. The pipeline alignment runs parallel to the edge of the Lake Merced Golf & Country Club and could indirectly affect use of that golf club, including parking. These impacts would be *potentially significant*; however, they would be temporary in duration and the golf courses would be restored once the pipeline is buried. Implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, air quality, traffic, and noise), mitigation measures identified in Chapter 6 (under 4.8, Traffic, Transportation, and Circulation; 4.9, Air Quality; and 4.10, Noise and Vibration), and coordination with golf course/recreational facility managers and provision of temporary access if applicable (Measure 4.12-1) would reduce these potential impacts to a less-than-significant level.

The Groundwater Projects (SF-2) would construct new groundwater extraction wells on properties owned by the CCSF, including the South Sunset and West Sunset Playgrounds, and the playground at Francis Scott Key School. This project would also upgrade wells at a number of city locations, including two sites in Golden Gate Park as well at Lake Merced (Harding Park Golf Course), the San Francisco Zoo, and Pine Lake at Stern Grove. These upgrades would occur intermittently over a three-year timeframe (from 2009 to 2011) and could disrupt adjacent recreational uses during this period. The Groundwater Projects would also develop approximately 7 million gallons per day (mgd) of potable groundwater in San Mateo County as part of a regional conjunctive-use project, at locations that have not yet been identified. One of the recreational sites that could be affected is the Daly City Skatepark. In the absence of more detailed project information, these potential impacts are assumed to be *potentially significant*. Implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, air quality, traffic, and noise), mitigation measures identified in Chapter 6 (under 4.8, Traffic, Transportation, and Circulation; 4.9, Air Quality; and 4.10, Noise and Vibration), as well as coordination with golf course/recreational facility managers (Measure 4.12-1) would reduce these potential impacts to a less-than-significant level.

The Recycled Water Projects (SF-3) would diversify San Francisco's water supply by providing 4 mgd of annual average production of recycled water. The recycled water would be stored at an existing reservoir in Golden Gate Park, and an additional storage facility could be built in the vicinity of Lincoln Park. In the absence of more detailed project information, these potential impacts are assumed to be *potentially significant*. Implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, air quality, traffic, and noise), mitigation measures identified in Chapter 6 (under 4.8, Traffic, Transportation, and Circulation; 4.9, Air Quality; and 4.10, Noise and Vibration), as well as coordination with golf course facility managers and provision of temporary access if applicable (Measure 4.12-1) would reduce these potential impacts to a less-than-significant level.

Operations, Siting, and Design Impacts

Long-Term Conflicts with Established Recreational Uses

Impact 4.12-2: Conflicts with established recreational uses due to facility siting and project operation.

If a WSIP project would conflict with established recreational uses by siting a permanent facility or changing a facility's operation, the impact would be potentially significant.

San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions

None of the WSIP projects in the San Joaquin, Sunol Valley, Bay Division, or Peninsula Regions would cause long-term conflicts with established recreational uses, because there would be no change in permanent access to recreational facilities, and access would be restored following project construction. Therefore, this impact would *not apply* to the projects in these regions.

San Francisco Region

Impact 4.12-2: Conflicts with established recreational uses due to facility siting and project operation		
SAPL 3 Installation	SF-1	PSM
Groundwater Projects	SF-2	PSM
Recycled Water Projects	SF-3	PSM

In the San Francisco Region, new facilities could be constructed in a number of City-owned parks and recreational facilities. The SAPL 3 Installation project (SF-1) would involve construction of a pipeline and various facilities, including two new structures (up to 8 feet high). The proposed pipeline alignment would traverse the San Francisco Golf Club and would be adjacent to the Lake Merced Golf & Country Club. The Groundwater Projects (SF-2) would construct new groundwater extraction wells at South Sunset Playground and West Sunset Playground. The Recycled Water Projects (SF-3) would store recycled water at an existing reservoir in Golden Gate Park (resulting in no new impact), and possibly at a new storage facility to be constructed at Lincoln Park. The impacts from these projects would be *potentially significant*. Implementation of architectural design, landscaping, and tree removal measures to reduce visual impacts (Measures 4.3-4a, 4.3-4b, 4.3-4c, and 4.3-4d), as well as appropriate siting of proposed facilities to minimize the direct loss of recreational access (Measure 4.12-2) would reduce these potential impacts to a less-than-significant level.

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4.13 Agricultural Resources

4.13 Agricultural Resources

4.13.1 Setting

Regional Overview

California is the nation's leading agricultural producer, responsible for approximately one-eighth of the country's agricultural output. The Central Valley (comprised of the Sacramento and San Joaquin Valleys) is the most productive agricultural area of the state; all eight counties in the San Joaquin Valley are among the top 15 most productive counties in the state (Legislative Analyst's Office, 2002; Umbach, 1997).

The WSIP study area stretches from Tuolumne County in the Sierra Nevada mountains, through two counties—San Joaquin and Stanislaus—that are part of the agriculturally productive San Joaquin Valley, then through four other counties that are part of the urbanized San Francisco Bay Area. Most agricultural production occurs in the San Joaquin Region, where there are large tracts of fertile farmland. Agricultural production is much more limited in the central and western portions of the study area for a variety of reasons, including less appropriate soil types, subdivision of land into smaller parcel sizes, higher production costs, and the predominance of urban development.

San Joaquin and Stanislaus Counties are ranked among the top 10 California counties in terms of the total value of annual agricultural production, while the remaining five counties in the WSIP study area have much lower rankings, as show on **Table 4.13-1**.

TABLE 4.13-1
VALUE OF AGRICULTURAL PRODUCTION IN WSIP STUDY AREA COUNTIES, 2003

County	Value of Agricultural Production ($1,000s)	2003 Ranking
San Joaquin	1,494,693	6
Stanislaus	1,454,928	7
Santa Clara	241,043	28
San Mateo	178,039	31
Alameda	37,342	44
Tuolumne	21,705	49
San Francisco	1,891	57

SOURCE: California Department of Finance, 2004.

Farmland Mapping

The California Department of Conservation, Division of Land Resource Protection, maps important farmlands throughout California. Important farmlands are divided into the following five categories based on their suitability for agriculture:

- *Prime Farmland* is land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed.

- *Farmland of Statewide Importance* is land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production.

- *Unique Farmland* does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has been used for the production of specific high-economic-value crops.

- *Farmland of Local Importance* is either currently producing crops or has the capability of production, but does not meet the criteria of the categories above.

- *Grazing Land* is land on which the vegetation is suited to the grazing of livestock.

Table 4.13-2 shows the quantities of these types of agricultural lands that are currently mapped in each of the WSIP study area counties. As this table indicates, San Joaquin and Stanislaus Counties have the highest acreages of prime, unique, and important farmlands.

TABLE 4.13-2
IMPORTANT FARMLAND ACREAGE IN WSIP STUDY AREA COUNTIES, 2002

County	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	Unique Farmland (acres)	Farmland of Local Importance (acres)	Grazing Land (acres)
Tuolumne	N/A	N/A	N/A	N/A	N/A
Stanislaus	260,730	30,069	61,205	29,519	374,898
San Joaquin	415,527	92,521	61,849	56,507	148,710
Alameda	6,328	1,485	2,100	0	245,728
Santa Clara	28,816	4,244	1,404	7,711	388,696
San Mateo	2,503	178	2,800	3,744	45,829
San Francisco	N/A	N/A	N/A	N/A	N/A

NOTE: Tuolumne County is not part of the California Department of Conservation's Farmland Mapping and Monitoring Program; San Francisco County is urbanized and has virtually no agricultural lands.

SOURCE: California Department of Conservation, Division of Land Resource Protection, 2002.

Description of Agricultural Resources by County in the Study Area

Tuolumne County

In 2003, Tuolumne County ranked 49th (out of 58 counties) in California for the value of its agricultural production, which was almost $22 million. The county's leading commodities include cattle, irrigated and range pasture, firewood, and apiary products. In 2004, the gross agricultural output was $28 million. Field crops in 2004 included hay (600 acres), irrigated pasture (1,200 acres), and rangeland (200,000 acres) (California Department of Finance, 2003; Tuolumne County Agricultural Commissioner, 2004).

While Tuolumne County covers the largest geographic area (1,415,781 acres) of the affected counties, it does not meet the minimum agricultural acreage requirement for inclusion of lands in the California Department of Conservation's Farmland Mapping and Monitoring Program. A total of 118,422 acres of land were enrolled in the Williamson Act in Tuolumne County in 2003 (California Department of Conservation, 2004).[1]

The WSIP projects in Tuolumne County pertain to the easternmost pipeline segment of the San Joaquin Pipeline—the SJPL System (SJ-3) and SJPL Rehabilitation (SF-4) projects. These projects are located in an area identified mainly as Grazing Land.

Stanislaus County

In 2003, Stanislaus County ranked seventh in California for the value of its agricultural production, which was almost $1.5 billion. The county's leading commodities are milk, almonds, chickens, nursery products (fruit, vine, and nut), and walnuts. In 2004, Stanislaus County had a gross agricultural income of $1.9 billion, showing a 36 percent increase from the previous year. The sectors showing the most significant gains were fruit and nut crops (approximately 43 percent) and livestock and poultry (approximately 68 percent) (California Department of Finance, 2003).

Grazing Land (38.6 percent) makes up a large portion of the county's total land area (970,169 acres). Almost 27 percent of the county (26,195 acres) is designated as Prime Farmland. The remaining important farmland is designated as Unique Farmland (6.3 percent), Farmland of Statewide Importance (3.1 percent), and Farmland of Local Importance (3.0 percent) (California Department of Conservation, 2003).

Stanislaus County had 286,957 acres of Prime Farmland and 405,546 acres of nonprime farmland enrolled in Williamson Act contracts in 2003, for a total of 692,503 acres (California Department of Conservation, 2004). However, the county has been experiencing rapid population growth and associated pressure to convert farmland to urban land uses. The county general plan anticipates an 83 percent increase in population between 1988 and 2010, requiring another 36,358 acres of urban land to accommodate this growth. As a result, it is likely that the competition between urban and agricultural land uses will increase, although County policy is to direct urban growth away from the most productive agricultural land (Stanislaus County, 1992).

There are two WSIP projects located in Stanislaus County. The SJPL System (SJ-3) would involve two pipeline segments—one at the eastern end of the county (west of Oakdale Portal) and a short segment at the western side of the county, south of the community of Vernalis. The SJPL Rehabilitation (SJ-4) project would involve the entire length of pipeline within this county, including the cities of Vernalis and Modesto.

[1] Under a Williamson Act (Land Conservation Act of 1965) contract, the landowner agrees to limit the use of the land to agriculture and compatible uses for a period of at least 10 years. In return, the land is taxed at a rate based on the agricultural production of the land, rather than its real estate market value.

Stanislaus County attributes the success of its agricultural sector to the availability of affordable, high-quality irrigation water, much of which is taken from the Tuolumne River to irrigate farms in the Modesto-Turlock area (Stanislaus County, 1992). Irrigation water is provided through the Turlock and Modesto Irrigation Districts. These two districts, which were formed in 1887 to become the first publicly owned irrigation districts in California, are described below.

Turlock Irrigation District

Turlock Irrigation District (TID) operates about 250 miles of canals and laterals in a service area that encompasses 307 square miles. TID currently supplies irrigation water from the Tuolumne River to 5,800 growers and approximately 150,000 acres of land. TID also supplies electricity to 88,000 customers in a 662-square-mile service area.

In 1893, through its partnership with neighboring Modesto Irrigation District (MID), TID built La Grange Dam, a water diversion dam on the Tuolumne River. In 1923, the districts jointly built the original dam and powerhouse at Don Pedro Reservoir (a new Don Pedro Dam was built and the reservoir expanded substantially in 1970, in cooperation with both TID and the City and County of San Francisco [CCSF]). TID and MID share the costs and benefits of maintaining the dam and reservoir based on the areas they serve; TID receives about two-thirds of the irrigation water and power output from jointly managed facilities, and MID receives about one-third (Turlock Irrigation District, 2007).

Modesto Irrigation District

MID operates 208 miles of canals and pipelines to supply irrigation water to over 3,000 growers farming approximately 60,000 acres of land in Stanislaus County. MID also supplies electricity to about 100,000 customers in a 160-mile service area that includes the greater Modesto area, Waterford, Salida, Mountain House, and parts of Ripon, Escalon, Oakdale, and Riverbank (Modesto Irrigation District, 2007a).

For the past decade, MID has provided about half the drinking water for the city of Modesto. In 2004, MID and the City of Modesto reached an agreement that will eventually double the capacity of the Modesto Regional Water Treatment Plant. This increased capacity could allow MID to supply more water for urban uses, particularly during drought conditions, although city wells will continue to provide a substantial amount of Modesto's drinking water (Modesto Irrigation District, 2007b).

San Joaquin County

San Joaquin County has the most Prime Farmland and the highest agricultural production of any county in the study area. In 2003, it ranked sixth in California for the value of its agricultural production, which was almost $1.5 billion. The county's leading commodities include milk, grapes, almonds, tomatoes and cherries. In 2004, despite a 5 percent drop in the harvested acreage, the total production value increased 9 percent, bringing the gross agricultural production to $1.6 billion (California Department of Finance, 2003).

More than 45 percent of San Joaquin County's total land area (912,601 acres) consists of Prime Farmland. There are also substantial amounts of Farmland of Statewide Importance (10.1 percent), Unique Farmland (6.8 percent), Farmland of Local Importance (6.2 percent), and Grazing Land (16.3 percent). Almost 85 percent of the county is mapped as some type of important farmland (California Department of Conservation, 2005b).

In 2002, 812,629 acres of land were in farms, the total cropland was 574,752 acres, and the irrigated cropland comprised 520,172 acres. There were over 4,000 farms, with an average size of 202 acres. In 2003, San Joaquin County had 334,762 acres of Prime Farmland and 146,680 acres of nonprime farmland participating in the Williamson Act (California Department of Conservation, 2004). The remaining 60,131 acres of the total 541,573 acres enrolled were designated as Farmland Security Zones.[2]

Bay Area housing prices have lead to the construction of "bedroom" suburbs in outlying areas of San Joaquin County, increasing the pressure to convert farmland to urban uses. The County General Plan encourages the preservation of farmland and discourages incompatible uses in agricultural areas (San Joaquin County, 1992).

WSIP project components that are located in San Joaquin County include the westernmost portion of the proposed SJPL System project (SJ-3), which would cross Prime Farmland and the Delta-Mendota Canal before terminating at Tesla Portal, and the proposed Lawrence Livermore facility (SJ-2), located on grazing lands in the southernmost section of the county. The Advanced Disinfection (SJ-1), SJPL Rehabilitation (SJ-4), and Tesla Portal Disinfection (SJ-5) projects are also located in this county.

Alameda County

In 2003, Alameda County ranked 49th in California for the value of its agricultural production, which was approximately $37 million. Its leading commodities include nursery products, wine grapes, cattle, range pasture, alfalfa, and hay. The gross agricultural output for 2004 was $40 million, a 7.6 percent increase from 2003 (California Department of Finance, 2003).

While only about 1 percent of Alameda County's total land area (525,338 acres) is classified as Prime Farmland, almost 47 percent is devoted to Grazing Land. Farmland of Statewide Importance (0.3 percent) and Unique Farmland (0.4 percent) comprise the remainder of the important farmland in the county (California Department of Conservation, 2005a). In 2003, Alameda County enrolled a total of 134,332 acres of farmland in the Williamson Act—9,968 acres of Prime Farmland and 124,364 acres of nonprime farmland (California Department of Conservation, 2004).

[2] A Farmland Security Zone is a contract between a private landowner and a County that restricts land to agricultural or open space uses for a minimum initial term of 20 years. Like a Williamson Act contract, Farmland Security Zone contracts self-renew for an additional year annually; unless either party files a notice of nonrenewal, the contract is automatically renewed each year for the 20-year term.

All of the Sunol Valley Region projects (SV-1 through SV-6) in addition to the BDPL Reliability Upgrade project (BD-1) are located in Alameda County. The Sunol Valley Region projects are located on SFPUC watershed lands that are classified as Grazing Lands, although some areas of Unique Farmland are mapped along Alameda Creek between San Antonio Creek and the Sunol Valley Water Treatment Plant (WTP). The Bay Division Region projects lie in urbanized areas and the salt evaporators and marshlands adjacent to San Francisco Bay.

Local jurisdictions within Alameda County that are potentially affected by these WSIP project components include Fremont, and Newark. Agricultural resources in these local jurisdictions are briefly described below.

City of Fremont

The Baylands District in Fremont is planned for open space and agricultural uses, with the exception of a possible future waste facility. Salt production is considered an agricultural use, and salt ponds cover approximately 8,800 acres in Fremont. In addition, the Northern Plain Planning Area has 400 acres of privately owned farmland, including Patterson Ranch, as well as the 200-acre Ardenwood Regional Preserve, a working historic farm owned by the City and managed by the East Bay Regional Park District. The Land Use Plan for this area indicates a 150-acre open space easement for agricultural purposes; however, the City is studying potential future urban development in this area. Fremont's General Plan also states that some agricultural lands are targeted for incorporation by the National Wildlife Refuge. The Hills Area of Fremont includes lands owned by the CCSF, as well as the unincorporated Vargas Plateau East, which Fremont plans to incorporate. This area, which is designated for agricultural use by Alameda County, has productive agricultural land used for grazing, over half of which is under Williamson Act contracts (City of Fremont, 1991).

City of Newark

Although Newark is historically an agricultural area, only a small area of prime agricultural lands remains cultivated today. Over 3,000 acres of lands in the western and southwestern parts of Newark are designated as Open Spaces of Statewide Significance, and most are currently under Williamson Act contract. The Draft EIR for the general plan update (March 1992) indicates that portions of both Prime Farmland and Open Spaces of Statewide Significance will be converted to urban use at some point in the future; however, the existence of the Williamson Act contracts will hinder rapid conversion. The general plan update envisions that salt ponds will remain as resource preservation lands in the future (City of Newark, 1992).

Santa Clara County

In 2003, Santa Clara County ranked 28th in California for the value of its agricultural production, which was about $241 million. Its leading commodities were nursery crops, mushrooms, peppers, cut flowers, and cattle. In 2004, Santa Clara experienced a 7 percent increase in its agricultural production value, bringing the total to $258 million (California Department of Finance, 2003).

Just over half (51.6 percent) of Santa Clara County's 835,226 acres is mapped as important farmland. The majority (46.5 percent of all county land) is designated as Grazing Land. Prime Farmland constitutes 3.5 percent of the county's total area, followed by Farmland of Local Importance (0.9 percent), Farmland of Statewide Importance (0.5 percent), and Unique Farmland (0.2 percent). The majority of the Prime Farmland is located along the Highway 101 corridor between San Jose and Gilroy, at the southern end of the county (California Department of Conservation, 2005d). In 2003, Santa Clara County had a total of 330,769 acres under Williamson Act contracts. Of these, 11,396 acres were considered Prime Farmland, and 319,374 acres were nonprime (California Department of Conservation, 2004).

WSIP projects that lie within Santa Clara County include portions of the Bay Division Pipeline improvement projects (BDPL Reliability Upgrade, BD-1; BDPL 3 and 4 Crossovers, BD-2; and BDPL 3 and 4 Seismic Upgrade at Hayward Fault, BD-3) and the Calaveras Dam project (SV-2). The cities in Santa Clara County that could be affected by WSIP components include Milpitas, San Jose, Mountain View, Santa Clara, Sunnyvale, Los Altos, and Palo Alto. Sunnyvale, Los Altos, Palo Alto, and Santa Clara are urbanized, with few remaining agricultural lands. Agricultural resources in the other cities are briefly described below.

City of Milpitas

In Milpitas, along Coyote Creek, an area of land is used for growing a variety of truck and berry field crops, including peppers, lettuce, squash, melons, and corn (City of Milpitas, 2002).

City of San Jose

The City of San Jose, in conjunction with Santa Clara County, has policies in place to preserve its remaining agricultural land uses, including grazing, dairying, livestock raising, feedlots, orchards, row crops, nursery stock, flower growing, ancillary residential uses, ancillary commercial uses, and the processing of agricultural products. The Coyote Valley Urban Reserve allows only agricultural and rural residential land uses, and these are the predominate uses in the area (City of San Jose, 2005).

City of Mountain View

Agricultural resources in Mountain View include a community garden as well as Deer Hollow Farm, a 10-acre working farm. According to the Mountain View General Plan, the City has adopted an agricultural district to preserve land for agricultural use. Two properties (45 acres and 135 acres) in Mountain View are designated as prime agricultural lands, and seven other sites totaling 55.1 acres are designated for agricultural purposes (City of Mountain View, 1992).

San Mateo County

In 2003, San Mateo County ranked 31st in California for the value of its agricultural production, which was approximately $178 million. The county's leading commodities include nursery plants, mushrooms, cut flowers, and Brussels sprouts. The county's gross agricultural output in 2004 was $181.5 million (California Department of Finance, 2003).

Grazing Land constitutes 13 percent of San Mateo County's total land area (353,449 acres)—the majority of the important farmland mapped in the county. Farmland of Local Importance (1.1 percent), Unique Farmland (0.8 percent), Prime Farmland (0.7 percent), and Farmland of State Importance (0.1 percent) make up the remaining acreage of important farmland in the county. San Mateo County's Prime and Unique Farmland and Farmland of Statewide Importance are concentrated along the Pacific coast and coastal valleys (California Department of Conservation, 2005c). In 2003, San Mateo County enrolled 3,070 acres of Prime Farmland and 43,988 acres of nonprime farmland in the Williamson Act, for a total of 47,058 acres (California Department of Conservation, 2004).

WSIP project components that fall within San Mateo County include portions of two Bay Division Region projects (BDPL Reliability Upgrade, BD-1, and BDPL 3 and 4 Crossovers, BD-2) and all of the Peninsula Region projects (PN-1 through PN-5). Portions of the SAPL 3 Installation project (SF-1) are also located in San Mateo County.

The cities in San Mateo County that could be affected by WSIP project components include East Palo Alto, Menlo Park, Atherton, Redwood City, Woodside, San Carlos, San Mateo, Hillsborough, Burlingame, Millbrae, San Bruno, South San Francisco, Colma, Brisbane, and Daly City. Agricultural uses, where they remain in these cities, are described below.

City of East Palo Alto

Agriculture was an important part of East Palo Alto's history, and the general plan includes policies to preserve open space lands that are of economic use, in particular the Weeks and Gardens/Gateway III neighborhoods. Examples of uses on these lands are nurseries, horticulture, and community gardens. The plan states that the City will allow the establishment and continuation of these open space activities, while ensuring that the surrounding planned land uses are compatible (City of East Palo Alto, 1999).

Town of Colma

Colma contains approximately 113 acres of agricultural lands, dedicated mainly to nurseries, greenhouse operations, open field flowers, and vegetable plots. All of the agricultural land is privately maintained open space (Town of Colma, 2000).

City of Daly City

Daly City contains three neighborhoods that have agricultural lands: the Bayshore (5.50 acres), Original Daly City (0.55 acres), and Hillside (4.02 acres) neighborhoods. Included in the agricultural designation are greenhouses, row crops, cut flowers, and livestock grazing (City of Daly City, 1987).

San Francisco County

In 2003, San Francisco County ranked 57th (out of 58 counties) in California for the value of its agricultural production, which was less than $2 million. The county's leading commodities were vegetables and cut flowers (California Department of Finance, 2003). The CCSF does not

participate in the Williamson Act and does not have the minimum amount of farmland required to participate in the Farmland Mapping and Monitoring Program.

Regulatory Framework

Farmland in California is protected mainly by federal and state legislation, although local policies and ordinances are also in place at the county or city level to control uses on or adjacent to farmland. The main federal legislation protecting agriculture is the Farmland Protection and Policy Act, which requires an evaluation of the relative value of farmland potentially affected by decisions sponsored in whole or part by the federal government. The Farmland Protection and Policy Act would not apply to the proposed program, however, since the WSIP is not a federal government action or program. The state and local regulatory setting for agricultural resources in the study area is described below.

California State Legislation

The California Land Conservation Act of 1965—commonly referred to as the Williamson Act—enables local governments to enter into contracts with private landowners to ensure that specific parcels are kept in agricultural or open space use as "agricultural preserves." In return, landowners receive lower property tax assessments than they would otherwise receive. Williamson Act contracts are typically renewed annually for a term of 10 additional years.

"Agricultural preserve" is defined broadly in the Williamson Act to include areas devoted to either agricultural, recreational, or open space use, or any combination of these uses. Open space use is defined in the act as "the use or maintenance of land in a manner that preserves its natural characteristics, beauty, or openness for the benefit and enjoyment of the public, to provide essential habitat for wildlife, or for the solar evaporation of seawater in the course of salt production for commercial purposes." The act states that contracted land in open space use must be within a scenic highway corridor, a wildlife habitat area, a salt pond, a managed wetland area, or a submerged area. Changes in the terms of a specific Williamson Act contract must go through the planning and zoning department approval process of the appropriate local jurisdiction before they can be enacted.

Williamson Act contracts may be cancelled only with the approval of a local board or council. Cancellation of the contract may occur if it is determined to be in the public interest (i.e., other public concerns outweigh the objectives of having the land under contract, and there is no other suitable land available for the proposed alternative use), or if all of the following conditions are met: (1) a notice of nonrenewal has been served; (2) the cancellation is not likely to result in the removal of adjacent lands from agricultural use; (3) the cancellation is for an alternative use that is consistent with the relevant city or county general plan; (4) cancellation will not result in discontinuous patterns of urban development; and (5) there is no suitable uncontracted land available nearby for the proposed alternative purpose. The property owner generally pays a fee of 12.5 percent of the "cancellation" value of the property once cancellation of the contract has been authorized.

Local Plans and Policies

Refer to Section 4.2, Plans and Policies, regarding the application of local land use plans and policies to implementation of the WSIP.

4.13.2 Impacts

Significance Criteria

The CCSF has not formally adopted significance standards for impacts related to agricultural resources, but generally considers that implementation of the proposed program would have a agricultural resource impact if it were to:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Department of Conservation, to a non-agricultural use[3] (Evaluated in this section)
- Conflict with existing zoning for agricultural use, or a Williamson Act contract (Evaluated in this section)
- Involve other changes in the existing environment which, due to their location or nature, could result in the conversion of Farmland of Statewide Importance to non-agricultural use (Evaluated in this section)

CEQA Guidelines Section 15206 states that a project would cause a significant impact if it resulted in the cancellation of a Williamson Act contract for parcels of 100 acres or more. No comparable threshold is available in state or city guidance for the loss or conversion of Prime Farmland.

Approach to Analysis

For the purpose of this analysis, each program element was considered in relation to farmland in the immediate site vicinity to identify any potential disruption that might be caused temporarily (during project construction) or permanently (due to project siting or operations on land that is currently in agricultural use). In addition, each project component was examined for its potential to affect land under Williamson Act contract.

Impact Summary by Region

Table 4.13-3 presents a summary of potential impacts on agricultural resources associated with the WSIP projects.

[3] Based on the definition of agricultural use contained in the Williamson Act, conversion to "non-agricultural use" would mean that land previously used for producing an agricultural commodity for commercial purposes is no longer capable of serving this purpose.

TABLE 4.13-3
POTENTIAL IMPACTS AND SIGNIFICANCE – AGRICULTURAL RESOURCES

Projects	Project Number	Impact 4.13-1: Temporary conflicts with established agricultural resources	Impact 4.13-2: Conversion of farmlands to non-agricultural uses
San Joaquin Region			
Advanced Disinfection	SJ-1	N/A	N/A
Lawrence Livermore Supply Improvements	SJ-2	N/A	N/A
San Joaquin Pipeline System	SJ-3	PSM	PSM
Rehabilitation of Existing San Joaquin Pipelines	SJ-4	PSM	N/A
Tesla Portal Disinfection Station	SJ-5	N/A	N/A
Sunol Valley Region			
Alameda Creek Fishery Enhancement	SV-1	PSM	N/A
Calaveras Dam Replacement	SV-2	PSM	LS
Additional 40-mgd Treated Water Supply	SV-3	PSM	PSM
New Irvington Tunnel	SV-4	PSM	N/A
SVWTP – Treated Water Reservoirs	SV-5	N/A	PSM
San Antonio Backup Pipeline	SV-6	PSM	N/A
Bay Division Region			
Bay Division Pipeline Reliability Upgrade	BD-1	N/A	N/A
BDPL Nos. 3 and 4 Crossovers	BD-2	N/A	N/A
Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault	BD-3	N/A	N/A
Peninsula Region			
Baden and San Pedro Valve Lots Improvements	PN-1	N/A	N/A
Crystal Springs/San Andreas Transmission Upgrade	PN-2	N/A	N/A
HTWTP Long-Term Improvements	PN-3	N/A	N/A
Lower Crystal Springs Dam Improvements	PN-4	N/A	N/A
Pulgas Balancing Reservoir Rehabilitation	PN-5	N/A	N/A
San Francisco Region			
San Andreas Pipeline No. 3 Installation	SF-1	N/A	N/A
Groundwater Projects	SF-2	N/A	N/A
Recycled Water Projects	SF-3	N/A	N/A

LS = Less than Significant impact, no mitigation required
PSM= Potentially Significant impact, can be mitigated to less than significant
N/A = Not Applicable

Construction Impacts

Impact 4.13-1: Temporary conflicts with established agricultural resources.

Various elements of the WSIP have the potential to affect agricultural resources in different ways. For example, open-trench construction of pipelines could temporarily disrupt production of field crops or orchards. Other construction activities could affect agricultural resources if they disrupted access to actively farmed parcels. In some areas, the loss of even a small amount of

Prime or Unique Farmland could contribute to significant cumulative impacts on agricultural resources if other projects have removed or will remove substantial amounts of important farmland from the area. These types of potential impacts on agricultural resources associated with the WSIP projects are identified by region below.

Construction of pipelines, tunnels, dams, and other WSIP facilities could disrupt agricultural activities in the study area by excavating in areas used for agricultural purposes, by affecting access to agricultural lands, or by disrupting utilities that serve agricultural uses. This analysis considers a project's impact to be significant if it would be incompatible with existing zoning for agricultural uses in the project vicinity. Temporary environmental impacts that would occur during construction (e.g., noise, dust, traffic) or conflicts with local adopted policies are used as indicators of incompatibility. Construction activities that could affect agricultural resources are described by facility type below.

Pipelines. Depending upon the location of staging areas and the seasonal timing of pipeline construction, cut and cover construction has the potential to cause adverse (but temporary) impacts on agricultural activities, including the potential loss of seasonal crops grown within and around the right-of-way. In addition, road and utility crossings could temporarily affect access to or provision of power or water to actively farmed land. These impacts would be relatively minor (i.e., confined to a linear strip the width of pipeline right-of-way or to a temporary construction easement area) and brief (less than one growing season) and could be reduced to a less-than-significant level with appropriate mitigation measures.

Tunnels. Unlike pipeline construction, tunneling would not affect sensitive agricultural resources at the surface, except in the vicinity of entry and exit portal locations, which would serve as construction staging areas. Agricultural resources could be adversely affected if the portals were located on important farmlands, or if access to nearby farmland were disrupted by construction traffic or grading for new construction access roads. These impacts would be temporary and less than significant after implementation of normal construction mitigation measures, unless portal siting would convert important farmland or lands under Williamson Act contract to non-agricultural use.

Vaults, Valve Lots, and Crossover Facilities. These facilities would be constructed at isolated locations near existing SFPUC facilities along the regional system. Unless they occurred on important farmland or on land zoned for agricultural use or under Williamson Act contract, these facilities are unlikely to affect agricultural resources, and any impacts would be less than significant.

Pump Stations. Upgrading existing pump stations, which would involve removing equipment and replacing it with new equipment, would not affect agricultural resources. New pump stations could affect agricultural resources if they were located on important farmland or on land zoned for agricultural use or under Williamson Act contract, in which case the impacts could be potentially significant.

Treatment Facilities. The proposed upgrades at existing treatment plants would occur within the property boundaries and would not affect agricultural resources. Impacts associated with a new facility would depend on the site location in relation to important farmlands and lands under Williamson Act contracts.

Storage Facilities. The WSIP improvements to water storage facilities could temporarily disrupt agricultural activities in the area (e.g., if grazing lands are located in the vicinity of the construction project) or significantly affect agricultural resources (e.g., if the project would entail flooding important farmland, land zoned for agricultural use, or land under Williamson Act contract).

San Joaquin Region

Impact 4.13-1: Temporary conflicts with established agricultural resources		
Advanced Disinfection	SJ-1	N/A
Lawrence Livermore	SJ-2	N/A
SJPL System	SJ-3	PSM
SJPL Rehabilitation	SJ-4	PSM
Tesla Portal Disinfection	SJ-5	N/A

Of the five WSIP projects within the San Joaquin Region, most construction activities would be associated with the San Joaquin Pipeline projects (SJPL System, SJ-3, and SJPL Rehabilitation, SJ-4). Pipeline and crossover construction and associated staging areas for the SJPL System project would temporarily disrupt agricultural activities in the vicinity of the two proposed pipeline segments. Construction would take place over three years. Most construction would occur within the existing SFPUC right-of-way, but up to an additional 200-foot width of temporary or additional right-of-way could be required north of the existing right-of-way. (Additional land might also be needed for crossover facilities and associated power supply facilities, depending on the final locations of these facilities. This impact is discussed under Impact 4.13-2.)

These construction activities could temporarily disrupt the production of field crops on important farmland within and adjacent to the right-of-way easement and staging areas, or cause temporary access conflicts for agricultural operators in the vicinity. Without mitigation, these temporary impacts could be *potentially significant* in some areas, especially the Prime Farmland east of Tesla Portal in the southern portions of Stanislaus and San Joaquin Counties. With implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, traffic, air quality, and noise); construction mitigation measures for traffic, noise, and air quality (described in Section 4.8, Transportation, Traffic, and Circulation; Section 4.9, Air Quality; and Section 4.10, Noise and Vibration); as well as supplemental noticing and soil stockpiling measures (Measure 4.13-1a), it is expected that potentially significant temporary construction impacts could be reduced to a less-than-significant level. The SJPL Rehabilitation project (SJ-4) could require pipeline rehabilitation at any location along the entire 48-mile San Joaquin Pipeline right-of-way, which extends through areas of important farmland in Stanislaus and San Joaquin Counties. Similar to the SJPL System project (SJ-3), depending on the location of construction work in relation to agricultural lands and activities, impacts could be *potentially significant*, but would likely be reduced to a less-than-significant level with implementation of SFPUC Construction Measures #1, #3, #5, and #6 (neighborhood notice, traffic, air quality, and noise); construction mitigation measures for traffic, noise, and air quality (described in Section 4.8, Transportation, Traffic, and Circulation;

Section 4.9, Air Quality; and Section 4.10, Noise and Vibration), and supplemental noticing and soil stockpiling measures (Measure 4.13-1a).

Two projects (Advanced Disinfection, SJ-1, and Tesla Portal Disinfection, SJ-5) would involve installing disinfection facilities at existing SFPUC facility sites that are currently used for water system purposes, and thus would not affect agricultural resources. The Lawrence Livermore project (SJ-2) would construct new water filtration facilities for the Lawrence Livermore Laboratory (at Thomas Shaft) in San Joaquin County and would not affect any existing agricultural uses or important farmlands. Therefore, this impact would *not apply* to these projects.

Sunol Valley Region

Impact 4.13-1: Temporary conflicts with established agricultural resources		
Alameda Creek Fishery	SV-1	PSM
Calaveras Dam	SV-2	PSM
40-mgd Treated Water	SV-3	PSM
New Irvington Tunnel	SV-4	PSM
Treated Water Reservoirs	SV-5	N/A
SABUP	SV-6	PSM

Construction of the 40-mgd Treated Water (SV-3) and SABUP (SV-6) projects would include new pipelines from the Sunol Valley WTP to the Alameda Siphons or new Irvington Tunnel and from San Antonio Reservoir to the San Antonio Pump Station. Construction of these pipelines could disrupt the sensitive area of agricultural soils mapped as Unique Farmland in the bottomlands adjacent to Alameda Creek in this area (California Department of Conservation, 2002), a *potentially significant* impact. Construction of the New Irvington Tunnel project (SV-4) could also affect identified agricultural soils in the Alameda Creek vicinity, depending on the ultimate location of staging areas and access roads. In addition, depending on the design of the Alameda Creek Fishery project (SV-1), construction of facilities such as a pipeline, associated staging areas, and pump stations could also disrupt these identified agricultural soils. Such disruption would be temporary, lasting for the duration of the construction period only. Similarly, depending on design and location of staging areas, the Calaveras Dam project (SV-2) could disrupt areas used for grazing. Potential impacts of the Alameda Creek Fishery, Calaveras Dam, and New Irvington Tunnel projects on agricultural resources (including consistency with any affected Williamson Act contracts) would be evaluated in more detail as part of separate, project-level CEQA review. It is expected that these *potentially significant* impacts could be mitigated to a less-than-significant level with implementation of avoidance or soil stockpiling measures, unless other actions are required as a result of contracts affecting use of the property or under specific agreements with individual landowners (Measure 4.13-1b).

Construction of the Treated Water Reservoirs project (SV-5) would not affect identified agricultural resources in the Sunol Valley. Construction activities associated with this project (where applicable) would occur entirely within the fenceline at the existing CCSF-owned Sunol Valley WTP site, which is used for water system purposes. Therefore, this impact would *not apply* to this project.

Bay Division Region

Impact 4.13-1: Temporary conflicts with established agricultural resources		
BDPL Reliability Upgrade	BD-1	N/A
BDPL 3 and 4 Crossovers	BD-2	N/A
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	N/A

The BDPL Reliability Upgrade project (BD-1) would be located in areas that are not mapped as important farmland. The open-trench sections of the pipeline would be constructed within the existing SFPUC right-of-way through urbanized areas. Similarly, none of the proposed locations for the BDPL 3 and 4 Crossovers project (BD-2) would affect agricultural resources, and the BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3) would not disturb important farmlands or existing agricultural activities. Therefore, this impact would *not apply* to the projects in this region.

Peninsula Region

Impact 4.13-1: Temporary conflicts with established agricultural resources		
Baden and San Pedro Valve Lots	PN-1	N/A
CS/SA Transmission	PN-2	N/A
HTWTP Long-Term	PN-3	N/A
Lower Crystal Springs Dam	PN-4	N/A
Pulgas Balancing Reservoir	PN-5	N/A

All of the Peninsula Region projects (PN-1 through PN-5) would occur on CCSF-owned sites that are not used for agricultural activities. New controls and valves would be installed at existing SFPUC facilities in urbanized locations, which are not important farmlands. The CS/SA Transmission project (PN-2) could entail construction of a new parallel pipeline on undeveloped land within the Peninsula watershed, but would not affect important farmland or disrupt existing agricultural uses. Therefore, this impact would *not apply* to the projects in this region.

San Francisco Region

Impact 4.13-1: Temporary conflicts with established agricultural resources		
SAPL 3 Installation	SF-1	N/A
Groundwater Projects	SF-2	N/A
Recycled Water Projects	SF-3	N/A

No agricultural activities would be affected by any of the program components in the urbanized San Francisco Region. Therefore, this impact would *not apply* to the projects in this region.

Operations, Siting, and Design Impacts

Impact 4.13-2: Conversion of farmlands to non-agricultural uses.

This section addresses potential impacts on agricultural resources associated with the siting and permanent operation of WSIP facilities in each region. In some areas, the loss of Prime or Unique Farmland could contribute to significant cumulative impacts on agricultural resources if other projects in the area have removed or would remove substantial amounts of important farmland.

These types of potential impacts on agricultural resources associated with the WSIP projects are identified by region below.

San Joaquin Region

Impact 4.13-2: Conversion of farmlands to non-agricultural uses		
Advanced Disinfection	SJ-1	N/A
Lawrence Livermore	SJ-2	N/A
SJPL System	SJ-3	PSM
SJPL Rehabilitation	SJ-4	N/A
Tesla Portal Disinfection	SJ-5	N/A

Additional land might be acquired to site the SJPL System project (SJ-3) crossover facilities and associated power supply facilities. Depending on the final locations selected, the siting of these facilities could adversely affect important farmland and result in its conversion to non-agricultural use, a *potentially significant* impact. Such impacts could be reduced to a less-than-significant level by siting facilities to avoid these lands or adopting a permanent set-aside for an equivalent acreage of similarly valued farmland in the area (Measure 4.13-2). The additional land required for these facilities might be under a Williamson Act contract, but would be less than 100 acres; therefore, acquisition of these lands would not cause a significant impact as defined by CEQA.

None of the other WSIP projects in the San Joaquin Region (Advanced Disinfection, SJ-1; Lawrence Livermore, SJ-2; SJPL Rehabilitation, SJ-4; and Tesla Portal Disinfection, SJ-5) would result in the permanent conversion of important agricultural land, land zoned for agricultural use, or land under Williamson Act contract to non-agricultural use. Therefore, this impact would *not apply* to these projects.

Sunol Valley Region

Impact 4.13-2: Conversion of farmlands to non-agricultural uses		
Alameda Creek Fishery	SV-1	N/A
Calaveras Dam	SV-2	LS
40-mgd Treated Water	SV-3	PSM
New Irvington Tunnel	SV-4	N/A
Treated Water Reservoirs	SV-5	PSM
SABUP	SV-6	N/A

The Sunol Valley contains important farmland and established agricultural uses that could be affected by WSIP components in Alameda County. The Calaveras Dam project (SV-2) has the potential to submerge approximately 100 acres of grasslands, portions of which may be potential Grazing Land within the SFPUC watershed. Extensive earthmoving activities would also occur within this area, since it has been designated as a borrow area. Because this area is not currently used for agricultural activities and the soils are not prime, unique, or of statewide importance and because the land is not under a Williamson Act contract, this impact would be *less than significant*.

Under the 40-mgd Treated Water (SV-3) and Treated Water Reservoirs (SV-5) projects, proposed basins or reservoirs could require the use of approximately two acres of land adjacent to the existing Sunol Valley WTP. Depending on their design, these facilities could convert potential agricultural land, including soils mapped as Unique Farmland, to non-agricultural uses or disrupt existing agricultural uses. It is expected that avoiding the siting of facilities on these lands or

adopting a permanent set-aside for an equivalent acreage of similarly valued farmland in the area (Measure 4.13-2) would reduce this *potentially significant* impact to a less-than-significant level.

The siting and operation of the remaining projects in the Sunol Valley Region (Alameda Creek Fishery, SV-1; New Irvington Tunnel, SV-4; and SABUP, SV-6) would have no effect on agricultural resources, as they would all take place within the boundaries of the existing SFPUC water system (or, in the case of pipelines, disruption would be temporary, and long-term agricultural uses would not be affected). Therefore, this impact would *not apply* to these projects.

Bay Division, Peninsula, and San Francisco Regions

Impact 4.13-2: Conversion of farmlands to non-agricultural uses		
BDPL Reliability Upgrade	BD-1	N/A
BDPL 3 and 4 Crossovers	BD-2	N/A
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	N/A
Baden and San Pedro Valve Lots	PN-1	N/A
CS/SA Transmission	PN-2	N/A
HTWTP Long-Term	PN-3	N/A
Lower Crystal Springs Dam	PN-4	N/A
Pulgas Balancing Reservoir	PN-5	N/A
SAPL 3 Installation	SF-1	N/A
Groundwater Projects	SF-2	N/A
Recycled Water Projects	SF-3	N/A

None of the proposed WSIP projects in these regions would result in the conversion of Prime or Unique Farmland or Farmland of Statewide Importance to non-agricultural uses, nor would they conflict with agricultural zoning or Williamson Act contracts. Therefore, this impact would *not apply* to the projects in these regions.

4.13.3 References – Agricultural Resources

California Department of Conservation, Division of Land Resource Protection, *Important Farmland Acreage Summary,* 2002.

California Department of Conservation, *Stanislaus County: 2000–2002 Land Use Conversion,* 2003.

California Department of Conservation, *The California Land Conservation (Williamson) Act: 2004 Status Report,* 2004.

California Department of Conservation, *Alameda County: 2002–2004 Land Use Conversion,* 2005a.

California Department of Conservation, *San Joaquin County: 2002–2004 Land Use Conversion,* 2005b.

California Department of Conservation, *San Mateo County: 2002–2004 Land Use Conversion,* 2005c.

California Department of Conservation, *Santa Clara County: 2002–2004 Land Use Conversion*, 2005d.

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4.14 Hazards

4.14 Hazards

If released to the soil, groundwater, or air, hazardous materials and wastes can result in public health hazards. Hazardous materials, defined in Section 25501(h) of the California Health and Safety Code, are materials that, because of their quantity, concentration, or physical or chemical characteristics, pose a substantial present or potential hazard to human health and safety or to the environment if released to the workplace or environment. Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications as well as in residential areas to a limited extent. A waste is any material that is relinquished, recycled, or inherently waste-like. In accordance with Title 22 of the California Code of Regulations, Division 4.5, Chapter 11, a waste is considered a hazardous waste if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases) in accordance with the criteria established in Article 3. Article 4 lists specific hazardous wastes and Article 5 identifies specific waste categories, including Resource Conservation and Recovery Act (RCRA) hazardous wastes, non-RCRA hazardous wastes, extremely hazardous wastes, and special wastes.

Environmental screening analyses or environmental database reviews have been performed for several WSIP projects; and the results of these analyses are described below as an indicator of the potential to encounter hazardous materials in the soil and groundwater. The types of sites identified in the environmental databases include permitted hazardous materials uses,[1] environmental cases,[2] and spill sites.[3] For projects where an environmental screening analysis or environmental database review has not been performed, general land uses are described.

4.14.1 Setting

San Joaquin Region

The San Joaquin Pipeline spans previous and current agricultural areas, where the application of pesticides and herbicides may have resulted in soil or shallow groundwater contamination. Underground fuel tanks, including heating oil or fuel tanks at individual farms, adjacent to or near the existing and proposed pipeline alignment may also have affected shallow soil or groundwater quality within the alignment.

The SJPL Rehabilitation project (SJ-4) could include assessment and rehabilitation along any section of the 48-mile San Joaquin Pipeline system. The environmental database review performed for this pipeline system in 2004 (EDR, 2004a) identified a number of permitted hazardous materials uses within 1/4 mile of the pipeline system, primarily concentrated in

1 Permitted hazardous materials uses are facilities that use hazardous materials or handle hazardous wastes but comply with current hazardous materials and hazardous waste regulations.

2 Environmental cases are sites suspected of releasing hazardous substances or that have had cause for hazardous materials investigations and are identified on regulatory agency lists. These are sites where soil and/or groundwater contamination is known or suspected to have occurred.

3 Spill sites are locations where a spill has been reported to the state or federal regulatory agencies. Such spills do not always involve a release of hazardous materials.

Modesto and to the west toward Shackelford Road. The uses considered to have the greatest potential to affect soil and groundwater quality within the pipeline right-of-way are the U.S. Army River Bank Ammunitions Plant site, located near Riverbank, and 43 historical underground storage tank sites.

The U.S. Army River Bank Ammunition Plant site, a government-owned and contractor-operated ammunitions manufacturing plant, is partially located within the San Joaquin Pipeline right-of-way. There are four unlined evaporation ponds, located approximately 1.5 miles north of the plant site and used since 1952 for the disposal of treated effluent. Cyanide, potliner wastes, and other wastes and debris were generated and reportedly disposed of in a landfill in the northeastern portion of the main plant area. Other wastes historically produced at the plant include corrosive wastes (phosphoric acid, sulfuric acid, caustic cleaners), solvents, spent pickle liquids, wastewater containing metals, and nitrates. Hexavalent chromium and cyanide have been identified in groundwater beneath the plant site and beyond the property boundaries, at maximum concentrations of 2,000 micrograms per liter (µg/L) and 9,300 µg/L, respectively. As a result, the U.S. Army Corps of Engineers has been required to permanently connect nearby residential areas relying on groundwater as the principal water source to a potable water source. This facility is a Superfund site undergoing corrective action under RCRA. A Record of Decision mandating a permanent remedy has been developed for this site. Other environmental cases identified within the pipeline corridor include six leaking underground storage tank sites, five of which are located within Modesto.

The SJPL System project (SJ-3) would include construction of a 6.4-mile-long pipeline extending from the Oakdale Portal to the west (eastern segment) and 10-mile-long pipeline extending from Tesla Portal to the east (western segment), although this latter segment could be as long as 16.3 miles. Both pipeline segments would be constructed within the existing right-of-way. The database review identified two historical underground storage tank sites within 1/4 mile of the western segment. No permitted hazardous materials uses, environmental cases, or spill sites were identified within 1/4 mile of the eastern segment.

Tesla Portal, where the Advanced Disinfection facility (SJ-1) and Tesla Portal Disinfection project (SJ-5) would be located, is in a rural area; there were no permitted hazardous materials uses, environmental cases, or spill sites identified within one mile of Tesla Portal (Vista Information Solutions, 1999a). No environmental database reviews have been conducted for the Thomas Shaft, where the Lawrence Livermore project (SJ-2) would be constructed. This site is also located in a rural area.

Gas Fields

The western segment of the San Joaquin Pipeline (SJPL System, SJ-3, and SJPL Rehabilitation, SJ-4) passes between the Vernalis and Southwest Vernalis Gas Fields. The alignment is near several plugged and abandoned gas wells in the Southwest Vernalis Field. Active gas wells in the Vernalis Field are more than one mile north of the alignment, although plugged and abandoned dry oil exploration holes are located about 1/2 mile from the alignment.

Sunol Valley Region

Most of the projects in this region would be located within Sunol Valley, which is mostly developed with water facilities, commercial nurseries, and quarries. The environmental database review conducted in 2003 for the New Irvington Tunnel project (SV-4) identified one environmental case within 1/4 mile of the Alameda West Portal (EDR, 2003a). This site had a confirmed release of hazardous materials and was also identified as a leaking underground storage tank site.

The Calaveras Test Site at the end of Marsh Road is located at the south end of Calaveras Reservoir where the Calaveras Dam project (SV-2) would be constructed. The SFPUC leased this 3.2-acre site to various operators between 1948 and 1993; during this time, the site was used for the testing and manufacturing of propellants and explosives (URS, 2004). A number of soil and groundwater investigations at this site have identified solvents, including trichloroethylene, in the groundwater. The Regional Water Quality Control Board (RWQCB) has approved monitored natural attenuation as the preferred remedial approach for the groundwater. In 1996, the plume of trichloroethene identified in the groundwater at this site extended about 730 feet to the northwest of where it originated, but by 2003 the length of the plume decreased to 570 feet. In 2006, the concentration of trichloroethene detected in groundwater was up to 11 µg/L, twice the cleanup level of 5 µg/L (Conestoga-Rovers & Associates, 2006). Solvents and semivolatile organic compounds have not been detected in Calaveras Creek or a nearby water supply well, and volatile organic compounds have not been detected in surface water samples collected from Calaveras Reservoir. Although trichloroethene concentrations have not reached cleanup levels, the RWQCB is preparing to recommend closure of the groundwater contamination case at this site (Johnson, 2007).

No hazardous materials assessments have been prepared for the Alameda Creek Fishery (SV-1), 40-mgd Treated Water (SV-3), Treated Water Reservoirs (SV-5), and SABUP (SV-6) projects, but hazardous materials are used at the Sunol Valley Water Treatment Plant (WTP), where the two treated water projects (SV-3 and SV-5) would be constructed.

Bay Division Region

The WSIP projects proposed in this region are generally located along the existing Bay Division Pipelines Nos. 1 and 2 (northern) alignment or Bay Division Pipelines Nos. 3 and 4 (southern) alignment; these pipelines span geographically different areas and are discussed separately below.

Northern Alignment

The proposed alignment for the BDPL Reliability Upgrade project (BD-1) generally follows the alignment of Bay Division Pipelines Nos. 1 and 2 and passes through residential, commercial, and industrial areas on both sides of San Francisco Bay. The environmental database review conducted for the project in 2003 identified a number of environmental cases, permitted hazardous materials uses, and spill sites within 1/4 mile of the alignment (EDR, 2003a, 2003b). On the east side of the bay, the majority of environmental cases were located in the vicinity of Cherry Street and Central

Avenue and within one mile of the proposed east tunnel portal at the Newark Valve House. Groundwater contamination by dissolved petroleum products or solvents was identified at six environmental cases located within 1/2 mile of the proposed east tunnel portal.

On the west side of the bay, the proposed west tunnel portal and Ravenswood Valve House are located at the site of the former Peninsula Sportsmen's Club. Soil at this site and sediment in the adjacent Cargill Salt Pond and levee have been contaminated by lead shot and clay pigeon debris from former skeet-shooting activities at the gun club. Although the City did not cause the contamination, as the landowner it is responsible for the cleanup in accordance with RWQCB Order No. 01-095 (RWQCB, 2001). Remediation of the site is ongoing, and complete cleanup is expected before 2009.

There are a number of leaking underground storage tank sites as well as sites with documented groundwater contamination within 1/4 mile of the remainder of the alignment on the east side of the bay. These sites are generally concentrated near Willow Road, Marsh Road, El Camino Real, and Canyon Road.

Southern Alignment

The Bay Division Pipelines Nos. 3 and No. 4 traverse the south end of the bay. WSIP projects along this alignment include the BDPL 3 and 4 Crossovers (BD-2) and BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3).

BDPL 3 and 4 Crossovers (BD-2) includes the construction of crossovers at the Guadalupe River, Bear Gulch Reservoir, and Barron Creek sites. Based on the 2003 environmental database review, all identified permitted hazardous materials uses were located approximately 1/4 mile from the crossover locations at Guadalupe River, and there were no identified environmental cases or spill sites within 1/4 mile (EDR, 2003a). There were two permitted hazardous materials uses within 1/4 mile of the Bear Gulch site, but no environmental cases or spill sites in this area. The Barron Creek site is near the Hillview-Porter regional groundwater plume, in which solvents have been identified. There were also two leaking underground storage tank sites and one case under the jurisdiction of the RWQCB within 1/4 mile of this site.

As part of a screening analysis, a database search was conducted to identify high- and medium-priority environmental cases[4] along Bay Division Pipelines Nos. 3 and 4, including the BDPL 3

[4] High-priority environmental cases are those sites identified as undergoing remediation or enforcement actions under the federal Superfund or RCRA regulations. These are sites identified on the National Priorities List (NPL), RCRA Corrective Action Sites, and RCRA Administrative Action Tracking System. A Record of Decision (ROD), which mandates a permanent remedy, has been developed for each of the NPL sites, and these sites are also tracked in the ROD database. Medium-priority environmental cases are those sites where a confirmed or potential release of hazardous materials has occurred and there is the potential to encounter hazardous materials during construction, but the contamination is not severe enough to warrant action under federal regulations. These include sites undergoing enforcement actions under the jurisdiction of state regulatory agencies, including the San Francisco Bay RWQCB and the California Department of Toxic Substances Control, as well as those sites tracked in the federal Comprehensive Environmental Response, Compensation, and Liability Information System as potential NPL sites. Toxic pit sites, waste management units, and sites with a reported release that could threaten a drinking water source are also included in this category.

and 4 Seismic Upgrade at Hayward Fault (BD-3) project location (EDR, 2003a). There were no high- or medium-priority environmental cases within 1/4 mile of the BD-3 improvements. Additional permitted hazardous materials uses, environmental cases, and spill sites may be located within 1/4 mile of these proposed improvements, but the existing environmental assessment only identified specific high-priority environmental cases.

Peninsula Region

The Peninsula Region includes open space lands of the Peninsula watershed as well as developed urban areas. The environmental database review conducted in 1999 for the Harry Tracy WTP, where the HTWTP Long-Term project (PN-3) would be constructed, reported a 1993 leak of motor vehicle fuel from an underground storage tank at the treatment plant (Vista Information Solutions, 1999c). The case was reported to affect soil only and was closed in 1995 after excavation and disposal of the contaminated soil. The Harry Tracy WTP site was not identified as a RCRA-permitted facility. The database review identified one leaking underground storage tank site within a one-mile radius of the site.

The Pulgas Balancing Reservoir site (PN-5) is located in a rural area. The environmental database review conducted in 1999 did not identify this site as an environmental case or a permitted hazardous materials use (Vista Information Solutions, 1999b). No environmental cases were identified within a one-mile radius of the site.

An environmental database review has not been conducted for the Baden and San Pedro Valve Lots (PN-1), CS/SA Transmission (PN-2), or Lower Crystal Springs Dam (PN-4) projects. There is a low potential to encounter soil or groundwater contamination during construction of the CS/SA Transmission and Lower Crystal Springs Dam projects because they are located on watershed land. However, there is the potential to encounter soil and groundwater contamination during the construction of the Baden and San Pedro Valve Lots project, which is partially located in urban areas.

San Francisco Region

The San Francisco Region projects are primarily located in San Francisco, although the SAPL 3 Installation (SF-1) extends to Highway 82 in Daly City, and the Regional Groundwater Projects (SF-2) are located outside of the San Francisco, in San Mateo County.

An environmental database review has been conducted for the SAPL 3 Installation project (SF-1). Environmental database reviews have not been conducted specifically for the Groundwater Projects (SF-2) or Recycled Water Projects (SF-3), although there is documented soil contamination at the Pacific Rod and Gun Club near Lake Merced, which is part of the Local Groundwater Projects. The environmental database review and Pacific Rod and Gun Club are discussed below.

San Andreas Pipeline No. 3 Installation Vicinity

Mixed residential and commercial land uses surround the southern end of the SAPL 3 Installation (SF-1) pipeline alignment for approximately 1,000 feet. The remainder of the alignment north to Sunset Reservoir traverses residential or golf course uses. The environmental database review conducted for the SAPL 3 Installation project identified leaking underground storage tank sites and additional environmental cases within 1/4 mile of the pipeline alignments under consideration (EDR, 2004b).

Pacific Rod and Gun Club

The Pacific Rod and Gun Club, located on 14 acres of property along the shores of Lake Merced (South Lake) off of John Muir Drive, has been used for skeet and trap shooting since 1928. Although the use of lead shot was discontinued in 1994 and biodegradable targets have been used since 2000, soil and sediment quality have been affected by the historical use of lead shot and clay pigeons at this facility; the primary constituents of concern are lead, arsenic, copper, and polynuclear aromatic hydrocarbons (URS, 2005).

Regulatory Framework

Hazardous materials and hazardous wastes are subject to numerous federal, state, and local laws and regulations intended to protect health and safety and the environment. The major federal, state, and regional agencies enforcing these regulations include the U.S. Environmental Protection Agency (U.S. EPA, federal); the DTSC and the RWQCB of the California Environmental Protection Agency (state); and the Bay Area Air Quality Management District (BAAQMD, regional). The state and federal regulatory framework is described in Appendix G.

In accordance Chapter 6.11 of the Health and Safety Code (Section 25404, et seq.), local regulatory agencies enforce many federal and state regulatory programs through the Certified Unified Program Agency (CUPA) program, including:

- 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])
- Hazardous waste generator requirements (Chapter 6.5 of the Health and Safety Code, Section 25100 et seq.)

Several county and city agencies within the WSIP study area are CUPA agencies. The environmental health departments in Tuolumne, Stanislaus, San Joaquin, Alameda, Santa Clara, and San Mateo Counties are the CUPA agencies in these counties. Local fire departments are the CUPA agencies in Newark, Fremont, and Santa Clara. Some local fire departments (Santa Clara County and Palo Alto) are participating agencies that support the CUPA agencies. The San Francisco Department of Public Health is the responsible CUPA agency in San Francisco.

Use and Storage of Hazardous Materials and Fuels

Hazardous Materials Business Plans

Businesses that handle specified quantities of chemicals are required to submit a hazardous materials business plan (HMBP) in accordance with community right-to-know laws. This plan allows local agencies to plan appropriately for a chemical release, fire, or other incident. The HMBP must include the following:

- An inventory of hazardous materials with specific quantity data, storage or containment descriptions, ingredients of mixtures, and physical and health hazard information
- Site and facility layouts that must be coded for chemical storage areas and other facility safety information
- Emergency response procedures for a release or threatened release of hazardous materials
- Procedures for immediate notification of releases to the administering agency
- Evacuation plans and procedures for the facility
- Descriptions of employee training in evacuation and safety procedures in the event of a release or threatened release of hazardous materials consistent with employee responsibilities, and proof of implementing such training on an annual basis
- Identification of local emergency medical assistance appropriate for potential hazardous materials incidents

The HMBP is filed with and administered by the CUPA agency, which ensures review by and distribution to other potentially affected agencies. The SFPUC has prepared and implemented HMBPs for its facilities that use hazardous materials above threshold limits.

California Accidental Release Program

The California Accidental Release Program (CalARP) includes regulatory requirements for facilities that handle regulated substances.[5] Ammonia and propane are regulated substances under state and federal risk management regulations. In accordance with CalARP regulations, preparation of a risk management plan (RMP) is required for the storage of regulated substances above threshold quantities. The RMP includes a hazard assessment to evaluate the potential

[5] CalARP incorporates the requirements of the Federal Risk Management Program, but is more stringent with respect to the threshold quantities of chemicals requiring risk management plans.

effects of an accidental release, a program for preventing an accidental release, and a program for responding to an accidental release. The RMP is filed with and administered by the CUPA agency, which ensures review by and distribution to other potentially affected agencies. The SFPUC has prepared and implemented RMPs for the storage of ammonia at the Harry Tracy WTP and Sunol Valley Chloramination Facility.

Aboveground Storage of Petroleum Products

The Aboveground Petroleum Storage Act of 1990 requires facilities storing petroleum products in a single tank greater than 1,320 gallons or facilities storing petroleum in aboveground tanks or containers with a cumulative storage capacity of greater than 1,320 gallons to file a storage statement with the State Water Resources Control Board (SWRCB) and prepare a spill prevention, control, and countermeasure plan. The plan must identify appropriate spill containment or equipment for diverting spills from sensitive areas, and discuss facility-specific requirements for the storage system, inspections, record keeping, security, and personnel training.

The SWRCB requires registration of an aboveground fuel storage tank at a construction site only if the tank is 20,000 gallons or larger, or if the aggregate volume of aboveground petroleum storage is over 100,000 gallons. For smaller temporary tanks used during construction, methods for controlling a release and measures to clean up an accidental release and prevent degradation of water quality are addressed in the construction stormwater pollution prevention plan prepared for the project, as described in Section 4.5, Hydrology and Water Quality.

Hazardous Materials Worker Safety Requirements

The federal Occupational Safety and Health Administration (Fed-OSHA) and the California Occupational 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 Title 29 of the Code of Federal Regulations, 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.

Control of Asbestos During Construction

The California Air Resources Board (CARB) has adopted an asbestos Airborne Toxic Control Measure (ATCM) for construction, grading, quarrying, and surface mining operations (CARB, 2002). The ATCM requires the use of best available dust mitigation measures to prevent offsite migration of asbestos-containing dust from road construction and maintenance activities, construction and grading operations, and quarrying and surface mining operations in areas of ultramafic rock,[6] serpentine,[7] or asbestos.[8] The BAAQMD implements the regulation, which became effective on July 22, 2002.

For construction projects within areas where ultramafic rock (primarily serpentinite) is mapped that disturb one acre or less of land, the ATCM requires the site operator to implement standard dust mitigation measures before construction begins, and to maintain each measure throughout the duration of the construction project. Construction activities disturbing more than one acre of asbestos-containing materials are required to prepare an asbestos dust mitigation plan specifying measures that would be taken to ensure that no visible dust crosses the property boundary. The asbestos dust mitigation plan must be submitted to and approved by the BAAQMD prior to the beginning of construction, and the site operator must ensure the implementation of all measures throughout the construction project. In addition, the BAAQMD may require air monitoring for offsite migration of asbestos dust during construction activities and may change the plan on the basis of the air monitoring results.

In the program area, naturally occurring asbestos would most likely be encountered in Franciscan ultramafic rock (primarily serpentinite) or mélange.[9] The asbestos ATCM could apply to the Calaveras Dam (SV-2), BDPL Reliability Upgrade (BD-1), CS/SA Transmission (PN-2), and Lower Crystal Springs Dam (PN-4) projects, because at least part of these projects would be located in areas where these bedrock units have been identified, as discussed in Section 4.4, Geology, Soils, and Seismicity. San Francisco Region projects could be subject to the ATCM if they would require disturbance of one of these bedrock units or would be located in areas that have been filled with materials excavated from bedrock containing serpentinite. Additional projects could be subject to the asbestos ATCM if naturally occurring asbestos were identified during construction.

6 Ultramafic rocks are formed in high-temperature environments well below the surface of the earth.
7 Serpentine is a naturally occurring group of minerals that can be formed when ultramafic rocks are metamorphosed during uplift to the earth's surface. Serpentinite is a rock consisting of one or more serpentine minerals. This rock type is commonly associated with ultramatic rock along earthquake faults. Small amounts of chrysotile asbestos, a fibrous form of serpentine minerals, are common in serpentinite.
8 Asbestos is a term used for several types of naturally occurring fibrous materials found in many parts of California.
9 Mélange is a mixture of rock materials of differing sizes and types typically contained within a sheared matrix.

Wildland Fire

The California Public Resources Code, beginning with Section 4427, includes fire safety regulations that: restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors[10] on construction equipment that use an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided onsite for various types of work in fireprone areas. The Public Resources Code requirements would apply to construction activities at the SJPL System (SJ-3) and SJPL Rehabilitation (SJ-4) east segment near the Oakdale Portal and west segment near Tesla Portal; projects at the Tesla Portal (Advanced Disinfection, SJ-1, and Tesla Portal Disinfection, SJ-5); the Lawrence Livermore project (SJ-2); all of the Sunol Valley Region projects; the BDPL Reliability Upgrade project (BD-1); and the Peninsula Region projects within the Peninsula watershed (Baden and San Pedro Valve Lots, PN-1; CS/SA Transmission, PN-2; Lower Crystal Springs Reservoir, PN-4; and Pulgas Balancing Reservoir, PN-5), because these sites are in or near areas designated by the California Department of Forestry and Fire Protection (CDF) as a "Wildland Area That May Contain Substantial Forest Fire Risks and Hazards" (CDF, various dates).

Any additional requirements of the local fire agencies would also apply to projects located within a "Very High Fire Hazard Severity Zone." The fire protection agencies may also designate new areas in their jurisdictions as "Very High Fire Severity Zones," which could result in more WSIP projects being located in such zones and subject to local requirements for construction in these zones.

In addition, the City and County of San Francisco has identified areas of Urban-Wildland Interface in Golden Gate Park, where some Groundwater Projects (SF-2) or Recycled Water Projects (SF-3) could be located (CCSF, 2005). While not a major threat, there is the potential for an urban-wildland fire in this area.

Tunnel Classification and Safety

The California Tunnel Safety Orders (California Code of Regulations, Title 8, Subchapter 20, Article 8) require the Division of Industrial Safety to classify all tunnels or portions of tunnels into one of the following classifications before a public works project can be put out to bid:

- Nongassy, the classification assigned when there is little likelihood of encountering gas during the construction of the tunnel.

- Potentially gassy, the classification assigned when there is a possibility that flammable gas or hydrocarbons will be encountered during construction of the tunnel.

- Gassy, the classification assigned when it is likely gas will be encountered, or if monitoring indicates the presence of hazardous gases at a concentration greater than 5 percent of the lower explosive limit.

[10] A spark arrestor is a device that prohibits exhaust gases from an internal combustion engine from passing through the impeller blades where they could cause a spark. A carbon trap is commonly used to retain carbon particles from the exhaust.

- Extra hazardous, the classification assigned to tunnels when the Division finds that there is a serious danger to the safety of employees, flammable gas or petroleum vapors emanating from the strata have been ignited in the tunnel, or monitoring indicates the presence of hazardous gases at a concentration greater than 20 percent of the lower explosive limit.

In accordance with the Tunnel Safety Orders, a tunnel is defined as an underground passageway, 30 inches in diameter or greater, that is excavated by employees working below the ground surface. Therefore, the orders would apply to tunnels proposed as part of the WSIP as well as jack-and-bore excavations that are 30 inches or more in diameter where employees work underground. A classification has not been assigned to the tunnels that would be constructed under the New Irvington Tunnel (SV-4) and BDPL Reliability Upgrade (BD-1) projects, although the New Irvington Tunnel is considered potentially gassy. Classification of these tunnels and other applicable bore excavations would be made by the Division of Industrial Safety on the basis of geologic assessments and recommendations of the SFPUC in accordance with the Tunnel Safety Orders.

The Tunnel Safety Orders require an emergency plan for all tunnel operations that includes maps, ventilation controls, firefighting equipment, rescue procedures, evacuation plans, and communications. The Tunnel Safety Orders specify ventilation requirements for all tunnels. For potentially gassy tunnels, the orders specify monitoring requirements during construction. If threshold levels of gases are exceeded, work must halt and may not resume until the Division of Industrial Safety has authorized reentry in writing. For gassy tunnels, the Tunnel Safety Orders specify monitoring requirements for explosive gases; actions to be taken in the event that explosive vapors are identified; additional requirements for ventilation; restrictions on the use of equipment with internal combustion engines and spark-producing work activities such as welding or cutting; restrictions on smoking and possession of personal sources of ignition such as lighters or matches; requirements for a “kill” button to cut off electrical equipment in the event that sufficient vapors accumulate; and provision of a refuge chamber or escape route for employee safety.

Emergency Response Procedures

The HMBPs and RMPs for the SFPUC facilities that store chemicals specify response procedures to be implemented in the event of a chemical emergency, in accordance with the applicable local regulations. These procedures include notification requirements in the event of a spill; measures to be taken to control and cleanup a spill; procedures for coordination of emergency response personnel; and procedures to be followed should emergency evacuation be required. Plant personnel maintain a comprehensive inventory of emergency response equipment at the facility, and emergency response equipment is regularly inspected and maintained. In accordance with community right-to-know laws, a copy of the HMBP or RMP is on file with the local fire department to assist them in responding to chemical emergencies at the SFPUC chemical storage facilities.

Hazardous Building Materials

Hazardous building materials are included in this discussion because some WSIP projects would involve demolition or renovation of structures that may contain such materials. Some building materials commonly used in older buildings could present a public health risk if disturbed during an accident or during demolition or renovation. Hazardous building materials include asbestos, electrical equipment such as transformers and fluorescent light ballasts that contain polychlorinated biphenyls (PCBs) or di (2 ethylhexyl) phthalate (DEHP), fluorescent lights containing mercury vapors, and lead-based paints. Asbestos and lead-based paint may also present a health risk to building occupants if the materials are in a deteriorated condition. If removed during demolition of a building, these materials would require special disposal procedures.

Asbestos is a common name for a group of naturally occurring fibrous silicate minerals that are made up of thin but strong, durable fibers. Because of its physical properties, asbestos was commonly used until the 1970s as a building material, including use as insulation material, shingles and siding, roofing felt, floor tiles, acoustical ceiling material, and automotive brakes and clutches. Asbestos is a known carcinogen and presents a public health hazard if it is present in the friable (easily crumbled) form. Long-term, chronic inhalation of high levels of asbestos can cause lung diseases such as asbestosis, mesolethioma, and lung cancer.

PCBs are mixtures of synthetic organic chemicals with physical properties ranging from oily liquids to waxy solids. Due to their nonflammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications, including use in electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastic, and rubber compounds; in pigments, dyes, and carbonless copy paper; and many others. More than 1.5 billion pounds of PCBs were manufactured in the United States before production ceased in 1977 (U.S. EPA, 2005). PCBs are a known human carcinogen; they are highly toxic substances that remain persistent in the environment, accumulate in biological systems, interfere with the reproductive system, and act as an immunosuppressant. Under Section 6(e) of the Toxic Substances Control Act, Congress began regulating the use and manufacturing of PCBs in 1976, legislating “cradle to grave” (i.e., from manufacture to disposal) management of PCBs in the United States. Because PCBs were historically used in the WSIP study area, the potential exists for leaks to have occurred.

Most fluorescent light ballasts manufactured before 1978 contain approximately 0.5 ounces of PCBs in a small capacitor, although the quantity can be up to 2 ounces. In 1978, the U.S. EPA estimated that approximately 850 million of these capacitors were in use in the United States. Ballasts manufactured after January 1, 1978 do not contain PCBs and should be labeled as such on the ballast. Between 1979 and the early 1990s, DEHP was used in place of PCBs as a dielectric fluid in some fluorescent light ballasts and other electrical equipment (Green Lights Recycling, 2007). DEHP is classified as a probable human carcinogen by the U.S. Department of Health and Human Services and as a hazardous substance by the U.S. EPA. Because of this classification, ballasts containing DEHP must be legally disposed of; ballast incineration or a combination of ballast recycling and incineration are recommended for complete destruction of DEHP.

Spent fluorescent light tubes commonly contain mercury vapors. In February 2004, regulations took effect in California that classified all fluorescent lamps and tubes as a hazardous waste. When these lamps or tubes are broken, mercury is released to the environment; mercury can also be absorbed through the lungs into the bloodstream and can be washed by rain into waterways. The mercury in urban stormwater sediment results in part from improperly discarded fluorescent lamps and tubes (CIWMB, 2007). In 2000, approximately 370 pounds of mercury were released in California due to the breakage of electric lamps and tubes during storage and transportation. It is estimated that nearly 75 million waste fluorescent lamps and tubes are generated annually in California, and these lamps and tubes contain more than half a ton of mercury.

Lead-based paint is paint that contains lead, a heavy metal historically added to paint as pigment and to speed drying, increase durability, retain a fresh appearance, and resist moisture (which causes corrosion). Because of its toxicity, paint containing more than 0.06 percent lead was banned for residential use in 1978 by the U.S. Consumer Product Safety Commission. Lead is toxic to humans, particularly young children, and can cause a range of human health effects depending on the level of exposure. When adhered to the surface of a material, lead-based paint poses little health risk. Where the paint is delaminated or chipping, it can cause a potential threat to the health of young children or other building occupants who may ingest the paint. Lead dust also presents public health risks during the demolition of structures that contain lead-based paint. Lead-based paint that has separated from a structure may also contaminate nearby soil.

4.14.2 Impacts

Significance Criteria

The CCSF has not formally adopted significance standards for impacts related to hazards, but generally considers that implementation of the proposed program would have a significant impact if it were to:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (Evaluated in this section)
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment (Evaluated in this section)
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 1/4 mile of an existing or proposed school (Evaluated in this section)
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment (Evaluated in this section)
- For a project located within an area covered by an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area (Not evaluated in this section, see Appendix B)

- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area (Not evaluated in this section, see Appendix B)

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (Not evaluated in this section, see Appendix B and Section 4.8, Traffic, Transportation, and Circulation)

- Expose people or structures to a significant risk of loss, injury, or death involving fires (Evaluated in this section)

Approach to Analysis

The program-level assessment focuses on the following issues:

- The potential for encountering hazardous substances in soil and groundwater during construction at the WSIP sites, based on land uses and regulatory database searches to identify permitted hazardous materials uses and environmental cases in the vicinity of ground-disturbing activities

- The potential for encountering naturally occurring asbestos during construction of the WSIP projects

- Potential wildland fire hazards associated with project construction

- Safety risks associated with potentially gassy conditions in the proposed tunnels

- Hazardous building materials that could be encountered during demolition or renovation required for the WSIP projects

- New uses of chemicals and changes in the use of chemicals at the WSIP project sites

The level of analysis used in this program-level assessment allows for the identification of potential impacts related to each project. However, these program-level reviews would be further refined as part of separate, project-level CEQA review of individual WSIP projects, which could result in a change in significance determination.

Impact Summary by Region

Table 4.14-1 provides a summary of the hazards impacts associated with implementation of the WSIP.

TABLE 4.14-1
POTENTIAL IMPACTS AND SIGNIFICANCE – HAZARDS

Projects	Project Number	Impact 4.14-1: Potential to encounter hazardous materials in soil groundwater	Impact 4.14-2: Exposure to naturally occurring asbestos	Impact 4.14-3: Risk of fires during construction	Impact 4.14-4: Gassy conditions in tunnels	Impact 4.14-5: Exposure to hazardous building materials	Impact 4.14-6: Accidental hazardous materials release from construction equipment	Impact 4.14-7: Increased use of hazardous materials during operation	Impact 4.14-8: Emission or use of hazardous materials within 1/4 mile of a school
San Joaquin Region									
Advanced Disinfection	SJ-1	LS	N/A	LS	N/A	N/A	LS	LS	N/A
Lawrence Livermore Supply Improvements	SJ-2	LS	N/A	LS	N/A	N/A	LS	LS	N/A
San Joaquin Pipeline System	SJ-3	LS	N/A	LS	LS	PSM	LS	LS	N/A
Rehabilitation of Existing San Joaquin Pipelines	SJ-4	PSM	N/A	LS	LS	PSM	LS	N/A	N/A
Tesla Portal Disinfection Station	SJ-5	LS	N/A	LS	N/A	PSM	LS	LS	N/A
Sunol Valley Region									
Alameda Creek Fishery Enhancement	SV-1	LS	N/A	LS	LS	N/A	LS	N/A	N/A
Calaveras Dam Replacement	SV-2	LS	LS	LS	N/A	PSM	LS	N/A	N/A
Additional 40-mgd Treated Water Supply	SV-3	LS	N/A	LS	LS	N/A	LS	LS	N/A
New Irvington Tunnel	SV-4	LS	N/A	LS	LS	PSM	LS	N/A	N/A
SVWTP – Treated Water Reservoirs	SV-5	LS	N/A	LS	N/A	N/A	LS	LS	N/A
San Antonio Backup Pipeline	SV-6	LS	N/A	LS	LS	N/A	LS	N/A	N/A
Bay Division Region									
Bay Division Pipeline Reliability Upgrade	BD-1	PSM	PSM	LS	LS	PSM	LS	LS	LS
BDPL Nos. 3 and 4 Crossovers	BD-2	PSM	N/A	N/A	N/A	N/A	LS	LS	LS
Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault	BD-3	PSM	N/A	N/A	LS	N/A	LS	N/A	N/A
Peninsula Region									
Baden and San Pedro Valve Lots Improvements	PN-1	PSM	N/A	LS	N/A	PSM	LS	LS	LS
Crystal Springs/San Andreas Transmission Upgrade	PN-2	LS	LS	LS	LS	PSM	LS	N/A	N/A
HTWTP Long-Term Improvements	PN-3	LS	N/A	N/A	N/A	PSM	LS	LS	LS
Lower Crystal Springs Dam Improvements	PN-4	LS	LS	LS	N/A	PSM	LS	LS	N/A
Pulgas Balancing Reservoir Rehabilitation	PN-5	LS	N/A	LS	N/A	PSM	LS	N/A	N/A
San Francisco Region									
San Andreas Pipeline No. 3 Installation	SF-1	PSM	LS	N/A	LS	PSM	LS	N/A	N/A
Groundwater Projects	SF-2	PSM	LS	LS	LS	PSM	LS	LS	LS
Recycled Water Projects	SF-3	PSM	LS	LS	LS	PSM	LS	LS	LS

LS = Less than Significant impact, no mitigation required
PSM= Potentially Significant impact, can be mitigated to less than significant
N/A = Not Applicable

Construction Impacts

Impact 4.14-1: Potential to encounter hazardous materials in soil and groundwater.

All Facilities. If hazardous materials are present in excavated soil, groundwater, or tunnel muck, a release to the environment could occur, and construction workers and the public could be exposed to the hazardous materials in the soil and groundwater and to chemical vapors during construction. Depending on the nature and extent of any contamination encountered, adverse health effects and nuisance vapors could result if proper precautions are not taken. Contaminated soil, groundwater, or tunnel muck could also require disposal as a restricted or hazardous waste; tunnel muck could contain petroleum hydrocarbons, metals, or cement slurry, in which case it would not be suitable for disposal at unregulated local fill sites. The greatest potential for encountering contaminated soil and groundwater during construction is in areas where past or current land uses may have resulted in leaking fuel or chemical storage tanks or other releases of hazardous materials have occurred. Land uses that typically involve the handling of hazardous materials include commercial or industrial areas as well as agricultural areas, where soils may contain pesticides and herbicides. Areas with known contamination are referred to as "environmental cases."

This impact analysis evaluates the potential to encounter hazardous materials in soil, groundwater, and tunnel muck based on previous land uses and, where available, environmental database reviews conducted for specific projects. The potential to encounter hazardous materials in the soil and groundwater would be low for projects located in areas with no known historical uses of hazardous materials, or for which the environmental database review did not identify known environmental cases; in such cases, impacts related to exposure to hazardous materials in soil and groundwater would be less than significant with implementation of SFPUC Construction Measure #7 (hazardous materials). This measure would require conduct of a site assessment to evaluate the potential for soil or groundwater contamination at each site prior to construction to ensure that contaminated materials are handled in accordance with applicable laws and regulations, as well as preparation of a contingency plan specifying measures to be taken should unanticipated contamination be identified during construction. The site assessment conducted under Construction Measure #7 would analyze site-specific information, which would either confirm the program-level determination of less than significant or provide a basis to revise this determination.

Impacts related to exposure to hazardous materials in soil, groundwater, or tunnel muck would be potentially significant if a proposed project would be located in an area where past or current land uses may have resulted in leaking fuel or chemical storage tanks or other releases of hazardous materials and if, based on project information presented in Appendix C, the project could disturb contaminated soil or groundwater. In such cases, implementation of mitigation measures to control exposure to contaminants and ensure proper handling of contaminated soil would be required to reduce this impact to a less-than-significant level. These measures include preparation of a site health and safety plan (Measure 4.14-1a) and materials disposal plan (Measure 4.14-1b). If groundwater dewatering is required, impacts related to the discharge of contaminated water would be less than significant with preparation of a dewatering plan in accordance with SFPUC

Construction Measure #4 (groundwater). The site assessment conducted under Construction Measure #7 would analyze site-specific information, which would either confirm the program-level significance determination or provide a basis to revise this determination.

Pipelines, Tunnels, Reservoirs, and Lakes. In addition to the potential hazardous materials impacts identified above, construction of pipelines or tunnels at or through existing environmental cases could interfere with activities at sites that have undergone or are undergoing remediation. At environmental cases that have undergone remediation or have received regulatory closure, the regulatory agencies may have approved engineering controls (such as a cap or landscaping) to prevent unacceptable exposure to hazardous materials in the soil and groundwater, or health-based cleanup levels that are based on current land uses. Where pipeline or tunnel alignments cross these sites, construction could disturb engineering controls or expose construction workers to unsafe levels of hazardous materials.

Dewatering at tunnel portal locations or along pipeline alignments as well as increased water levels in existing reservoirs could alter groundwater flow patterns and contaminant plume migration, and potentially interfere with ongoing groundwater remediations. In addition, the higher water levels in reservoirs or lakes could cause existing environmental cases to be inundated.

Impacts related to the potential to interfere with site remediations or to inundate a known environmental case would be reduced to a less-than-significant level through coordination with the property owner (or responsible SFPUC agency) and regulatory agencies (as specified under Measure 4.14-1c, which requires the SFPUC to assess the potential to encounter unacceptable levels of hazardous materials at known environmental cases; the potential for construction activities to cause groundwater plume migration or interfere with ongoing remediations at known environmental cases; and the potential for increased water levels in reservoirs or lakes to inundate known environmental cases). If the review indicates that the project could encounter unacceptable levels of hazardous materials or interfere with a remediation, or that adverse effects such as water quality degradation could occur from inundation of an environmental case, the SFPUC would contact the site owner (or responsible SFPUC department for the Peninsula Sportsmen's Club and Pacific Rod and Gun Club) and the responsible regulatory agency to determine appropriate construction modifications or remediation measures to avoid adverse effects. The site assessment conducted under SFPUC Construction Measure #7 would analyze site-specific information, which would either confirm the program-level significance determination or provide a basis to revise this determination.

San Joaquin Region

Impact 4.14-1: Potential to encounter hazardous materials in soil and groundwater		
Advanced Disinfection	SJ-1	LS
Lawrence Livermore	SJ-2	LS
SJPL System	SJ-3	LS
SJPL Rehabilitation	SJ-4	PSM
Tesla Portal Disinfection	SJ-5	LS

Based on existing land uses in the vicinity of the Advanced Disinfection (SJ-1), Lawrence Livermore (SJ-2), and Tesla Portal Disinfection (SJ-5) projects, and previous database reviews conducted for Tesla Portal, there is a low potential to encounter hazardous materials in the soil or groundwater during construction of

facilities at these locations. With implementation of SFPUC Construction Measure #7 (hazardous materials), this impact would be *less than significant* for these projects. SFPUC Construction Measure #7 requires preparation of a site assessment to evaluate the potential for soil or groundwater contamination at each site prior to construction to ensure that contaminated materials are handled in accordance with applicable laws and regulations, as well as preparation of a contingency plan identifying measures to be taken should unanticipated contamination be identified during construction.

Although there are seven historical underground storage tank sites located within 1/4 mile of the western pipeline alignment for the SJPL System project (SJ-3), there is a low potential to encounter hazardous materials in the soil and groundwater from known environmental cases because there are no documented releases of hazardous materials from these sites. Similarly, there is a low potential to encounter hazardous materials in the soil and groundwater along the eastern pipeline alignment because there are no documented hazardous materials uses or environmental cases within 1/4 mile of this alignment. Based on previous and current agricultural land uses along the pipeline, there is the potential to encounter pesticides and herbicides in the soil; however, this potential would be further evaluated in the site assessment conducted in accordance with SFPUC Construction Measure #7 (hazardous materials). Therefore, with implementation of this construction measure, it is expected that this impact would be *less than significant* for this project.

Pipeline rehabilitation could occur along any portion of the existing San Joaquin Pipeline as part of the SJPL Rehabilitation project (SJ-4). Depending on the location, hazardous materials could be encountered in the soil and groundwater, particularly in Modesto and near the U.S. Army Riverbank Ammunitions Plant. Therefore impacts related to the potential to encounter hazardous materials in the soil and groundwater are considered *potentially significant* for this project, but would be reduced to a less-than-significant level with implementation of SFPUC Construction Measure #7 (hazardous materials), as well as preparation of a site health and safety plan (Measure 4.14-1a) and materials disposal plan (Measure 4.14-1b) if contamination is identified during the site assessment conducted in accordance with SFPUC Construction Measure #7.

Pipeline rehabilitation in the vicinity of the U.S. Army Riverbank Ammunitions Plant could also interfere with ongoing remediation activities at this site, and dewatering along the pipeline alignment could enhance groundwater plume migration or interfere with remediations in Modesto and at the ammunitions plant, resulting in a *potentially significant* impact. However, this impact would be reduced to a less-than-significant level through coordination with the property owner and regulatory agencies (Measure 4.14-1c).

The western portion of the San Joaquin Pipeline alignment (SJPL System, SJ-3, and SJPL Rehabilitation, SJ-4) is near the Vernalis and Southwest Vernalis Gas Fields; during construction, potentially explosive gases could accumulate in the trench excavation. However, in compliance with the State of California Construction Safety Orders (Title 8 of the California Code of Regulations, Chapter 4, Subchapter 4), the construction contractor would be required to take adequate precautions to prevent the accumulation of unacceptable levels of explosive gases in the

excavation. Compliance with these regulations would ensure potential impacts related to the accumulation of natural gas in the pipeline excavation would be less than significant.

If groundwater dewatering is required for any WSIP projects in the San Joaquin Region, impacts related to the discharge of contaminated water would be less than significant with compliance with the discharge regulations discussed in Section 4.5, Hydrology and Water Quality, and implementation of a dewatering plan in accordance with SFPUC Construction Measure #4 (groundwater).

Sunol Valley Region

Impact 4.14-1: Potential to encounter hazardous materials in soil and groundwater		
Alameda Creek Fishery	SV-1	LS
Calaveras Dam	SV-2	LS
40-mgd Treated Water	SV-3	LS
New Irvington Tunnel	SV-4	LS
Treated Water Reservoirs	SV-5	LS
SABUP	SV-6	LS

The Alameda Creek Fishery (SV-1), 40-mgd Treated Water (SV-3), New Irvington Tunnel (SV-4), Treated Water Reservoirs (SV-5), and SABUP (SV-6) projects include construction of facilities, pipelines, or tunnels. There is a low potential to encounter hazardous materials in the soil or groundwater during construction of these projects, based on existing land uses and environmental database reviews conducted for the New Irvington Tunnel project (SV-4). As described in the Setting, contaminants have been identified in the soil at the Calaveras Test Site, near the Calaveras Dam. However, excavation for the Calaveras Dam project (SV-2) would not take place within the areas of identified contamination. Therefore, with implementation of SFPUC Construction Measure #7 (hazardous materials), impacts related to the potential to encounter hazardous materials in the soil, groundwater, and tunnel muck would be *less than significant* for each of these projects.

As discussed in the Setting, a plume of trichloroethene has been identified at the Calaveras Test Site, adjacent to the Calaveras Reservoir. Raising the water level in the reservoir under the Calaveras Dam project would restore the reservoir to pre-2001 conditions and would likely result in a flatter groundwater gradient than exists under current conditions, thereby slowing the migration of trichloroethene in the groundwater and reducing risks to water quality in Calaveras Reservoir. Furthermore, groundwater quality monitoring would continue until the RWQCB grants regulatory closure of the groundwater contamination case. Therefore, impacts related to the potential to interfere with an ongoing remediation and to degrade water quality in Calaveras Reservoir would be *less than significant* for this project.

If groundwater dewatering is required for any of the Sunol Valley Region projects, impacts related to the discharge of contaminated water would be less than significant with compliance with the discharge regulations discussed in Section 4.5, Hydrology and Water Quality, and implementation of a dewatering plan in accordance with SFPUC Construction Measure #4 (groundwater).

Bay Division Region

Impact 4.14-1: Potential to encounter hazardous materials in soil and groundwater		
BDPL Reliability Upgrade	BD-1	PSM
BDPL 3 and 4 Crossovers	BD-2	PSM
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	PSM

Based on the environmental database review conducted for the Bay Division Pipelines, there is a high potential to encounter hazardous materials during construction of the BDPL Reliability Upgrade project (BD-1), particularly at the east tunnel portal (where groundwater contamination has been identified at six sites within 1/2 mile in Newark) and at the west tunnel portal (which is located on the site of a former gun club undergoing remediation by the SFPUC). Therefore, impacts related to the potential to encounter hazardous materials in soil, groundwater, and tunnel muck are considered *potentially significant*, but would be reduced to a less-than-significant level with implementation of SFPUC Construction Measure #7 (hazardous materials) as well as preparation of a site health and safety plan (Measure 4.14-1a) and materials disposal plan (Measure 4.14-1b).

Dewatering at the tunnel portal locations for the BDPL Reliability Upgrade project (BD-1) could enhance the migration of groundwater contaminant plumes or interfere with ongoing remediations at the east tunnel portal location, where there are six cases of known groundwater contamination within 1/2 mile. These effects could also occur at additional locations along the pipeline alignment where dewatering is conducted. Furthermore, although remediation of the former Peninsula Sportsmen's Club at the west tunnel portal location should be completed before construction of the BDPL Reliability Upgrade project, construction activities for this project could interfere with remediation activities if the remediation is delayed, or could encounter unacceptable levels of hazardous materials in the soil, depending on the cleanup level achieved during remediation. Therefore, impacts related to the potential to enhance groundwater plume migration or interfere with site remediations are considered *potentially significant* for this project, but would be reduced to a less-than-significant level with coordination with the property owner (or responsible SFPUC department) and regulatory agencies (Measure 4.14-1c).

The BDPL 3 and 4 Crossovers (BD-2) and BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3) projects would include pipeline installation, pipeline improvements, or construction of crossover facilities on the existing Bay Division Pipelines Nos. 3 and 4. A database review has not been conducted specifically for these projects. However, there is a potential to encounter hazardous materials in the soil and groundwater during construction of these projects because they are all located at least partially within commercial or industrial areas. Therefore, impacts related to the potential to encounter hazardous materials in the soil and groundwater are considered *potentially significant* for these projects, but would be reduced to a less-than-significant level with implementation of SFPUC Construction Measure #7 (hazardous materials), as well as preparation of a site health and safety plan (Measure 4.14-1a) and materials disposal plan (Measure 4.14-1b) if contamination is identified during the site assessment conducted in accordance with Construction Measure #7.

If groundwater dewatering is required for any Bay Division Region project, impacts related to the discharge of contaminated groundwater would be less than significant with compliance with the discharge regulations discussed in Section 4.5, Hydrology and Water Quality, and implementation of a dewatering plan in accordance with SFPUC Construction Measure #4 (groundwater).

Peninsula Region

Impact 4.14-1: Potential to encounter hazardous materials in soil and groundwater		
Baden and San Pedro Valve Lots	PN-1	PSM
CS/SA Transmission	PN-2	LS
HTWTP Long-Term	PN-3	LS
Lower Crystal Springs Dam	PN-4	LS
Pulgas Balancing Reservoir	PN-5	LS

No database reviews have been conducted for the Baden and San Pedro Valve Lots project (PN-1), but because these valve lots are located in an urbanized area, the potential exists to encounter hazardous materials in the soil at these sites. Therefore, impacts related to the potential to encounter hazardous materials in the soil and groundwater are considered *potentially significant*, but would be reduced to a less-than-significant level with implementation of SFPUC Construction Measure #7 (hazardous materials), as well as preparation of a site health and safety plan (Measure 4.14-1a) and materials disposal plan (Measure 4.14-1b) if contamination is identified by the site assessment conducted in accordance with Construction Measure #7.

The HTWTP Long-Term (PN-3), Lower Crystal Springs Dam (PN-4), and Pulgas Balancing Reservoir (PN-5) projects would each include construction of facilities, while the CS/SA Transmission (PN-2) project would include construction of pipelines as well. These projects are located in undeveloped watershed land or residential areas. Based on their locations as well as previous database reviews for the Harry Tracy WTP and Pulgas Balancing Reservoir, there is a low potential to encounter hazardous materials in the soil or groundwater. Therefore, with implementation of SFPUC Construction Measure #7 (hazardous materials), it is expected that impacts related to the potential to encounter hazardous materials in the soil and groundwater would be *less than significant*. This measure would require the conduct of a site assessment to evaluate the potential for soil or groundwater contamination at each site prior to construction to ensure that contaminated materials are handled in accordance with applicable laws and regulations, as well as preparation of a contingency plan identifying measures to be taken should unanticipated contamination be identified during construction.

If groundwater dewatering is required for any Peninsula Region project, impacts related to the potential to discharge contaminated groundwater would be less than significant with compliance with the discharge regulations discussed in Section 4.5, Hydrology and Water Quality, and implementation of a dewatering plan in accordance with SFPUC Construction Measure #4 (groundwater).

San Francisco Region

Impact 4.14-1: Potential to encounter hazardous materials in soil and groundwater		
SAPL 3 Installation	SF-1	PSM
Groundwater Projects	SF-2	PSM
Recycled Water Projects	SF-3	PSM

No database reviews have been conducted specifically for the Groundwater Projects (SF-2) and Recycled Water Projects (SF-3). Since these projects are located in urbanized areas, impacts related to the potential to encounter hazardous materials in soil and groundwater are considered *potentially significant* for these projects, but would be reduced to a less-than-significant level with implementation of SFPUC Construction Measure #7 (hazardous materials), as well as preparation of site health and safety plan (Measure 4.14-1a) and materials disposal plan (Measure 4.14-1b) if contamination is identified by the site assessment conducted in accordance with Construction Measure #7.

A database review conducted for the SAPL 3 Installation project (SF-1) indicated the presence of documented environmental cases along the pipeline alignment. Therefore, impacts related to the potential to encounter hazardous materials in the soil and groundwater are considered *potentially significan*t, but would be reduced to a less-than-significant level with implementation of SFPUC Construction Measure #7 (hazardous materials) as well as preparation of a site health and safety plan (Measure 4.14-1a) and materials disposal plan (Measure 4.14-1b).

According to a voluntary study performed on behalf of the SFPUC in 2004, raising the water level in Lake Merced under the Local Groundwater Projects (SF-2) would inundate a portion of the Pacific Rod and Gun Club property and could result in lead and arsenic concentrations that exceed drinking water standards, cause adverse effects on fish and other aquatic organisms, or cause adverse effects on sediment-dwelling species that would occupy the newly inundated area (URS, 2005). The results of the study suggest that before inundating the shoreline it may be necessary to perform remedial action or further assess the potential for releases of lead and arsenic into Lake Merced. Therefore, impacts related to the potential to cause adverse effects from inundation of a known environmental case are considered *potentially significant* for this project, but would be reduced to a less-than-significant level with coordination with regulatory agencies and implementation of appropriate measures to avoid adverse effects on water quality and aquatic organisms (Measure 4.14-1c).

If groundwater dewatering is required for any San Francisco Region projects, impacts related to the potential to discharge contaminated groundwater would be less than significant with compliance with the discharge regulations discussed in Section 4.5, Hydrology and Water Quality, and implementation of a dewatering plan in accordance with SFPUC Construction Measure #4 (groundwater).

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Impact 4.14-2: Exposure to naturally occurring asbestos.

As discussed in the Setting, some of the pipeline, tunnel, and dam excavations traverse mapped areas of Franciscan Complex serpentinite and mélange, which commonly contain naturally occurring chrysotile asbestos (a fibrous mineral that can be a human health hazard if it becomes airborne). If serpentinite or mélange is encountered during construction, onsite workers and the surrounding population could be exposed to asbestos in airborne dust and tunnel emissions unless appropriate control measures are implemented.

Pipelines and Other Excavation Activities. Excavation in soil containing naturally occurring asbestos could produce airborne (or "fugitive") dust. However, the SFPUC would be required to comply with the asbestos ATCM (CARB's Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations; see the Setting for more discussion) to prevent fugitive dust containing asbestos from migrating beyond property boundaries during excavation.

In accordance with the asbestos ATCM, for surface construction activities in the WSIP study area that would disturb rock containing naturally occurring asbestos (serpentinite and mélange) within an area of less than one acre, contractors are required to comply with the following dust mitigation measures before construction begins and to maintain each measure throughout the duration of the construction project:

- Limit construction vehicle speed at the worksite to 15 miles per hour
- Sufficiently wet all ground surfaces prior to disturbance to prevent visible dust emissions from crossing the property line
- Keep all graded and excavated areas adequately wetted during construction to prevent visible dust emissions from crossing the property line
- Adequately wet all storage piles, treat with chemical dust suppressants, or cover piles when material is not being added to or removed from the pile
- Wash down all equipment before moving from the property onto a paved public road
- Clean all visible track-out from the paved public road by street sweeping or using a vacuum equipped with a high-efficiency particulate air (HEPA) filter within 24 hours

For construction activities in the WSIP study area that would disturb more than one acre of rock containing naturally occurring asbestos (serpentinite and mélange), construction contractors are required to submit the appropriate notification forms, although an application for exemption may be filed if a registered geologist determines that there is no ultramafic rock or serpentine in the construction area. For projects of this size where ultramafic rock or serpentinite are present, contractors must prepare an asbestos dust mitigation plan specifying measures that would be taken to ensure that no visible dust crosses the property boundary during construction. The plan must specify the following measures:

- Prevent and control visible track-out from the property

- Ensure adequate wetting or covering of active storage piles
- Control disturbed surface areas and storage piles that would remain inactive for seven days
- Control traffic on onsite unpaved roads, parking lots, and staging areas, including a maximum vehicle speed of 15 miles per hour
- Control earthmoving activities
- Control offsite transport of dust emissions that contain naturally occurring asbestos-containing materials
- Stabilize disturbed areas following construction

The asbestos dust mitigation plan must be submitted to and approved by the BAAQMD prior to the beginning of construction, and the site operator must ensure the implementation of all specified dust mitigation measures throughout the construction project. In addition, the BAAQMD may require air monitoring for offsite migration of asbestos dust during construction activities and may change the plan on the basis of the air monitoring results.

For WSIP construction projects of all sizes, notification of the BAAQMD and compliance with the asbestos ATCM are required if rock containing naturally occurring asbestos (serpentinite or mélange) is identified during construction.

Tunnels. Similar to construction of pipelines and facilities, excavation of the portal areas and handling of tunnel muck outside of the tunnels could produce fugitive dust emissions. Wet conditions within the tunnels during construction would likely prevent asbestos from becoming airborne. However, in the absence of proper controls, asbestos could become airborne in emissions from the tunnel ventilation system and could expose nearby receptors to unacceptable levels of asbestos.

San Joaquin Region

Impact 4.14-2: Exposure to naturally occurring asbestos

Advanced Disinfection	SJ-1	N/A
Lawrence Livermore	SJ-2	N/A
SJPL System	SJ-3	N/A
SJPL Rehabilitation	SJ-4	N/A
Tesla Portal Disinfection	SJ-5	N/A

None of the proposed WSIP facilities in the San Joaquin Region are expected to encounter Franciscan Complex serpentinite or mélange. Therefore, the potential for naturally occurring asbestos to become airborne during construction in these regions is considered *not applicable*. However, if naturally occurring asbestos is identified during construction, these projects would have to comply with the asbestos ATCM requirements.

Sunol Valley Region

Impact 4.14-2: Exposure to naturally occurring asbestos		
Alameda Creek Fishery	SV-1	N/A
Calaveras Dam	SV-2	LS
40-mgd Treated Water	SV-3	N/A
New Irvington Tunnel	SV-4	N/A
Treated Water Reservoirs	SV-5	N/A
SABUP	SV-6	N/A

Under the Calaveras Dam project (SV-2), construction of the new dam and haul roads would disturb Franciscan Complex serpentinite and mélange. In addition, the existing dam (which would be removed) includes materials obtained from serpentinite and mélange. However, as discussed above, compliance with the asbestos ATCM requirements would ensure that impacts related to exposure to naturally occurring asbestos would be *less than significant* for this project.

No Franciscan Complex serpentinite or mélange is mapped near the remaining projects in this region (Alameda Creek Fishery, SV-1; 40-mgd Treated Water, SV-3; New Irvington Tunnel, SV-4; Treated Water Reservoirs, SV-5; and SABUP, SV-6), so this impact would *not apply* to these projects. However, if naturally occurring asbestos is identified during construction, these projects would have to comply with the asbestos ATCM requirements.

Bay Division Region

Impact 4.14-2: Exposure to naturally occurring asbestos		
BDPL Reliability Upgrade	BD-1	PSM
BDPL 3 and 4 Crossovers	BD-2	N/A
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	N/A

The BDPL 3 and 4 Crossovers (BD-2) and BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3) projects are not located in areas of mapped Franciscan Complex serpentinite or mélange, so this impact would *not apply* to these projects. However, if naturally occurring asbestos is identified during construction, these projects would have to comply with the asbestos ATCM requirements.

The BDPL Reliability Upgrade project (BD-1) could encounter several hundred feet of highly weathered and intensely fractured serpentinite, sandstone, and shale of the Franciscan Complex in the tunnel approximately 1,000 feet west of the Newark Valve Lot. Construction of the tunnel portion of this project would have to comply with the asbestos ATCM for the handling of materials containing naturally occurring asbestos, including tunnel muck. In addition, operation of the tunnel ventilation system could emit airborne asbestos fibers. This *potentially significant* impact would be reduced to a less-than-significant level with implementation of a health risk screening assessment and preparation of an airborne-asbestos monitoring plan (Measure 4.14-2).

Peninsula Region

Impact 4.14-2: Exposure to naturally occurring asbestos		
Baden and San Pedro Valve Lots	PN-1	N/A
CS/SA Transmission	PN-2	LS
HTWTP Long-Term	PN-3	N/A
Lower Crystal Springs Dam	PN-4	LS
Pulgas Balancing Reservoir	PN-5	N/A

Two Peninsula Region projects located near Crystal Springs Reservoir and San Andreas Reservoir (CS/SA Transmission, PN-2, and Lower Crystal Springs Dam, PN-4) could encounter Franciscan Complex serpentinite or mélange. However, as discussed above, compliance with the asbestos ATCM would ensure that impacts related to exposure to naturally occurring asbestos are *less than significant* for these projects.

The other Peninsula Region projects are not located in Franciscan Complex serpentinite or mélange (Baden and San Pedro Valve Lots, PN-1; HTWTP Long-Term, PN-3; and Pulgas Balancing Reservoir, PN-5), so this impact would *not apply* to these projects. However, if naturally occurring asbestos is identified during construction, these projects would have to comply with the asbestos ATCM requirements.

San Francisco Region

Impact 4.14-2: Exposure to naturally occurring asbestos		
SAPL 3 Installation	SF-1	LS
Groundwater Projects	SF-2	LS
Recycled Water Projects	SF-3	LS

The three San Francisco Region projects (SAPL 3 Installation, SF-1; Groundwater Projects, SF-2; and Recycled Water Projects, SF-3) are not likely to encounter Franciscan Complex serpentinite or mélange, although naturally occurring asbestos could be encountered in fill materials within San Francisco. However, as discussed above, compliance with the asbestos ATCM would ensure that impacts related to exposure to naturally occurring asbestos would be *less than significant* for each project.

Impact 4.14-3: Risk of fires during construction.

The use of construction equipment and temporary onsite storage of diesel fuel could pose a wildland fire risk in areas classified by the CDF as a “Wildland Area That May Contain Substantial Forest Fire Risks and Hazards” or a “Very High Fire Hazard Severity Zone” or in areas identified as an Urban-Wildland Interface in the city of San Francisco. The time of the greatest fire danger is during the clearing phase, when people and machines are working among vegetative fuels that can be highly flammable; if piled onsite, the cleared vegetative materials could also become a fire fuel. Potential sources of ignition include equipment with internal combustion engines, gasoline-powered tools, and equipment or tools that produce a spark, fire, or flame. Such sources include sparks from blades or other metal parts scraping against rock, overheated brakes on wheeled equipment, friction from worn or unaligned belts and drive chains, and burned-out bearings or bushings. Sparking as a result of scraping against rock is difficult to

prevent. The other hazards result primarily from poor maintenance of the equipment. Smoking by onsite construction personnel is also a potential source of ignition during construction.

Regulations governing the use of construction equipment in fireprone areas are designed to minimize the risk of wildland fires during construction activity. In accordance with the Public Resources Code, the construction contractor would be required to comply with the following legal requirements during construction activities at sites located in areas classified as a "Wildland Area That May Contain Substantial Forest Fire Risks and Hazards" or a "Very High Fire Hazard Severity Zone":

- Earthmoving and portable equipment with internal combustion engines would be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (PRC Section 4442).
- Appropriate fire suppression equipment would be maintained during the highest fire danger period – from April 1 to December 1 (PRC Section 4428).
- On days when a burning permit is required, flammable materials would be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor would maintain the appropriate fire suppression equipment (PRC Section 4427).
- On days when a burning permit is required, portable tools powered by gasoline-fueled internal combustion engines would not be used within 25 feet of any flammable materials (PRC Section 4431).

In addition, projects in the Sunol Valley Region and Peninsula Region located within the Peninsula watershed would be required to comply with fire-related policies and actions contained in the SFPUC's Alameda and Peninsula Watershed Management Plans (WMPs). The WMPs are described in Section 4.2, Plans and Policies. Action fir1 of the WMPs, which requires compliance with CDF fire prevention regulations for SFPUC vehicles and equipment as well as certification by the CDF of non-SFPUC equipment, must be implemented for these projects.

San Joaquin Region

Impact 4.14-3: Risk of fires during construction		
Advanced Disinfection	SJ-1	LS
Lawrence Livermore	SJ-2	LS
SJPL System	SJ-3	LS
SJPL Rehabilitation	SJ-4	LS
Tesla Portal Disinfection	SJ-5	LS

The Advanced Disinfection (SJ-1), Lawrence Livermore (SJ-2), and Tesla Portal Disinfection (SJ-5) projects as well as the easternmost and westernmost pipeline segments of the SJPL System (SJ-3) and SJPL Rehabilitation (SJ-4) projects are located in areas classified as a "Wildland Area That May Contain Substantial Forest Fire Risks and Hazards." However, mandatory compliance with the Public Resources Code, impacts related to wildland fires would be *less than significant* for each project.

Sunol Valley Region

Impact 4.14-3: Risk of fires during construction		
Alameda Creek Fishery	SV-1	LS
Calaveras Dam	SV-2	LS
40-mgd Treated Water	SV-3	LS
New Irvington Tunnel	SV-4	LS
Treated Water Reservoirs	SV-5	LS
SABUP	SV-6	LS

All of the Sunol Valley Region projects (Alameda Creek Fishery, SV-1; Calaveras Dam, SV-2; 40-mgd Treated Water, SV-3, New Irvington Tunnel, SV-4; Treated Water Reservoirs, SV-5; and SABUP, SV-6) are located in areas classified as a "Wildland Area That May Contain Substantial Forest Fire Risks and Hazards." However, with compliance with the Public Resources Code and Alameda WMP Action fir1 (described above), impacts related to wildland fires would be *less than significant* for each project.

Bay Division Region

Impact 4.14-3: Risk of fires during construction		
BDPL Reliability Upgrade	BD-1	LS
BDPL 3 and 4 Crossovers	BD-2	N/A
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	N/A

The Irvington Tunnel and Pulgas Portal, located at either end of the BDPL Reliability Upgrade project (BD-1), may be located in an area classified as a "Wildland Area That May Contain Substantial Forest Fire Risks and Hazards." However, with compliance with the Public Resources Code, impacts related to wildland fires would be *less than significant* for this project.

The BDPL 3 and 4 Crossovers (BD-2) and BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3) projects are not located in mapped areas of high wildland fire risk; therefore, this impact would *not apply* to these projects.

Peninsula Region

Impact 4.14-3: Risk of fires during construction		
Baden and San Pedro Valve Lots	PN-1	LS
CS/SA Transmission	PN-2	LS
HTWTP Long-Term	PN-3	N/A
Lower Crystal Springs Dam	PN-4	LS
Pulgas Balancing Reservoir	PN-5	LS

The Baden and San Pedro Valve Lots project (PN-1) would include construction at the Pulgas Pump Station, Pulgas Gate Shaft, and Pulgas Air Shaft, which are each located in an area classified as a "Wildland Area That May Contain Substantial Forest Fire Risks and Hazards." In addition, the CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4), and Pulgas Balancing Reservoir (PN-5) projects are located in areas classified as a "Wildland Area That May Contain Substantial Forest Fire Risks and Hazards." However, with compliance with the Public Resources Code and the Peninsula WMP Action fir1 (described above), impacts related to wildland fires would be *less than significant* for these projects.

The HTWTP Long-Term project (PN-3) is not located in mapped areas of high wildland fire risk, so this impact would *not apply* to this project.

San Francisco Region

Impact 4.14-3: Risk of fires during construction		
SAPL 3 Installation	SF-1	N/A
Groundwater Projects	SF-2	LS
Recycled Water Projects	SF-3	LS

Depending on the specific locations selected for components of the Groundwater Projects (SF-2), some components of this project could be located within high fire hazard zones within or outside of San Francisco, and some Recycled Water Projects (SF-3) could be located within an Urban-Wildland Interface at Golden Gate Park. However, with compliance with the Public Resources Code, impacts related to wildland fires would be *less than significant* for these projects.

The SAPL 3 Replacement project (SF-1) is not located within a mapped area of high wildland fire risk within or outside of San Francisco. Therefore, this impact would *not apply* to this project.

Impact 4.14-4: Gassy conditions in tunnels.

Gassy conditions in tunnels could increase the risk of an explosion, which would endanger construction workers and the public.

Tunnels and Pipelines. Accumulated natural gases in a tunnel, including jack-and-bore excavations that are 30 inches in diameter or larger, could cause an explosion during construction. A classification has not yet been assigned to the tunnels that would be constructed under the WSIP; however, prior to the project being put out to bid, the SFPUC would be required to file an application for gas classification with the Division of Industrial Safety in accordance with the Tunnel Safety Orders (described in the Setting). This application would be required for all tunnels and jack-and-bore excavations that are 30 inches in diameter or larger where workers would work underground. The application would be based on a detailed geotechnical characterization that would be performed for final design of the proposed tunneling project. If the tunnel is classified as potentially gassy or gassy, project construction would be performed in compliance with the Tunnel Safety Orders, which specify requirements for the monitoring of explosive vapors, ventilation, and the restriction of potential ignition sources in tunnels. The Division of Industrial Safety could require additional measures if conditions warrant and could shut down the tunneling operation if unsafe conditions were identified. Resumption of tunneling operations would not be allowed until the Division of Industrial Safety inspected the tunnel conditions and cleared the tunnel for reentry.

San Joaquin Region

Impact 4.14-4: Gassy conditions in tunnels		
Advanced Disinfection	SJ-1	N/A
Lawrence Livermore	SJ-2	N/A
SJPL System	SJ-3	LS
SJPL Rehabilitation	SJ-4	LS
Tesla Portal Disinfection	SJ-5	N/A

The SJPL System project (SJ-3) includes the installation of approximately 16 to 22 miles of pipeline and the SJPL Rehabilitation project (SJ-4) could include rehabilitation along any portion of the San Joaquin pipeline system. These projects could require tunneling using

jack-and-bore construction at stream or roadway crossings. In accordance with the Tunnel Safety Orders, an assignment would be made for these tunnels prior to construction if employees would work underground. Compliance with the tunnel safety orders and any additional requirements of the Department of Industrial Safety would ensure that impacts related to a potential explosion are *less than significant* for these projects. None of the other San Joaquin Region projects (Advanced Disinfection, SJ-1; Lawrence Livermore, SJ-2; and Tesla Portal Disinfection, SJ-5) would involve tunneling, so this impact would *not apply* to these projects.

Sunol Valley Region

Impact 4.14-4: Gassy conditions in tunnels		
Alameda Creek Fishery	SV-1	LS
Calaveras Dam	SV-2	N/A
40-mgd Treated Water	SV-3	LS
New Irvington Tunnel	SV-4	LS
Treated Water Reservoirs	SV-5	N/A
SABUP	SV-6	LS

The New Irvington Tunnel project **(**SV-4) includes construction of a new 18,200-foot-long tunnel in an area considered to be potentially gassy. Tunneling using jack-and-bore construction to install pipelines beneath streams or roadways could also be required for the Alameda Creek Fishery (SV-1), 40-mgd Treated Water (SV-3), and SABUP (SV-6) projects. In accordance with the Tunnel Safety Orders, an assignment would be made for these tunnels prior to construction if employees would work underground. Compliance with the Tunnel Safety Orders and any additional requirements of the Department of Industrial Safety would ensure that impacts related to a potential explosion are *less than significant* for these projects. The other Sunol Valley Region projects (Calaveras Dam, SV-2, and Treated Water Reservoirs, SV-5) would not involve tunneling, so this impact would *not apply* to these projects.

Bay Division Region

Impact 4.14-4: Gassy conditions in tunnels		
BDPL Reliability Upgrade	BD-1	LS
BDPL 3 and 4 Crossovers	BD-2	N/A
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	LS

The BDPL Reliability Upgrade project (BD-1) includes construction of a new five-mile-long tunnel beneath San Francisco Bay. Pipelines would also be installed for this project and for the BDPL 3 and 4 Seismic Upgrade at Hayward Fault project (BD-3), which could require tunneling using jack-and-bore construction at stream and road crossings. In accordance with the Tunnel Safety Orders, an assignment would be made for these tunnels prior to construction if employees would work underground. Compliance with the Tunnel Safety Orders and any additional requirements of the Department of Industrial Safety would ensure that impacts related to a potential explosion are *less than significant* for these projects. The BDPL 3 and 4 Crossovers project (BD-2) would not involve tunneling, so this impact would *not apply* to this project.

Peninsula Region

Impact 4.14-4: Gassy conditions in tunnels		
Baden and San Pedro Valve Lots	PN-1	N/A
CS/SA Transmission	PN-2	LS
HTWTP Long-Term	PN-3	N/A
Lower Crystal Springs Dam	PN-4	N/A
Pulgas Balancing Reservoir	PN-5	N/A

Tunneling using jack-and-bore construction beneath streams and roadways could be required to install pipelines under the CS/SA Transmission project (PN-2). In accordance with the Tunnel Safety Orders, an assignment would be made for these tunnels prior to construction if employees would work underground. Compliance with the Tunnel Safety Orders and any additional requirements of the Department of Industrial Safety would ensure that impacts related to a potential explosion are *less than significant* for this project. None of the other Peninsula Region projects (Baden and San Pedro Valve Lots, PN-1; HTWTP Long-Term, PN-3; Lower Crystal Springs Dam, PN-4; and Pulgas Balancing Reservoir, PN-5) would involve tunneling, including the, so this impact would *not apply* to these projects.

San Francisco Region

Impact 4.14-4: Gassy conditions in tunnels		
SAPL 3 Installation	SF-1	LS
Groundwater Projects	SF-2	LS
Recycled Water Projects	SF-3	LS

The SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), and Recycled Water Projects (SF-3) include pipeline construction and could require tunneling using jack-and-bore construction at stream or roadway crossings. In accordance with the Tunnel Safety Orders, an assignment would be made for these tunnels prior to construction if employees would work underground. Compliance with the Tunnel Safety Orders and any additional requirements of the Department of Industrial Safety would ensure that impacts related to a potential explosion are *less than significant*.

Impact 4.14-5: Exposure to hazardous building materials.

Demolition or modification of existing facilities could result in exposure to hazardous building materials. In the absence of proper abatement procedures, demolition or renovation of a structure that contains hazardous building materials can expose workers and the public to hazardous materials. The types of hazardous building materials that could be encountered during building demolition include asbestos, lead-based paint, electrical equipment containing PCBs, fluorescent tubes containing mercury vapors, and fluorescent light ballasts containing DEHP.

If friable or nonfriable asbestos is present, disturbance of the asbestos-containing materials could result in the exposure of the public or construction workers to airborne asbestos fibers, unless proper asbestos abatement precautions are taken. Similarly, if lead-based paint or other hazardous materials are present and have delaminated or chipped from the surface of the building materials, there is a potential for the release of airborne particulates unless proper abatement procedures are followed. If PCBs are present in the buildings to be demolished, leakage could expose workers to

unacceptable levels of PCBs. Removal of fluorescent tubes could result in exposure to mercury vapors if the lights are broken, or to DEHP in the light ballasts.

Well-established regulatory requirements for asbestos abatement are provided in the California Health and Safety Code, Section 19827.5, and Title 8 of the California Code of Regulations, Sections 341.6 through 341.14 and 1529. The BAAQMD and San Joaquin Valley Air Pollution Control District requirements would also apply to the abatement of asbestos-containing materials. Requirements for lead-based paint abatement in residential and public use buildings are specified in Title 17 of the California Code of Regulations, Sections 35001 through 3600. However, existing state and local regulations do not address the abatement of lead-based paint in nonresidential or nonpublic buildings and other structures.[11] Because surveys have not been conducted to identify hazardous building materials in the structures that would be demolished, existing regulations do not address abatement of lead-based paint in nonresidential or public use buildings, and other hazardous building materials such as PCB- or DEHP-containing equipment and fluorescent light tubes could require disposal, this impact is considered potentially significant for projects where demolition or modifications of a structure would be required but for which hazardous building material surveys have not been completed. Additional information analyzed as part of subsequent, project-specific CEQA review for each project would either confirm the program-level determination of potentially significant or provide a basis to revise this determination.

Pump Stations, Treatment Facilities, Tunnels, and Standby Power. Construction of these permanent facilities could first require demolition of existing structures. If demolition is required, the hazardous building materials discussed above could be encountered (e.g., existing storage tanks may be painted with lead-based paint).

Reservoirs. For dam improvements, the structures that would be demolished or modified could contain lead-based paint, PCBs, or other hazardous building materials. For existing reservoirs, there may be hazardous building materials in the liner materials, roof, or piping systems.

Pipelines. The regional water system pipelines are largely constructed of steel or concrete. These pipelines have been constructed over the years using a variety of lining, coating, and joint-sealant materials, including coal tar and lead as well as other substances. While these substances do not present a hazard under current conditions, they could become hazardous if mishandled during construction. In addition, in some locations the right-of-way may have been encroached upon by structures that would need to be demolished prior to project construction, and these structures could include the hazardous building materials described above.

Valves, Vaults, and Crossover Facilities. Construction of valves, vaults, and crossover facilities would not be expected to encounter hazardous building materials.

[11] Senate Bill 460 added text to the California Health and Safety Code specifying that lead-based paint above certain quantities cannot be disturbed without providing containment, but does not address specific requirements for abatement or containment of lead-based paint. The requirements of this bill are not enforceable through permit conditions. Title 17 of the California Code of Regulations does include requirements for the abatement of lead-based paint, but these requirements apply only to residential and public use buildings.

San Joaquin Region

Impact 4.14-5: Exposure to hazardous building materials		
Advanced Disinfection	SJ-1	N/A
Lawrence Livermore	SJ-2	N/A
SJPL System	SJ-3	PSM
SJPL Rehabilitation	SJ-4	PSM
Tesla Portal Disinfection	SJ-5	PSM

The SJPL System project (SJ-3) would require excavation along approximately 16 miles of existing right-of-way and the SJPL Rehabilitation project (SJ-4) could require access to the pipeline anywhere along the entire length. While unlikely, in some locations the right-of-way may have been encroached upon by structures that would need to be demolished. Depending on their age, these structures may contain hazardous building materials. In addition, the Tesla Portal Disinfection project (SJ-5) would include renovation of the existing chlorination system, including possible demolition of existing structures. Because no surveys have been conducted to identify hazardous building materials in these structures and the extent of demolition is currently unknown, this impact is conservatively considered to be *potentially significant* for these projects; however, if demolition does occur, this impact would be reduced to a less-than-significant level with implementation of hazardous materials building surveys and abatement (Measure 4.14-5). The other San Joaquin Region projects (Advanced Disinfection, SJ-1, and Lawrence Livermore, SJ-2) are not expected to require demolition or renovation of structures, so this impact would *not apply* to these projects.

Sunol Valley Region

Impact 4.14-5: Exposure to hazardous building materials		
Alameda Creek Fishery	SV-1	N/A
Calaveras Dam	SV-2	PSM
40-mgd Treated Water	SV-3	N/A
New Irvington Tunnel	SV-4	PSM
Treated Water Reservoirs	SV-5	N/A
SABUP	SV-6	N/A

The Calaveras Dam project (SV-2) would require demolition of the cofferdam, chemical treatment building, valve vaults, existing spillway, and portions of the outlet tower. Demolition of the existing Irvington Portal structure would also be required for the New Irvington Tunnel project (SV-4). Depending on their age, the structures that would be demolished could contain hazardous building materials. Because no surveys have been conducted to identify hazardous building materials in these structures, this impact is considered *potentially significant* for these projects, but would be reduced to a less-than-significant level with implementation of hazardous materials building surveys and abatement (Measure 4.14-5). None of the other projects in the Sunol Valley Region (Alameda Creek Fishery, SV-1; 40-mgd Treated Water, SV-3; Treated Water Reservoirs, SV-5; and SABUP, SV-6) are expected to require demolition or renovation of structures, so this impact would *not apply* to these projects.

Bay Division Region

Impact 4.14-5: Exposure to hazardous building materials		
BDPL Reliability Upgrade	BD-1	PSM
BDPL 3 and 4 Crossovers	BD-2	N/A
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	N/A

The BDPL Reliability Upgrade project (BD-1) would remove 1.4 miles of pipeline between the Edgewood Valve Lot and Pulgas Valve Lot and decommission the aboveground and submarine sections of the Bay Division Pipelines Nos. 1 and 2. In addition, pipeline installation would require excavation along approximately 16 miles of existing right-of-way and, in some locations, the right-of-way may have been encroached upon by structures that would need to be demolished. Depending on their age, these structures could contain hazardous building materials. Because no surveys have been conducted to identify hazardous building materials in these structures or pipelines, this impact is considered *potentially significant* for this project, but would be reduced to a less-than-significant level with implementation of hazardous materials building surveys and abatement (Measure 4.14-5). The BDPL 3 and 4 Crossovers (BD-2) and BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3) projects are not expected to require demolition or renovation of structures, so this impact would *not apply* to these projects.

Peninsula Region

Impact 4.14-5: Exposure to hazardous building materials		
Baden and San Pedro Valve Lots	PN-1	PSM
CS/SA Transmission	PN-2	PSM
HTWTP Long-Term	PN-3	PSM
Lower Crystal Springs Dam	PN-4	PSM
Pulgas Balancing Reservoir	PN-5	PSM

Removal of existing pipelines within the vaults could be required for the Baden and San Pedro Valve Lots project (PN-1). In addition, the CS/SA Transmission project (PN-2) could involve upgrades to or demolition of the Crystal Springs Pump Station, and the HTWTP Long-Term project (PN-3) could require the demolition or upgrade of structures at the Harry Tracy WTP. The Lower Crystal Springs Dam project (PN-4) would modify the spillway, parapet walls and stilling basin, and the Pulgas Balancing Reservoir project (PN-5) would modify the inlet/outlet piping and sediment catchment basin. Hazardous building materials could be present in the structures to be demolished or modified, depending on their age. Because no surveys have been conducted to identify hazardous building materials in these structures, this impact is considered *potentially significant* for these projects, but would be reduced to a less-than-significant level with implementation of hazardous materials building surveys and abatement (Measure 4.14-5).

San Francisco Region

Impact 4.14-5: Exposure to hazardous building materials		
SAPL 3 Installation	SF-1	PSM
Groundwater Projects	SF-2	PSM
Recycled Water Projects	SF-3	PSM

The SAPL 3 Installation project (SF-1) would involve construction of approximately four miles of new pipeline and removal of some existing pipeline. The Recycled Water Projects (SF-3) could require demolition of existing structures, depending on the actual location of

project facilities. The need for demolition under the Groundwater Projects (SF-2) has not been determined. Because the need for demolition is uncertain and no surveys have been conducted to identify hazardous building materials in the structures that could be demolished, this impact is considered *potentially significant* for all San Francisco Region projects, but would be reduced to a less-than-significant level with implementation of hazardous materials building surveys and abatement (Measure 4.14-5).

Impact 4.14-6: Accidental hazardous materials release from construction equipment.

All Regions

Impact 4.14-6: Accidental hazardous materials release from construction equipment		
San Joaquin Region		
Advanced Disinfection	SJ-1	LS
Lawrence Livermore	SJ-2	LS
SJPL System	SJ-3	LS
SJPL Rehabilitation	SJ-4	LS
Tesla Portal Disinfection	SJ-5	LS
Sunol Valley Region		
Alameda Creek Fishery	SV-1	LS
Calaveras Dam	SV-2	LS
40-mgd Treated Water	SV-3	LS
New Irvington Tunnel	SV-4	LS
Treated Water Reservoirs	SV-5	LS
SABUP	SV-6	LS
Bay Division Region		
BDPL Reliability Upgrade	BD-1	LS
BDPL 3 and 4 Crossovers	BD-2	LS
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	LS
Peninsula Region		
Baden and San Pedro Valve Lots	PN-1	LS
CS/SA Transmission	PN-2	LS
HTWTP Long-Term	PN-3	LS
Lower Crystal Springs Dam	PN-4	LS
Pulgas Balancing Reservoir	PN-5	LS
San Francisco Region		
SAPL 3 Installation	SF-1	LS
Groundwater Projects	SF-2	LS
Recycled Water Projects	SF-3	LS

Storage and use of hazardous materials at construction sites could result in the accidental release of hazardous materials such as oil, grease, or fuel, which could enter an adjacent watercourse and degrade water quality. Many of the WSIP projects are located near creeks or storm systems that discharge to a surface water body. If accidentally released, such hazardous materials could degrade surface water quality. However, as discussed in Impact 4.5-1 in Section 4.5, Hydrology and Water Quality, impacts related to a potential release would be *less than significant* with implementation of SFPUC Construction Measure #3 (onsite air and water quality measures during construction), which requires the implementation of erosion control measures, including preparation and implementation of a stormwater pollution prevention plan (SWPPP) if required by the RWQCB. A SWPPP would be required for all projects outside of San Francisco that disturb more than one acre of land. The SWPPP would include protection measures for the temporary onsite storage of diesel fuels used during construction, including requirements for secondary containment and berming of the diesel storage area (or any chemical storage areas) to contain a potential release and to prevent any such release from reaching an adjacent waterway or stormwater collection system. The erosion control plan prepared for San Francisco projects in compliance with Article 4.1 of the San Francisco Public Works Code and for other projects in accordance with SFPUC Construction Measure #3 would also include measures to prevent a release of hazardous materials from reaching an adjacent waterway.

Furthermore, projects located within the Alameda and Peninsula watersheds would be required to implement the following watershed management plan actions pertaining to potential spills from construction equipment. (In the actions listed below, the first number is for the Alameda WMP and the second number is for the Peninsula WMP.)

- *Action haz4/haz5*: Conduct regular servicing for the SFPUC vehicle fleet and equipment so that leaks/drips/spills of contaminants are minimized. Guidelines include:

    a. Immediately report accidental spills of hazardous materials into surface waters to the Water Quality Bureau and the appropriate state agencies.

    b. Require that buckets and absorbent materials be carried in all SFPUC vehicles in case of an accident or breakdown in which vehicle-related fluids are released.

    c. Follow appropriate BMPs [best management practices] in C-6 to minimize leaching of vehicle-related contaminants into the soil or groundwater from facilities.

    d. For fire protection purposes, ensure that all vehicles and equipment are equipped with spark arrestors and each vehicle carries fire suppression equipment.

- *Action haz6/haz8*: Identify high-risk spill potential areas and implement measures (e.g., fines, barricades, etc.) to reduce the risk of hazardous spills.

- *Action haz7/haz10*: Develop spill response and containment measures for SFPUC vehicles on the watershed. These measures should be coordinated with the overall Emergency Response Plan developed in Action saf7.

Operations, Siting, and Design Impacts

Impact 4.14-7: Increased use of hazardous materials during operation.

The proposed WSIP projects would result in an increase in the quantities of chemicals stored at some of the facilities or would introduce a new use of hazardous materials. If accidentally released, these chemicals could cause human health effects to plant personnel and surrounding populations and could cause adverse environmental effects if released to the environment.

Treatment Facilities. Treatment facilities use a variety of hazardous materials for disinfection, typically ammonia and sodium hypochlorite which are incompatible materials that could pose a public health or water quality risk if mixed. Other hazardous materials such as liquid oxygen might also be used, depending on the water treatment method.

The Uniform Fire Code, Article 80, includes specific requirements for the safe storage and handling of hazardous materials. These requirements reduce the potential for a release of hazardous materials and for mixing of incompatible chemicals. Design of chemical storage facilities at the WSIP project sites would comply with the current Uniform Fire Code requirements and other applicable federal, state, and local regulations, including the following

specific design features that would reduce the potential for a release of hazardous materials that could affect public health or the environment:

- Separation of incompatible materials with a noncombustible partition.
- Spill control in all storage, handling, and dispensing areas.
- Separate secondary containment for each chemical storage system. The secondary containment would hold the entire contents of the tank, plus the volume of water needed to supply the fire suppression system for a period of 20 minutes in the event of a catastrophic spill.

Liquid oxygen is an oxidizing cryogenic liquid[12] that is not toxic or flammable. However, if released, ignition of combustible materials can occur more easily in the oxygen-enriched atmosphere. National Fire Protection Association (NFPA) 50, Standard for Bulk Oxygen at Consumer Sites, specifies standards to ensure the safe storage of liquid oxygen and provide adequate separation between the storage facilities and combustibles. NFPA 50 also specifies minimum distances from nonambulatory patients, places of public assembly, public sidewalks or parked cars, and property lines for the protection of public safety. Additional standards for liquid oxygen systems are provided in Article 75 of the California Fire Code and Standard 80-2 of the Uniform Fire Code.

Incorporation of these legally required design features would reduce the potential for spills resulting from the storage and handling of hazardous materials at the treatment facilities. In addition, the SFPUC would be required by the local CUPA agency to prepare an HMBP for new facilities or update the HMBP for existing facilities to reflect the changes in hazardous materials storage.

Ammonia is a regulated substance, and subject to more stringent regulatory requirements. At the federal level, only solutions with an ammonia concentration greater than 20 percent are regulated. However, CalARP regulations apply to all ammonia solutions. The federal and state threshold quantities for ammonia are 20,000 and 500 pounds, respectively. For facilities that would use ammonia in excess of these quantities, the SFPUC would be required by the local CUPA agency to prepare an RMP for new facilities or update the RMP for existing facilities to reflect the changes in storage.

In addition, projects located in the Alameda and Peninsula watersheds would be required to comply with actions outlined in the watershed management plan pertaining to safe hazardous materials storage, as described below. Compliance with legal requirements and implementation of the actions specified in the Alameda and Peninsula WMPs would ensure that potential impacts related to a release of chemicals from WSIP facilities are less than significant.

[12] An oxidizing cryogenic liquid is one that has a normal boiling point below -150 degrees Fahrenheit and readily reacts to promote or initiate combustion of combustible materials.

Standby Power. WSIP implementation would include provision of standby power (propane-, battery-, or diesel-fueled emergency generators) at a number of facilities to keep facilities operating during power outages. Safe use of diesel, propane, and batteries would be addressed through preparation and implementation of the legally required HMBP and compliance with the Aboveground Petroleum Storage Act, discussed in the Setting. In addition to compliance with these legal requirements, projects located in the Alameda and Peninsula watersheds would be required to comply with actions outlined in the watershed management plans pertaining to aboveground storage tanks. Although propane is a federally regulated flammable substance, the quantities that would be stored are well below the federal threshold planning quantity of 10,000 pounds. Therefore, an RMP would not be required for this substance.

San Joaquin Region

Impact 4.14-7: Increased use of hazardous materials during operation		
Advanced Disinfection	SJ-1	LS
Lawrence Livermore	SJ-2	LS
SJPL System	SJ-3	LS
SJPL Rehabilitation	SJ-4	N/A
Tesla Portal Disinfection	SJ-5	LS

Hazardous materials required for the disinfection facilities for the Advanced Disinfection project (SJ-1) would depend on the treatment methods selected to achieve compliance with water quality regulations. The Tesla Portal Disinfection project (SJ-5) could require the use of new water treatment chemicals, and the Lawrence Livermore project (SJ-2) would also likely require the use of disinfection chemicals. Construction of standby power facilities for the Advanced Disinfection (SJ-1), Lawrence Livermore (SJ-2), SJPL System (SJ-3), and Tesla Portal Disinfection (SJ-5) projects would introduce the use of propane or diesel. However, impacts related to a potential release of hazardous materials would be *less than significant* for these projects with preparation and implementation of a legally required HMBP for the new uses at Thomas Shaft (under Lawrence Livermore) and revision of the existing HMBP for Tesla Portal (under Advanced Disinfection, SJPL System, and Tesla Portal Disinfection). There would be no new use of hazardous materials under the SJPL Rehabilitation project (SJ-4), so this impact would *not apply* to this project.

Sunol Valley Region

Impact 4.14-7: Increased use of hazardous materials during operation		
Alameda Creek Fishery	SV-1	N/A
Calaveras Dam	SV-2	N/A
40-mgd Treated Water	SV-3	LS
New Irvington Tunnel	SV-4	N/A
Treated Water Reservoirs	SV-5	LS
SABUP	SV-6	N/A

Increased water treatment capacity under the 40-mgd Treated Water (SV-3) and Treated Water Reservoirs (SV-5) projects would increase the use of sodium hypochlorite and introduce the use of ammonia and fluoride at the Sunol Valley WTP. Construction of standby power facilities under the Treated Water Reservoirs project (SV-5) could also require the use of diesel. However, impacts related to a potential release of hazardous materials would be *less than significant* with revision of the existing HMBP for the Sunol Valley WTP to account for changes in the storage of hazardous materials, and preparation of an RMP for new use of ammonia. Furthermore, chemical storage at

the Sunol Valley Chloramination Facility would be reduced by the same amounts, and the HMBP and RMP for this facility would be revised to reflect this change in chemical storage.

In addition, the 40-mgd Treated Water (SV-3) and Treated Water Reservoirs (SV-5) projects would be required to implement actions of the Alameda WMP regarding the use of hazardous materials in the watershed. Action haz1 requires development of hazardous chemical management procedures addressing the type, use, storage, transport, and disposal of hazardous chemicals and pesticides used in watershed activities. Action haz2 requires the SFPUC to inventory and annually monitor all above- and below-ground fuel storage tanks, refueling stations, and vehicle maintenance yards within the watershed with respect to the control of vehicle-related contaminants as well as for compliance with applicable underground storage tank requirements and hazardous materials storage and handling requirements.

None of the other Sunol Valley Region projects (Alameda Creek Fishery, SV-1; Calaveras Dam, SV-2; New Irvington Tunnel, SV-4; and SABUP, SV-6) would involve a new use or change in use of hazardous materials, so this impact would *not apply* to these projects.

Bay Division Region

Impact 4.14-7: Increased use of hazardous materials during operation		
BDPL Reliability Upgrade	BD-1	LS
BDPL 3 and 4 Crossovers	BD-2	LS
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	N/A

The BDPL Reliability Upgrade project **(**BD-1) would require the storage of propane and a battery to fuel the emergency generators at the vaults and backup generators using propane or diesel could also be required for the BDPL 3 and 4 Crossovers project (BD-2). However, impacts related to a potential release from project facilities would be *less than significant* with preparation and implementation of a legally required HMBP.

The BDPL 3 and 4 Seismic Upgrade at Hayward Fault project (BD-3) would involve installation of or modifications to transmission pipelines and would not involve the use of hazardous materials during operation; therefore, this impact would *not apply* to this project.

Peninsula Region

Impact 4.14-7: Increased use of hazardous materials during operation		
Baden and San Pedro Valve Lots	PN-1	LS
CS/SA Transmission	PN-2	N/A
HTWTP Long-Term	PN-3	LS
Lower Crystal Springs Dam	PN-4	LS
Pulgas Balancing Reservoir	PN-5	N/A

The Baden and San Pedro Valve Lots project (PN-1) would add a propane tank to provide backup power for the water quality building at the Baden Valve Lot. In addition, the treatment capacity of the Harry Tracy WTP would be increased under the HTWTP Long-Term project (PN-3), potentially resulting in an increase in the use of treatment chemicals, including sodium hypochlorite and ammonia. The possible construction of standby power facilities under the HTWTP Long-Term (PN-3) and Lower Crystal Springs Dam (PN-4) projects could also

require the use of diesel. However, impacts related to a potential release of hazardous materials would be *less than significant* with preparation of an HMBP or revision of the existing HMBPs as well as revision of the Harry Tracy WTP RMP to account for changes in the use of hazardous materials and regulated substances (ammonia). The Lower Crystal Springs Dam project is located in the Peninsula watershed, and the actions specified in the Peninsula WMP would apply. Action haz1 requires development of hazardous chemical management procedures addressing the type, use, storage, transport, and disposal of hazardous chemicals and pesticides used in watershed activities. Action haz2 requires the SFPUC to inventory and annually monitor all above- and below-ground fuel storage tanks, refueling stations, and vehicle maintenance yards within the watershed with respect to the control of vehicle-related contaminants, as well as for compliance with applicable underground storage tank requirements and hazardous materials storage and handling requirements.

The CS/SA Transmission (PN-2) and Pulgas Balancing Reservoir (PN-5) projects would not include a new use or change in use of hazardous materials, so this impact would *not apply* to these projects.

San Francisco Region

Impact 4.14-7: Increased use of hazardous materials during operation		
SAPL 3 Installation	SF-1	N/A
Groundwater Projects	SF-2	LS
Recycled Water Projects	SF-3	LS

Implementation of the Groundwater Projects (SF-2) and Recycled Water Projects (SF-3) could require the use of chlorination or chloramination treatment chemicals, such as sodium hypochlorite or ammonia, and other water treatment chemicals, as well as propane or diesel for backup power at the well or other locations. However, impacts related to a potential release of hazardous materials would be *less than significant* with preparation and implementation of a legally required HMBP or RMP for new uses of hazardous materials, and revision of the existing HMBP for changes in hazardous materials uses at existing facilities.

The SAPL 3 Installation project (SF-1) would not include a new use or change in use of hazardous materials, so this impact would *not apply* to this project.

Impact 4.14-8: Emission or use of hazardous materials within 1/4 mile of a school.

As discussed in Impact 4.14-7, the proposed WSIP projects would increase the quantities of chemicals stored at some of the facilities or would introduce a new use of hazardous materials. If emitted or accidentally released near a school, these chemicals could cause health effects for children.

San Joaquin Region

Impact 4.14-8: Emission or use of hazardous materials within 1/4 mile of a school		
Advanced Disinfection	SJ-1	N/A
Lawrence Livermore	SJ-2	N/A
SJPL System	SJ-3	N/A
SJPL Rehabilitation	SJ-4	N/A
Tesla Portal Disinfection	SJ-5	N/A

The Advanced Disinfection (SJ-1) and Telsa Portal Disinfection (SJ-5) projects at Tesla Portal and the Lawrence Livermore project at Thomas Shaft (SJ-2) would likely involve an increase in the use of disinfection and other water treatment chemicals. In addition, the Advanced Disinfection (SJ-1), Lawrence Livermore (SJ-2), SJPL System (SJ-3), and Tesla Portal Disinfection (SJ-5) projects would introduce the use of hazardous materials for backup power systems. However, these projects are not located within 1/4 mile of a school, so this impact would *not apply* to these projects.

There would be no change in the hazardous materials used under the SJPL Rehabilitation project (SJ-4). Therefore, this impact would *not apply* to this project.

Sunol Valley Region

Impact 4.14-8: Emission or use of hazardous materials within 1/4 mile of a school		
Alameda Creek Fishery	SV-1	N/A
Calaveras Dam	SV-2	N/A
40-mgd Treated Water	SV-3	N/A
New Irvington Tunnel	SV-4	N/A
Treated Water Reservoirs	SV-5	N/A
SABUP	SV-6	N/A

An increase in the use of water treatment chemicals would occur at the Sunol Valley WTP under the 40-mgd Treated Water (SV-3) and Treated Water Reservoir (SV-5) projects and standby power facilities would be constructed at the WTP under the Treated Water Reservoir project. However, the Sunol Valley WTP is not located within 1/4 mile of a school, so this impact would *not apply* to these projects.

There would be no change in the hazardous materials used under the other Sunol Valley Region projects (Alameda Creek Fishery, SV-1; Calaveras Dam, SV-2; New Irvington Tunnel, SV-4; and SABUP, SV-6). Therefore, this impact would *not apply* to these projects.

Bay Division Region

Impact 4.14-8: Emission or use of hazardous materials within 1/4 mile of a school		
BDPL Reliability Upgrade	BD-1	LS
BDPL 3 and 4 Crossovers	BD-2	LS
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	N/A

The Bay Division Reliability project (BD-1) would use propane or a battery for backup power supplies within approximately 1/4 mile of Mission San Jose High School, J. Haley Durham Elementary School, St. Leonard Santa Paula School, and Saint Matthias School. The BDPL 3 and 4 Crossovers project (BD-2) might also use these materials within 1/4 mile of a school. However, propane storage and battery use would be safely managed to protect public health, in accordance with the existing and future

regulatory-approved HMBP. Therefore, this impact would be *less than significant* for these projects with compliance with current regulations.

There would be no change in the hazardous materials used under the BDPL 3 and 4 Seismic Upgrade at Hayward Fault project (BD-3). Therefore, this impact would *not apply* to this project.

Peninsula Region

Impact 4.14-8: Emission or use of hazardous materials within 1/4 mile of a school		
Baden and San Pedro Valve Lots	PN-1	LS
CS/SA Transmission	PN-2	N/A
HTWTP Long-Term	PN-3	LS
Lower Crystal Springs Dam	PN-4	N/A
Pulgas Balancing Reservoir	PN-5	N/A

The Baden and San Pedro Valve Lots project (PN-1) would use propane as a backup power supply for the water building at the Baden Valve Lot, within approximately 1/4 mile of Los Cerritos School, Southwood School, and South San Francisco High School. The Harry Tracy WTP is located within approximately 1/4 mile of Meadows Elementary School, and there would likely be an increase in the use of water treatment chemicals associated with the increased capacity of this treatment plant and construction of standby power facilities under the HTWTP Long-Term project (PN-3). However, hazardous materials used at these facilities would be safely managed to protect public health, in accordance with the existing and future regulatory-approved HMBPs and RMP. Therefore this impact would be *less than significant* with compliance with current regulations.

Although the Lower Crystal Springs Dam project (PN-4) could use diesel for a backup power supply, this project is not located within 1/4 mile of a school. There would be no change in the hazardous materials used under the CS/SA Transmission (PN-2) or Pulgas Balancing Reservoir (PN-5) projects. Therefore, this impact would *not apply* to these projects.

San Francisco Region

Impact 4.14-8: Emission or use of hazardous materials within 1/4 mile of a school		
SAPL 3 Installation	SF-1	N/A
Groundwater Projects	SF-2	LS
Recycled Water Projects	SF-3	LS

Both the Groundwater Projects (SF-2) and Recycled Water Projects (SF-3) could increase the use of water treatment chemicals such as sodium hypochlorite or ammonia, or require propane or diesel for backup power at the well or other locations. Specific sites for these project facilities have not been determined. However, even if located within 1/4 mile of a school, these hazardous materials would be safely managed to protect public health, in accordance with the future regulatory-approved HMBPs and RMPs. Therefore, this impact would be *less than significant* with compliance with current regulations.

The SAPL 3 Installation project (SF-1) would not include a new use or change in use of hazardous materials, so this impact would *not apply* to this project.

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4.15 Energy Resources

4.15 Energy Resources

4.15.1 Setting

Electrical Utility Providers

SFPUC Power Enterprise

SFPUC Power Enterprise (formerly part of Hetch Hetchy Water and Power Enterprise) would provide electrical power service for the WSIP facilities, primarily from power generated by the SFPUC's hydroelectric facilities in the Hetch Hetchy system. As discussed in Chapter 2, the Hetch Hetchy Project comprises 400 megawatts of hydroelectric power generation plants on the Tuolumne River and 150 miles of high-voltage transmission lines linking Hetch Hetchy power to California's electricity grid at Newark. Energy production varies by season and by year depending on hydrologic conditions. The long-term annual average production is approximately 1.7 billion kilowatt-hours (kWh); historical production has ranged from a low of 1.2 billion kWh per year to a high of 2.2 billion kWh per year (SFPUC, 2002). The total energy usage of existing facilities within the WSIP regions is nearly 44 million kWh, less than 4 percent of the historical low production rate of the Hetch Hetchy Project and less than 3 percent of the long-term annual average production rate.

SFPUC Power Enterprise provides electricity to all City and County of San Francisco (CCSF) facilities (including tenants) and to San Francisco International Airport and its tenants. SFPUC Power Enterprise also sells electricity to Norris Industries (a federal facility), provides electricity for the municipal and agricultural pumping loads of the Modesto and Turlock Irrigation Districts, and sells electricity to other public agency wholesalers. While the quantity of power produced exceeds San Francisco's municipal power needs on an annual basis, the CCSF must supplement its power sources to meet municipal demand and its contractual obligations during the summer and fall months, at which time power generation is reduced so that water can be stored.

Pacific Gas and Electric Company

Pacific Gas and Electric Company (PG&E) provides natural gas and electricity to most of Northern California. It provides SFPUC Power Enterprise with transmission and distribution services from Newark to the west, pursuant to an Interconnection Agreement regulated by the Federal Energy Regulatory Commission. Under this agreement, PG&E transmits and distributes electricity to SFPUC Power Enterprise customers, which would include the WSIP facilities.

California's Electricity Supply

California's electricity is supplied by a number of sources, including natural gas (41 percent), coal (21 percent), large hydroelectric plants (15 percent), and nuclear (13 percent) (CEC, 2005). The remaining 10 percent is supplied from geothermal, biomass, small hydroelectric, wind, and solar sources. Despite California policies aimed at diversifying the state's electrical supply, dependence on natural gas is continuing to grow, from 30 percent in 1999 to 36 percent in 2002

to 41 percent in 2004. Electricity generation accounted for 50 percent of the natural gas usage in 2004. In 2002, California imposed a requirement that electrical corporations increase procurement of eligible renewable energy resources by at least 1 percent per year so that 20 percent of its retail sales are procured from renewable resources by 2017 (Public Utilities Code, Section 399.15), and publicly owned utilities have been asked to consider establishing a similar target.

Current Energy Use

Electricity

While per capita electricity consumption in the United States has increased by nearly 50 percent over the past 30 years, per capita California energy use during this period has been approximately flat (CEC, 2005). This achievement is the result of continued progress in cost-effective building and appliance standards and ongoing enhancements in efficiency programs. These combined efforts have reduced peak capacity needs by more than 12,000 megawatts and continue to save about 40,000 gigawatt-hours (GWh) per year of electricity.

Even though California's increases in energy use are small relative to the rest of the country, electricity consumption in California grew from 250,241 GWh in 2001 to 270,927 GWh in 2004. Electricity use is forecast to grow between 1.2 and 1.5 percent annually, from 270,927 GWh in 2004 to between 310,716 and 323,372 GWh by the end of the 2016. Overall, electricity demand in California increases most dramatically in the summer, driven by high air-conditioning usage. The generation system must be able to accommodate these high summer peaks in addition to demand swings caused by weather variability and the economy. Although peak demand periods total only 50 to 100 hours per year, they impose huge burdens on the electrical system. The state's dependence on natural gas to generate electricity is escalating, as is the demand for natural gas in the residential and commercial sectors, with California's natural gas consumption second only to that of Texas.

Despite improvements in power plant licensing, energy efficiency programs, and continued technological advances, development of new energy supplies is not keeping pace with the state's increasing demand (CEC, 2005). Construction of new power plants has lagged, and the number of new plant permit applications has decreased. Transmission lines are frequently running at capacity, forcing system operators to reduce generation to avoid overloading the system, and transmission line outages sometimes result in rolling blackouts. In addition, the development of new renewable resources has been slower than anticipated, due in part to the state's complex and cumbersome approval process. Additional actions are still needed for California to achieve its full energy efficiency potential.

In September 2004, the California Public Utilities Commission (CPUC) adopted the nation's most aggressive energy savings goals for both electricity and natural gas. In achieving these targets, the state will save an additional 5,000 megawatts and 23,000 GWh per year of electricity and 450 million therms per year of natural gas by 2013.

As stated above, the Hetch Hetchy Project provides 400 megawatts of hydroelectric power that is not dependent on natural gas. SFPUC Power Enterprise customer base and generation base are distinguishable from other power supplies, and its load profile is relatively flat (i.e., not dramatically higher in the summer) because it is not driven by air-conditioning usage.

Energy Use Associated with Water Infrastructure Projects

Industrywide, California's water infrastructure uses large amounts of energy to collect and treat water; to dispose of wastewater; and to power the large pumps that move water throughout the state. However, SFPUC Water Enterprise electricity consumption is less intensive than many water providers in California because the regional water system relies on gravity, as opposed to pumping, to bring water from the Sierra Nevada to local storage facilities. Industrywide energy usage for water infrastructure accounts for nearly 20 percent of the state's electricity consumption, one-third of non-power-plant natural gas consumption, and about 88 million gallons of diesel fuel consumption (CEC, 2005). The California Energy Commission (CEC) states that, if not coordinated and properly managed on a statewide basis, water-related electricity demand could ultimately affect the reliability of the electrical system during peak demand periods when reserves are low.

Water and wastewater agencies would similarly be unable to meet the needs of their customers without adequate electricity supplies. More efficient water usage, coupled with energy efficiency improvements in the water infrastructure itself, could reduce electricity demand in this sector. The CEC recommends that the CEC, the California Department of Water Resources, the CPUC, local water agencies, and other stakeholders explore and pursue cost-effective water efficiency opportunities that would save energy and decrease the intensity of energy use in the water sector.

According to the CEC, industry experts estimate that untapped energy efficiency opportunities in water and wastewater treatment range from 5 to 30 percent. In the mid-1990s, the Electric Power Research Institute and HDR, Inc. conducted an audit of the energy savings potential of water and wastewater facilities in California. The audit indicated that over 880 GWh could be saved through implementation of a variety of measures, including load shifting and installation of high-efficiency motors and pumps. The National Resources Defense Council (NRDC) and Pacific Institute further evaluated energy usage by water and wastewater systems, assessing the intensity of energy usage for components of the water supply and treatment system and identifying areas where energy efficiency could be achieved (NRDC and Pacific Institute, 2004). The results of this study are further discussed below under Impact 4.15-2.

Regulatory Framework

National Energy Policy

The National Energy Policy, established in 2001 by the National Energy Policy Development Group, is designed to help the private sector and state and local governments promote dependable, affordable, and environmentally sound production and distribution of energy for the future (NEPDG, 2001). Key issues addressed by the energy policy are energy conservation, repair

and expansion of energy infrastructure, and ways of increasing energy supplies while protecting the environment.

2005 California Energy Action Plan II

The *Energy Action Plan II* is the state's principal energy planning and policy document (CPUC and CEC, 2005). The plan continues the goals of the original *Energy Action Plan*, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first-priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy and capacity needs, clean and efficient fossil-fired generation is supported.

The *Energy Action Plan II* includes the following energy efficiency action specific to water supply systems:

- Identify opportunities and support programs to reduce electricity demand related to the water supply system during peak hours, and opportunities to reduce the energy needed to operate water conveyance and treatment systems.

In 2002, California established its Renewable Portfolio Standard program,[1] with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The CPUC subsequently accelerated that goal to 2010 for electrical corporations, and the CEC further recommended that the state increase the target for all retail electricity sellers to 33 percent by 2020. Because much of electricity demand growth is expected to be met by increases in natural-gas-fired generation, reducing consumption of electricity and diversifying electricity generation resources are significant elements of plans to reduce natural gas demand.

Building Energy Efficiency Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings, as specified in Title 24, Part 6, of the California Code of Regulations, were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The current version of the standards was adopted in October 2005, and the CEC has begun development of an update, which is planned for adoption in 2008.

[1] The Renewable Portfolio Standard is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country. By increasing the required minimum amount over time, the Renewable Portfolio Standard puts the electricity industry on a path toward increasing sustainability.

California's building efficiency standards (along with those for energy-efficient appliances) have saved more than $56 billion in electricity and natural gas costs since 1978 (CEC, 2007). It is estimated that the standards will save an additional $23 billion by 2013.

San Francisco Plans

Sustainability Plan for San Francisco

The *Sustainability Plan for San Francisco* contains a set of general goals and specific objectives and actions for San Francisco to ensure that the city's current needs are met without sacrificing the ability of future generations to meet their own needs (SFDE, 1996). The major energy goals expressed in the plan are to reduce overall power use by maximizing energy efficiency; to maintain an energy supply based on renewable, environmentally sound resources; to eliminate climate-changing and ozone-depleting emissions and toxics associated with energy production and use; and to base energy decisions on the goal of creating a sustainable society.

The Energy, Climate Change and Ozone Depletion chapter of the Sustainability Plan encourages the use of solar energy (harvested directly as sunlight and converted to heat or electricity, or indirectly through wind, water, or vegetation and converted to fuel) as a path towards reducing reliance on nonrenewable fossil fuels. The plan also includes goals to develop energy efficiency requirements that exceed Title 24 standards by 25 percent; provide every building with a renewable energy provider; retrofit mechanically cooled buildings with passive cooling; provide a reliable energy supply system even in times of natural or economic disaster; and install alternative fuels for backup of electrical systems in critical buildings. Specific actions that may be related to the WSIP projects include conducting an energy efficiency audit of public facilities and developing a plan to improve energy efficiency; creating an incentive-based program for managers of city agencies to save energy; establishing city policy that requires staff in municipal facilities to turn off lights and computers when not in use; encouraging building construction that utilizes passive solar technology; and initiating demonstration projects that use solar, wind, ocean, and/or biogas energy sources.

Electricity Resource Plan

The *Electricity Resource Plan* for San Francisco presents an action plan to meet the growth in demand for electricity, as well as allow the shutdown of the Hunters Point power plant and replacement of the aging power plants at Potrero (SFDE and SFPUC, 2002). The main components of the plan include demand reduction through energy efficiency and load management; use of renewable energy resources such as solar, wind, and water; construction of medium-sized generation plants using the most efficient gas-fired generators and cogeneration plants;[2] construction of small-scale distributed generation such as fuel cells, package cogeneration plants, and micro-turbines; and improved power transmission from the Peninsula. The plan calls for a renewed commitment and an accelerated pace to achieving the goals of the 1997 Sustainability Plan, including the elimination of all fossil-fuel power; an energy supply

[2] Cogeneration is the production and use of electricity and heat from the same installation.

based on renewable, environmentally sound resources; and maximum energy efficiency. Specific energy savings and production goals for each component of the *Electricity Resource Plan* are identified.

Climate Action Plan

In February 2002, the San Francisco Board of Supervisors passed the *Greenhouse Gas Emissions Reduction Resolution* (Number 158-02) committing the City and County of San Francisco to a greenhouse gas (GHG) emissions reductions goal of 20 percent below 1990 levels by the year 2012. The resolution also directs the San Francisco Department of the Environment, the SFPUC, and other appropriate City agencies to complete and coordinate an analysis and planning of a local action plan targeting GHG emission reduction activities. In September 2004, the San Francisco Department of the Environment and the SFPUC published the *Climate Action Plan for San Francisco: Local Actions to Reduce Greenhouse Emissions* (Plan) (SFDE and SFPUC, 2004). Although the San Francisco Board of Supervisors has not formally committed the City to perform the actions addressed in the Plan, and many of the actions require further development and commitment of resources, it serves as a blueprint for GHG emission reductions, and several actions are now in progress. The climate Action Plan is further discussed in Section 4.9, Air Quality.

4.15.2 Impacts

Significance Criteria

The CCSF has not formally adopted significance standards for impacts related to energy resources, but generally considers that implementation of the proposed program would have a significant energy resource impact if it were to:

- Encourage activities that resulted in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner (Evaluated in this section)

Approach to Analysis

This analysis evaluates proposed WSIP projects in terms of energy demand during construction and operation and assesses the potential for long-term increases in energy demand and/or the wasteful use of energy. For energy used during construction, the analysis discusses how construction operations would be conducted to minimize the use of fuels and ensure that they are not used in a wasteful manner. For energy used during operation, the analysis identifies WSIP projects for which increases in energy demand would occur. For these projects, energy efficiency measures, consistent with the *Energy Action Plan II*, would be evaluated as part of subsequent, project-level CEQA review. Although any increase in energy demand would be considered potentially significant, implementation of measures to increase energy efficiency, to be determined on a project-by-project basis, would ensure that energy is not used in a wasteful manner and would reduce potential impacts on the state's limited energy supply and aging energy infrastructure.

Impact Summary by Region

Table 4.15-1 presents a summary of potential impacts on energy associated with the WSIP projects. For each impact, the summary presents the expected level of significance of each potential impact for each WSIP project.

TABLE 4.15-1
POTENTIAL IMPACTS AND SIGNIFICANCE – ENERGY

Projects	Project Number	4.15-1: Construction-related energy use	4.15-2: Long-term energy use during operation
San Joaquin Region			
Advanced Disinfection	SJ-1	PSM	PSM
Lawrence Livermore Supply Improvements	SJ-2	PSM	PSM
San Joaquin Pipeline System	SJ-3	PSM	PSM
Rehabilitation of Existing San Joaquin Pipelines	SJ-4	PSM	LS
Tesla Portal Disinfection Station	SJ-5	PSM	PSM
Sunol Valley Region			
Alameda Creek Fishery Enhancement	SV-1	PSM	PSM
Calaveras Dam Replacement	SV-2	PSM	N/A
Additional 40-mgd Treated Water Supply	SV-3	PSM	PSM
New Irvington Tunnel	SV-4	PSM	N/A
SVWTP – Treated Water Reservoirs	SV-5	PSM	PSM
San Antonio Backup Pipeline	SV-6	PSM	N/A
Bay Division Region			
Bay Division Pipeline Reliability Upgrade	BD-1	PSM	PSM
BDPL Nos. 3 and 4 Crossovers	BD-2	PSM	PSM
Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault	BD-3	PSM	PSM
Peninsula Region			
Baden and San Pedro Valve Lots Improvements	PN-1	PSM	N/A
Crystal Springs/San Andreas Transmission Upgrade	PN-2	PSM	PSM
HTWTP Long-Term Improvements	PN-3	PSM	PSM
Lower Crystal Springs Dam Improvements	PN-4	PSM	N/A
Pulgas Balancing Reservoir Rehabilitation	PN-5	PSM	N/A
San Francisco Region			
San Andreas Pipeline No. 3 Installation	SF-1	PSM	PSM
Groundwater Projects	SF-2	PSM	PSM
Recycled Water Projects	SF-3	PSM	PSM

LS = Less than Significant impact, no mitigation required
PSM= Potentially Significant impact, can be mitigated to less than significant
N/A = Not Applicable

Construction Impacts

Impact 4.15-1: Construction-related energy use.

Construction of the WSIP projects would require the use of fuels (primarily gas, diesel, and motor oil) for a variety of construction activities, including excavation, grading, demolition, and vehicle travel. During these activities, fuel use for construction worker commute trips would be minor compared to the fuel use by construction equipment. Although the fuels would only be used during construction of the WSIP projects, excessive idling and other inefficient site operations could result in the wasteful use of fuels. Therefore, impacts related to the wasteful use of fuels during construction would be *potentially significant* for all WSIP projects. However, certain exhaust control measures specified in Section 4.9, Air Quality, such as limiting idling time and performing low-emissions tune-ups (Measures 4.9-1b and 4.9-1d), would ensure that fuels are not used in a wasteful manner and would therefore reduce this impact to a less-than-significant level.

Operational Impacts

Impact 4.15-2: Long-term energy use during operation.

Operation of WSIP project facilities could increase the long-term consumption of energy. As stated above in the Setting, California's water infrastructure accounts for nearly 20 percent of the state's electricity consumption, one-third of non-power-plant natural gas consumption, and about 88 million gallons of diesel fuel consumption. Electricity consumption also contributes to greenhouse gas emissions and associated climate change effects (see Section 4.9, Air Quality, Impact 4.9-6, for more discussion). Furthermore, many of the peak demands for water and much the energy required to treat and transport the water coincide with peak seasonal demands experienced by electrical utilities, and can contribute to the need for rolling blackouts. Thus, reducing the energy required to move, use, and treat water would help relieve stresses on California's energy infrastructure and help California to meet its energy savings goals, while shifting loads from peak demand periods would also help relieve stresses on the system. To address these issues, SFPUC Power Enterprise is developing energy efficiency design guidelines for use by WSIP project staff in designing energy-efficient pump stations and buildings, and the SFPUC already participates in demand-shifting programs to shift more water and wastewater energy usage to off-peak hours, therefore decreasing the use of energy during peak demand periods and reducing the potential for rolling blackouts.

In their analysis of water system energy requirements, the NRDC and Pacific Institute divided the water supply/use/disposal chain into five stages: providing a source of water and conveying it to the point of use, water treatment, distribution, end use, and wastewater treatment (NRDC, 2004). Based on a San Diego case study, the NRDC concluded that end uses of water (especially clothes washing and taking showers) consume more energy than any other part of the urban water conveyance and treatment cycle (56 percent of the total energy usage in San Diego). Of the total

usage, providing source water and conveyance of the water accounted for 30 percent, wastewater treatment accounted for 8 percent, distribution accounted for 5 percent, and water treatment accounted for 1 percent.

Water conservation, planned as part of the WSIP and incorporated in the estimated 2030 water demand, would save substantial amounts of energy, not only by reducing the amount of energy consumed by end-users, but also by reducing the amount of water requiring conveyance and treatment as well as the volume of wastewater requiring treatment. These measures include implementation of plumbing code changes for more efficient water use, continuation of existing conservation practices, and varying levels of additional conservation measures, depending on the system customer. In addition, the WSIP preferred water supply option includes about 4 mgd of additional water conservation measures in San Francisco not already included in the 2030 demand projection, as described in Chapter 3 of this PEIR.

The following analysis focuses on the general energy efficiency approach used by the SFPUC as well as energy consumption required for conveyance and treatment of water under the WSIP. Energy uses by end-users and for wastewater treatment are not evaluated, because the WSIP does not address these components of the water supply/use/disposal chain.

General Energy Usage and Energy Efficiency Approach. Operation of the WSIP projects would increase power consumption relative to existing conditions. Although the Hetch Hetchy Project produces far greater power than is currently used by SFPUC projects in the WSIP regions, the proposed increase in power use by the WSIP facilities could result in a higher reliance on nonrenewable energy resources; this is because less hydroelectric power would be available, particularly during the fall and summer months when power generation under the Hetch Hetchy Project is reduced and power supplies are supplemented by PG&E. However, SFPUC Water Enterprise is developing energy efficiency design guidelines and also participates in energy savings programs, such as the demand-shifting program mentioned above. Participation in demand-shifting programs along with implementation of project-specific energy efficiency measures, consistent with the *Energy Action Plan II*, would ensure that energy under the WSIP is not used in a wasteful manner.

Pump Stations. Much of the energy involved in municipal water systems is used for pumping. SFPUC Power Enterprise is working with WSIP staff to identify energy efficiency opportunities in two areas: pumping energy optimization and efficient pump station design. Pumping energy optimization, or demand shifting, is aimed at designing pumping systems that reduce on-peak energy requirements for water pumping operations. With optimized pumping, pumping operations would shift to the off-peak and part-peak periods of each day (within system constraints) to reduce on-peak energy consumption, while at the same time maintaining uninterrupted water delivery to end users. This measure is projected to reduce on-peak electricity demand by 6 megawatts.

Efficient pump station design is being addressed by incorporating efficient motors, pumps, lighting, and ventilation systems. Energy savings resulting from this measure would be determined based on the energy efficiency guidelines of SFPUC Power Enterprise. Pumping

facilities (including CS/SA Transmission, PN-2; HTWTP Long-Term, PN-3; and Recycled Water Projects, SF-3) would be designed in accordance with these energy efficiency guidelines.

Water Treatment Plants. Water treatment facilities use energy to pump and process water. The amount of energy required for treatment depends on source-water quality, treatment methods used, and pumping requirements for the treated water. Energy requirements for treatment have typically been small, with the bulk of the energy used to pump raw water. Energy savings can be achieved by reducing the volume of raw water pumped (through water conservation), using energy-efficient treatment and pumping equipment, using effective instrumentation and controls, managing pumping operations, and implementing consistent repairs and maintenance of facilities to minimize power use. Other than approximately 2 percent for backwash, treated water is not pumped in the water treatment plants.

Many water suppliers are moving in the direction of using more energy-intensive treatment methods for disinfection, such as ozonation, which is currently used at one SFPUC water treatment plant. The energy required for water treatment is expected to increase over the next decade as treatment capacity expands, new water quality standards are put in place, and new treatments are developed to improve drinking water taste and color. The implementation of the Advanced Disinfection project (SJ-1), for instance, would lead to an increase in energy needs for water treatment.

Groundwater Production. The production of groundwater requires electricity to pump the groundwater from the wells and convey it to a water treatment system. The amount of energy required depends on the efficiency of the pumping equipment, the depth to groundwater, and the distance to the treatment facility. Some of this energy use could be offset, however, because less energy could be required to treat the generally high-quality groundwater. Conjunctive groundwater use, included as part of the drought supply for the WSIP preferred water supply option, would increase energy demands associated with the retrieval of accumulated water in the Westside Basin.

Recycled Water Facilities. The energy costs for water recycling include the incremental costs to treat the wastewater to the standard necessary for its intended use, and the cost of energy required to convey the water to its intended users. The amount of energy required would depend on the equipment used, the degree of treatment required, and the proximity of the treatment plant to the location where the recycled water would be used.

Pipelines and Tunnels. For the most part, WSIP pipelines and tunnels would be gravity driven and would not require power to operate. Where the pipeline would operate under pressure, a pumping plant would be required; power consumption for pumping plants is addressed above. Valve lots constructed for the pipeline systems could result in a small increase in energy demand during their operation. Valves constructed along the pipelines would require a power source for operation, typically connected to the power grid.

Backup power would typically be provided by propane, diesel, or an uninterruptible power supply, all of which are nonrenewable energy sources. However, backup power would only be used in the event of a disruption in power service. One standby power facility constructed for the BDPL Reliability Upgrade project (BD-1) would use a battery and require operation of an air conditioner to maintain an acceptable temperature for battery operation, but energy requirements for this use would be minimal. Therefore, impacts related to the use of large amounts of energy would be less than significant for the standby power facilities used on pipelines.

Crossover Facilities. Crossover facilities would use energy to switch service from one pipeline to another for maintenance or in the event that a pipeline is damaged in a natural disaster. While this use could result in a small increase in energy demand, energy efficiency measures could be employed to reduce the amount of energy required, or an alternative power supply could be utilized. Some crossovers could be hydraulically activated and would not require a power source.

San Joaquin Region

Impact 4.15-2: Long-term energy use during operation		
Advanced Disinfection	SJ-1	PSM
Lawrence Livermore	SJ-2	PSM
SJPL System	SJ-3	PSM
SJPL Rehabilitation	SJ-4	LS
Tesla Portal Disinfection	SJ-5	PSM

SFPUC Power Enterprise provides power in the San Joaquin Region, where existing power usage is 199,574 kWh. As summarized in **Table 4.15-2**, operation of new disinfection facilities at Tesla Portal under the Advanced Disinfection (SJ-1) and Tesla Portal Disinfection (SJ-5) projects could substantially increase energy consumption at this site, depending on the disinfection methods used and pumping requirements of the treatment facility. Energy usage could be as high as 28,280,000 kWh for the Advanced Disinfection project and 128,000 kWh for the Tesla Portal Disinfection project. Operation of disinfection facilities at Thomas Shaft under the Lawrence Livermore project (SJ-2) and crossover facilities for the SJPL System project (SJ-3) would also result in a small increase in energy usage (40,000 kWh for SJ-2 and 60,000 kWh for SJ-3). Implementation of these projects would increase energy usage in the San Joaquin Region by more than 100-fold over existing conditions, primarily due to the large energy consumption required for the Advanced Disinfection project. Therefore, impacts related to the use of large amounts of energy are *potentially significant* for each of these projects, particularly for the Advanced Disinfection project. However, incorporation of energy efficiency measures (Measure 4.15-2) would reduce this impact to a less-than significant-level. Energy efficiency measures would be evaluated in more detail as part of subsequent, project-level CEQA review for each project.

Although the SJPL Rehabilitation project (SJ-4) would require some electricity for the operation of valves and associated instruments, this power load would be temporary and would not be continuous, and any increase in energy demand would thus be negligible. Therefore, this impact would be *less than significant* for this project.

TABLE 4.15-2
ESTIMATED ANNUAL OPERATIONAL ENERGY DEMAND, 2030

No.	Project Name	Existing Power Supply (2005)	Estimated Increase in Annual Operational Energy Consumption, 2030		
			New or Additional Power Needed	Expected Provider	Electricity Requirement (kWh)
SJ-1	Advanced Disinfection	SFPUC	Yes	SFPUC	26,280,000
SJ-2	Lawrence Livermore Supply Improvements	SFPUC	Yes	SFPUC	40,000
SJ-3	San Joaquin Pipeline System	SFPUC	Yes	SFPUC	60,000
SJ-4	Rehabilitation of Existing San Joaquin Pipelines	SFPUC	No[a]	N/A	N/A
SJ-5	Tesla Portal Disinfection Facility	SFPUC	Yes	SFPUC	128,000
SV-1	Alameda Creek Fishery Enhancement	SFPUC	Yes	SFPUC	55,000
SV-2	Calaveras Dam Replacement	SFPUC	No	N/A	N/A
SV-3	Additional 40-mgd Treated Water Supply	SFPUC	Yes	SFPUC	TBD
SV-4	New Irvington Tunnel	SFPUC	No	N/A	N/A
SV-5	SVWTP – Treated Water Reservoirs	SFPUC	Yes	SFPUC	TBD
SV-6	San Antonio Backup Pipeline	SFPUC	No	N/A	N/A
BD-1	Bay Division Pipeline Reliability Upgrade	SFPUC	Yes	SFPUC	70,000
BD-2	BDPL Nos. 3 and 4 Crossovers	SFPUC	Yes	SFPUC	TBD
BD-3	Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault	SFPUC	Yes	SFPUC	TBD
PN-1	Baden and San Pedro Valve Lots Improvements	SFPUC	No	N/A	N/A
PN-2	Crystal Springs/San Andreas Transmission Upgrade	SFPUC	Yes	SFPUC	TBD
PN-3	HTWTP Long-Term Improvements	SFPUC	Yes	SFPUC	TBD
PN-4	Lower Crystal Springs Dam Improvements	SFPUC	No	N/A	N/A
PN-5	Pulgas Balancing Reservoir Rehabilitation	SFPUC	No	N/A	N/A
SF-1	San Andreas Pipeline No. 3 Installation	SFPUC	Yes	SFPUC	8,760
SF-2	Groundwater Projects	SFPUC	Yes	SFPUC	5,100,000
SF-3	Recycled Water Projects	SFPUC	Yes	SFPUC	6,500,000 to 7,000,000

NOTES: SFPUC = SFPUC Power Enterprise; N/A = not applicable

[a] Although the SJPL Rehabilitation project (SJ-4) would require some electricity for the operation of valves and associated instruments, this power load would be temporary and would not be continuous.

Sunol Valley Region

Impact 4.15-2: Long-term energy use during operation		
Alameda Creek Fishery	SV-1	PSM
Calaveras Dam	SV-2	N/A
40-mgd Treated Water	SV-3	PSM
New Irvington Tunnel	SV-4	N/A
Treated Water Reservoirs	SV-5	PSM
SABUP	SV-6	N/A

SFPUC Power Enterprise provides power in the Sunol Valley Region, where existing power usage is 5,076,996.5 kWh. The Alameda Creek Fishery project (SV-1) would likely include a pumping plant to transport recaptured water via a pipeline to a reservoir or treatment plant; as summarized in Table 4.15-2, increased energy required for this project may be 55,000 kWh. Implementation of this project would increase energy usage in the Sunol Valley Region by approximately 1 percent over existing conditions. Although, the 40-mgd Treated Water (SV-3) and Treated Water Reservoirs (SV-5) projects would also result in increased energy use for pumping and treating water at the Sunol Valley WTP, the amount of this increase has not been determined. The increase in energy use for all three projects would be small, but because there would be an increase, impacts related to the use of energy would be *potentially significant* for each of these projects. However, incorporation of energy efficiency measures (Measure 4.15-2) and continued participation in demand-shifting programs would reduce this impact to a less-than-significant level. Incorporation of energy efficiency measures would be evaluated in the project-level CEQA documentation for each project.

There would be no increase in operational energy use for the Calaveras Dam (SV-2), New Irvington Tunnel (SV-4), and SABUP (SV-6) projects. Therefore, this impact would *not apply* to these projects.

Bay Division Region

Impact 4.15-2: Long-term energy use during operation		
BDPL Reliability Upgrade	BD-1	PSM
BDPL 3 and 4 Crossovers	BD-2	PSM
BDPL 3 and 4 Seismic Upgrade at Hayward Fault	BD-3	PSM

SFPUC Power Enterprise (through connections with PG&E) provides power in the Bay Division Region, where existing power usage is 191,438.5 kWh. The BDPL Reliability Upgrade project (BD-1) would require an estimated increase of 70,000 kWh for the operation of valving and actuators, as indicated in Table 4.15-2. The BDPL 3 and 4 Crossovers (BD-2) and BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3) projects would also involve an increase in energy use to operate valves and actuators, but the actual increase has not been determined. Although these facilities would only be operated during pipeline outages for planned maintenance, emergencies, or other unusual circumstances, impacts related to the use of energy would be *potentially significant* for each of these projects. However, incorporation of energy efficiency measures (Measure 4.15-2) would reduce this impact to a less-than-significant level. Potential energy demand associated with each of these projects and energy efficiency measures would be evaluated in more detail as part of the project-level CEQA review for each project.

Peninsula Region

Impact 4.15-2: Long-term energy use during operation		
Baden and San Pedro Valve Lots	PN-1	N/A
CS/SA Transmission	PN-2	PSM
HTWTP Long-Term	PN-3	PSM
Lower Crystal Springs Dam	PN-4	N/A
Pulgas Balancing Reservoir	PN-5	N/A

SFPUC Power Enterprise (through connections with PG&E) provides power in the Peninsula Region, where existing power usage is 24,423,491.5 kWh. As summarized in Table 4.15-2, the CS/SA Transmission (PN-2) and HTWTP Long-Term (PN-3) projects, both of which include construction or improvements to a pumping plant, would require an increase in operational energy use, but the amount has not been determined. Because there would be an increase in energy use, impacts related to the use of energy would be *potentially significant* for each of these projects. However, incorporation of energy efficiency measures (Measure 4.15-2) and continued participation in demand-shifting programs would reduce this impact to a less-than-significant level. Energy efficiency measures would be evaluated in the project-level CEQA documentation for each project.

There would be no increase in the use of energy during operation of the Baden and San Pedro Valve Lots (PN-1), Lower Crystal Springs Dam (PN-4), or Pulgas Balancing Reservoir (PN-5) projects. Therefore, this impact would *not apply* to these projects.

San Francisco Region

Impact 4.15-2: Long-term energy use during operation		
SAPL 3 Installation	SF-1	PSM
Groundwater Projects	SF-2	PSM
Recycled Water Projects	SF-3	PSM

SFPUC Power Enterprise (through connections with PG&E) provides power in the San Francisco Region, where existing power usage is 13,882,397 kWh. As summarized in Table 4.15-2, the SAPL 3 Installation project (SF-1) would require 8,760 kWh of energy to operate valving and monitoring stations. The Groundwater Projects (SF-2) would require up to 5,100,000 kWh to convey water for restoration of Lake Merced water levels, pump groundwater, and convey groundwater to a treatment plant; the Recycled Water Projects (SF-3) would require up to 7,000,000 kWh of electricity to operate the recycled water facility and convey the water to storage facilities and end-users.

Implementation of these projects would result in an approximately 87 percent increase in energy use in the San Francisco Region over existing conditions. Therefore, impacts related to the use of large amounts of energy are *potentially significant* for each of these projects. However, incorporation of energy efficiency measures (Measure 4.15-2) would reduce this impact to a less-than-significant level. Energy efficiency measures would be evaluated as part of project-level CEQA documentation for each project.

4.15.3 References – Energy Resources

California Energy Commission (CEC), *2005 Integrated Energy Policy Report*, November 2005.

California Energy Commission (CEC), Title 24, Part 6, of the California Code of Regulations, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, available online at http://www.energy.ca.gov/title24/, June 8, 2007.

California Public Utilities Commission (CPUC) and California Energy Commission (CEC), *Energy Action Plan II*, Implementation Roadmap for Energy Policies, September 21, 2005.

National Energy Policy Development Group (NEPDG), National Energy Policy, May 2001.

National Resources Defense Council (NRDC) and Pacific Institute, *Energy Down the Drain, the Hidden Costs of California's Water Supply*, August 2004.

San Francisco Department of the Environment (SFDE), *Sustainability Plan for San Francisco*, available online at http://www.sfenvironment.com/aboutus/policy/sustain/, October 1996.

San Francisco Department of the Environment and San Francisco Public Utilities Commission (SFDE and SFPUC), *Electricity Resource Plan*, Choosing San Francisco's Energy Future, Revised December 2002.

San Francisco Department of the Environment and San Francisco Public Utilities Commission (SFDE and SFPUC), *Climate Action Plan for San Francisco*, Local Actions to Reduce Greenhouse Emissions, September 2004.

San Francisco Public Utilities Commission (SFPUC), *Long Term Strategic Plan for Capital Improvements*, May 2002.

4.16 Collective Impacts Related to WSIP Facilities

4.16 Collective Impacts Related to WSIP Facilities

4.16.1 Introduction and Approach

This analysis evaluates the potential for multiple WSIP projects to generate *collective* impacts in multiple WSIP regions or within the same WSIP region, which are the combined impacts resulting from implementation of multiple WSIP facility improvement projects. The collective impact sections presented below are organized by the same environmental resource topics analyzed in the preceding sections of Chapter 4. The analyses assume that the SFPUC would implement the measures identified to reduce the impacts of individual WSIP projects, including SFPUC standard construction measures, mitigation measures described in Chapter 6 (Measures 4.3-1 through 4.15-2), regulatory requirements of other agencies with jurisdiction over environmental resources, and, where applicable, policies of the Alameda and Peninsula Watershed Management Plans (WMPs). The overall approach to the Chapter 4 facilities impact assessment is described in Section 4.1.

Additionally, this section assesses the program-wide impacts that could result from collective WSIP facility impacts (i.e., the residual effects that are still significant after mitigation) combined with relevant residual impacts associated with the proposed water supply and system operations (as analyzed in Chapter 5, and which relate only to water quality, biological resources, recreation, and visual quality). Since there are undetermined aspects of many of the WSIP projects at this stage of program planning, this PEIR errs on the conservative side in its determination of impact of significance and assumes that separate, project-level CEQA review would confirm the existing conditions and degree of impact.

Mitigation measures that address potentially significant collective impacts are presented in Chapter 6, Mitigation Measures. These measures are numbered to correspond to the collective impact number (4.16-X) to differentiate them from program-level mitigation measures for facilities impacts, which are numbered 4.3-X through 4.15-X. In some cases, a collective mitigation measure repeats a program-level measure that was required for a specific project in Sections 4.3 through 4.15, but applies the same measure to more projects (e.g., all projects in the region or in a specific area) in order to reduce the collective impact.

4.16.2 Potential Overlap of WSIP Facility Locations and Schedules

This section compares WSIP project locations and schedules and identifies any overlap. The geographic scope of some impacts (e.g., air pollutant emissions) could extend beyond the boundary of a given WSIP region (referred to as multi-regional collective impacts). Other collective impacts (e.g., traffic) would be confined to specific areas within a particular WSIP region, where the locations and schedules of WSIP projects could overlap (referred to as localized collective impacts). The analysis evaluates the potential for residual impacts from each WSIP project (i.e., impacts after mitigation) to contribute to collective or combined effects; identifies

the severity or significance of such impacts; and indicates whether mitigation is available to reduce these effects to a less-than-significant level.

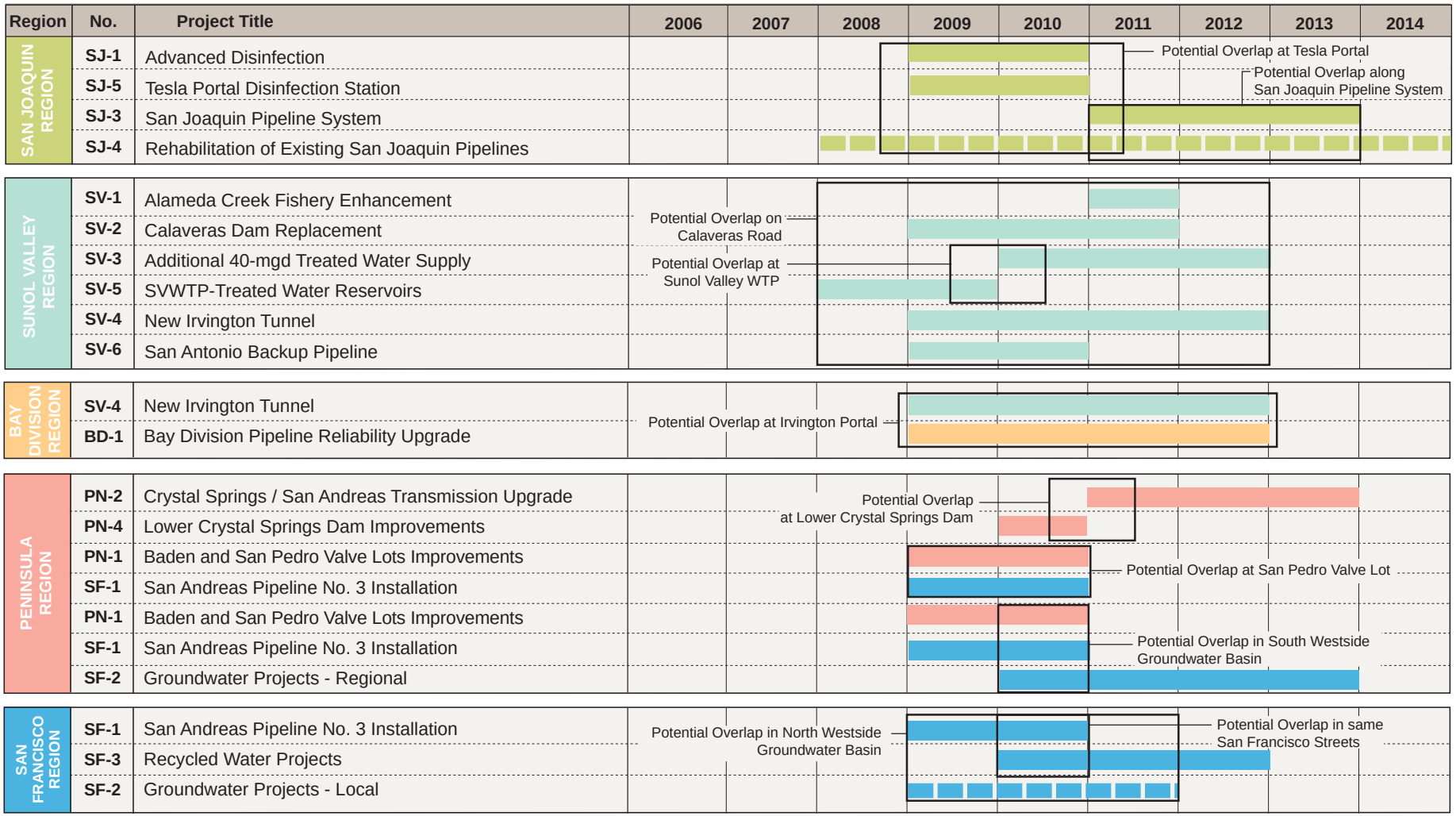
Implementation of the proposed program would result in simultaneous construction and operation of multiple WSIP projects and could cause collective impacts that are greater (more severe, more frequent, and/or longer in duration) than individual project impacts. Two types of collective impacts are evaluated in this section:

- *Multi-regional Collective Impacts*. Impacts in different WSIP regions that would occur at the same time. These impacts would not necessarily overlap geographically. Since project-related activities would occur over many regions, the multi-regional impacts represent those impacts that would span more than one region. Multi-regional impacts would only pertain to the following resource areas: hydrology and water quality (regional water bodies), biological resources (sensitive biological habitats that occur regionally), and air quality (regional air basins). There could also be multi-regional traffic impacts for drivers who commute daily through more than one region, since these motorists could encounter traffic delays from WSIP construction projects in multiple regions.

- *Localized Collective Impacts*. Projects would be considered to have a potential collective impact if they overlapped geographically (in terms of affecting the same resources) in one WSIP region, and construction would occur during the same time period. The locations of each WSIP project (see Chapter 3, Figure 3.5) and preliminary construction schedules (Figure 3.6) were compared to identify where simultaneous construction activities could occur. **Figure 4.16-1** shows the geographic areas and time periods of potential overlaps; specific overlapping projects are listed in **Table 4.16-1**.

  Geographic overlap for construction activities would occur if projects were constructed in the same location, shared the same access/haul/delivery routes, or drained to the same waterway. Schedule overlap, for the purpose of this PEIR, is defined as an overlap in the preliminary construction schedules, or preliminary construction schedules that are separated by one year or less (and could therefore overlap if construction schedules shifted by up to a year). It should be noted that this analysis would still be representative of the types of program-level impacts that could occur if construction schedules shifted by more than one year. For example, if both geographic and schedule overlap for multiple projects were to occur, a combined increase in truck traffic and other temporary construction impacts (such as noise and dust) could result. However, in all cases, the likelihood and extent of overlapping construction activities from two or more WSIP projects would vary depending on the SFPUC's ongoing and future planning (preliminary construction schedules could change over time), coordination, individual project construction phasing, and/or the intermittent nature of construction activities for some projects. In addition, the area affected by construction would shift over time for the linear WSIP projects (e.g., pipelines and aqueducts).

Specific areas of potential overlap are discussed below by region.



Note: Only WSIP projects with potential overlap are shown. See Figure 3.6 for complete construction schedule

Period Of Potential Geographic Overlap

Intermittent Construction Activities

Continuous Construction Activities

SOURCE: ESA + Orion, 2006

Figure 4.16-1

Location and Years of Potentially Overlapping WSIP Construction Activities

TABLE 4.16-1
WSIP PROJECTS WITH POTENTIAL CONSTRUCTION OVERLAP

WSIP Facility	Proposed WSIP Construction Schedule (Duration)	Potentially Overlapping WSIP Projects				
		2006	2007–2008	2009–2010	2011–2012	2013–2014
San Joaquin Region						
SJ-1: Advanced Disinfection	2009–2010 (1–2 years)	None	None	*SJPL System* (*SJ-3*) SJPL Rehabilitation (SJ-4) Tesla Portal Disinfection (SJ-5)	*SJPL System* (*SJ-3*)	None
SJ-2: Lawrence Livermore Supply Improvements	2010–2011 (1 year)	None	None	None	None	None
SJ-3: San Joaquin Pipeline System	2011–2014 (3 years)	None	None	*Advanced Disinfection* (*SJ-1*) *Tesla Portal Disinfection* (*SJ-5*)	*Advanced Disinfection* (*SJ-1*) SJPL Rehabilitation (SJ-4) *Tesla Portal Disinfection* (*SJ-5*)	SJPL Rehabilitation (SJ-4)
SJ-4: Rehabilitation of Existing San Joaquin Pipelines	2007–2014 (7–8 years)	None	None	Advanced Disinfection (SJ-1) Tesla Portal Disinfection (SJ-5)	SJPL System (SJ-3)	SJPL System (SJ-3)
SJ-5: Tesla Portal Disinfection Station	2009–2011 (1–2 years)	None	None	Advanced Disinfection (SJ-1) *SJPL System* (*SJ-3*) SJPL Rehabilitation (SJ-4)	*SJPL System* (*SJ-3*)	None
Sunol Valley Region						
SV-1: Alameda Creek Fishery Enhancement[a]	2011 (1 year)	None	None	SABUP (SV-6)	Calaveras Dam (SV-2) 40-mgd Treated Water (SV-3) New Irvington Tunnel (SV-4) SABUP (SV-6)	TBD
SV-2: Calaveras Dam Replacement	2009–2011 (2–3 years)	None	None	40-mgd Treated Water (SV-3) New Irvington Tunnel (SV-4) Treated Water Reservoirs (SV-5) SABUP (SV-6)	Alameda Creek Fishery (SV-1) 40-mgd Treated Water (SV-3) New Irvington Tunnel (SV-4)	None
SV-3: Additional 40-mgd Treated Water Supply	2010–2013 (2–3 years)	None	None	Calaveras Dam (SV-2) New Irvington Tunnel (SV-4) *Treated Water Reservoirs* (*SV-5*) SABUP (SV-6)	Alameda Creek Fishery (SV-1) Calaveras Dam (SV-2) New Irvington Tunnel (SV-4)	None
SV-4: New Irvington Tunnel	2009–2013 (3–4 years)	None	None	Calaveras Dam (SV-2) 40-mgd Treated Water (SV-3) Treated Water Reservoirs (SV-5) SABUP (SV-6) BDPL Reliability Upgrade (BD-1)	Alameda Creek Fishery (SV-1) Calaveras Dam (SV-2) 40-mgd Treated Water (SV-3) BDPL Reliability Upgrade (BD-1)	None
SV-5: SVWTP – Treated Water Reservoirs	2008–2010 (2 years)	None		Calaveras Dam (SV-2) *40-mgd Treated Water* (*SV-3*) New Irvington Tunnel (SV-4) SABUP (SV-6)	None	None
SV-6: San Antonio Backup Pipeline	2009–2011 (2 years)	None	None	*Alameda Creek Fishery (SV-1)* Calaveras Dam (SV-2) 40-mgd Treated Water (SV-3) New Irvington Tunnel (SV-4) Treated Water Reservoirs (SV-5)	*Alameda Creek Fishery (SV-1)*	None

TABLE 4.16-1 (Continued)
WSIP PROJECTS WITH POTENTIAL CONSTRUCTION OVERLAP

WSIP Facility	Proposed WSIP Construction Schedule (Duration)	Potentially Overlapping WSIP Projects				
		2006	2007–2008	2009–2010	2011–2012	2013–2014
Bay Division Region						
BD-1: Bay Division Reliability Upgrade	2009–2013 (4 years)	None		New Irvington Tunnel (SV-4)	New Irvington Tunnel (SV-4)	None
BD-2: BDPL Nos. 3 and 4 Crossovers	2010–2012 (2 years)	None	None	None	None	None
BD-3: Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault	2010–2012 (1–2 years)	None	None	None	None	None
Peninsula Region						
PN-1: Baden and San Pedro Valve Lots Improvements	2009–2011 (2 years)	None	None	SAPL 3 Installation (SF-1) Groundwater Projects – Regional (SF-2)	None	None
PN-2: Crystal Springs/ San Andreas Transmission Upgrade	2011–2013 (2–3 years)	None	None	*Lower Crystal Springs Dam* (*PN-4*)	None	None
PN-3: HTWTP Long-Term Improvements	2011–2013 (2–3 years)	None	None	None	None	None
PN-4: Lower Crystal Springs Dam Improvements	2010-2011 (1 year)	None	None	*CS/SA Transmission* (*PN-2*)	None	None
PN-5: Pulgas Balancing Reservoir Rehabilitation	2007–2008, 2010–2013 (1 and 3 years)	None	None	None	None	None
San Francisco Region						
SF-1: San Andreas Pipeline No. 3 Installation	2009–2010 (2 years)	None	None	Baden and San Pedro Valve Lots (PN-1) Groundwater Projects (SF-2) Recycled Water Projects (SF-3)	None	None
SF-2: Groundwater Projects – Local and Lake Merced	2009–2012 (3 years, intermittent)	None	None	SAPL 3 Installation (SF-1) Recycled Water Projects (SF-3)	Recycled Water Projects (SF-3)	None
SF-2 Groundwater Projects – Regional	2010–2014 (4 years)	None	None	Baden and San Pedro Valve Lots (PN-1) SAPL 3 Installation (SF-1)	None	None
SF-3: Recycled Water Projects	2010–2012 (2 years for treatment facility, longer for pipelines)	None	None	SAPL 3 Installation (SF-1) Groundwater Projects (SF-2)	Groundwater Projects (SF-2)	None

NOTE: *Italicized* text indicates projects with sequential start and end dates. Although there is no overlap between the date one project ends and another project starts, sequential project schedules have some potential for overlap, since construction delays could alter schedules.

San Joaquin Region

The following potential overlaps have been identified:

- *Tesla Portal*. Up to four WSIP projects with potentially overlapping construction schedules could be built at this location. The Advanced Disinfection (SJ-1) and Tesla Portal Disinfection (SJ-5) facilities might both be built at Tesla Portal, and the construction schedules overlap in 2009 and 2010. The SJPL System (SJ-3) and SJPL Rehabilitation (SJ-4) projects would also include construction at Tesla Portal. The SJPL Rehabilitation project could overlap with the Advanced Disinfection and Tesla Portal Disinfection projects at the Tesla Portal in 2009 and 2010. The SJPL System project could also overlap with the Advanced Disinfection and Tesla Portal Disinfection projects at the Tesla Portal because the construction of the SJPL System project is scheduled to start when construction of these projects ends in 2011.

- *San Joaquin Pipeline System*. Both the SJPL System (SJ-3) and SJPL Rehabilitation (SJ-4) projects would occur along the existing San Joaquin Pipeline alignment and could overlap with each other between 2011 and 2014. However, the nature of potential overlap with construction activities under the SJPL Rehabilitation project is unknown, since the rehabilitation work would not be defined until the conditions assessment is completed.

Sunol Valley Region

The following potential overlaps have been identified:

- *Use of Calaveras Road During Construction of Multiple Projects*. Five of the Sunol Valley Region projects could be under construction between 2009 and 2010, with construction of Calaveras Dam (SV-2) extending to the end of 2011 and two projects (40-mgd Treated Water, SV-3, and New Irvington Tunnel, SV-4) extending to the end of 2012. If the construction schedule changed, the Alameda Creek Fishery project (SV-1), scheduled for 2011, could also be under construction during this time period. Four projects could be simultaneously under construction between 2011 and 2012. The actual overlap of the New Irvington Tunnel would depend on the phasing of this project, because much of the construction activity would take place in the Sunol Valley near the Alameda West Portal.

- *Sunol Valley WTP*. The 40-mgd Treated Water (SV-3) and Treated Water Reservoirs (SV-5) projects are both proposed at the Sunol Valley WTP; although the Treated Water Reservoirs project is scheduled for completion by the end of 2009, prior to the 40-mgd Treated Water project, some overlap could occur if there were construction delays. As shown in Figure 4.16-1, construction activities at the Sunol Valley WTP would be continuous for five years, from 2008 through the end of 2012.

Bay Division Region

In the Bay Division Region, the BDPL Reliability Upgrade (BD-1) and New Irvington Tunnel (SV-4) projects involve work at the Irvington Portal vicinity in Fremont, and the two project schedules overlap from 2009 through 2012. Most of the construction activity for the New Irvington Tunnel project would occur in the Sunol Valley. Under the BDPL Reliability Upgrade project, the pipeline would be constructed using cut-and-cover methods along much of the pipeline alignment, while construction activities associated with tunnel construction would occur

primarily at the east tunnel portal in Newark (approximately seven miles west of the Irvington Portal) and the west tunnel portal in East Palo Alto, across San Francisco Bay. However, since the west end of the New Irvington Tunnel would connect to the east end of the BDPL Reliability Upgrade, there would necessarily be coordination and overlap in the design and construction of both projects.

Peninsula Region

The following specific overlaps have been identified:

- *Lower Crystal Springs Reservoir Area*. The CS/SA Transmission (PN-2) and Lower Crystal Springs Dam (PN-4) projects involve construction at or near Lower Crystal Springs Dam. These projects have sequential start and end dates at the end of 2010 and could overlap if construction schedules were to change, depending on the phasing of the CS/SA Transmission project.

- *San Pedro Valve Lot*. Construction at the San Pedro Valve Lot could occur under both the Baden and San Pedro Valve Lots (PN-1) and SAPL 3 Installation (SF-1) projects. Their schedules overlap for the entire two-year construction duration in 2009 and 2010. Actual overlap of these projects would depend on the phasing of the SAPL 3 Installation construction, which would take place over the entire pipeline length.

- *South Westside Groundwater Basin, San Mateo County*. The Baden and San Pedro Valve Lots project (PN-1) is in the South Westside Groundwater Basin, where the Regional Groundwater Projects (SF-2) would be constructed. Construction could overlap for one year in 2010. The actual overlap would depend on the specific locations selected for the Regional Groundwater Projects.

San Francisco Region

Specific project overlaps include:

- *San Francisco North Westside Groundwater Basin*. In San Francisco, a portion of the SAPL 3 Installation (SF-1) pipeline alignment and the Recycled Water Projects (SF-3) are located within the North Westside Groundwater Basin, where the Local Groundwater Projects (SF-2) would be constructed, and some of the facilities are within one mile of each other. The construction schedules for the SAPL 3 Installation project and the Local Groundwater Projects overlap in 2009 and 2010. The construction schedules for the Recycled Water Projects and Local Groundwater Projects overlap for two years in 2010 and 2011. The actual overlap for all projects would depend on the specific locations selected for the Local Groundwater Projects and the phasing of the SAPL 3 Installation project. In addition, construction activities under the Local Groundwater Projects would be intermittent, and there would not be continual overlap for the duration of the construction period.

- *South Westside Groundwater Basin, San Mateo County*. A portion of the SAPL 3 Installation (SF-1) pipeline alignment is located in San Mateo County within the South Westside Groundwater Basin, where the Regional Groundwater Projects (SF-2) would be constructed, and these projects could overlap for one year in 2010. The actual overlap would depend on the specific locations selected for the Regional Groundwater Projects and the phasing of the SAPL 3 Installation project.

- *San Francisco Streets*. In some San Francisco locations, the installation of recycled water pipelines under the Recycled Water Projects (SF-3) could occur in the same street alignments as pipelines for the SAPL 3 Installation project (SF-1), and construction activities could coincide in 2010.[1]

4.16.3 Collective Facility Impacts

Significance Criteria

The City and County of San Francisco (CCSF) has not formally adopted significance standards for impacts related to the combined or collective effects of a program such as the WSIP. Sections 4.3 through 4.15 present the criteria used to determine the significance of individual facility impacts under the various environmental resource topics. This assessment of collective impacts applies the same significance criteria to the same resource topics to identify the residual impacts that would remain following implementation of mitigation measures identified in Sections 4.3 through 4.15 (described in Chapter 6).

Impact Summary

Collective impacts are discussed below, and impact significance determinations by region and environmental topic are summarized in **Table 4.16-2**.

Land Use and Visual Quality

Impact 4.16-1a: Collective temporary and permanent impacts on existing land uses in the vicinity of proposed facility sites.

Multi-regional Collective Impacts

As described in Section 4.3, implementation of the WSIP could result in temporary adverse impacts on existing land uses located adjacent to proposed WSIP facility sites by causing temporary incompatibility problems or conflicts between existing uses and construction activities (e.g., disrupting use of a school or park) (Impact 4.3-1). Although temporary disruptions could occur where facility sites would be in separate discrete locations, there would be no multi-regional collective temporary disruption or division of land uses (*not applicable*).

Implementation of the WSIP could require the acquisition of easements or land, and such acquisition could result in permanent displacement of existing land uses at discrete locations adjacent to or near specific project facility sites (Impact 4.3-2). For sites that are separate from other WSIP sites, no multi-regional collective or additive permanent displacement of existing land uses would occur (*not applicable*).

[1] Note that pipelines for the Recycled Water Projects (SF-3) would carry recycled water, while pipelines for the SAPL 3 Installation project (SF-1) would carry potable water; if both types of pipes were to be installed in the same streets, the pipeline placement would require review for compliance with regulations regarding the separation of potable and recycled water pipelines.

TABLE 4.16-2
POTENTIAL COLLECTIVE IMPACTS AND SIGNIFICANCE – BY REGION

Impact Number and Topic	Multi-regional Collective Impact[a]	Localized Collective Impacts in Overlapping Areas				
		San Joaquin Region	Sunol Valley Region	Bay Division Region	Peninsula Region	San Francisco Region
4.16-1a: Land Use	N/A	N/A	N/A	PSU	LSM	N/A
4.16-1b: Visual Quality	N/A	LSM	LS	LSM	LSM	LSM
4.16-2: Geology, Soils, and Seismicity	B	N/A	N/A	N/A	N/A	N/A
4.16-3: Hydrology and Water Quality	LSM	LSM	LSM	LSM	LSM	LSM
4.16-4: Biological Resources	PSM	PSM	PSU	PSM	PSU	N/A
4.16-5: Cultural Resources	LSM	LSM	PSU	LSM	PSU	N/A
4.16-6: Traffic, Transportation, and Circulation	PSU	PSM	PSM	PSM	PSM	PSM
4.16-7: Air Quality	PSU	PSM	PSM	LSM	LS	LS
4.16-8: Noise and Vibration	N/A	PSU	PSM	PSU	PSU	PSU
4.16-9: Public Services and Utilities	LSM	N/A	N/A	N/A	N/A	N/A
4.16-10: Recreational Resources	LS	LSM	LSM	LSM	LSM	LSM
4.16-11: Agricultural Resources	LSM	N/A	N/A	N/A	N/A	N/A
4.16-12: Hazards	LS	LSM	LSM	LSM	LSM	LSM
4.16-13: Energy Resources	LSM	LSM	LSM	LSM	LSM	LSM

NOTE: The significance determinations presented in this table assume implementation of all SFPUC construction measures, regulations, and mitigation measures identified in Chapter 6.

B = Beneficial impact
N/A = Not applicable, because there is no collective or combined effect
LS = Less than Significant impact, no mitigation required
LSM = Less than Significant with program-level mitigation (Measures 4.3-1 through 4.15-2)
PSM= Potentially Significant impact, can be mitigated to a less-than-significant level with collective mitigation (Measures 4.16-1 through 4.16-9b)
PSU = Potentially Significant Unavoidable impact

[a] For Energy Resources, the significance determination includes systemwide (area encompassing the entire water system) impacts as well as impacts within the WSIP study area (area between San Francisco and Oakdale Portal)

Localized Collective Impacts

WSIP projects with overlapping sites, staging areas, and/or haul routes could exacerbate temporary community disruption impacts (e.g., traffic congestion and access constraints, dust, and noise) or collectively alter existing land use patterns. Temporary direct collective impacts would occur in overlapping areas if construction activities or staging associated with multiple WSIP projects affected the same or adjacent uses. Indirect collective impacts from overlapping projects, such as construction-related traffic conflicts on common haul routes, combined construction air pollutant emissions, and construction-related noise increases, are discussed below under the traffic, air quality, and noise discussions. Permanent collective impacts could occur in overlapping areas if multiple WSIP projects adversely affected the same land uses, especially if the same or adjacent lands or easements were required for access to more than one project.

As stated in Section 4.3, the potential for temporary land use disruption or conflicts would be low during construction of most WSIP projects, since they generally involve improvements to existing SFPUC facilities that occur within existing facility sites and SFPUC rights-of-way, or are located in areas isolated from other development. However, some project facilities would involve construction outside of CCSF-owned lands and thus would be more likely to affect existing land uses on or adjacent to lands to be acquired. When the projects identified as requiring land acquisition or staging areas (see Table C.1 in Appendix C) are considered together and then evaluated in the context of overlapping schedules (Figure 4.16-1), the potential for direct temporary or permanent collective impacts in each region would be as follows:

- *San Joaquin Region*. Two projects in this region (SJPL System, SJ-3, and Tesla Portal Disinfection, SJ-5) would require temporary land acquisition for staging areas, but there would be no permanent change in land use at Tesla Portal, which is already developed with water facilities. Since the construction schedules of these two projects would not overlap (Figure 4.16-1), no collective impacts would result from temporary changes in land use associated with each project's construction staging. Therefore, this impact would *not apply*.

- *Sunol Valley Region*. Three projects in this region (Calaveras Dam, SV-2; 40-mgd Treated Water, SV-3; and Treated Water Reservoirs, SV-5) would require temporary acquisition of land or easements for construction staging or access, and portions of their construction schedules would overlap. However, since the acquired land would not overlap geographically, no temporary or permanent collective impacts would occur in this region. Therefore, this impact would *not apply*.

- *Bay Division Region – Irvington Portal in Fremont*. Staging and access areas for both the new Irvington Tunnel portal (SV-4) and easternmost segment of the BDPL Reliability Upgrade project (BD-1) would overlap in the area east of Mission Boulevard and in the vicinity of existing homes. Since the construction schedules for these projects overlap for their entire four-year durations (2009 to 2013), it is not known whether or how long the construction activities would overlap. Both of these projects would introduce temporary staging and construction activities into a currently undeveloped area adjacent to a residential neighborhood. Such construction-related impacts would be a potentially significant collective impact. Implementation of a collective mitigation measure to coordinate staging and construction of these two projects in the Irvington Tunnel portal vicinity (Measure 4.16-1a) could reduce this collective impact; however, since the feasibility of such coordination cannot be determined at this stage of project planning, temporary impacts on residences near the Irvington Tunnel portal would be *potentially significant and unavoidable.*

  The WSIP would also develop new permanent water facilities and an access road in an undeveloped area adjacent to a residential neighborhood. Implementation of program-level measures, such as conducting siting studies to minimize permanent impacts on existing land uses and using buffer zones and visual screens (Measures 4.3-2a and 4.3-2b), would help minimize each project's impact such that the residual collective land use impact would be less than significant.

- *Peninsula Region – Lower Crystal Springs Dam Vicinity*. Construction of the CS/SA Transmission (PN-2) and Lower Crystal Springs Dam (PN-4) projects could overlap briefly between 2010 and 2011 if construction schedules were changed or delayed. Even if the schedules do not overlap, staging areas for each project or prolonged use of the same staging area in the dam vicinity for both projects could affect recreational uses if access or

parking were disrupted. Implementation of measures to accommodate the displaced public parking supply for recreational visitors (Measure 4.8-4) would help minimize each project's impact such that the potential residual collective land use impact would be *less than significant with mitigation.*

- *San Francisco Region*. Only one project in this region (Groundwater Projects, SF-2) would require the acquisition of land or easements for staging. With only one project, there would be no overlap with any other WSIP projects in this region, and this impact would *not apply*.

Impact 4.16-1b: Collective temporary and permanent impacts on the visual character of the surrounding area.

Section 4.3 also addresses the aesthetic and visual quality impacts associated with implementation of the WSIP (Impact 4.3-3).

Multi-regional Collective Impacts

Potential visual impacts of the WSIP (e.g., temporary visual effects during construction or permanent visual effects due to proposed aboveground facilities) would be confined to specific sites and corridors within the WSIP study area. In addition, as discussed in Chapter 5, the proposed water supply and system operations would have the potential to affect visual resources associated with changes in stream flow or water levels in affected water bodies in the Tuolumne, Alameda, and Peninsula watersheds. However, these effects would also be confined to specific sites and corridors within the WSIP program area. Therefore, no multi-regional degradation of visual resources would occur (*not applicable*).

Localized Collective Impacts

Temporary and permanent collective impacts could occur where more than one WSIP project with aboveground facilities would adversely affect the same visual resource (e.g., views of natural areas, such as ridgelines and riparian corridors, from a designated scenic route), thus creating a collective visual change. When projects identified as having aboveground elements (see Table C.1, Appendix C) are considered together and then evaluated in the context of overlapping schedules (see Figure 4.16-1), the potential for collective visual impacts in each region would be as follows:

- *San Joaquin Region – Tesla Portal*. Distant views of the Tesla Portal facility are visible from I-580, a designated scenic route. The Advanced Disinfection (SJ-1) and Tesla Portal Disinfection (SJ-5) projects would collectively expand the cluster of buildings that already exists at the Tesla Portal facility. Implementation of measures pertaining to architectural siting and design (Measure 4.3-4a), revegetation and site restoration (Measure 4.3-4b), and tree care (Measure 4.3-4c) would reduce each project's impact such that the residual collective visual impact would be *less than significant with mitigation*.

- *Sunol Valley Region – Sunol Valley WTP*. There are two projects involving new aboveground facilities at the Sunol Valley WTP: 40-mgd Treated Water (SV-3) and

Treated Water Reservoirs (SV-5). Since the WTP is not visible from Calaveras Road (due to trees in the Alameda riparian corridor that block the view), proposed facilities would also not be visible from this road. In addition, the proposed water supply and system operations could affect the visual character of creeks and reservoirs in the Sunol Valley Region (see Chapter 5, Section 5.4.7); however, due to the separate viewsheds for the WTP and the creeks/reservoirs as well as the difference in impact type (i.e., the appearance of proposed structures vs. changes in stream flow and water levels), there would be no additive effects on the visual character of the area. Therefore, the collective visual impact would be *less than significant,* particularly with implementation of the SFPUC's Alameda WMP design guidelines.

- *Bay Division Region – Irvington Portal in Fremont*. The New Irvington Tunnel (SV-4) and BDPL Reliability Upgrade (BD-1) projects would overlap geographically in the vicinity of Irvington Portal (east of Mission Boulevard) in Fremont, and their schedules would coincide. The BDPL Reliability Upgrade project would have two vaults (Irvington Portal Vault and Mission Boulevard Venturi Meter Vault) in the vicinity of the new Irvington Tunnel portal. Implementation of measures for architectural siting and design (Measure 4.3-4a), revegetation and site restoration (Measure 4.3-4b), and tree care (Measure 4.3-4c) would reduce each project's impact such that the residual collective impact would be *less than significant with mitigation.*

- *Peninsula Region – Lower Crystal Springs Dam Vicinity*. Aboveground facilities associated with the CS/SA Transmission (PN-2) and Lower Crystal Springs Dam (PN-4) projects would overlap in the area below the dam and could collectively alter views from Highway 35 (Skyline Road Bridge over Lower Crystal Springs Dam) or Crystal Springs Road, both designated scenic routes. However, these views would be limited somewhat by elevational differences and intervening vegetation; furthermore, implementation of the SFPUC's Peninsula WMP design guidelines for structures and roads within the watershed plan area, in addition to mitigation measures for architectural siting and design (Measure 4.3-4a), revegetation and site restoration (Measure 4.3-4b), and tree care (Measure 4.3-4c) would reduce each project's impact such that the potential residual collective visual impact would be *less than significant with mitigation.* In addition, the proposed water supply and system operations could affect the visual character of creeks and reservoirs in the Peninsula Region (see Chapter 5, Section 5.5.7); however, due to the limited views and difference in impact type (i.e., the appearance of proposed structures vs. changes in stream flow and water levels), there would be no additive effects on the visual character of the area.

- *San Francisco Region*. Although the locations for all 16 single-story structures associated with the Groundwater Projects (SF-2) have not been determined, one of these aboveground structures could overlap with one of four new aboveground structures for the Recycled Water Projects (SF-3) in the vicinity of the San Francisco Zoo, Golden Gate Park, or other locations. Implementation of measures for architectural siting and design (Measure 4.3-4a), revegetation and site restoration (Measure 4.3-4b), and tree care (Measure 4.3-4c) would reduce each project's impact such that the residual potential collective visual impact would be *less than significant with mitigation.*

Geology, Soils, and Seismicity

Impact 4.16-2: Collective exposure of people or structures to geologic and seismic hazards.

Multi-regional Collective Impacts

One of the primary objectives of the WSIP is to ensure that sufficient water is available to customers served by the SFPUC following an earthquake on one of the regional faults. To meet this objective, the program consists of projects to strengthen and improve water system components that could be subject to seismic hazards, and to provide redundancy in the system should substantial damage and/or a failure of part of the system occur. Therefore, implementation of the WSIP would collectively result in *beneficial* effects related to the seismic safety of the regional water system.

Localized Collective Impacts

Section 4.4 presents the potential geologic and seismic impacts associated with implementation of the WSIP, which include slope instability, erosion, various seismic hazards, expansive or corrosive soils, and squeezing ground (Impacts 4.4-1 through 4.4-9). These potential impacts would be site-specific (i.e., dependent on local geologic and soil conditions) and would not be additive or collective. Therefore, the WSIP projects would not have any localized collective impacts related to geology, soils, and seismicity (*not applicable* in overlapping areas).

Hydrology and Water Quality

Impact 4.16-3: Collective WSIP impacts related to the degradation of surface waters and flooding hazards.

Multi-regional and Localized Collective Impacts

The WSIP projects would have multi-regional and localized collective impacts on hydrology or water quality if they would cause adverse impacts on the same water body or watershed or cause degradation of San Francisco Bay, which ultimately receives drainage from all of the WSIP regions. However, all discharges to surface water occurring under the WSIP would be conducted under a National Pollutant Discharge Elimination System (NPDES) permit(s) issued by the Regional Water Quality Control Board (RWQCB). These permits require compliance with water quality regulations as well as with the plans, policies, and water quality objectives and criteria of the relevant Basin Plan, including the total maximum daily load (TMDL) requirements for impaired water bodies. Compliance with permit conditions and implementation of control measures specified in the permit would ensure the protection of water quality consistent with regional goals and objectives.

Permit conditions and control measures typically include: stormwater controls or treatment of discharges to achieve the stated water quality goals (described in plans subject to RWQCB

approval); self-monitoring and reporting to demonstrate compliance with these criteria; and implementation of corrective actions should permit limitations be exceeded. Furthermore, the RWQCB can amend, revoke, and reissue an NPDES permit if investigations demonstrate that the discharge could potentially cause or contribute to adverse effects on water quality and/or beneficial uses of the receiving waters. The permit can also be amended if water quality objectives change or additional pollutants could exceed water quality objectives, or to incorporate waste load allocations determined during the TMDL process. The RWQCB may also revoke the permit if the discharger fails to meet the requirements of the permit, or if the RWQCB finds that the permitted discharge endangers human health or the environment.

Therefore, with adherence to the control measures specified in NPDES permit(s), implementation of SFPUC Construction Measures #3 and #10 (onsite water quality and project site measures) and Measures 4.5-4a through 4.5-6 (described in Chapter 6), and compliance with the water quality requirements of regulatory agencies, impacts related to discharges from the WSIP projects would be reduced such that the residual contributions to multi-regional and localized collective impacts on surface waters would be *less than significant with mitigation,* as described below.

- *Construction-Phase Water Quality Impacts*. Potential water quality impacts during construction include increased erosion and sedimentation, the discharge of groundwater produced during dewatering, or the discharge of treated water (Impacts 4.5-1, 4.5-3a, and 4.5-3b). All WSIP projects would be required to implement SFPUC Construction Measure #3 (onsite air and water quality measures during construction) and to comply with applicable water quality regulations, including Article 4.1 of the San Francisco Public Works Code for projects in San Francisco and NPDES construction stormwater permitting requirements for other projects, as discussed in Section 4.5 (including implementation of stormwater pollution prevention plans and best management practices for erosion control). Such compliance is designed to achieve consistency with regional water quality objectives and criteria of the appropriate Basin Plan, which contains water quality objectives deemed protective of water quality by the State of California.

- *Flood Flow Impacts*. Construction activities in a flood zone could divert flood flows or contribute sediment or contaminants to flood flows (Impact 4.5-4); however, the WSIP projects would not be located in the same flood zones (except for possibly the Alameda Creek Fishery, SV-1, and SABUP, SV-6, projects in the Sunol Valley Region as well as the SJPL System, SJ-3, and SJPL Rehabilitation, SJ-4, projects in the San Joaquin Region), and no collective effect would occur. Where construction would occur in the same flood zone, incorporation of flood flow protection measures (Measure 4.5-4a) would reduce each project's impact such that the residual collective impact on affected flood zones would be less than significant with mitigation.

  As discussed under Impact 4.5-4, the diversion dam or concrete weir and small earthen dam that might be constructed under the Alameda Creek Fishery project (SV-1) could alter the drainage of surface flows in Alameda Creek and potentially exacerbate flooding or siltation. With implementation of a site-specific flooding analysis (Measure 4.5-4b), these potential impacts would be reduced to a less-than-significant level. There would be no collective flooding impacts associated with the 40-mgd Treated Water (SV-3) and Treated Water Reservoirs (SV-5) projects, since both projects would involve only intermittent, small-magnitude discharges to Alameda Creek and San Antonio Creek. Discharges to these

two creeks under the SABUP project (SV-6) would be a continuation of an existing discharge, and no new discharges under this project would occur. Therefore, collective increases in the potential for flooding along Alameda Creek due to these projects would be less than significant with mitigation.

- *Operations-Phase Discharges from Multiple Sites to the Same Water Bodies*. The WSIP projects could contribute to multi-regional or localized collective water quality, erosion, or flooding impacts related to discharges of treated water during operation (Impact 4.5-5) as well as alteration of drainage patterns or increased impervious surfaces (Impact 4.6-6). However, any new discharges of treated water during operation would not contribute to flooding and would not degrade water quality because the discharges would be intermittent (for maintenance purposes only) and would be dechlorinated prior to discharge in compliance with NPDES permit requirements and any other applicable permitting requirements of the California Department of Fish and Game (CDFG) and U.S. Army Corps of Engineers. Implementation of these permitting requirements would ensure that the quality and beneficial uses of all receiving waters are protected such that any residual collective impacts would be less than significant.

None of the WSIP sites would collectively contribute to water quality degradation (including offsite erosion and flooding as a result of increased impervious surfaces) for the following reasons:

- Projects in the San Joaquin Region would incorporate post-construction stormwater controls, as specified in the stormwater management plan required under NPDES regulations or Measure 4.5-6.

- Projects in the Sunol Valley, Bay Division, and Peninsula Regions would comply with municipal stormwater requirements (see Section 4.5), which specify numeric design standards for sizing stormwater treatment controls; limits on increases in peak stormwater discharges from new or redevelopment sites that could increase erosion in creeks; requirements for the operation and maintenance of stormwater controls; and requirements for site design and source control measures.

- Construction of WSIP projects in the San Francisco Region would not collectively contribute to an increase in impervious surfaces. The pipelines constructed under each of the projects would be installed in existing streets, and some facilities associated with the Recycled Water Projects (SF-3) would be constructed in areas that are currently paved; therefore, no new impervious surfaces would be created. If the Groundwater Projects (SF-2) or Recycled Water Projects (SF-3) created any new impervious surfaces, the extent would be minimal and would not be expected to measurably affect the volume or frequency of combined sewer discharges.

None of the projects would collectively alter drainage patterns in such a way that would result in collective offsite flooding, erosion or sedimentation effects because all WSIP projects would be required to: (1) implement SFPUC Construction Measure #10 (project site), which would return all sites to the general condition that existed prior to construction; (2) implement erosion control measures in accordance with SFPUC Construction Measure #3 (onsite air and water quality measures during construction); and (3) comply with applicable water quality regulations, including Article 4.1 of the San Francisco Public Works Code for projects in San Francisco and NPDES construction stormwater permitting requirements for other projects, as discussed in

Section 4.5. Implementation of SFPUC Construction Measures #10 and #3 and regulatory permitting requirements would ensure that the quality and beneficial uses of all receiving waters are protected such that any residual collective impacts in the San Joaquin, Sunol Valley, Bay Division, or Peninsula Regions would be less than significant.

As described in Chapter 5, the WSIP water supply and system operations would have the potential to affect water quality and hydrology in the Tuolumne, Alameda, and Peninsula watersheds. The only potential for overlapping, collective effects due to long-term facilities impacts combined with water supply impacts would be for water bodies in the Alameda and Peninsula watersheds. However, no collective or combined impacts on water quality and hydrology would occur, since there would be no substantive overlap between affected water quality or hydrological parameters. Water quality and hydrological effects related to long-term facilities impacts (for both project-specific and collective impacts) would be associated with operations-phase discharges. On the other hand, the proposed water supply and system operations would alter stream flow and reservoir water levels, with the potential for related water quality effects on temperature, dissolved oxygen, and possibly nutrients; however, these effects would be distinct from effects related to discharges from facilities, and mitigation measures identified for the individual effects would reduce these impacts to a less-than-significant level. Therefore, multi-regional and collective impacts on water quality and hydrology would be *less than significant with mitigation.*

Biological Resources

Impact 4.16-4: Collective loss of sensitive biological resources.

Multi-regional Collective Impacts

Section 4.6 presents the potential impacts of each WSIP project on biological resources, including wetlands, sensitive habitats (as defined by the CDFG), as well as heritage trees, special-status plant and wildlife species, and riparian habitat potentially subject to state and federal protection (Impacts 4.6-1 through 4.6-3). As indicated in Section 4.6, Table 4.6-3, WSIP facility projects would affect approximately 2,000 acres considering project footprints, borrow and fill areas, spoil piles, temporary laydown areas for construction, and indirect impacts such as inundation and fugitive dust. Multi-regional collective biological impacts could occur when projects are constructed simultaneously or in close sequence, such as:

- Impacts on wildlife movement due to temporary habitat fragmentation and reduction in areas for cover or escape
- Compounded impacts on functional units of habitat as WSIP projects simplify vegetation structure and increase “edge” (the boundary between two different habitats)
- Increased habitat impacts due to the spread of weedy, non-native plant species

When these multi-regional collective facilities impacts are considered in combination with the water supply and system operation impacts on biological resources in the Alameda and Peninsula

watersheds (as discussed in Chapter 5, Sections 5.4.6 and 5.5.6), there would be several instances of combined effects on reservoir and riparian vegetation. For some species, especially riparian-dependent species, construction of a WSIP facility could displace animals to habitat along streams or reservoir edges that could be of reduced quality due to WSIP-related reductions in stream flow, flooding, or channel-forming events (as described in Chapter 5). Since the PEIR's significance determination errs on the conservative side (and assumes that separate, project-level CEQA review would confirm the existing condition and effects), this impact is considered to be *potentially significant*.

Implementation of habitat compensation measures, implemented either on a project by project basis or through a coordinated program such as proposed in the SFPUC's Habitat Reserve Program (HRP) (Measure 4.16-4a) would help reduce this combined collective impact. Effective mitigation through habitat conservation could occur on SFPUC property or could require the acquisition of conservation easements and conservation lands. Although the SFPUC could provide mitigation within the watershed, this conservative analysis considers the availability of suitable land in the Bay Area for such mitigation efforts. Of an estimated 4.5 million acres of Bay Area land, 720,000 acres (16 percent) are developed and 1.1 million acres (24 percent) are in protected open space (GreenInfo Network, 2007). Although it may appear that property for land conservation is not available, competition for open lands is on a more level playing field than one might first assume. Successful conservation programs in Southern California (where regional biodiversity planning has proceeded at a faster rate than in the Bay Area) are one indicator of potential feasibility.[2] Where conservation easement or land acquisition is not feasible, another way to achieve habitat compensation goals and mitigation requirements would be to assist land trusts and other stewards in more effectively managing their lands.

Thus, even if the WSIP were to mitigate its impact at a typical replacement ratio and mitigation within SFPUC property was insufficient, such acreage could be accommodated within the regional area, thereby reducing the WSIP's potentially significant collective biological impacts to a less-than-significant level.

Localized Collective Impacts

Figure 4.16-1 indicates where projects would overlap geographically and project schedules would coincide. When overlapping areas in this figure are considered in the context of areas of known biological sensitivity, the potential for combined or collective biological impacts would be greatest in the Sunol Valley and Peninsula Regions. However, these collective impacts could

[2] In San Diego's conservation plan, for example, the reserve design included 22,083 acres of land already conserved and targeted an additional 30,884 acres for conservation. By 2001, 83 percent of that additional amount had been conserved or obligated for conservation through a combination of state, federal, and local purchases as well as exactions (Pollak, 2001). What has made the programs in Southern California viable is the private-sector economic reality that places the value of land conservation on an equal footing with development interests. Undeveloped land is likely to be sold at or above market rates to either a conservation planning entity or a private developer without prejudice. Furthermore, conservation easements present a unique opportunity for sellers who wish to preserve some use rights to properties or pass them along to heirs. A wildlife habitat easement might prohibit development, for example, but allow continued farming. There is also substantial social consensus on this aspect of implementing a program like the HRP. In August 2006, Congress approved a substantial expansion of the federal conservation tax incentive for conservation easement donations, and President Bush signed it into law.

occur in any of the regions where construction associated with overlapping projects would increase the extent of traffic, noise, and temporary habitat loss (e.g., if multiple staging areas were needed). These potential impacts are as follows:

- *San Joaquin Region*. The construction schedules associated with the Advanced Disinfection (SJ-1), SJPL Rehabilitation (SJ-4), and Tesla Portal Disinfection (SJ-5) projects would overlap for a brief time, and it is possible that these projects could affect the Tesla Portal vicinity at the same time (2009 and 2010). Potentially affected biological resources include grassland and wetland habitats with associated special-status species. It is also possible that construction of the SJPL System (SJ-3) and SJPL Rehabilitation (SJ-4) projects could overlap if the projects affected the same pipeline segment (2011 through 2013). Potentially affected biological resources include grassland, oak woodland, riparian, vernal pool, and wetland habitats with associated special-status species. Collective increases in haul truck traffic and noise along with increased surface disturbance for staging areas would result in *potentially significant* collective impacts if such overlaps occurred near identified sensitive biological resources. Implementation of SFPUC Construction Measure #8 (biological screening survey for each individual project) and mitigation measures for general impacts (Measures 4.6-1 through 4.6-3, including Table 4.6-4) would reduce each project's contribution to collective impacts on biological resources. These measures combined with consolidation of construction staging and access (Measure 4.16-4b) would reduce this collective impact. Because of the limited extent of project overlap in this region, the mitigation measures identified could reduce this impact to less than significant.

- *Sunol Valley Region*. The construction schedules for all projects in this region would overlap at various times between 2008 and 2012. Some of these projects would have the potential to contribute to collective impacts on sensitive biological resources in the Sunol Valley, while increased truck traffic on Calaveras Road, the haul route for all projects in this region, could adversely affect sensitive biological resources adjacent to Calaveras Road. Collective increases in haul truck traffic and noise along with increased surface disturbance for facility construction and staging areas would result in potentially significant collective impacts if project overlaps occurred near identified sensitive biological resources. Implementation of SFPUC Construction Measure #8 (biological screening survey for each individual project) and mitigation measures for general impacts (Measures 4.6-1 through 4.6-3, including Table 4.6-4) would reduce each project's contribution to collective impacts on biological resources. These measures combined with consolidation of construction staging and access (Measure 4.16-4b) would reduce this collective impact, but some sensitive biological resources would remain at risk. For example, a recent sighting of a San Joaquin kit fox on another SFPUC project site near Sunol suggests a small population may be reestablishing itself in the area. Such populations are more vulnerable to disturbance.[3]

  For purposes of this program-level evaluation, the collective impact of multiple WSIP project construction activities in Sunol Valley on sensitive biological resources such as listed species is considered *potentially significant and unavoidable* because of the number of WSIP projects to be implemented in this region and the extent of overlap in terms of construction activity timing and location. Further site-specific analysis for each WSIP project to be conducted as part of project-level CEQA review for each project may determine that this potentially significant collective impact can be mitigated to less than

[3] A single individual was observed during nighttime surveys associated with the SFPUC Sunol / Niles Dam Removal Project in 2006. The species is not otherwise considered present in the Sunol Valley Region.

significant based on more detailed information about the project site location, schedule and construction methods.

- *Bay Division Region – Irvington Portal in Fremont*. Staging and access areas for both the new Irvington Tunnel portal (SV-4) and easternmost segment of the BDPL Reliability Upgrade project (BD-1) would overlap in the area east of Mission Boulevard and existing homes. This area is currently undeveloped, and these two projects would result in the removal of annual grassland to accommodate temporary staging areas as well as new permanent water facilities and an access road. The significance of this impact would depend on the presence of sensitive biological resources, which is not likely given the low quality of the habitat present. Implementation of SFPUC Construction Measure #8 (biological screening survey for each individual project) and mitigation measures for general impacts (Measures 4.6-1 through 4.6-3, including Table 4.6-4) would reduce each project's contribution to collective impacts on biological resources. Given the limited extent of WSIP project overlap in this region, these measures combined with coordination of construction staging and access (Measure 4.16-4b) would reduce this *potentially significant* collective impact to less than significant.

- *Peninsula Region – Lower Crystal Springs Dam Vicinity*. Staging areas for the CS/SA Transmission (PN-2) and Lower Crystal Springs Dam (PN-4) projects could overlap or affect the same areas for a longer duration. Increased traffic and the inadvertent use of road shoulders when vehicles pass could have a potentially significant collective impact on the endangered San Mateo woolly sunflower. Implementation of SFPUC Construction Measure #8 (biological screening survey for each individual project) and mitigation measures for general impacts (Measures 4.6-1 through 4.6-3, including Table 4.6-4) would reduce each project's contribution to collective impacts on biological resources. These measures combined with consolidation of construction staging and access (Measure 4.16-4b) would reduce this collective impact; however, protection of San Mateo woolly sunflower individuals would be problematic, since incidental disturbance of plants along the road shoulder would be difficult to completely avoid. Therefore, the collective impact in the Peninsula Region would be *potentially significant and unavoidable*.

- *San Francisco Region*. As indicated in Figure 4.16-1, construction of WSIP projects in this region would have the potential to overlap in San Francisco streets. Collective impacts on sensitive biological resources would not be expected (*not applicable*).

Cultural Resources

Impact 4.16-5: Collective increase in impacts related to archaeological, paleontological, and historical resources.

Section 4.7 describes potential impacts of the WSIP on paleontological and archaeological resources (Impacts 4.7-1 and 4.7-2); it also evaluates the effects of new construction on historical resources, including historic districts or contributors to historic districts (Impact 4.7-3), on individual facilities within the system (Impact 4.7-4); and on adjacent historical resources (Impact 4.7-5).

Multi-regional Collective Impacts

Multi-regional collective WSIP impacts on cultural resources are not expected to occur because the site-specific impacts of the various WSIP facility projects on individual paleontological, archaeological, or historical resources were not found to be additive. As described under Impact 4.7-4, select WSIP facility improvement projects could result in significant impacts on an individual historic facility, but the combined impacts from these projects do not represent a collective impact on historical resources. For example, the potentially significant impact on the potentially historic Irvington Portal as part of the New Irvington Tunnel project (SV–4) is distinct from the potentially significant impact on the potentially historic Crystal Springs Pump Station (PN–2); impacts on these two different historic facilities within the SFPUC regional water system do not, in combination, represent a larger, multiregional collective impact. WSIP project effects on potential paleontological and archaeological resources are similarly site-specific and considered to have a system-wide or region-wide collective effect. This impact is not applicable with respect to effects on individual resources.

Impact 4.7-3 addresses the issue of potential effects of one or more WSIP projects on the historical significance of historic districts or resources that would be contributors to a historic district. That analysis concludes that removal and replacement of the historic Calaveras Dam (SV–2) could, for example, represent a potentially significant, unavoidable impact on a historic district, if one were determined to be present. This impact would be distinct from the potentially significant impact on historic districts due to implementation of the CS/SA Transmission project (PN-2) in the vicinity of Crystal Springs Reservoir on the Peninsula.

Elsewhere, potential historic districts may have boundaries that extend beyond the WSIP regional boundaries identified in this PEIR. Such districts would be identified based on an appropriate historical context and significance, which may not correspond with the SFPUC water system regions. Implementation of SFPUC Construction Measure #9 (cultural resources) and various measures to document and protect historical resources (Measures 4.7-4a, through 4.7-4f) would reduce each project's impact on any historic districts that may be located in more than one region. Mitigation measures identified during project-level CEQA review are expected to reduce the potential collective effect of these projects to a level that is *less than significant.*

Localized Collective Impacts

In general, potential impacts on paleontological and archaeological resources (Impacts 4.7-1 and 4.7-2) would be site-specific (dependent on local conditions) and would not be additive or collective. Therefore, the WSIP projects would not have any localized collective impacts on these resources. Section 4.7 also analyzes the WSIP's potential for impacts on the historical significance of potential historic districts (Impact 4.7-3), individual facilities (Impact 4.7-4), and adjacent historical resources (Impact 4.7-5). As with impacts on paleontological and archaeological resources, impacts on historical resources are typically not additive, and thus the potential for collective impacts is generally low.

Localized collective impacts on historical resources could occur, however, when (1) multiple WSIP projects are proposed in the same general area and could each affect the same individual

historic facility/resource, or (2) when multiple WSIP projects could each affect one or more facilities/resources that are part of an historic district. Figure 4.16-1 identifies where WSIP projects overlap geographically. The potential for such localized collective impacts on historical resources is discussed below by region:

- *San Joaquin Region*. Four of the five WSIP projects in this region (Advanced Disinfection, SJ-1; SJPL System, SJ-3; SJPL Rehabilitation, SJ-4; and Tesla Portal Disinfection, SJ-5) would overlap at or near the Tesla Portal. These projects could affect potential historical resources that could be contributors to a potential historic district associated with the implementation of John R. Freeman's plan for the development of the Hetch Hetchy system, such as the San Joaquin Pipelines, Tesla Portal, and the caretaker's residence adjacent to the proposed facilities. Implementation of SFPUC Construction Measure #9 (cultural resources) and various measures to document and protect resources (Measures 4.7-4a through 4.7-4f) would reduce each project's impact such that these projects would not have a significant, localized collective. This impact would be *less than significant.*

- *Sunol Valley Region*. Three projects in the region (Calaveras Dam, SV-2; New Irvington Tunnel, SV-4; and SABUP, SV-6) could result in a significant impact on the historical significance of individual facilities (Impact 4.7-4) and on adjacent historic resources (Impact 4.7-5). Implementation of SFPUC Construction Measure #9 (cultural resources) and various measures to document and protect resources (Measures 4.7-4a through 4.7-4f) would reduce each project's impact such that the residual collective impact on individual facilities would be less than significant.

  Given the concentration of water system facilities in the Sunol Valley Region that are more than 45 years old, some of which were previously identified as historical resources for the purposes of CEQA, it is possible that one or more historic districts could be present in this region. More detailed assessment to identify historic districts and potential impacts of the WSIP projects on any historic districts, if present, will occur during project-level environmental review. Because it has not been determined whether the Sunol Valley Region or a portion of this region meets the National Register criteria or California Register criteria as a historic district (or districts), or whether the WSIP projects in the Sunol Valley Region could cause a substantial adverse change to such a district(s), this PEIR conservatively considers the collective effect of the six WSIP projects in this region on historic districts to be *potentially significant and unavoidable.* Measures 4.7-4a through 4.7-4f could reduce the significance of this impact but the impact is still considered significant at the programmatic level; until project-level environmental review will further define the impact and identify additional measures to reduce this potential effect to a less-than-significant level.

- *Bay Division Region – Irvington Portal in Fremont*. The three WSIP projects in this region (BDPL Reliability Upgrade, BD-1; BDPL 3 and 4 Crossover, BD-2; and BDPL 3 and 4 Seismic Upgrade at Hayward Fault, BD-3) could have potentially significant impacts on the historical significance of a historic district (Impact 4.7-3), individual facilities (Impact 4.7-4), or adjacent facilities (Impact 4.7-5). These projects would be located near or adjacent to the Bay Division Pipelines and the existing Irvington Portal, both of which are potential historic facilities. One or more of the Bay Division Pipelines could be a contributor to a potential historic district related to the implementation of John R. Freeman's plan for the development of the Hetch Hetchy system. There could also be

individual resources in this program that are historically significant. Implementation of SFPUC Construction Measure #9 (cultural resources) and various measures to document and protect resources (Measures 4.7-4a through 4.7-4f) would reduce each project's impact such that the potential collective effect of these projects would be *less than significant*, particularly on the Bay Division Pipeline because portions of the existing pipelines would remain following construction.

- *Peninsula Region – Lower Crystal Springs Dam Vicinity*. Potential alteration of the potentially historic Crystal Springs Pump Station (CS/SA Transmission, PN-2) and the historic Lower Crystal Springs Dam (PN-4) could have potentially significant impacts on the historical significance of the individual facilities (Impact 4.7-4) and adjacent facilities (Impact 4.7-5). Implementation of SFPUC Construction Measure #9 (cultural resources) and various measures to document and protect resources (Measures 4.7-4a through 4.7-4f) would reduce each project's impact such that the residual collective impact on individual facilities would be less than significant.

  Given the concentration of water system facilities in the Peninsula Region that are more than 45 years old, some of which were previously identified as historical resources, it is possible that a historic district, or multiple historic districts, could be present in the Peninsula Region. More detailed assessment to identify historic districts and potential impacts of the WSIP project on any historic districts, if present, will occur during project-level environmental review. Because it has not been determined whether the Peninsula Region or a portion of this region meets the National Register criteria or California Register criteria as a historic district (or districts), or whether the WSIP projects in the Peninsula Region could cause a substantial adverse change to such a district(s), this PEIR conservatively considers the collective effect of the five WSIP projects in this region on historic districts to be *potentially significant and unavoidable.* Measures 4.7-4a through 4.7-4f could reduce the significance of this impact, but the impact is still considered significant at the programmatic level; project-level environmental review will further define the impact and identify additional measures to reduce this potential effect to a less-than-significant level.

  San Francisco Region. Two of the WSIP projects in this region (SAPL 3 Installation, SF-1, and Recycled Water Projects, SF-3) could have potentially significant impacts on historical resources. The SAPL 3 Installation project could effect a historic district (Impact 4.7-3), individual facilities (Impact 4.7-4), or adjacent facilities (Impact 4.7-5). These potential resources include the Baden-Merced Pipeline. The Recycled Water projects (SF-5) has the potential to cause a substantial adverse change to an adjacent facility (Impact 4.7-5) – that is, the historic Fleishhacker Bath House, which was built in 1925, which could be indirectly affected under some project scenarios. The collective impact on historical resources is *not applicable*, however, because there would be no overlapping or collective impact in this region.

Traffic, Transportation, and Circulation

Impact 4.16-6: Collective traffic increases on local and regional roads.

As described in Section 4.8, implementation of the WSIP could cause traffic delays as a result of construction activities and construction vehicles. Construction activities would comply with the encroachment permit requirements (from Caltrans, county agencies, and/or local jurisdictions) for construction affecting public rights-of-way (Impacts 4.8-1 and 4.8-2). Implementation of traffic control plans (Measure 4.8-1) would reduce each project's individual local impacts to a less-than-significant level. However, even with mitigation, the WSIP projects together could significantly increase traffic delays *across* and *within* the five regions due to construction in public roadways and construction vehicles traveling to and from project sites.

WSIP construction activities would take place between 2007 and 2014; however, most projects would occur between 2009 and 2012, and the greatest number of projects would be under construction between 2009 and 2010 (see Table 4.16-1). Many of these projects involve construction within or across public roadways, which would temporarily reduce the available capacity and result in increased traffic delays. In addition, under many of the WSIP projects, construction vehicles would travel to and from material suppliers and excavation disposal or reuse sites. These vehicles would use the same regional freeways (e.g., Highway 101, I-5, I-580, I-680), resulting in increased truck traffic on segments where construction trucks from multiple projects overlap, and such increases could, at times, lower travel speeds on these roadways.

As described below, implementation of additional measures (appointing a traffic coordinator and preparing combined traffic control plans for the San Joaquin and Sunol Valley Regions) would reduce collective impacts within specific regions, but might not reduce multi-regional collective traffic impacts to a less-than-significant level. Traffic impacts of the individual projects would be evaluated in more detail during separate, project-level CEQA review, at which time the potential for combined or collective impacts of multiple projects would be reassessed.

Multi-regional Collective Impacts

Multi-regional collective impacts would occur when the travel routes of individual drivers cross multiple roadways affected by WSIP construction activities within one or more regions, and/or when construction vehicles use regional roadways. Multi-regional collective impacts would include increased travel times; however, the extent and duration of delays would vary depending on individual driver origins and destinations, time of travel, and use of alternate routes. Implementation of Measure 4.16-6a (identifying a program construction coordinator to coordinate project specific traffic control plans to minimize multi-regional impacts) would serve to offset the potential multi-regional collective traffic impacts, but might not reduce impacts to a less-than-significant level. Therefore, the multi-regional collective traffic impacts are considered *potentially significant and unavoidable.*

Localized Collective Impacts

Implementation of the WSIP would result in potential impacts on traffic and circulation, including increased construction vehicles and traffic delays, loss of parking, traffic safety issues, access disruption, and increased operational traffic (Impacts 4.8-1 and 4.8-3 through 4.8-6). These impacts could be collective where the construction schedules of multiple WSIP projects overlap (see Table 4.16-1).

For each WSIP 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 worksites 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 WSIP project sites would not be substantial, while the project-generated trips on local serving roadways would represent a higher (more noticeable) percent increase in daily traffic volumes. Project traffic would not significantly disrupt daily traffic flow on these roadways. However, drivers would experience intermittent delays if they were traveling behind a construction truck.

Collective traffic impacts could occur if there were overlapping construction schedules in areas with limited construction access, since construction vehicles would have to share the same access route(s). The total number of vehicle trips added to the common route(s) due to concurrent construction of multiple WSIP projects could be collectively higher than the maximum number of daily and hourly vehicle trips used to determine impacts of a single WSIP project. However, because the timeframe of maximum trip generation would vary among the WSIP projects, the maximum traffic flows on the common route(s) would not necessarily be the sum of the maximum trips generated by the overlapping projects.

When overlapping areas in Figure 4.16-1 are considered in conjunction with traffic volumes on construction access roads identified in Table C.5 (Appendix C), the potential for collective traffic impacts would be as follows:

- *San Joaquin Region – Tesla Portal*. Construction of the SJPL System project (SJ-3) could overlap with construction of the Advanced Disinfection (SJ-1) and Tesla Portal Disinfection (SJ-5) projects. Implementation of traffic control plans for each project (Measure 4.8-1) and coordination of individual traffic control plans for projects in the Tesla Portal vicinity (Measure 4.16-6b) would reduce this *potentially significant* collective impact to a less-than-significant level.

  Construction traffic for the Advanced Disinfection (SJ-1) and Tesla Portal Disinfection (SJ-5) projects would use I-580, Chrisman Road, and Vernalis Road for site access. The number of daily truck trips associated with construction of the Advanced Disinfection project has not yet been determined, but would likely be similar to the number of truck trips generated by the Tesla Portal Disinfection project (i.e., an average of about 15 truck trips per day and a maximum of 40 truck trips per day). Although the construction schedules of these two projects could overlap, the increase in the number of daily construction vehicle trips could likely be accommodated within the existing capacity of the access routes, and the Advanced Disinfection and Tesla Portal Disinfection projects would not result in significant collective traffic impacts. With implementation of a traffic control plan for each

these projects (Measure 4.8-1) and coordination of individual traffic control plans for projects in the Tesla Portal vicinity (Measure 4.16-6b), collective construction-related traffic impacts associated with these two projects would be reduced to a less-than-significant level.

- *Sunol Valley Region – Calaveras Road*. To varying degrees, the six projects in this region would utilize Calaveras Road, I-580, and I-680 for haul and delivery routes as well as site access. Current schedule projections estimate that these projects could overlap for up to two years. Accordingly, there could be significant increases in truck traffic along Calaveras Road and I-680. The volume of construction traffic would vary depending on the particular construction phase of each project. However, during a two-year period (2009 and 2010), four or five projects could overlap (different combination of projects each year; see Table C.5, Appendix C and Table F-3, Appendix F for estimated traffic volumes), resulting in periods with up to approximately 1,200 daily construction-generated vehicle trips (including inbound and outbound construction worker and construction truck trips) on Calaveras Road. It should be noted that the number of truck trips associated with the Calaveras Dam project (SV-2) might be reduced if fill materials could be found or processed in the dam vicinity.

  Increased construction vehicles on Calaveras Road between Geary Road and I-680, as well as on I-680, would increase delays due to the slower speeds and larger turning radii of trucks. The increase in truck traffic resulting from multiple projects would be considerable in relation to the capacity of Calaveras Road (one travel lane in each direction) and would result in *potentially significant* collective traffic impacts. Although I-680 has additional capacity in the vicinity of Calaveras Road, an increase in the number of trucks accessing the freeway on an uphill grade and merging with through-traffic could interfere with freeway operations.

  The entire length of Calaveras Road between I-680 and Calaveras Dam would be subject to damage due to the combined truck traffic associated with the six WSIP projects in this region. Trucks carrying sand and gravel from Sunol Valley to the dam could affect access to Sunol Regional Park.

  Implementation of traffic control plans for each project (Measure 4.8-1) along with a coordinated Sunol Valley traffic control plan (Measure 4.16-6c) would reduce this collective impact to a less-than-significant level.

- *Bay Division Region – Irvington Portal in Fremont*. The haul/delivery/site access route for the New Irvington Tunnel (SV-4) exit portal would include a new access road constructed through a residential neighborhood to connect the portal with Mission Boulevard (Highway 238) and the I-680 freeway. Due to the possible overlap in the construction schedules of the New Irvington Tunnel and BDPL Reliability Upgrade (BD-1) projects, there could be substantial increases in haul and delivery truck traffic in this area; these traffic increases could substantially affect the capacity of Mission Boulevard, a *potentially significant* collective impact. Implementation of traffic control plans for each project (Measure 4.8-1) and coordination of individual traffic control plans (Measure 4.16-6a) would reduce potential collective traffic impacts to a less-than-significant level.

- *Peninsula Region – Lower Crystal Springs Dam Vicinity*. Although construction of the CS/SA Transmission (PN-2) and Lower Crystal Springs Dam (PN-4) projects would not overlap (one project is scheduled to end just as the other begins), there is some potential for short-term combined increases in construction traffic on Crystal Springs Road near Lower Crystal Springs Reservoir. The number of daily truck trips associated with these two projects has not yet been determined, but it is expected that the number of truck trips would be similar to that generated by the Calaveras Dam project (SV-2) (i.e., up to 40 truck trips per day for each project, for a total of 80 truck trips per day). Construction vehicles associated with the HTWTP Long-Term project (PN-3) would also use Crystal Springs Road and Skyline Boulevard, although the construction schedules for all three projects are not expected to overlap. Implementing a traffic control plan for these projects (Measure 4.8-1) and coordinating individual traffic control plans (Measure 4.16-6a) would reduce any *potential significant* collective traffic impacts to a less-than-significant level.

- *San Francisco Region*. Pipeline construction associated with the SAPL 3 Installation (SF-1) and Recycled Water Projects (SF-3) could overlap in the same San Francisco streets. There could also be an overlap in vicinity of the San Francisco Zoo, which is identified as a possible site for facilities under the Groundwater Projects (SF-2) and Recycled Water Projects. The volume of overlapping construction traffic would vary depending on the location of each project (some project locations have not yet been determined) and particular construction phase of each project. However, each project is projected to result in about 20 truck trips per day. Implementing a traffic control plan for these projects (Measure 4.8-1) and coordinating individual traffic control plans (Measure 4.16-6a) would reduce any *potential significant* collective traffic impacts to a less-than-significant level. In addition, each project's construction activities would be coordinated by the San Francisco Department of Public Work's Street Construction Coordination Center (which coordinates utility excavation activities).

Air Quality

Impact 4.16-7: Collective increases in construction and/or operational emissions in the region.

Section 4.9 evaluates the air quality impacts associated with implementation of the WSIP. Potential air quality impacts include increases in dust and equipment emissions during construction, exposure to diesel particulate matter (DPM), tunnel-related emissions, operational emissions, odors, secondary emissions from power generation and conflicts with regional and statewide air quality planning (Impacts 4.9-1 through 4.9-7). Tunnel-related emissions would be site-specific and would not have a collective impact (Impact 4.9-3).

Multi-regional Collective Impacts

Criteria Pollutants

As summarized in Table 4.9-5, construction of the WSIP would result in potentially significant multi-regional collective increases in air pollutant emissions in the San Joaquin Valley Air Basin and the San Francisco Bay Area Air Basin. Table 4.9-5 indicates that onsite construction-related

air pollutant emissions would exceed the applicable BAAQMD and SJVAPCD thresholds within the San Joaquin, Sunol Valley, and Bay Division regions, but not within the Peninsula and San Francisco regions. However, when emissions from all regions are considered together, construction-related emissions would be collectively significant. Implementation of the mitigation measure requiring dust and exhaust controls, but modified so it applies to all WSIP projects (Measure 4.16-7a), would be required to address the WSIP's collective impact on criteria air pollutants. Although these measures would reduce each project's impact incrementally, there would still be a residual contribution from each project to the region's nonattainment status for ozone and particulate matter (PM_{10} and $PM_{2.5}$) in both the San Francisco Bay Area and San Joaquin Valley Air Basins. Given the region's nonattainment status for ozone and particulate matter, the residual multi-regional collective impact associated construction of the WSIP as a whole is considered *potentially significant and unavoidable.*

Non-GHG air quality emissions during operation of the WSIP facility improvement projects would be required to comply with the air quality regulations of the Bay Area Air Quality Management District (BAAQMD) and San Joaquin Valley Air Pollution Control District (SJVAPCD), which would ensure consistency with regional air quality planning efforts (Impacts 4.9-4 and 4.9-5). Therefore, multi-regional collective air pollutant emissions from priority pollutants associated with operation of the WSIP as a whole would be *less than significant*.

GHG Emissions

Sources of GHGs from WSIP projects include those associated with construction equipment and increases in vehicle traffic and use of refrigerants during facility operations. However, as documented in Section 4.9 (Impact 4.9-7) increases in GHGs from construction sources associated with WSIP projects would be minimal.

The WSIP would also result in secondary operational increases in GHG emissions as a result of electricity generated to meet the WSIP's increase in energy demand (Impact 4.9-7). Although electricity for the WSIP projects would be derived primarily from hydroelectric sources, power would need to be purchased by current customers of the SFPUC Power Enterprise from the grid when less hydroelectric power is available, particularly during the summer and fall months. The WSIP's incremental increase in power demand during project operations (the portion that is not from hydroelectric or alternative energy sources) would indirectly serve to sustain rather than reduce current GHG emissions from these emission sources. The WSIP projects at completion would create approximately 14,260 metric tons of CO_2-equivalent emissions by consuming hydroelectric power that is no longer available to current users. Compared to the current annual inventory of 427,000,000 metric tons in California (California Energy Commission, 2006), this represents 0.0033 percent of that inventory. Planned increases in water distribution and treatment system efficiencies will offset a limited portion of the increased power demand, but not enough to eliminate the increase in GHG emissions that would result from WSIP-diverted electrical power. Nevertheless, the total increased power demand associated with the operation of the WSIP projects is a small fraction of total state demand.

As the CARB's Early Action Measures and CEC's greenhouse gases emission performance standard for local, public-owned electric utilities become effective (see discussion under Regulatory Framework, Greenhouse Gas Emissions Limits), the SFPUC will implement them as required to reduce GHG emissions from the WSIP project operations. Given the minimal contribution of GHG emissions from the WSIP, continuing implementation of GHG reduction actions by the CCSF and SFPUC and additional GHG reduction actions that SFPUC will take as part of the WSIP project (see above under "Existing Setting"), the WSIP projects would not conflict with the State's goals of reducing GHG emissions to 1990 levels by 2020. Therefore, residual multi-regional collective GHG emissions associated with construction and operation of the WSIP as a whole would be less than significant.

As part of implementation of the WSIP, the SFPUC will also be required to implement mitigation measures related to exhaust control (see Measures 4.9-1b, 4.9-1d, and 4.16-7a), waste reduction measures (Measure 4.11-2), and feasible energy efficiency measures in applicable WSIP projects, consistent with the *Energy Action Plan II* priorities for reducing energy usage (as specified in Measure 4.15-2). Implementation of these measures would also achieve reductions that would help minimize overall GHG emission increases. In addition, as CARB's Early Action Measures become effective, the SFPUC will implement them as required to reduce GHG emissions from the WSIP-related activities.

Localized Collective Impacts

During construction of the WSIP projects, worker vehicles and diesel haul/delivery trucks would generate offsite emissions. Localized short-term collective increases in emissions of DPM (the particulates of greatest concern) could occur in overlapping areas if construction activities associated with multiple WSIP projects affected the same access routes. As outlined in Impact 4.9-2, a cancer risk between 1 and 10 in a million is conservatively considered to be potentially significant for purposes of this PEIR (20,000 truckloads or 40,000 trips = 1 in a million; 200,000 loads or 400,000 trips = 10 in a million). Conducting a health risk screening or using soot filters on haul trucks (Measure 4.9-2a) and vacating the two SFPUC Land Managers' residences (Measure 4.9-2b) are identified in Section 4.9 for certain projects. As described below, when overlapping areas in Figure 4.16-1 are considered in conjunction with traffic volumes and construction access roads identified in Table C.5 (Appendix C), the potential for collective air quality impacts in overlapping areas could necessitate implementation of this measure for additional projects, as follows:

- *San Joaquin Region*. The haul routes for up to four WSIP projects could affect the same residents near Tesla Portal (i.e., along Chrisman and Vernalis Roads, the access route between Tesla Portal and I-580). Residents living along this route could be exposed to increases in DPM from haul truck and delivery traffic during construction of the western segments of the SJPL System (SJ-3) and SJPL Rehabilitation (SJ-4) projects, in addition to the Advanced Disinfection (SJ-1) and Tesla Portal Disinfection (SJ-5) projects if construction schedules overlapped in the Tesla Portal vicinity. Together, these four projects are not expected to generate over 40,000 truck trips on Chrisman or Vernalis Roads over the entire period of construction, but peak truck volumes could depending on the extent of excavation spoils that are hauled offsite. Most residences along these roads are set back

250 to 300 feet, reducing the potential for exposure to DPM health risks. However, if combined truck trips were to exceed 40,000 on Chrisman or Vernalis Roads, the combined or collective impacts would be *potentially significant*, and implementation of the mitigation measure requiring a health risk screening or use of soot filters on haul trucks, but modified so it applies to all projects in this region (Measure 4.16-7b), would reduce this collective impact to a less-than-significant level.

- *Sunol Valley Region*. Due to the overlap in construction schedules for proposed WSIP projects within this region, there could be significant combined or collective increases in haul and delivery truck traffic along Calaveras Road in the Sunol Valley. As indicated in Table 4.9-6, truck trips could exceed the significant "10 in a million" threshold or the potentially significant "1 in a million" threshold, depending on the proportion of excavation spoils that would be hauled offsite. Therefore, the combined or collective DPM impact would be *potentially significant* for all projects in the Sunol Valley Region. However, exposure of sensitive receptors to elevated DPM levels would be limited to occupants of the two SFPUC Land Managers' residences. Implementation of the mitigation measure requiring the two SFPUC Land Managers' residences be vacated, but modified so it applies to all projects in this region (Measure 4.16-7c), would reduce this collective impact to a less-than-significant level.

- *Bay Division Region – Irvington Portal in Fremont*. Outside of the Sunol Valley, the haul route for the New Irvington Tunnel (SV-4) exit portal would be a new access road constructed through a residential neighborhood to connect the portal with Mission Boulevard (Highway 238) and I-680. Due to the possible overlap in construction schedules for the New Irvington Tunnel and BDPL Reliability Upgrade (BD-1) projects, this neighborhood could be subject to combined DPM increases if there were any overlap in haul and delivery truck traffic for these two projects. Potential combined increases in construction traffic would be evaluated in more detail as part of separate, project-level CEQA review for these two projects. If combined truck trips were to exceed 40,000 on this access road over the entire construction period, the combined or collective impacts would be potentially significant. However, completion of a health risk screening or use of soot filters on haul trucks would be required for the BDPL Reliability Upgrade project under Measure 4.9-2a as well as at the exit portal for the New Irvington Tunnel project (SV-4) under Measure 4.16-7c (above). Therefore, implementation of this measure would reduce each project's impact such that the residual collective impact would be *less than significant with mitigation.*

- *Peninsula Region – Lower Crystal Springs Dam Vicinity*. Given the limited amounts of surface disturbance and facility construction associated with these three projects, it is expected that the combined DPM levels for this region would be *less than significant* (excess cancer risk would be less than 1 in a million, or 40,000 total truck trips).

- *San Francisco Region*. The combined increase in DPM levels associated with all three WSIP projects in this region would be *less than significant* (combined excess cancer risk would be less than 1 in a million); however, this conclusion would need to be confirmed at the project level due to the potential proximity of construction activities to sensitive receptors.

Noise and Vibration

Impact 4.16-8: Collective increases in construction-related and operational noise.

Multi-regional Collective Impacts

Section 4.10 identifies potential noise and vibration impacts associated with construction and operation of WSIP facilities. As described in Impacts 4.10-1, 4.10-3, and 4.10-4, there could be potentially significant noise and vibration impacts at most project sites. However, these potential impacts would be site-specific and would not be additive or collective. Therefore, the WSIP projects would not have a multi-regional collective impact on noise (*not applicable*). Since most construction noise impacts would be specific to each facility site, collective or overlapping noise impacts could only occur at adjoining construction sites or along common haul/delivery routes where overlapping schedules for two or more facilities with a shared haul/delivery route could result in combined noise increases. This localized issue is discussed below.

Localized Collective Impacts

Localized collective increases in noise could occur in overlapping areas if construction activities associated with multiple WSIP projects affected the same adjacent sensitive receptors or if haul/delivery trucks for multiple projects used the same access routes. When overlapping areas in Figure 4.16-1 are considered in conjunction with traffic volumes and construction access roads identified in Table C.5 (Appendix C), the potential for collective noise impacts in overlapping areas would be as follows:

- *San Joaquin Region – Tesla Portal*. Haul and delivery trucks would use Chrisman and Vernalis Roads to access Tesla Portal from I-580, and residential receptors along this route could be subject to traffic noise increases. Collective noise increases along this route could occur from overlapping construction schedules for the Advanced Disinfection and Tesla Portal Disinfection projects (SJ-1 and SJ-5). If construction of the SJPL Rehabilitation project (SJ-4) were to occur in the Tesla Portal vicinity at the same time, truck traffic on these roads could increase further. Construction of the SJPL System project (SJ-3) in the Tesla Portal vicinity would prolong the duration that construction-related truck traffic would use these two roads, but this project would not overlap with the Advanced Disinfection and Tesla Portal Disinfection projects. It is possible that implementation of the mitigation measures limiting hourly truck volumes and restricting truck operations at night (Measures 4.10-2a and 4.10-2b), but modified so they apply to all projects in this region (Measure 4.16-8a), could reduce this collective impact to a less-than-significant level. However, since truck volumes and hours of truck operations are undetermined for these projects, potential collective noise impacts on residential receptors located along this route are conservatively considered to be *potentially significant and unavoidable.*

  Collective noise impacts associated with adjoining construction sites for the Advanced Disinfection (SJ-1) and Tesla Portal Disinfection (SJ-5) projects at Tesla Portal could result in combined or prolonged construction-related noise impacts. Any construction activities associated with either the SJPL System (SJ-3) or SJPL Rehabilitation (SJ-4) projects in the Tesla Portal vicinity also could add to combined or prolonged construction-related noise impacts. Although there are no private residences near Tesla Portal (the closest residence is approximately 3,500 feet away), there is an SFPUC caretaker's residence at Tesla Portal.

Collective increases in daytime construction noise would be potentially significant for occupants of the caretaker's residence, but less than significant for private residences located to the south. While there could be potentially significant collective noise impacts on occupants of both the SFPUC caretaker's residence and private residences from any nighttime construction noise at Tesla Portal, given the distance to the nearest receptors, it is possible that this impact could be reduced to a less-than-significant level with implementation of noise controls (Measure 4.10-1a) and vacating the caretaker's residence (Measure 4.10-1b). However, since construction activities associated with any of these projects could extend beyond the typical daytime hours (during the evening or nighttime hours on weekends as well as weekdays), it is also possible that collective noise impacts could occur at both the SFPUC caretaker's residence and private residences. Therefore, the PEIR errs on the conservative side and has determined that *potentially significant and unavoidable* collective noise impacts could occur at these receptors if the hours of construction associated with these projects extended beyond the hours specified in local noise ordinances and local noise limits specified for nighttime hours cannot be met.

- *Sunol Valley Region – Calaveras Road*. Due to the overlap in construction schedules of proposed WSIP projects in this region, there could be significant collective increases in haul and delivery truck traffic along Calaveras Road in the Sunol Valley and on I-680. Collective hourly truck traffic increases (averaging 60 to 70 trucks per hour, inbound and outbound, see Table F-2, Appendix F) from these projects would not collectively cause an exceedance of the 70-dBA speech interference criterion adjacent to this road (approximately 80 trucks per hour would cause an exceedance of this criterion). However, if truck operations occurred during the nighttime hours, such collective hourly volumes would exceed the sleep interference criterion. There is one private residence 2,000 feet from Calaveras Road; at this distance, the residence would not be adversely affected by noise from daytime or nighttime collective truck traffic increases (speech or sleep interference criteria would not be exceeded and noise ordinance noise limits could feasibly be met). However, occupants of the SFPUC Land Manager's residence adjacent to Alameda East Portal could be significantly affected by collective nighttime truck noise along Calaveras Road, a *potentially significant* collective noise impact. Vacating this residence during construction of all projects in this region (Measure 4.16-8b) would reduce this potential collective noise impact to a less-than-significant level.

- *Bay Division Region – Irvington Portal in Fremont*. The haul route for the New Irvington Tunnel (SV-4) exit portal would be a new access road constructed through a residential neighborhood to connect the portal with Mission Boulevard (Highway 238) and I-680. Due to the possible overlap in construction schedules for the New Irvington Tunnel and BDPL Reliability Upgrade (BD-1) projects, there could be significant collective increases in haul and delivery truck traffic in this neighborhood. It is possible that limiting hourly truck volumes during the day (Measure 4.10-2a) and restricting nighttime truck operations (Measure 4.10-2b), but modified so they apply to both the New Irvington Tunnel and BDPL Reliability Upgrade projects (Measure 4.16-8a), could reduce this impact to a less-than-significant level. However, since haul routes, truck volumes, and hours of truck operations are undetermined for these projects, potential noise impacts on residential receptors in this area are conservatively considered to be *potentially significant and unavoidable*. The potential for such a collective noise impact would be evaluated in more detail as part of separate, project-level CEQA review for the New Irvington Tunnel and BDPL Reliability Upgrade projects.

Collective noise impacts associated with adjoining construction sites for the New Irvington Tunnel (SV-4) and BDPL Reliability Upgrade (BD-1) projects at Irvington Portal could result in combined or prolonged construction-related noise impacts. Due to the proximity of residential receptors (setbacks of less than 75 feet), *potentially significant and unavoidable* noise impacts could occur in this neighborhood if construction were prolonged (longer than two weeks), any simultaneous construction activities generated combined noise levels that exceeded the 70-dBA speech interference or 50-dBA sleep interference criteria, or construction activities extended beyond the ordinance time limits and could not meet local noise limits specified for nighttime hours.

- *Peninsula Region – Crystal Springs Road in the Lower Crystal Springs Dam Vicinity*. If construction activities associated with the CS/SA Transmission (PN-2) and Lower Crystal Springs Dam (PN-4) projects overlapped in the vicinity of Lower Crystal Springs Reservoir, there could be collective increases in haul or delivery truck traffic on Crystal Springs Road. Since truck traffic is expected to travel on I-280, collective truck traffic increases would occur primarily on the west end of this road between the pump station access road and I-280. It is possible that limiting hourly truck volumes during the day (Measure 4.10-2a) and restricting nighttime truck operations (Measure 4.10-2b), but modified so they apply to both CS/SA Transmission and Lower Crystal Springs Dam projects (Measure 4.16-8a), could reduce this impact to a less-than-significant level since the closest residential receptors are approximately 225 feet north of Crystal Springs Road. However, since haul routes, truck volumes, and hours of truck operations are undetermined for these projects, potential noise impacts on residential receptors in this area are conservatively considered to be *potentially significant and unavoidable*.

  Collective noise impacts associated with adjoining construction sites for the CS/SA Transmission (PN-2) and Lower Crystal Springs Dam (PN-4) projects in the Lower Crystal Springs Dam vicinity could result in combined or prolonged construction-related noise impacts. Since the closest residential receptors are approximately 500 feet from the Crystal Springs Pump Station, any collective increases in daytime construction noise would be less than significant. While there could be potentially significant collective noise impacts on the closest receptors from any nighttime construction noise in the Crystal Springs Pump Station vicinity, implementation of noise controls (Measure 4.10-1a) would reduce each project's impact such that the potential residual collective nighttime noise impact would be less than significant. However, since construction activities associated with these projects could extend beyond the typical daytime hours (during the evening or nighttime hours on weekends as well as weekdays), the PEIR errs on the conservative side and has determined that *potentially significant and unavoidable* collective noise impacts could occur at these receptors if the hours of construction associated with these projects extended beyond the hours specified in local noise ordinances and local noise limits specified for nighttime hours cannot be met.

- *San Francisco Region – Various Streets*. Pipeline construction associated with the SAPL 3 Installation (SF-1) and Recycled Water Projects (SF-2) could overlap in the same San Francisco streets. Such overlap could prolong the duration of construction-related noise increases (longer than two weeks) at affected sensitive receptors; however, any collective construction-related noise increases associated with these projects cannot be determined at this time and would be evaluated as part of separate, project-level CEQA review.

  There could also be a collective increase in haul/delivery trucks and associated noise if the same haul routes are used. These collective noise impacts would only occur if the construction schedules overlapped on the same streets. Since each project is projected to generate about 20 truck trips per day, collective increases from the overlap of these

projects, either on San Francisco streets or near the zoo, are not expected to exceed the 70-dBA speech interference criterion in adjacent areas. However, if truck operations extended beyond the daytime and evening hours (between 10 p.m. and 7 a.m.), any collective truck traffic increases could exceed the 50-dBA sleep interference criterion, a potentially significant impact. Implementation of the mitigation measures limiting hourly truck volumes and restricting truck operations at night (Measures 4.10-2a and 4.10-2b), but modified so they apply to all projects in this region (Measure 4.16-8a), would reduce this collective impact to a less-than-significant level. However, since haul routes, truck volumes, and hours of truck operations are undetermined for these projects, potential noise impacts on residential receptors where haul routes overlap are conservatively considered to be *potentially significant and unavoidable.*

Public Services and Utilities

Impact 4.16-9: Collective impacts on utilities and landfill capacity.

Multi-regional Collective Impacts

Section 4.11 evaluates the WSIP's impact on regional landfill disposal capacity (Impact 4.11-2). Construction of WSIP projects could collectively generate approximately 2 million cubic yards of excavated materials requiring offsite disposal. When compared to the approximately 400 million cubic yards of remaining capacity in existing landfills across the WSIP study area (see Table 4.11-3), the WSIP's potential disposal requirements represent approximately 1/2 percent of the total remaining capacity. Implementation of waste reduction measures for design and construction (Measures 4.11-2a and 4.11-2b) would reduce each project's offsite disposal requirements such that the residual contributions to this collective impact would be *less than significant with mitigation.*

Localized Collective Impacts

Section 4.11 evaluates potential construction-related impacts on public utilities, including disruption of existing utilities (Impact 4.11-1) or required relocation of existing utilities (Impact 4.11-3). These potential impacts would be site-specific and would not be additive. Therefore, the WSIP projects would not result in localized collective impacts on existing public utilities (*not applicable*).

Recreational Resources

Impact 4.16-10: Collective effects on recreational resources during construction.

Multi-regional and Localized Collective Impacts

As described in Section 4.12, construction activities associated with some WSIP facilities could temporarily disrupt access to or use of recreational facilities. While implementation of the WSIP could result in the temporary closure or disruption of several recreational opportunities

(displacing demand to other facilities and therefore potentially collectively increasing demand at some other regional facilities), the effects on recreational resources within the WSIP study area would be distributed over a relatively large area. Further, given the availability and diversity of recreational opportunities in the vicinity of the WSIP projects in each region as well as in the WSIP study area as a whole, the diversion of recreation users would not likely result in overcrowding or associated deterioration of recreational resources. Therefore, multi-regional collective impacts on recreational resources would be *less than significant*. Coordination with golf course and park planning staff (Measures 4.12-1 and 4.12-2) would also reduce each project's impact such that the residual contributions to localized collective impacts on recreational resources within each region would be *less than significant with mitigation*.

The WSIP water supply and system operations would have no impact on water-related recreational facilities or activities in the Alameda or Peninsula watersheds, as described in Sections 5.4.7 and 5.5.7. It would, however, affect recreational resources within the Tuolumne River watershed, as described in Section 5.3.8. Since facility impacts on recreational resources (described in Section 4.12) would not affect access to or use of the recreational resources in Yosemite National Park and the Tuolumne River watershed, no combined or collective multi-regional impacts on recreational resources in this area are expected to occur.

Agricultural Resources

Impact 4.16-11: Collective conversion of farmland to nonagricultural uses.

Multi-regional and Localized Collective Impacts

Section 4.13 identifies potential temporary and permanent impacts on agricultural resources associated with implementation of the WSIP. The permanent conversion of farmland would be site-specific and not additive or collective within the WSIP study area, since there is only one project in the San Joaquin Region and one project in the Sunol Valley Region (*not applicable* for localized overlapping impacts) that could affect agricultural resources. The SJPL System (SJ-3) and 40-mgd Treated Water (SV-3) projects could convert important farmland to nonagricultural use; since these projects are in two different regions, multi-regional collective impacts on agricultural resources could occur. Siting both of these facilities to avoid prime agricultural lands or offsetting its loss (Measure 4.13-2) would reduce each project's impact such that the residual contributions to this multi-regional collective impact would be *less than significant with mitigation*.

Hazards

Impact 4.16-12: Collective effects related to hazardous conditions and exposure to or release of hazardous materials.

Multi-regional Collective Impacts

Construction impacts associated with the potential to encounter hazardous materials or hazardous conditions, or to release hazardous materials during construction (Impacts 4.14-1, 4.14-2, and 4.14-4 through 4.14-6) would, for the most part, be site-specific and would not be additive or collective. Similarly, the potential for accidental releases of chemicals stored at the water treatment plants (Impacts 4.14-7 and 4.14-8) would also be site-specific and would not be additive or collective.

For many of the projects, soil excavated during construction could be classified as a hazardous waste, potentially requiring disposal at any of the three hazardous waste disposal facilities in California (Impact 4.14-1). With implementation of SFPUC Construction Measure #7 (hazardous materials) and preparation of a materials disposal plan (Measure 4.14-1b), project-level impacts related to disposal of hazardous wastes would be less than significant. As discussed above in Section 4.16-9, construction of the WSIP projects could collectively generate approximately 2 million cubic yards of excavated materials requiring offsite disposal. However, only a portion of that material would potentially be classified as a hazardous waste. Although project-level estimates have not been made to determine the quantity of soil that could be classified as a hazardous waste, it can be assumed based on historical land uses that the soil generated from the Peninsula and Alameda Creek watersheds would not be considered hazardous. Assuming, as a worst case, that 25 to 70 percent of the soil requiring offsite disposal from the Bay Division and San Francisco Region projects and 10 percent of the soil requiring offsite disposal from the SJPL System project (SJ-3) in the San Joaquin Region would be classified as hazardous, the total volume of soil requiring disposal as a hazardous waste could be up to 270,000 cubic yards.

The existing capacity of the three in-state hazardous waste disposal facilities is 18.8 million cubic yards, including 7.3 million cubic yards[4] at the Kettleman Hills Hazardous Waste Facility (Yarbrough, 2007), 9 million cubic yards at Buttonwillow (Buoni, 2006a), and 2.5 million cubic yards at Westmorland (Buoni, 2006b). In addition, Kettleman Hills is in the process of permitting another 15-million-cubic-yard waste disposal unit to be constructed by 2013, when the current disposal unit is scheduled for closure. Based on worst-case estimates, the WSIP's potential hazardous waste disposal requirements would represent approximately 1.5 percent of the total existing hazardous waste disposal capacity in the region, and less than 1 percent of the disposal volume expected to be available by 2013. Therefore, the WSIP's contribution to this multi-regional collective impact on hazardous waste disposal capacity would be *less than significant*.

[4] The total capacity of the Kettlemen Hills Hazardous Waste Facility includes a 5-million-cubic-yard expansion that will be constructed prior to 2013.

Localized Collective Impacts

Impact 4.14-3 describes the potential for an increased risk of wildland fires during construction in high fire hazard areas. Potential impacts at individual WSIP sites would be mitigated to a less-than-significant level through compliance with the Public Resources Code provisions governing the use of construction equipment in fire-prone areas. Because some WSIP project sites are near each other and would share access and haul/delivery routes, there could be a collective increase in fire hazards in the following overlapping areas, especially if construction were to overlap during the season of highest fire danger:

- *San Joaquin Region – Tesla and Oakdale Portals*. Potential overlap in high fire danger areas identified as "Wildland Area That May Contain Substantial Forest Fire Risks and Hazards" could occur in the San Joaquin Region at both the Tesla and Oakdale Portals. Both the Advanced Disinfection (SJ-1) and Tesla Portal Disinfection (SJ-5) projects would be constructed at Tesla Portal in 2009 and 2010, and additional construction could occur at this portal during the same timeframe as part of the SJPL Rehabilitation project (SJ-4). Both the SJPL System (SJ-3) and SJPL Rehabilitation projects could also include construction at Oakdale Portal and, depending on the phasing of both projects, could overlap at this portal for some period of time between 2011 and the end of 2013.

- *Sunol Valley Region – Sunol Valley*. All six WSIP projects in this region are located in high fire danger areas and could be under construction between 2009 and 2010, with multiple projects under construction through 2012.

- *Bay Division Region – Irvington Portal in Fremont*. The BDPL Reliability Upgrade (BD-1) and New Irvington Tunnel (SV-4) projects could overlap at the Irvington Portal for some period of time between 2009 and the end of 2012.

- *Peninsula Region – Lower Crystal Springs Dam Vicinity*. If schedules change, both the CS/SA Transmission (PN-2) and Lower Crystal Springs Dam (PN-4) projects could be under construction in 2010 and 2011 in the Peninsula Region, and construction activities for both projects would be conducted in the vicinity of the Lower Crystal Springs Dam.

The potential collective increase in wildland fire risk could place an additional burden on the local fire service provider, particularly if access for emergency vehicles were impeded. The extent of this impact would depend on the actual timing and phasing of these WSIP projects. Notification of fire departments, as required under Measure 4.8-1 as part of each project's traffic control plan, would reduce each project's impact such that all residual contributions to this collective impact in all regions would be *less than significant with mitigation*.

Energy Resources

Impact 4.16-13: Collective increases in the use of nonrenewable energy resources.

Section 4.15 describes the potential for increased electricity demand associated with construction and operation of the WSIP projects. SFPUC Power Enterprise provides the energy required to operate the SFPUC regional water system, primarily from power generated by the SFPUC's

hydroelectric facilities in the Hetch Hetchy system. Within the WSIP study area, annual average energy consumption for water system operation totals approximately 44 million kilowatt-hours (kWh). Implementation of the WSIP would increase annual operational energy consumption in the WSIP study area by approximately 39 million kWh, or approximately 89 percent over existing conditions. The increase would be highest in the San Joaquin Region due to the Advanced Disinfection project (SJ-1), which could use as much as 26.5 million kWh of electricity to provide disinfection of the Hetch Hetchy water supply to meet the requirements of the Long-Term 2 Enhanced Water Treatment Rule.[5]

As discussed in Chapter 5, Section 5.3.9, changes in water releases from WSIP system operations would increase SFPUC Power Enterprise's power production from an average of 1,618 million kWh in 2005 to an average of 1,641 million kWh in 2030. With this 23 million kWh increase in power production, the net increase in energy demand for the regional system under the WSIP would be approximately 16 million kWh, which represents less than 1 percent of SFPUC Power Enterprise's 2005 average production. In addition, changes in water supply and system operations under the WSIP would affect hydroelectric power generation downstream on the Tuolumne River at the Don Pedro Power Plant, which is operated by the Turlock Irrigation District (TID) and Modesto Irrigation District (MID). The WSIP system operations would result in a decrease in hydroelectric generation from the Don Pedro Power Plant of 14 million kWh (see Impact 5.3.9-1). Combined with the 16 million kWh increase in energy demand from the WSIP, the net loss in available hydroelectric energy attributable to the WSIP would be 30 million kWh, which is less than 0.1 percent of the estimated total energy usage in the counties within the WSIP study area.[6]

Although this increased energy consumption under the WSIP is small, the WSIP would utilize more hydroelectric power generated by SFPUC Power Enterprise, making slightly less hydroelectric power available to other users during times when there is an excess of hydroelectric power, and slightly increasing demands on other energy sources during the summer and fall months when SFPUC Power Enterprise does not generate enough power to meet its municipal demand and contractual obligations. In addition, the decrease in hydroelectric generation by the Don Pedro Power Plant would require the TID and MID to rely more on other sources of energy, possibly derived from fossil fuels. Electricity generation from nonrenewable sources contributes to greenhouse gas emissions and associated global warming effects (see Air Quality Impact 4.16-7 above for more discussion).

In accordance with Appendix F of the CEQA Guidelines, a project would have an adverse environmental effect if it were to use energy in an unnecessary, wasteful, or inefficient manner. Section 15126.4(a)(1) of the CEQA Guidelines further requires that an EIR describe feasible measures to minimize the inefficient and unnecessary consumption of energy where relevant.

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5 The WSIP's collective energy impacts would be program-wide (multi-regional) rather than localized, since all WSIP projects affect the same power sources. Therefore, the WSIP projects would not result in localized collective impacts on energy (*not applicable*).

6 Total energy usage in Alameda, San Francisco, San Joaquin, San Mateo, Santa Clara, and Tuolumne Counties was 45,072 million kWh in 2000 (CEC, 2006). Assuming a 1.2 percent annual increase in energy consumption, the total usage in 2005 would have been 47,842 million kWh.

Implementation of the WSIP and the associated increase in energy demand is necessary to provide a reliable water supply of sufficient quality to meet future water quality regulations, including the Long-Term 2 Enhanced Water Treatment Rule. Furthermore, implementation of energy efficiency measures, which would be evaluated in more detail as part of project-level CEQA review for each WSIP project (Measure 4.15-2), and continued participation in demand-shifting programs, as described in Section 4.15, would ensure that energy would not be used in a wasteful or inefficient manner, and could reduce the projected increase in energy demand. The WSIP's multi-regional (program-wide) collective increase in operational energy demand would be *less than significant with mitigation*, because the increase in energy demand would be less than 1 percent of SFPUC Power Enterprise's existing average production; the increase in energy use and decrease in Don Pedro Power Plant hydroelectric production would be necessary to provide a reliable water source; and the energy would not be used in a wasteful or inefficient manner.

Construction activities associated with each WSIP project in all regions would require the use of fuels to operate construction equipment and transport employees and materials. Each project's impacts related to the wasteful use of fuels during construction would be reduced by certain exhaust control measures (limiting idling time and performing low-emissions tune-ups, as specified Measures 4.9-1b and 4.9-1d) such that the collective increase in construction-related energy consumption would be *less than significant with mitigation*.

4.16.3 References – Collective Impacts Related to WSIP Facilities

Buoni, Marianna, Telephone conversation between Marianna Buoni of Clean Harbors and Mary McDonald of Orion Environmental Associates, December 14, 2006a.

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Pollak, D., *The Future of Habitat Conservation? The NCCP Experience in Southern California*, Part 2 of a series, California Research Bureau, California State Library, Sacramento, CA, 2001.

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4.17 Cumulative Effects

4.17 Cumulative Effects

4.17.1 Introduction and Approach

As defined in Section 15355 (CEQA Guidelines), a cumulative impact is the impact that results from implementing the proposed project together with other projects causing related impacts. The CEQA Guidelines require that 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 significant when viewed in connection with the effects of past, present, and reasonably foreseeable (i.e., 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

This analysis addresses the cumulative impacts associated with construction and operation of the WSIP facility improvement projects. Section 5.7 (in Chapter 5) presents the cumulative impacts associated with the WSIP's water supply and system operations. Chapter 7 discusses the cumulative effects associated with growth inducement and secondary effects of growth based on projections from adopted general plans and related environmental documents. The overall approach to the facilities impact assessment in Chapter 4 is described in Section 4.1.

This section presents an analysis of the *cumulative* impacts of the WSIP as a whole (i.e., the WSIP impacts identified in Sections 4.3 through 4.16 prior to mitigation, with the effects of mitigation measures considered in determining the significance of the WSIP's contribution of residual effects after mitigation to overall cumulative impacts) in combination with other proposed, planned, and approved projects from the past, present, and reasonably foreseeable future, including: (a) other SFPUC projects or activities in the WSIP study area, and (b) non-SFPUC projects or activities in the WSIP study area under the jurisdiction of other local agencies. The projects are listed by WSIP region in Tables 4.17-1 through 4.17-6 and are either: (1) planned, proposed, or approved but not yet constructed, or (2) recently completed or under construction (all as of July 2006).[1]

[1] Construction schedules for non-SFPUC projects were estimated based on information obtained in project-related documents such as initial studies and environmental impact reports; city, county, and regional agency websites; and interviews with representatives from local jurisdictions or regional agencies. In some cases, project schedules could not be estimated from these sources, but the projects were in sufficient stages of planning to be considered likely to start or complete construction before 2014, the planning horizon for construction of WSIP facilities. The schedules for these projects are listed as "Unknown." The estimated schedules are based on the most current information available during preparation of this PEIR (as of July 2006). However, as with all proposed development projects, estimated construction schedules are subject to revisions and delays and therefore could vary from the time periods indicated.

4.17.2 Projects Considered in Cumulative Analysis

Section 4.16 describes the collective impacts associated with construction and operation of the WSIP facilities based on the geographic scope of the affected environmental resource and the proposed project schedule. This section describes other "cumulative" projects, including past projects, projects currently under construction, and probable future projects that have or could potentially result in similar impacts as those resulting from the construction and/or operation of WSIP facility improvement projects. Cumulative projects identified by local and regional agencies as well as other projects planned or proposed by the SFPUC (including SFPUC projects funded with WSIP bond funds that are not analyzed in the PEIR for the reasons explained in Chapter 3, Section 3.1) are listed by region in **Tables 4.17-1** through **4.17-6**. The tables present the planning jurisdiction, a brief description, and the estimated construction schedule associated with each cumulative project. The tables also identify WSIP projects that could, in conjunction with the cumulative projects, contribute to cumulative effects and potential cumulative impact topics are identified.

The potential for cumulative impacts would depend on both the geographic locations and the construction schedules of the other projects. **Figure 4.17-1** shows the approximate locations of the cumulative projects listed in these tables. **Table 4.17-7** lists the potential schedule overlap between cumulative projects and WSIP projects. However, for future projects, construction schedules are often broadly estimated and may be subject to change. In addition, the construction schedules were unavailable for numerous projects listed in Tables 4.17-1 through 4.17-6; therefore, the estimated construction schedules for the projects were grouped into roughly five-year periods to determine the potential for schedule overlap with the WSIP projects.

Project information listed in Tables 4.17-1 through 4.17-6 is based on consultations with local jurisdictions within the San Joaquin, Sunol Valley, Bay Division, Peninsula, and San Francisco Regions (the local planning, community development, and public works/engineering departments of these agencies) as well as review of EIRs and information posted on agency websites. The tables include the following:

- Projects proposed by PG&E, AT&T, and other service providers
- Projects proposed by Caltrans, BART, Caltrain, and county transportation agencies
- Projects proposed by the SFPUC (including other planned water, wastewater, and power projects that are not part of the WSIP, or projects funded with WSIP bond funds that are not analyzed in the PEIR for the reasons explained in Chapter 3, Section 3.1), many of which are repair and rehabilitation projects[2]

[2] Projects listed in these tables do not necessarily represent all SFPUC repair and rehabilitation projects.

TABLE 4.17-1
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN JOAQUIN REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Areas	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the San Joaquin Region (Public and Private Developments)						
SJC-1	City of Waterford	Waterford Government Center	Construction of new East County Sheriff's Substation, an expanded County Branch Library and City of Waterford administrative offices (Stanislaus County, 2007).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., Highways 132 and 99) and associated air quality and noise impacts	2007–2009
SJC-2	City of Waterford	Reconstruction of Western Avenue	Reconstruction of Western Avenue from Kadota Avenue south to Highway 132 (City of Waterford, 2007).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Traffic impacts along the southern reconstructed segment of the roadway near Highway 132 and associated air quality and noise impacts	2007–2008
SJC-3	Stanislaus County	Grizzly Ranch	Construction of 142 estate homes, interspersed among almond grove ranches on 2,843 acres, over a 10-year buildout period (City of Waterford, 2007; Borchard, 2006).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., Highways 132 and 99) and associated air quality and noise impacts; encroachment of nonagricultural uses onto farm orchards	2007–2017
SJC-4	City of Modesto	Beard Industrial Tract	Development of ongoing medium and heavy industrial infill projects (Kachel, 2006).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., Highways 132 and 99) and associated air quality and noise impacts; conversion of farmland to nonagricultural uses	Ongoing
SJC-5	City of Oakdale	Residential Subdivision	Phased construction of 200 units west of Central Avenue (Huey, 2006).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., Highways 132 and 99) and associated air quality and noise impacts	2007–2010
SJC-6	City of Riverbank	North Corridor Expressway – Local Improvements	Extension and widening of roads (Crane Road, Sterns Avenue, and Warnerville Road) for future connections to Highway 99 as part of this countywide project (Hightower, 2006).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., Highways 132 and 99) and associated air quality and noise impacts	2009–2013

TABLE 4.17-1 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN JOAQUIN REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Areas	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the San Joaquin Region (Public and Private Developments) (cont.)						
SJC-7	Stanislaus County	Kaiser Modesto Medical Center	Development of a full-service hospital facility with nursing towers, three medical office buildings, three parking garages (2,185 spaces), and a central utility plant in three phases, which began in 2004 and will be completed in 2025. Project includes replacement of the existing hospital, built to meet state seismic safety standards (City of Modesto, 2004).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., Highways 132 and 99) and associated air quality and noise impacts; and improved seismic safety and reliability of critical public facilities	Phase A: 2004–2008 Phase B: 2010–2013 Phase C: 2018–2025
SJC-8	Stanislaus County	Cornerstone Business Park	Construction of a 400,000-gross-square-foot business park with professional and medical office space adjacent to, and concurrent with, Phase A of Kaiser Medical Center (City of Modesto, 2004).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., Highways 132 and 99) and associated air quality and noise impacts	2004–2011
SJC-9	Stanislaus County/City of Modesto	Pelendale/ McHenry Specific Plan	Proposed specific plan to develop up to 386 residential units at Pelandale and McHenry Avenues on an 84.4-acre site currently occupied by commercial businesses, 15 mobile homes, and a public storage facility. The SPLJ System (SJ-3) and SJPL Rehabilitation (SJ-4) projects traverse the site from northeast to northwest. The SFPUC right-of-way is proposed for open space. Project approvals include a general plan amendment, annexation to the City of Modesto, and a permit from the SFPUC to develop within its right-of-way (City of Modesto, 2006).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., Highways 99 and 132) and associated air quality and noise impacts	2010–2014+
SJC-10	City of Modesto	Salida Boulevard/ Pelandale Avenue Interchange	Reconstruction of the Pelandale Avenue/Salida Boulevard Interchange (City of Salida, 2007).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Construction-related traffic impacts on regional roads (e.g., Highways 132 and 99) and construction-related air quality and noise impacts	2007–2009
SJC-11	Stanislaus County	Highway 99/ Whitmore Avenue Interchange	Reconstruction of the Highway 99/Whitmore Avenue Interchange (Stanislaus County, 2007).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Construction-related traffic impacts on regional roads (e.g., Highways 132 and 99) and construction-related air quality and noise impacts	TBD
SJC-12	Stanislaus County	Salida Hulling Almond Hulling Facility	Construction of relocated and expanded almond hulling and shelling facility on a 50.4-acre site (Stanislaus County, 2006).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., Highway 132) and associated air quality and noise impacts	2007–2009

TABLE 4.17-1 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN JOAQUIN REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Areas	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the San Joaquin Region (Public and Private Developments) (cont.)						
SJC-13	City of Modesto	Highway 132/ Highway 99 to Morse, Nebraska, or Dakota Avenue	Construction of a portion of the Modesto Freeway on a new alignment (Stanislaus County, 2007).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; water quality impacts; construction-related traffic impacts on regional roads (e.g., Highways 132 and 99) and associated air quality and noise impacts	TBD
SJC-14	Stanislaus County	Highway 132/ Highway 33 Widening	Widening of Highway 132/Highway 33 to the San Joaquin River to four lanes (Stanislaus County, 2007).	Advanced Disinfection (SJ-1), SJPL System (SJ-3), SJPL Rehabilitation (SJ-4), Tesla Portal Disinfection (SJ-5)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; construction-related traffic impacts on regional roads (e.g., Highway 132) and associated air quality and noise impacts	TBD
SJC-15	Stanislaus County	West Patterson Business Park	Phased development of flex, light industrial, and distribution warehouse uses on 832 acres. The current proposal is for 2.5 million square feet on a 224-acre site within a park between I-5, the Mendota Delta, Rodgers Road, and Sperry Avenue; remaining future development unknown (City of Patterson, 2003; Simpson, 2006).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., I-5) and associated air quality and noise impacts; construction-related water quality impacts	2006–2013+
SJC-16	Stanislaus County	Patterson Gardens	Phased construction of 940 single-family units, a 47-unit senior residential neighborhood, and 300,000 square feet of commercial office and recreational uses, including a 16-acre lake on a 305-acre site partly in agricultural use. The first phase was completed and the second phase is under construction (City of Patterson, 2003; Simpson, 2006).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; traffic impacts on regional roads (e.g., I-5) and associated air quality and noise impacts; conversion of farmland to nonagricultural uses	2006–2009
SJC-17	San Joaquin County/ Stanislaus County	RMC Pacific Vernalis Quarry Mining and Reclamation Project	Proposed sand and gravel extraction and processing of construction aggregate on 688 acres, with permitted active mining for 26 to 60 years on a 659-acre site in San Joaquin County (590 acres) and Stanislaus County (98 acres) (RMC Pacific Vernalis, 2006).	Advanced Disinfection (SJ-1), SJPL System (SJ-3), SJPL Rehabilitation (SJ-4), Tesla Portal Disinfection (SJ-5)	Water quality impacts; potential ground water and water quality impacts; operational traffic impacts on regional roads (e.g., Highway 132); operational air quality and noise impacts; conversion of non-productive farmland to commercial uses	2008–2068
SJC-18	San Joaquin County	Bird Road/ Highway 132 Interchange	Replacement of four-way stop with interchange facility at the intersection of Bird Road and Highway 132 (San Joaquin Council of Governments, 2007).	Advanced Disinfection (SJ-1), SJPL System (SJ-3), SJPL Rehabilitation (SJ-4), Tesla Portal Disinfection (SJ-5)	Construction-related water quality impacts; traffic impacts on regional roads (e.g., Highway 132) and associated air quality and noise impacts	2008–2009

TABLE 4.17-1 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN JOAQUIN REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Areas	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the San Joaquin Region (Public and Private Developments) (cont.)						
SJC-19	San Joaquin County	Mountain House Specific Plan I, II, and III	Long-term development of a new community on 4,360 acres consisting of 12 neighborhoods, 10 elementary schools, new community college, business park, public services, and recreation facilities and including 16,000 dwelling units, 21,600 jobs, and 39,000 residents over a 20- to 40-year buildout period (San Joaquin County, 1994; San Joaquin County, 2005).	**Indirect:** All San Joaquin Region projects	Traffic impacts on regional roads and associated air quality and noise impacts; disruption of existing established land use patterns; continuation of conversion of crop and farmlands to nonagricultural uses in San Joaquin County	2004–2024/2048
Other SFPUC Projects at Tesla Portal						
SJP-1a	CCSF (SFPUC)	Tesla Portal Erosion Repairs	Repairs to eroded areas around the portal and pipe connection as well as the road to the chemical building. Work would occur in a developed area within a fenced compound (SFPUC, 2006).	Advanced Disinfection (SJ-1), SJPL System (SJ-3), SJPL Rehabilitation (SJ-4), Tesla Portal Disinfection (SJ-5)	Possible overlap of onsite construction activities; construction-related traffic on access roads and associated air quality and noise impacts	TBD
SJP-1b	CCSF (SFPUC)	Tesla Portal Surface Drainage	Drainage improvement in an area of portal/pipeline connections, with additional pavement around the pump house (SFPUC, 2006).	Advanced Disinfection (SJ-1), SJPL System (SJ-3), SJPL Rehabilitation (SJ-4), Tesla Portal Disinfection (SJ-5)	Possible overlap of onsite construction activities; construction-related traffic on access roads and associated air quality and noise impacts; increased surface runoff	TBD
SJP-1c	CCSF (SFPUC)	Tesla Portal Utilities Building	Modification of electrical equipment inside an existing structure; wiring and conduit work (SFPUC, 2006).	Advanced Disinfection (SJ-1), SJPL System (SJ-3), SJPL Rehabilitation (SJ-4), Tesla Portal Disinfection (SJ-5)	Possible overlap of onsite construction activities; construction-related traffic on access roads and associated air quality and noise impacts	TBD
SJP-1d	CCSF (SFPUC)	Tesla Portal/ Thomas Shaft Disinfection Project	Construction of an access road and improvements to chemical storage (SFPUC, 2006).	Advanced Disinfection (SJ-1), Lawrence Livermore (SJ-2), SJPL System (SJ-3), SJPL Rehabilitation (SJ-4), Tesla Portal Disinfection (SJ-5)	Possible construction access restrictions at Tesla Portal and Thomas Shaft	TBD

TABLE 4.17-1 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN JOAQUIN REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Areas	Estimated Construction Schedule[b]
Other SFPUC Projects at Tesla Portal (cont.)						
SJP-1e	CCSF (SFPUC)	Tesla Portal Water Quality Monitoring Improvements	Addition/enhancement of water quality monitoring at the San Joaquin Valve House and Tesla Portal (SFPUC, 2006).	Advanced Disinfection (SJ-1), SJPL System (SJ-3), SJPL Rehabilitation (SJ-4), Tesla Portal Disinfection (SJ-5)	Possible overlap of onsite construction activities; construction-related traffic on access roads and associated air quality and noise impacts	TBD
Other SFPUC Projects in Thomas Shaft Vicinity						
SJP-2	CCSF (SFPUC)	Thomas Shaft SCADA Antenna Installation	Installation of Supervisory Control and Data Acquisition antenna (satellite dish) on an existing chlorine facility in a remote coastal mountain location. In-house construction, installation of antenna, minor electrical conduit, and hookup (SFPUC, 2006).	Lawrence Livermore (SJ-2)	Possible overlap of construction-related traffic on access roads to Thomas Shaft	TBD

[a] A WSIP facility that, in conjunction with the cumulative project, could contribute to a potential cumulative impact, depending on construction timing or affected resources.
[b] Construction schedules for non-SFPUC projects were estimated based on information obtained in project-related documents such as initial studies and EIRs; city, county, and regional agency websites; and interviews with representatives from local jurisdictions or regional agencies. In some cases, project schedules could not be estimated from these sources, but the projects were in sufficient stages of planning to be considered likely to start or complete construction before 2014, the planning horizon for construction of WSIP facilities. The schedules for these projects are listed as "TBD" (To Be Determined). The estimated schedules are based on the most current information available during preparation of this PEIR (as of July 2006). However, as with all proposed development projects, estimated construction schedules are subject to revisions and delays and therefore could vary from the time periods indicated.

TABLE 4.17-2
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SUNOL VALLEY REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the Sunol Valley Region (Public and Private Developments)						
SVC-1	Alameda County	Route 84 Safety Project	Safety improvement project that would realign and widen a section of State Route 84 (Niles Canyon Road) between Rosewarnes Bridge and Farwell Bridge. The project would improve sight distance and vertical clearances at bridges, and install a retaining wall along a section of Alameda Creek. Niles Canyon Road provides access to Calaveras Road from the north (Caltrans, 2004).	*Indirect*: All Sunol Valley Region projects; BDPL Reliability Upgrade (BD-1)	Impacts on sensitive habitats and species; water quality impacts on Alameda Creek; construction-related traffic on regional roads (e.g., Highway 84 and Highway 84/I-680 interchange) and associated air quality and noise impacts; wildland fire hazards	2007–2009
SVC-2	Alameda County	Route 84 Expressway	Widening of Highway 84 (Isabel Avenue) from a four- to six-lane roadway from Jack London Boulevard in Livermore through the Isabel Avenue/Vallecitos Road intersection. Project would add capacity, reduce congestion, improve local circulation, and eventually tie into the Isabel Avenue/I-580 interchange project. The project designates the Vallecitos Road portion of the new route a scenic corridor (ACTIA, 2007).	*Indirect*: All Sunol Valley Region projects	Construction-related traffic on regional roads (e.g., Vallecitos/I-680 ramps); associated air quality and noise impacts; potential visual impacts	2010–2012
SVC-3	Alameda County	Chevron Pipeline Relocation/ Watershed Protection Project	Construction and operation of a new pipeline segment (approximately 7.5 miles long), generally within the existing electrical transmission line easement extending north of San Antonio Reservoir and south of Vallecitos Road (Highway 84). Pipeline to be joined to an existing petroleum products pipeline in order to reduce the risk of water supply contamination at San Antonio Reservoir in the event of a pipeline failure within the reservoir's watershed. Relocation is a condition of Chevron's right-of-way lease agreement with the SFPUC (SFPUC, 2005a).	*Indirect*: All Sunol Valley Region projects	Impacts on sensitive habitat and species; construction-related traffic on Calaveras Road and associated air quality and noise impacts; temporary disruption to commercial businesses on Calaveras Road; wildland fire hazards; potential hazardous materials spills during pipeline relocation	TBD
SVC-4	Alameda County	Mission Valley Rock Company Quarries	Continuation and expansion of three surface mining permits (SMP) in areas east of Calaveras Road, north of I-680. SMP-24 is an existing 202-acre quarry and processing operation; the permit allows increased aggregate extraction and deepening of pits from 140 feet up to 250 feet. SMP-32 allows for new quarry operations on 240 acres with materials processed at SMP-24. SMP-33 a 31-acre quarry; the permit allows deepening of pits from 140 feet to up to 200 feet, footprint expansion by 6 acres to the east for a total of 37 acres, and materials processed at SMP-24 (SFPUC, 2005a).	*Indirect*: All Sunol Valley Region projects	Impacts on sensitive habitats and species; water quality impacts on nearby creeks (e.g., Alameda Creek); potential groundwater impacts; visual impacts from Calaveras Road, a designated scenic route; traffic impacts on regional roads (e.g., I-680) and Calaveras Road and associated air quality and noise impacts; wildland fire hazards	Ongoing to 2045+

TABLE 4.17-2 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SUNOL VALLEY REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the Sunol Valley Region (Public and Private Developments) (cont.)						
SVC-5	Alameda County	Sunol Valley Quarry	Expansion of existing 308.5-acre quarry to increase mining depth from 140 feet to approximately 225 feet, plus restoration of portions of Alameda and San Antonio Creeks and installation of slurry cutoff wall (SFPUC, 2005a).	*Indirect*: All Sunol Valley Region projects	Impacts on sensitive habitats and species; water quality impacts on nearby creeks; potential groundwater impacts; visual impacts from Calaveras Road; traffic impacts on regional roads (e.g., I-680) and Calaveras Road and associated air quality and noise impacts; wildland fire hazards	2009–2011
SVC-6	Alameda County	Apperson Ridge Quarry	Potential surface mining of an existing 680-acre mining leasehold (SMP-14) situated on the central portions of the 2,555-acre Apperson Ranch located about one mile east of Calaveras Road in the SFPUC Alameda watershed. No mining or extraction activities have been initiated or are likely in the near future. However, the existing permit extends for a period of 80 years (Alameda County, 1984; Jensen, 2007).	*Indirect*: All Sunol Valley Region projects	Impacts on sensitive habitats and species; water quality impacts on nearby creeks; potential groundwater impacts; visual impacts from Calaveras Road; traffic impacts on regional roads (e.g., I-680) and Calaveras Road and associated air quality and noise impacts; wildland fire hazards	TBD
Other SFPUC Projects in the Sunol Valley Water Treatment Plant Vicinity						
SVP-1a	CCSF (SFPUC)	SVWTP/HTWTP External UPS Study	External Uninterruptible Power Supply (UPS) Bypass/Replacement Study to either install external bypass switches or replace UPS. After the study, work would entail minor installation of electrical switches on plant equipment or replacement of power supplies on the same equipment (SFPUC, 2006).	*Direct*: 40-mgd Treated Water (SV-3), Treated Water Reservoirs (SV-5) *Indirect*: All Sunol Valley Region projects	Overlap of onsite construction activities; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	TBD
SVP-1b	CCSF (SFPUC)	SVWTP Tank Replacement	In-kind replacement of three existing hypochlorite tanks and five alum tanks at the Sunol Valley Water Treatment Plant (WTP). Maintenance replacement of existing chemical tanks at filter plant (SFPUC, 2006).	*Direct*: 40-mgd Treated Water (SV-3), Treated Water Reservoirs (SV-5) *Indirect*: All Sunol Valley Region projects	Overlap of onsite construction activities; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	TBD
SVP-1c	CCSF (SFPUC)	SVWTP Replace Valve V40	Replacement of valve V40 within filter plant compound at the Sunol Valley WTP. Maintenance/repair project (SFPUC, 2006).	*Direct*: 40-mgd Treated Water (SV-3), Treated Water Reservoirs (SV-5) *Indirect*: All Sunol Valley Region projects	Overlap of onsite construction activities; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	2007

TABLE 4.17-2 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SUNOL VALLEY REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the Sunol Valley Water Treatment Plant Vicinity (cont.)						
SVP-1d	CCSF (SFPUC)	SVWTP V40–V41 Pressure Transmitters	Minor installation of pressure transmitters on valves V40 and V41 at the Sunol Valley WTP (SFPUC, 2006).	*Direct*: 40-mgd Treated Water (SV-3), Treated Water Reservoirs (SV-5) *Indirect*: All Sunol Valley Region projects	Overlap of onsite construction activities; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	TBD
Other SFPUC Projects at the Alameda Portals						
SVP-2	CCSF (SFPUC)	Alameda East Portal – Chemical Piping Modification	Replacement of small high-density polyethylene piping within existing building at the Alameda East Portal, located inside off-limits, fenced-in portal compound, and relocation of existing small pumps. Minor electrical work (SFPUC, 2006).	*Direct*: SABUP (SV-6) *Indirect*: All Sunol Valley Region projects	Overlap of onsite construction activities; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	TBD
SVP-3	CCSF (SFPUC)	Alameda Portal – Alameda Siphons Flow Meter Replacement	Replacement of flow meters in Alameda Siphons with more reliable meters for 69-, 91-, and 96-inch pipes. Work involves replacing small electrical devices on pipelines within existing vaults and evaluating flow meter after field-testing (SFPUC, 2006).	*Direct*: New Irvington Tunnel (SV-4), SABUP (SV-6) *Indirect*: All Sunol Valley Region projects	Overlap of on-site construction activities; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	TBD
Other SFPUC Projects at the Sunol Yard						
SVP-4a	CCSF (SFPUC)	Sunol Yard Auto – Shop Remodel	Remodeling of auto shop inside existing building within maintenance yard at the Sunol Yard (SFPUC, 2006).	*Indirect*: All Sunol Valley Region projects	Construction-related traffic on regional roads and associated air quality and noise impacts; wildland fire hazards	TBD
SVP-4b	CCSF (SFPUC)	Sunol Yard New Roll-up Door at Welding Shop	Construction of an enclosure for the welding shop with a roll-up door. Work includes modification to existing building within maintenance yard (SFPUC, 2006).	*Indirect*: All Sunol Valley Region projects	Construction-related traffic on regional roads and associated air quality and noise impacts; wildland fire hazards	TBD
SVP-4c	CCSF (SFPUC)	Sunol Yard Temporary Expansion	Construction of a series of prefabricated structures to replace run-down operations shops at the Sunol Yard (SFPUC, 2006).	*Indirect*: All Sunol Valley Region projects	Construction-related traffic on regional roads and associated air quality and noise impacts; wildland fire hazards	TBD
SVP-4d	CCSF (SFPUC)	SFPUC Pipeline Repair and Readiness Improvement	This project would provide a pipe-rolling facility in the Sunol Maintenance Yard for the purpose of supplying emergency repair pipe following a major seismic event. Seven improvement/storage sites for stockpiling materials would be used. Three of these sites are currently used for materials storage and the other four were determined to	*Indirect*: All Sunol Valley Region projects	Construction-related traffic on regional roads and associated air quality and noise impacts; wildland fire hazards	2007-2008

TABLE 4.17-2 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SUNOL VALLEY REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects at the Sunol Yard (cont.)						
SVP-4d (cont.)			be categorically exempt from CEQA. Pipe-rolling facilities would also be installed at two other sites, but would be located within existing buildings in existing SFPUC equipment yards (SFPUC, 2005b).			
Other SFPUC Projects at the Alameda Siphons						
SVP-5a	CCSF (SFPUC)	Alameda Siphon #1 Pipeline Inspection	Alameda Siphon #1 – pipeline inspection (SFPUC, 2006).	*Direct*: New Irvington Tunnel (SV-4) *Indirect*: All Sunol Valley Region projects	Treated water discharges; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	2007
SVP-5b	CCSF (SFPUC)	Alameda Siphon #3 PCCP Pipeline Inspection	Alameda Siphon #3 – PCCP (prestressed concrete cylinder pipe) pipeline inspection (SFPUC, 2006).	*Direct*: New Irvington Tunnel (SV-4) *Indirect*: All Sunol Valley Region projects	Treated water discharges; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	2007
SVP-5c	CCSF (SFPUC)	Alameda Siphons Upgrade	Construction of a fourth, seismically resistant Alameda Siphon across the Sunol Valley along the same corridor as the three existing Alameda Siphons. The fourth siphon would be a redundant pipeline to the three existing siphons. The preferred project would include construction of a new siphon consisting of 3,000-foot-long, 78-inch-diameter pipeline; manifold modifications at the existing Alameda East and West Portals to allow connection of the fourth siphon; and addition of line valves on the three existing siphons or a large gate in the downstream end of the Coast Range Tunnel to allow for isolation of the fourth siphon (SFPUC, 2005b).	*Direct*: New Irvington Tunnel (SV-4) *Indirect*: All Sunol Valley Region projects	Impacts on sensitive habitats and species; treated water discharges; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	2009–2011
Other SFPUC Projects in the Sunol Valley Region						
SVP-6	CCSF (SFPUC)	Turner Dam – Drainage Improvement	Improvements to alleviate local ponding at the toe of Turner Dam. Project would involve removing eroded soil and rock from dry creekbed below release valve at the base of Turner Dam and re-contouring the streambed to prevent future erosion and deposits of material (SFPUC, 2006).	*Direct*: SABUP (SV-6) *Indirect*: All Sunol Valley Region projects	Impacts on sensitive habitats and species; water quality impacts; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	TBD

TABLE 4.17-2 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SUNOL VALLEY REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the Sunol Valley Region (cont.)						
SVP-7	CCSF (SFPUC)	San Antonio Reservoir Piezometer Study	Flushing and retrofit of existing piezometers at San Antonio Reservoir, and preparation of a maintenance plan for the long-term maintenance of piezometers at the facility (SFPUC, 2006).	*Direct*: SABUP (SV-6) *Indirect*: All Sunol Valley Region projects	Construction-related traffic on Calaveras Road and associated air quality and noise impacts	TBD
SVP-8	CCSF (SFPUC)	Calaveras Pipeline Inspection	Calaveras pipeline inspection (SFPUC, 2006).	*Direct*: SABUP (SV-6) *Indirect*: All Sunol Valley Region projects	Treated water discharges; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	2012
SVP-9	CCSF (SFPUC)	San Antonio PCCP Pipeline Inspection	San Antonio PCCP pipeline inspection (SFPUC, 2006).	*Direct*: SABUP (SV-6) *Indirect*: All Sunol Valley Region projects	Treated water discharges; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	2008
SVP-10	CCSF (SFPUC)	Sunol Effluent Pipeline Inspection	Sunol effluent pipeline inspection (SFPUC, 2006).	*Direct*: 40-mgd Treated Water (SV-3), SVWTP Treated Water Reservoirs (SV-5) *Indirect*: All Sunol Valley Region projects	Treated water discharges; construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	2007
SVP-11	CCSF (SFPUC Water)	Sunol & Niles Dam Removal	Removal of two obsolete dams on Alameda Creek (SFPUC, 2006).	Indirect: All Sunol Valley Region projects	Water quality impacts on Alameda Creek; impacts on sensitive habitats and species; loss of historical resources; construction-related traffic on regional roads and associated air quality and noise impacts; wildland fire hazards	Completed 2006
SVP-12	CCSF (SFPUC)	Sunol Watershed – Demolition of Unsafe Structures	Removal of abandoned buildings and water transmission facilities in the Sunol Valley and Niles Canyon to eliminate potential nuisances (facilities could attract and endanger people). Most structures are small wooden buildings and/or portions of the Sunol Aqueduct, an abandoned concrete enclosed channel through off-road areas of Niles Canyon (SFPUC, 2006).	*Indirect*: All Sunol Valley Region projects	Construction-related traffic on Highway 84 and associated air quality and noise impacts; wildland fire hazards	TBD

TABLE 4.17-2 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SUNOL VALLEY REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the Sunol Valley Region (cont.)						
SVP-13	CCSF (SFPUC)	San Antonio Pump Station Upgrade	Upgrade and rehabilitation of the San Antonio Pump Station, including replacement of three existing electric pumps with three new electric pumps; backup power for the three electric pumps; seismic retrofit of the main pump building to correct structural deficiencies; and construction of a 6.25-mVA backup transformer at the Calaveras Substation (SFPUC, 2005b).	*Direct*: SABUP (SV-6) *Indirect*: All Sunol Valley Region projects	Construction-related traffic on local access roads and associated air quality and noise impacts; wildland fire hazards	2009–2011
SVP-14	CCSF (SFPUC)	Standby Power Facilities	Construction of standby backup power at six critical facilities to allow these facilities to remain in operation during power outages and other emergency situations. Permanent engine generators would be provided at four locations, while hookups for portable engine generators would be provided at two locations. Project locations include the San Pedro Valve Lot, Millbrae Facility, San Antonio and Calaveras Reservoirs, Alameda West Portal, and Harry Tracy WTP (SFPUC, 2005b).	*Direct*: Calaveras Dam (SV-2) *Indirect*: All Sunol Valley Region projects, Baden and San Pedro Valve Lots (PN-1), HTWTP Long-Term (PN-3), SAPL 3 Installation (SF-1)	Construction-related traffic on local access roads and associated air quality and noise impacts; wildland fire hazards	2008–2010
SVP-15	CCSF (SFPUC)	Sunol Bridge Replacement	Replacement of existing wooden bridge in a remote area of East Bay Regional Park District lands (SFPUC, 2006).	*Indirect*: All Sunol Valley Region projects	Construction-related traffic on Calaveras Road and associated air quality and noise impacts; wildland fire hazards	TBD
SVP-16 **(not shown on figure)**	CCSF (SFPUC)	Alameda Watershed Habitat Conservation Plan	Preparation of a land use and biological planning document to provide comprehensive, long-term conservation measures for species listed as threatened or endangered under the endangered species acts, or for species that could be listed in the future. The plan would identify SFPUC watershed operations and maintenance activities to be covered, with the intent of mitigating the potential effects of these covered activities on covered species through implementation of a conservation program (SFPUC, 2007b).	*Indirect*: All Sunol Valley Region projects	Biological resources impacts; water quality impacts; construction-related traffic on local access roads	2008-2009

[a] A WSIP facility that, in conjunction with the cumulative project, could contribute to a potential cumulative impact, depending on construction timing or affected resources.
[b] Construction schedules for non-SFPUC projects were estimated based on information obtained in project-related documents such as initial studies and EIRs; city, county, and regional agency websites; and interviews with representatives from local jurisdictions or regional agencies. In some cases, project schedules could not be estimated from these sources, but the projects were in sufficient stages of planning to be considered likely to start or complete construction before 2014, the planning horizon for construction of WSIP facilities. The schedules for these projects are listed as "TBD" (To Be Determined). The estimated schedules are based on the most current information available during preparation of this PEIR (as of July 2006). However, as with all proposed development projects, estimated construction schedules are subject to revisions and delays and therefore could vary from the time periods indicated.

TABLE 4.17-3
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE BAY DIVISION REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the Bay Division Region (Public and Private Developments)						
BDC-1	City of Fremont	BART Extension to Warm Springs	A 5.4-mile extension of the BART Fremont line to the Warm Springs district of Fremont, with an optional station in the Irvington district (ACTIA, 2007).	BDPL Reliability Upgrade (BD-1), BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3)	Construction-related land use impacts; increased surface runoff and water quality impacts; traffic impacts on local roads (near Paseo Padre Parkway and other nearby major arterials) and Union Pacific railroad tracks; associated air quality and noise impacts	2005–2010
BDC-2	City of Fremont	Walnut Avenue Mixed Use Project	Construction of 159 residential units and 7,000 square feet of commercial space on a 3.89-acre vacant parcel in the Central Business District (Pullen, 2005).	BDPL Reliability Upgrade (BD-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on local roads (e.g., Mowry Boulevard and Paseo Parkway) and associated air quality and noise impacts	TBD
BDC-3	City of Fremont	Patterson Ranch	Mixed-use development on a 430-acre site in northern Fremont, west of I-880; uses not established yet; replaces portion of historic Patterson Ranch (Pullen, 2005).	BDPL Reliability Upgrade (BD-1)	Impacts on sensitive habitats and species; increased surface runoff and water quality impacts; historical and cultural resource impacts; construction-related traffic impacts on regional roads (e.g., I-880 corridor) and associated air quality and noise impacts	TBD
BDC-4	City of Newark	Home Depot Project	Construction of a new store containing 107,500 square feet on a 12.25-acre site that replaces a Kmart on Thornton, east of Cedar Boulevard (City of Newark, 2007).	BDPL Reliability Upgrade (BD-1)	Construction-related traffic impacts on regional roads (e.g., I-880, I-880/Mowry Avenue interchange, BDPL alignment crossing on Cedar Boulevard at Mowry Avenue) and associated air quality and noise impacts	2006–2008
BDC-5	City of Newark	NewPark Mall Renovation	Interior and exterior mall renovation, three new restaurant sites, and the addition of a 20-screen movie theater (New Park Mall, 2007).	BDPL Reliability Upgrade (BD-1)	Construction-related traffic impacts on regional roads (e.g., I-880, I-880/Mowry Avenue interchange) and associated air quality and noise impacts	2007–2010
BDC-6	Alameda County	I-680 Smart Lanes	Construction of improvements to provide SMART lanes along I-680 from Highway 84 in Alameda County to Santa Clara County line. SMART lanes allow carpools to travel free of charge, and low-occupancy vehicles to travel for a fee (ACTIA, 2006).	New Irvington Tunnel (SV-4), BDPL Reliability Upgrade (BD-1)	Water quality impacts; traffic impacts on regional roads (e.g., I-680 corridor in Alameda County) and associated air quality and noise impacts	2007–2010
BDC-7	City of Newark	Ohlone College Newark Center for Heal Sciences and Technology	Construction of 135,000-gross-square-foot campus with capacity for 3,500 students in four buildings on an 81-acre site on Cherry Street, southwest of the BDPL No. 1 alignment, east of Mowry Avenue (Ohlone College, 2007).	BDPL Reliability Upgrade (BD-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on regional roads (e.g., I-880, I-880/Mowry Avenue interchange) and associated air quality and noise impacts	2006–2009

TABLE 4.17-3 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE BAY DIVISION REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the Bay Division Region (Public and Private Developments) (cont.)						
BDC-8	City of Fremont	Mission Boulevard/ Warren Avenue/ I-880 Interchange Reconstruction – Phases 1b and 2	Reconstruction of interchange to improve traffic between I-880 and I-680 along Mission Boulevard. Phase 1 high-occupancy-vehicle lanes completed. Phase 1b would rebuild on-/off-ramps between Mission Boulevard and Kato Road with a landscape project. Phase 2 is a City of Fremont project to construct a grade separation at Warren Avenue for BART Warm Springs service (City of Fremont, 2007).	BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3)	Construction-related traffic impacts on regional roads (e.g., I-880 corridor) and associated air quality and noise impacts	Phase 1b: 2005–2008 Phase 2: TBD
BDC-9	City of Fremont	Cisco Field (Oakland A's Ballpark)	Preliminary proposal for a 32,000 to 35,000-seat open-air baseball facility with 9,000 parking spaces on a 140-acre parcel located west of I-880 near Auto Mall Parkway (Oakland Athletics, 2007).	Direct: BDPL Reliability Upgrade (BD-1), BDPL 3 and 4 Crossovers (BD-2) Indirect: All Bay Division Region projects	Increased surface runoff and water quality impacts; construction-related and operational (seasonal) traffic impacts on regional roads (e.g., I-880 and Highway 101, and major interchanges in vicinity) and associated air quality and noise impacts; potential nighttime lighting effects	2007–2010
BDC-10	North San Jose	N. Montague Expressway, West of 1st Street	Development of 620 single-family units on an 11-acre site (City of San Jose, 2007).	BDPL 3 and 4 Crossovers (BD-2)	Redirection of flood flows within 100-year floodplain between Guadalupe River and Coyote Creek; increased surface runoff and water quality impacts on Guadalupe River; construction-related traffic on regional roads and associated air quality and noise impacts; cultural (archaeological) impacts; impacts on Coyote Creek (alternate site)	2008–2010
BDC-11	North San Jose	BEA Systems North 1st Street/ Component Drive	Construction of 859,890-square-foot research and development office buildings on a 25.5-acre site (City of San Jose, 2007)	BDPL 3 and 4 Crossovers (BD-2)	Redirection of flood flows within 100-year floodplain between Guadalupe River and Coyote Creek; increased surface runoff and water quality impacts on Adobe Creek and Guadalupe River; construction-related traffic impacts on regional roads and associated air quality and noise impacts	2008–2011
BDC-12	North San Jose	Montague Expressway/ Trimble Road	Development of 208,000 square feet of research and development space in five buildings on a 6.8-acre site (City of San Jose, 2007).	BDPL 3 and 4 Crossovers (BD-2)	Redirection of flood flows within 100-year floodplain between Guadalupe River and Coyote Creek; increased surface runoff and water quality impacts on Adobe Creek and Guadalupe River; construction-related traffic impacts on regional roads and associated air quality and noise impacts	2009–2012

TABLE 4.17-3 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE BAY DIVISION REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the Bay Division Region (Public and Private Developments) (cont.)						
BDC-13	North San Jose	Baypointe Parkway between Zanker Road and Tasman Drive	Rezoning for development of 636 attached residences and 12,000 square feet of commercial space on a 10.2-acre site (City of San Jose, 2007).	BDPL 3 and 4 Crossovers (BD-2)	Redirection of flood flows within 100-year floodplain between Guadalupe River and Coyote Creek; increased surface runoff and water quality impacts on Guadalupe River; construction-related traffic impacts on regional roads and associated air quality and noise impacts	TBD
BDC-14	North San Jose / Alviso	Los Esteros Critical Energy Facility Expansion	Expansion to convert existing simple-cycle Los Esteros facility to a combined-cycle generation station capable of producing 320 megawatts (California Energy Commission, 2006).	BDPL 3 and 4 Crossovers (BD-2)	Construction-related traffic impacts on regional roads and associated air quality and noise impacts; operational regional air quality impacts; potential water quality impacts on Coyote Creek	2007–2009
BDC-15	City of Santa Clara	49er Stadium Complex	Construction of new 49ers' football stadium complex on 40 acres northeast of existing Paramount Great American Theme Park. Conceptual design includes 68,000+ seat stadium, three-floor garage (2,000 spaces), 7,000-seat amphitheater, two eight-story office towers with ground-floor retail, and a restaurant (Forty Niners, 2007).	Direct: BDPL 3 and 4 Crossovers (BD-2) Indirect: All Bay Division Region projects	Increased surface runoff and water quality impacts; construction-related and operational traffic impacts on regional roads (e.g., I-880 and Highway 101, and major interchanges in vicinity) and associated air quality and noise impacts; potential nighttime lighting effects	2007–2012
BDC-16	City of Palo Alto	Charleston-Arastradero Corridor Project	Trial demonstration traffic-calming project on Arastradero and Charleston between Miranda Avenue and Fabian Way. A new school-only right-turn lane for westbound vehicles was constructed at Gunn Hill High School in May 2006. Final project decision in June 2008 (City of Palo Alto, 2007).	BDPL 3 and 4 Crossovers (BD-2)	Effects on operational traffic in immediate vicinity of Barron Creek site during two-year trial period; potential for permanent right-turn lane and additional traffic-calming improvements after 2008	2006–2008+
BDC-17	Cities of Redwood City, Menlo Park, Newark, Fremont	Dumbarton Rail Corridor Project	Construction of a 20.5-mile commuter rail service corridor beginning along the Southern Pacific line in Redwood City and extending east to stations in Menlo Park, Newark, and Fremont, and terminating at the Union City BART station. Service would link Caltrain, the Altamont Commuter Express, Amtrak Capitol Corridor, and BART (San Mateo County Transit Authority, 2004).	BDPL Reliability Upgrade (BD-1)	Impacts on sensitive habitats and species; water quality and flood hazards; construction-related land use, traffic, noise/vibration, and air quality impacts near at-grade crossings in Menlo Park and East Palo Alto (Marsh Road, Chilco Street [south of Belle Haven School], University Avenue, Willow Road), Newark (Cherry Street, Cedar Street), and Fremont (Blacow Road); construction-related traffic impacts on regional roads and associated air quality and noise impacts; cultural (archaeological) impacts	2008–2010

TABLE 4.17-3 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE BAY DIVISION REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the Bay Division Region (Public and Private Developments) (cont.)						
BDC-18	City of East Palo Alto	Core Development Company	Construction of 178 condominium units on a 2.63-acre site (Banico, 2005).	BDPL Reliability Upgrade (BD-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on local roads (e.g., University Avenue, University Avenue/ Highway 101 interchange, University Avenue/Bay Expressway ramp – Highway 84) and associated air quality and noise impacts	TBD
BDC-19	City of East Palo Alto	University Palms	Construction of 183,200 square feet of office, 13,280 square feet of restaurant, and 3,280 square feet of retail space with residential units above (Banico, 2005).	BDPL Reliability Upgrade (BD-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on local/regional roads (e.g., University Avenue, University Avenue/ Highway 101 interchange, University Avenue/Bay Expressway ramp – Highway 84) and associated air quality and noise impacts	TBD
BDC-20	City of East Palo Alto	Tara Road Office Condominium	Construction of 60,000-square-foot office condominium on a 4.85-acre site, replacing salvage yards and vehicle storage area (Banico, 2005).	BDPL Reliability Upgrade (BD-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on local/regional roads (e.g., University Avenue, University Avenue/Highway 101 interchange, University Avenue/Highway 84 interchange) and associated air quality and noise impacts; hazardous materials disposal	TBD
BDC-21	City of Palo Alto	PG&E 230 kV Transmission Line	Development of 230-kilovolt transmission line extending between Highway 84 and Highway 101 in Palo Alto (Banico, 2005).	BDPL Reliability Upgrade (BD-1), BDPL 3 and 4 Crossovers (BD-2)	Impacts on sensitive habitats and species; construction-related traffic impacts on regional roads and associated air quality and noise impacts	2010–2012
BDC-22	City of Menlo Park	Independence Drive/ Constitution Drive	Development of a 514,543-square-foot office, 125-room hotel, fitness center, and restaurant facilities on two sites totaling 13.5 acres (Banico, 2005).	BDPL Reliability Upgrade (BD-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on local/regional roads (e.g., Marsh Road at crossing of BD-1 and at Highway 101/Marsh Road interchange) and associated air quality and noise impacts	2009–2012
BDC-23	City of Redwood City	Abbott Laboratories West Coast Research Center 1 Cardinal Way	Construction of a 541,077-square-foot lab and research facility on a former salt pile on Redwood City's bayfront (City of Redwood City, 2003a).	BDPL Reliability Upgrade (BD-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on local/regional roads (e.g., at Woodside Road/Highway 101 interchange) and associated air quality and noise impacts	2004–2014

TABLE 4.17-3 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE BAY DIVISION REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the Bay Division Region (Public and Private Developments) (cont.)						
BDC-24	City of Redwood City	Kaiser Hospital Master Plan	Long-range development of approximately 960,000 gsf of medical center uses, and 1.032 gsf of parking, including replacement of existing hospital to meet state seismic safety mandate (City of Redwood City, 2003b).	BDPL Reliability Upgrade (BD-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on local/regional roads (e.g., Highway 101 interchanges with Whipple Avenue and Woodside Road) with associated air quality and noise impacts; and improved seismic safety and reliability of critical public facilities	2009-2014
BDC-25	City of Redwood City	Stanford Outpatient Center Project	Renovation and conversion of four commercial buildings in the Midpoint Technology Park office and research and development campus to create a new hospital outpatient center totaling 369,500 square feet (City of Redwood City, 2006).	BDPL Reliability Upgrade (BD-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on local/regional roads (e.g., at Woodside Road/ Highway 101 interchange) and associated air quality and noise impacts	2007-2009
BDC-26	California Department of Fish and Game and U.S. Fish and Wildlife Service	South Bay Salt Pond Restoration Project	Tidal wetland restoration project that would convert 15,100 acres of commercial salt ponds at the south end of San Francisco Bay to a mix of tidal marsh, mudflat, and other wetland habitats. The state and federal governments purchased the property from Cargill Salt. The project calls for an eight-year initial stewardship phase followed by long-tem implementation. Project is currently in the initial stages of environmental review (South Bay Salt Pond Restoration Project, 2007).	*Direct*: BDPL Reliability Upgrade (BD-1) *Indirect*: All Bay Division Region projects that affect water courses discharging into South Bay	Potential impacts (both positive and negative) on sensitive habitat and species associated with San Francisco Bay; potential construction-related effects on hydrology, sensitive habitats, and bayside recreation and open space activities during tunnel construction	2006–2014+
Other SFPUC Projects on Bay Division Pipeline Nos. 1 and 2						
BDP-1	CCSF (SFPUC)	BDPL2A Pipeline Inspection (A10 to A20)	Bay Division Pipeline 2A pipeline inspection (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1); New Irvington Tunnel (SV-4)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2010–2011
BDP-2	CCSF (SFPUC)	BDPL1A Pipeline Inspection (B10 to B20)	Bay Division Pipeline 1A pipeline inspection (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1); New Irvington Tunnel (SV-4)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2009
BDP-3	CCSF (SFPUC)	BDPL2B Pipeline Inspection (A20 to A30)	Bay Division Pipeline 2B pipeline inspection (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2008

TABLE 4.17-3 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE BAY DIVISION REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects on Bay Division Pipeline Nos. 1 and 2 (cont.)						
BDP-4	CCSF (SFPUC)	BDPL1B Pipeline Inspection (B20 to B30)	Bay Division Pipeline 1B pipeline inspection (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2010
BDP-5	CCSF (SFPUC)	BDPL1C Pipeline Inspection (A41 to A50)	Bay Division Pipeline 1C pipeline inspection (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2007
BDP-6	CCSF (SFPUC)	BDPL2C Pipeline Inspection (B41 to B60)	Bay Division Pipeline 2C pipeline inspection (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2012
BDP-7	CCSF (SFPUC)	BDPL1D Pipeline Inspection (A50 to A60)	Bay Division Pipeline 1D pipeline inspection (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2007
BDP-8	CCSF (SFPUC)	BDPL1E Pipeline Inspection (A60 to A70)	Bay Division Pipeline 1E pipeline inspection (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2011
BDP-9	CCSF (SFPUC)	BDPL2D Pipeline Inspection (B60 to B70)	Bay Division Pipeline 2D pipeline inspection (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2006–2007
Other SFPUC Projects on Bay Division Pipeline Nos. 3 and 4						
BDP-10	CCSF (SFPUC)	BDPL3A Seismic Upgrade (C10 to C21)	Compressive slip joint repair to existing seismic joint on BDPL No. 3. Work would be conducted within existing vault in the vicinity of I-680 on-ramp (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1); New Irvington Tunnel (SV-4)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	Completed 2006
BDP-11	CCSF (SFPUC)	BDPL4A Seismic Upgrade (D10 to D20)	Compressive slip-joint repair of an existing seismic joint on Bay Division Pipeline No. 4. Work would be conducted within existing vault in the vicinity of the I-680 on-ramp (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1); New Irvington Tunnel (SV-4)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2006
BDP-12	CCSF (SFPUC)	BDPL Nos. 3 and 4 Crossover/Isolation Valve at Hayward Fault	Planning, design, and construction of shutoff and crossover facilities on Bay Division Pipelines Nos. 3 and 4 they cross the Hayward fault (SFPUC, 2005b).	BDPL 3 and 4 Seismic Upgrade at Hayward Fault (BD-3)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2006–2008

TABLE 4.17-3 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE BAY DIVISION REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects on Bay Division Pipeline Nos. 3 and 4 (cont.)						
BDP-13	CCSF (SFPUC)	BDPL3D Pipeline Inspection (C50 to C70)	Bay Division Pipeline 3D pipeline inspection (SFPUC, 2006).	BDPL 3 and 4 Crossovers (BD-2)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2008
BDP-14	CCSF (SFPUC)	BDPL4D PCCP Pipeline Inspection (D50 to D70)	Bay Division Pipeline 4D PCCP pipeline inspection (SFPUC, 2006).	BDPL 3 and 4 Crossovers (BD-2)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2008–2009
Other SFPUC Projects in the Bay Division Region						
BDP-15	CCSF (SFPUC)	Peninsula Sportsmen's Club	Environmental remediation of former gun club located in East Palo Alto (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1)	Overlapping construction at project site; construction-related traffic on local access roads and associated air quality and noise impacts	2007
BDP-16 (not shown on figure)	CCSF (SFPUC)	New Electrical Transmission Line from Newark to San Francisco	Planning, permitting, design, and construction of 50 miles of new 115-kilovolt electrical transmission line from Newark to San Francisco, and construction of a new substation (SFPUC, 2006).	BDPL Reliability Upgrade (BD-1)	Construction-related traffic impacts on local access roads; construction air quality and noise impacts and associated air quality and noise impacts	2012–2014 (Estimated)

[a] A WSIP facility that, in conjunction with the cumulative project, could contribute to a potential cumulative impact, depending on construction timing or affected resources.
[b] Construction schedules for non-SFPUC projects were estimated based on information obtained in project-related documents such as initial studies and EIRs; city, county, and regional agency websites; and interviews with representatives from local jurisdictions or regional agencies. In some cases, project schedules could not be estimated from these sources, but the projects were in sufficient stages of planning to be considered likely to start or complete construction before 2014, the planning horizon for construction of WSIP facilities. The schedules for these projects are listed as "TBD" (To Be Determined). The estimated schedules are based on the most current information available during preparation of this PEIR (as of July 2006). However, as with all proposed development projects, estimated construction schedules are subject to revisions and delays and therefore could vary from the time periods indicated.

TABLE 4.17-4
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE PENINSULA REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Projects[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the Peninsula Region (Public and Private Developments)						
PNC-1	San Mateo County	PG&E Jefferson Martin Transmission Line	Implementation of a mitigation monitoring program including restoration of wetlands, sensitive habitats, and special-status species along the eastern portion of Crystal Springs Reservoir. Transmission line completed in April 2006 (CPUC, 2003; Masuoka, 2006).	CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4), Pulgas Balancing Reservoir (PN-5)	Effects on wetlands, sensitive habitats and species, trails and passive uses, scenic views, scenic resources, historic resources	2006–2009+
PNC-2	San Mateo County	San Mateo County Crystal Springs Road Bridge Replacement	Seismic replacement of roadbridge on Crystal Springs Road extending across the crest of the Lower Crystal Springs Dam (PN-4). The roadbridge replacement is planned during construction of the Lower Crystal Springs Dam (PN-4) project (Clarke, 2007).	CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4), Pulgas Balancing Reservoir (PN-5)	Temporary construction-related traffic impacts on Highway 92 and I-280 and associated air quality and noise impacts; scenic view impacts; biological resources	2010–2011
PNC-3	City of San Bruno	The Crossings El Camino Real at I-380	Phased project on former Navy site (prior housing and administrative uses), including construction of 185-unit apartment facility (under construction); 228 units of senior apartments (under construction); and 350 units consisting of 187 condominium and 163 apartment units (approval pending) (City of San Bruno, 2006).	Baden and San Pedro Valve Lots (PN-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on local/regional roads (e.g., at I-380/El Camino Real and I-280/San Bruno interchanges) and associated air quality and noise impacts	2005–2010+
PNC-4	City of San Bruno	San Bruno Caltrain Grade Separation Project	Construction of new Caltrain station in downtown San Bruno to improve safety. Project includes elevated tracks, four street underpasses, and pedestrian underpasses to improve pedestrian bicyclists and vehicle safety at track crossings (City of San Bruno, 2006).	Baden and San Pedro Valve Lots (PN-1)	Increased surface runoff and water quality impacts; construction-related traffic impacts on local/regional roads (e.g., at I-380/El Camino Real and I-280/San Bruno interchanges) and associated air quality and noise impacts	2007–2009
Other SFPUC Projects at the Harry Tracy Water Treatment Plant						
PNP-1a	CCSF (SFPUC)	HTWTP Programmable Logic Controller Program	Work on Programmable Logic Controller (a commercial computer that controls operations within the Harry Tracy WTP filter plant) and installation of pipes in the clarifier (a sludge or treatment residuals thickening tank to help in mixing) (SFPUC, 2006).	HTWTP Long-Term (PN-3)	Construction-related traffic impacts on access roads and associated air quality and noise impacts	TBD
PNP-1b	CCSF (SFPUC)	HTWTP Power Modifications	Electrical installation for existing water pumps 101, 102, and 103 at the Harry Tracy WTP (SFPUC, 2006).	HTWTP Long-Term (PN-3)	Construction-related traffic impacts on access roads and associated air quality and noise impacts	TBD

TABLE 4.17-4 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE PENINSULA REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Projects[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects at the Harry Tracy Water Treatment Plant (cont.)						
PNP-1c	CCSF (SFPUC)	HTWTP Water Tanks Slope Study	Study to analyze the stability of hillsides near water tanks located at the Harry Tracy WTP (SFPUC, 2006).	HTWTP Long-Term (PN-3)	Impacts on sensitive habitat and species; construction-related traffic impacts on access roads and associated air quality and noise impacts	TBD
PNP-1d	CCSF (SFPUC)	HTWTP Northern Drainage Repairs	Project would plug the northern drainage line and redirect storm water into newly constructed storm drain system. Work would include excavation of the drain line within the fenced filter plant property, which is off-limits to the public (SFPUC, 2006).	HTWTP Long-Term (PN-3)	Impacts on sensitive habitat and species; stormwater runoff impacts; construction-related traffic impacts on access roads and associated air quality and noise impacts	Completed 2006
PNP-1e	CCSF (SFPUC)	HTWTP Raw Water Pipeline #3 Inspection	Inspection of one of two pipelines supplying the Harry Tracy WTP with lake water. Small permitted discharge of lake water to creek (SFPUC, 2006).	HTWTP Long-Term (PN-3)	Treated water discharges; construction-related traffic impacts on access roads and associated air quality and noise impacts	2009
PNP-1f	CCSF (SFPUC)	HTWTP External UPS Study	Study to either install external bypass switches or replace the Uninterruptible Power Supply (UPS). After the study, work would entail minor installation of electrical switches on plant equipment or replacement of power supplies on the same equipment (SFPUC, 2006).	HTWTP Long-Term (PN-3)	Construction-related traffic impacts on access roads and associated air quality and noise impacts	TBD
PNP-1g	CCSF (SFPUC)	HTWTP – Short-Term Improvements	Replacement and upgrade of the filtration system at the Harry Tracy WTP to increase the reliability and efficiency of the treatment process during normal raw water conditions (SFPUC, 2005b).	HTWTP Long-Term (PN-3)	Construction-related traffic impacts on access roads and associated air quality and noise impacts.	2006–2010
Other SFPUC Projects in the Peninsula Region						
PNP-2	CCSF (SFPUC)	Pulgas Pump Station – Alternate Power Source	Alternatives analysis to determine best way to provide alternative power to gate valves and pressure-reducing valve in Pulgas Pump Station. Installation of electrical conduit between chemical treatment facility and pump station (SFPUC, 2006).	Pulgas Balancing Reservoir (PN-5)	Construction-related traffic impacts on access roads and associated air quality and noise impacts	TBD
PNP-3	CCSF (SFPUC)	Crystal Springs Pump Station Temperature Alarms	Construction of bearing temperature alarms, which includes minor installation of electrical sensors on existing electric pump motors in the Crystal Springs Pump Station building (SFPUC, 2006).	CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4)	Construction-related traffic impacts on access roads and associated air quality and noise impacts; wildland fire hazards	TBD

TABLE 4.17-4 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE PENINSULA REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Projects[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the Peninsula Region (cont.)						
PNP-4	CCSF (SFPUC Water)	Pilarcitos Pipeline Inspection	Pilarcitos pipeline inspection (SFPUC, 2006).	CS/SA Transmission (PN-2)	Treated water discharges; construction-related traffic impacts on access roads and associated air quality and noise impacts; wildland fire hazards	2015
PNP-5	CCSF (SFPUC Water)	Ingoing Road and Pilarcitos Pipeline Replacement	Replacement of the Pilarcitos Pipeline west of San Andreas Dam to Portola Comfort station (SFPUC, 2006).	CS/SA Transmission (PN-2)	Impacts on sensitive habitat and species; water quality impacts; construction-related traffic impacts on access roads and associated air quality and noise impacts; wildland fire hazards	TBD
PNP-6	CCSF (SFPUC Water)	Baden Pump Station – Pump No. 3 Starter Modifications	Minor electrical modification to existing motor control starter in existing Baden Pump Station (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1)	Construction-related traffic impacts on access roads and associated air quality and noise impacts	TBD
PNP-7	CCSF (SFPUC Water)	San Andreas Reservoir – 28" Pilarcitos Pipeline	Replacement of a section of pipeline from Pilarcitos Reservoir within the SFPUC Peninsula watershed (SFPUC, 2006).	CS/SA Transmission (PN-2)	Impacts on sensitive habitat and species; water quality impacts; construction-related traffic impacts on access roads and associated air quality and noise impacts; wildland fire hazards	2007 -2010
PNP-8	CCSF (SFPUC Water)	San Pedro Valve Lot – Drainage Improvement	Improvement of drainage at the existing San Pedro Valve Lot; all work would take place within the valve lot fence line (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1), SAPL 3 Installation (SF-1)	Stormwater runoff impacts; construction-related traffic impacts on access roads and associated air quality and noise impacts	2006–2007
PNP-9	CCSF (SFPUC)	Adit Leak Repair – Crystal Springs Reservoir	Repair of leakage and associated damage to existing adit structures (outlet facilities) in Lower Crystal Springs Reservoir and Calaveras Dam (SFPUC, 2005b).	*Direct*: CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4), Calaveras Dam (SV-2) *Indirect*: All Sunol Valley Region projects	Construction-related traffic impacts on access roads and associated air quality and noise impacts; wildland fire hazards	2007–2008

TABLE 4.17-4 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE PENINSULA REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Projects[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the Peninsula Region (cont.)						
PNP-10	CCSF (SFPUC)	New Crystal Springs Bypass Tunnel	Construction of a new tunnel to increase seismic reliability and increase delivery reliability, including construction of a new 4,200-foot-long, 8-foot-diameter tunnel; north and south access shafts approximately 15 and 30 feet in diameter, respectively; and north and south connection pipes, standby power facilities, and valve vaults (SFPUC, 2005b).	CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4)	Construction-related traffic on local access roads and associated air quality and noise impacts; wildland fire hazards; visual impacts; impacts on sensitive habitat and species	2007–2010
PNP-11	CCSF (SFPUC)	Pipeline Repair and Readiness Improvements	Purchase of materials for emergency repair and improvement of seven storage sites for stockpiling materials necessary to repair pipelines in the event of an emergency. The improvements at each of the storage sites would include grubbing, grading, surfacing, and fencing. Project locations include California Department of Forestry in Sunol (Sunol yard across the street from CDF), Cedar Court in Newark, Ravenswood in East Palo Alto (biological study complete), Donovan Quarry near Hillsborough (biological study complete), Skyline Quarry near Lower Crystal Springs Dam, and Millbrae Yard in Millbrae (SFPUC, 2005b).	BDPL Reliability Upgrade (BD-1), CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4) All Sunol Valley Region projects	Construction-related traffic on local access roads and associated air quality and noise impacts; wildland fire hazards	2006
PNP-12	CCSF (SFPUC Water)	Southern Fuel Break Replacement	Removal of bushes and potential fire fuels from watershed near the Filoli Estate (SFPUC, 2006).	Pulgas Balancing Reservoir (PN-5)	Impacts on sensitive habitat and species; construction-related traffic impacts on access roads and associated air quality and noise impacts	TBD
PNP-13	CCSF (SFPUC)	SA Branch Pipeline Inspection (N42 to M41)	San Andreas Branch pipeline inspection (SFPUC, 2006).	HTWTP Long-Term (PN-3)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2007 -2010
PNP-14	CCSF (SFPUC)	CSPL2 Pipeline Inspection (K10 to K20)	Crystal Springs Pipeline #2 pipeline inspection (SFPUC, 2006).	CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2014
PNP-15	CCSF (SFPUC)	SSPL Pipeline Inspection (M10 to M31)	Sunset Supply Pipeline pipeline inspection (SFPUC, 2006).	CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2012

TABLE 4.17-4 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE PENINSULA REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Projects[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the Peninsula Region (cont.)						
PNP-16	CCSF (SFPUC)	CSPL2 Replacement	Repair and replacement of 4.8 miles of the existing Crystal Springs Pipeline No. 2 to improve seismic reliability and address security concerns (SFPUC, 2005b).	Baden and San Pedro Valve Lots (PN-1), CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4)	Construction-related traffic on local access roads and associated air quality and noise impacts; wildland fire hazards	2009–2011
PNP-17	CCSF (SFPUC)	CSPL2 Pipeline Inspection (K40 to K50)	Crystal Springs Pipeline #2 pipeline inspection (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2014
PNP-18	CCSF (SFPUC)	CSPL2 Pipeline Inspection (K50 to K60)	Crystal Springs Pipeline #2 pipeline inspection (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2014
PNP-19	CCSF (SFPUC)	SSPL Pipeline Inspection (M50 to M60)	Sunset Supply Pipeline pipeline inspection (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1), SAPL 3 Installation (SF-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2009
PNP-20	CCSF (SFPUC)	CS/SA Pipeline (Force Main) – Temporary Drainage and Pipe Supports Repairs	Repair of supports for pipeline between Crystal Springs Pump Station and San Andreas Reservoir (SFPUC, 2006).	CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	Completed 2005
PNP-21	CCSF (SFPUC)	CS/SAPL (Force Main) Pipeline Inspection	Crystal Springs/San Andreas Pipeline (force main) pipeline inspection (SFPUC, 2006).	CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2014
PNP-22	CCSF (SFPUC)	SSPL Pipeline Inspection (M40 to M50)	Sunset Supply Pipeline pipeline inspection (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2021

TABLE 4.17-4 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE PENINSULA REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Projects[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the Peninsula Region (cont.)						
PNP-23	CCSF (SFPUC)	CSPL1 Replacement	Removal of and/or mitigation for Crystal Springs/San Andreas pipes placed in Polhemus Creek when the bypass tunnel is completed (SFPUC, 2005b).	CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4)	Impacts on sensitive habitats and species; water quality; construction-related traffic impacts on local access roads and associated air quality and noise impacts	TBD
PNP-24	CCSF (SFPUC)	Baden Valve Lot and Pump Station Upgrade	Upgrade of pumps, valves, and motors; seismic upgrade of structure; construction of surge protection; construction of emergency power; and installation of perimeter improvements (SFPUC, 2007c).	Baden and San Pedro Valve Lots (PN-1)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2002-2005 and 2007-2008
PNP-25	CCSF (SFPUC)	SAPL1 Pipeline Inspection (L40P to P48)	San Andreas Pipeline No. 1 pipeline inspection (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2007
PNP-26	CCSF (SFPUC)	SAPL2 Pipeline Inspection (R12 to R50)	San Andreas Pipeline No. 2 pipeline inspection (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	TBD
PNP-27	CCSF (SFPUC)	SAPL2 Pipeline Inspection (R50 to R60)	San Andreas Pipeline No. 2 pipeline inspection (R50 to R60) (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1), SAPL 3 Installation (SF-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	TBD
PNP-28	CCSF (SFPUC)	SAPL3 Pipeline Inspection (T50 to T60)	San Andreas Pipeline No. 3 pipeline inspection (T50 to T60) (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1), SAPL 3 Installation (SF-1)	Treated water discharges; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2010
PNP-29	CCSF (SFPUC)	Pulgas Dechloramination Sampling Station No. 5	Installation of a new prefabricated sampling station over the existing channel to test chloramines residual before discharging to Upper Crystal Springs Reservoir (SFPUC, 2006).	Baden and San Pedro Valve Lots (PN-1), Pulgas Balancing Reservoir (PN-5)	Impacts on sensitive habitats and species; water quality; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2005-2007
PNP-30	CCSF (SFPUC)	Polhemus Creek Restoration	Restoration of Polhemus Creek along Polhemus Road. Rock fill that was placed in the creek on an emergency basis in 1996 would be removed and the creekbed area would be restored (SFPUC, 2007).	CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4)	Impacts on sensitive habitats and species; water quality; construction-related traffic impacts on local access roads and associated air quality and noise impacts	2006–2007

TABLE 4.17-4 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE PENINSULA REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Projects[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the Peninsula Region (cont.)						
PNP-31 **(not shown on figure)**	CCSF (SFPUC)	Peninsula Watershed Habitat Conservation Plan	Preparation of a land use and biological planning document to provide comprehensive, long-term conservation measures for species listed as threatened or endangered under the endangered species acts, or for species that could be listed in the future. The plan would identify SFPUC watershed operations and maintenance activities to be covered, with the intent mitigating the potential effects on covered species resulting from these covered activities through implementation of a conservation program (under preparation).	Baden and San Pedro Valve Lots (PN-1), CS/SA Transmission (PN-2), Lower Crystal Springs Dam (PN-4), Pulgas Balancing Reservoir (PN-5)	Biological resources, water quality, construction-related traffic impacts on local access roads and associated air quality and noise impacts	**Implementation within 10 years after adoption of Peninsula WMP**

[a] A WSIP facility that, in conjunction with the cumulative project, could contribute to a potential cumulative impact, depending on construction timing or affected resources.
[b] Construction schedules for non-SFPUC projects were estimated based on information obtained in project-related documents such as initial studies and EIRs; city, county, and regional agency websites; and interviews with representatives from local jurisdictions or regional agencies. In some cases, project schedules could not be estimated from these sources, but the projects were in sufficient stages of planning to be considered likely to start or complete construction before 2014, the planning horizon for construction of WSIP facilities. The schedules for these projects are listed as "TBD" (To Be Determined). The estimated schedules are based on the most current information available during preparation of this PEIR (as of July 2006). However, as with all proposed development projects, estimated construction schedules are subject to revisions and delays and therefore could vary from the time periods indicated.

TABLE 4.17-5
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN FRANCISCO REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other Non-SFPUC Planned or Approved Projects in the San Francisco Region (Public and Private Developments)						
SFC-1	CCSF (SFPUC)	800 Brotherhood Way	Subdivision of 8.15-acre parcel into 127 lots, including 66 single-family homes, 39 two-unit buildings, and 22 three-unit buildings (CCSF, 2007; Moitra, 2006).	SAPL 3 Installation (SF-1)	Land use effects on recreational uses (Harding Park Municipal Golf Course; construction-related traffic impacts on local streets (e.g., Brotherhood Way) and associated air quality and noise impacts	2007-2008
SFC-2	CCSF (SFPUC)	50 Thomas More Way	Addition of new classroom building and gymnasium at St. Thomas More School (CCSF, 2007; Moitra, 2006).	SAPL 3 Installation (SF-1)	Construction-related traffic impacts on local streets (e.g., Brotherhood Way) and associated air quality and noise impacts	TBD
SFC-3	CCSF (SFPUC)	Stern Grove and Pine Lake Park	Phased implementation of improvements, including redesign of concert area; restoration of historic structures, new and restored playgrounds, and activity areas; infrastructure improvements; and wildlife habitat restoration (CCSF, 2007; Moitra, 2006).	SAPL 3 Installation (SF-1)	Water quality impacts; construction-related traffic impacts on local streets (e.g., Brotherhood Way) and associated air quality and noise impacts	TBD
SFC-4	CCSF (SFPUC)	2800 Sloat Boulevard	Construction of 55-unit residential building with 48 parking spaces in underground garage, and 26,000 gross square feet of ground-floor retail (CCSF, 2007; Moitra, 2006).	SAPL 3 Installation (SF-1)	Construction-related traffic impacts on local streets and associated air quality and noise impacts	TBD
SFC-5	CCSF (SFPUC)	2750 Rivera Street	Construction of new music building with coral room, classrooms, storage, batting cages, and accessory space two blocks south of reservoir (CCSF, 2007; Moitra, 2006).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local streets and associated air quality and noise impacts	TBD
SFC-6	CCSF (SFPUC)	18th/19th Avenue Traffic Calming Project	Implementation of phased traffic-calming improvements on 18th and 19th Avenues, including sidewalk, intersection, median, and traffic signalization improvements (CCSF, 2007).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local streets (e.g., 18th and 19th Avenues) and associated air quality and noise impacts	2007-2009+
SFC-7	CCSF (SFPUC)	USF, 2130 Fulton Street	Construction of a 26,000-square-foot addition to McLaren Hall, including office, classroom, and student lounge space (CCSF, 2007; Moitra, 2006).	SAPL 3 Installation (SF-1), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local streets and associated air quality and noise impacts	Under Construction

TABLE 4.17-5 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN FRANCISCO REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects near the Oceanside Water Treatment Plant						
SFP-1a	CCSF (SFPUC)	OSP HVAC Improvements	HVAC (heating, ventilation, and air conditioning) system improvements of eight process buildings, an administration building, and a parking structure (SFPUC, 2006).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2005–2008
SFP-1b	CCSF (SFPUC)	OSP Digester Mixing Improvements	Modifications or upgrades to internal overflow, withdrawal lines, mixing system, gas collection, and heat exchangers (SFPUC, 2006).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2008–2010
SFP-1c	CCSF (SFPUC)	SWOO Cleaning and Backflow Prevention	Engineering evaluation of saltwater and sediment intrusion and development of a methodology to clean southwest ocean outfall. Installation of backflow prevention devices to eliminate further saltwater and sediment intrusion (SFPUC, 2006).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2000–2009
Other SFPUC Projects in the San Francisco Region						
SFP-2	CCSF (SFPUC)	2nd Avenue/ 4th Avenue/ 12th Avenue Sewer Replacement	Replacement of the existing sewers on 2nd Avenue from Balboa to Cabrillo Street; 4th Avenue from Geary Boulevard to Cornwall Street; 12th Avenue from Geary Boulevard to Cabrillo Street; and from Lake to California Street (SFPUC, 2006).	Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; potential to share same pipeline alignment	2007
SFP-3	CCSF (SFPUC)	Parker Avenue/ McAllister Street/ 17th Avenue Sewer Replacement	Replacement of the existing sewers on Parker Avenue from Geary Boulevard to Euclid Avenue; McAllister Street from Parker Avenue to Stanyan Street; and 17th Avenue from Balboa to Cabrillo Street (SFPUC, 2006).	Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; potential to share same pipeline alignment	Completed 2006
SFP-4	CCSF (SFPUC)	Alma Street/ Fulton Street/ Saturn Street/ Willard Street Sewer Replacement	Replacement of the existing sewers on Alma Street from Belvedere to Cole Street; Fulton Street from Stanyan Street to Arguello Boulevard; Saturn Street from Roosevelt Way to Temple Street; and Willard North Street from Turk Boulevard to Golden Gate Avenue (SFPUC, 2006).	Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2006–2007

TABLE 4.17-5 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN FRANCISCO REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the San Francisco Region (cont.)						
SFP-5	CCSF (SFPUC)	Euclid Avenue/ Pacific Avenue/ 36th Avenue Sewer Replacement	Replacement of the existing sewers on Euclid Avenue from Jordan to Palm Avenue; Pacific Avenue from Presidio to Walnut Street; and 36th Avenue from Balboa to Cabrillo Street (SFPUC, 2006).	Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; potential to share same pipeline alignment	2007-2008
SFP-6	CCSF (SFPUC)	Kirkham Sewer Improvement	Project to alleviate flooding along Kirkham Street by increasing the capacity of the sewer system along Kirkham Street from 21st to 26th Avenue, Lawton Street from 21st to 23rd Avenue, Moraga Street from 22nd to 23rd Avenue, and 21st Avenue from Lawton to Moraga Street (SFPUC, 2006).	Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; potential to share same pipeline alignment	2009–2010
SFP-7	CCSF (SFPUC)	Vicente Street Sewer System Improvements – Phase I	Project to alleviate flooding along Vicente Street by increasing the capacity of the sewer system along Vicente Street from 34th to Sunset Avenue, 42nd to 44th Avenue, and 44th to 45th Avenue (SFPUC, 2006).	Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; potential to share same pipeline alignment	Completed 2005–2006
SFP-8	CCSF (SFPUC)	Vicente Street Sewer System Improvements – Phase II	Project to alleviate flooding along Vicente Street and 45th Avenue by increasing the capacity of the sewer system along Vicente Street from 26th to 32nd Avenue, Ulloa Street from 45th Avenue to the Great Highway, and at the intersection of 44th Avenue and Wawona Street (SFPUC, 2006).	Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; potential to share same pipeline alignment	Completed 2006
SFP-9	CCSF (SFPUC)	Kirkham Street/ Vicente Street/ 30th Avenue/ 48th Avenue Sewer Replacement	Replacement of the existing sewers on Kirkham Street from 10th to 11th Avenue; Vicente Street from 47th Avenue to Lower Great Highway; 30th Avenue from Taraval to Ulloa Street; 48th Avenue from Lawton to Moraga Street; and from Noriega to Ortega Street (SFPUC, 2006).	Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; potential to share same pipeline alignment	2007-2008
SFP-10	CCSF (SFPUC)	23rd Avenue/ 31st Avenue/ Arguello Boulevard/ Funston Avenue Sewer Replacement	Replacement of the existing sewers on 23rd Avenue from Taraval to Vicente Street; 31st Avenue from Santiago to Taraval Street; Arguello Boulevard from Carl to Hugo Street; Funston Avenue from Judah to Kirkham Street (SFPUC, 2006).	Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; potential to share same pipeline alignment	Completed 2005 to 2006

TABLE 4.17-5 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN FRANCISCO REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the San Francisco Region (cont.)						
SFP-11	CCSF (SFPUC)	Junipero Serra Sewer Improvement	Project to alleviate flooding along Junipero Serra by increasing the capacity of the sewer system along Junipero Serra from Lyndhurst to Eucalyptus (SFPUC, 2006).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; projects could share the same pipeline alignment	2009–2010
SFP-12	CCSF (SFPUC)	Ocean Avenue Sewer Improvement	Project to alleviate flooding in the vicinity of Ocean Avenue/Faxon Street (SFPUC, 2006).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; projects could share same pipeline alignment	2009–2010
SFP-13	CCSF (SFPUC)	Claremont Boulevard/ Edna Street/ Naglee Street/ Oneida Street/ Seneca Avenue Sewer Replacement	Replacement of the existing sewers on Claremont Boulevard from Granville Way to Dewey Boulevard; Edna Street from Monterey Boulevard to Joost Avenue; Naglee Street from Huron Avenue to Alemany Boulevard; Oneida Street from Cayuga Avenue to end; and Seneca Avenue from Delano to Cayuga Avenue (SFPUC, 2006).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; projects could share the same pipeline alignment	2006–2007
SFP-14	CCSF (SFPUC)	Streetlighting Conversion	Replacement of part of current series loop 576, located in the Lakeshore area at the end of Ocean Avenue, west of Sunset Boulevard (SFPUC, 2006).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	TBD
SFP-15	CCSF (SFPUC)	Brotherhood Way Sewer Improvement	Project to alleviate flooding along Brotherhood Way and St. Charles. The project involves increasing the capacity of the sewer system along Brotherhood Way between Arch and Vernon, Head and Victoria, Ramsell and Arch, St. Charles and Junipero Serra, Vernon and St. Charles, and Victoria and Ramsell (SFPUC, 2006).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic on local access roads and associated air quality and noise impacts; projects could share the same pipeline alignment	2006–2007

TABLE 4.17-5 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN FRANCISCO REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the San Francisco Region (cont.)						
SFP-16	CCSF (SFPUC)	Alemany and Sickles Sewer Improvements, Phase 1	Project to address flooding complaints in the vicinity of Alemany Boulevard near the Daly City limits (SFPUC, 2006).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic on local access roads and associated air quality and noise impacts; projects could share the same pipeline alignment	2009
SFP-17	CCSF (SFPUC)	Sunset Reservoir – North Basin	Seismic upgrades and rehabilitation of the existing Sunset Reservoir North Basin, including stabilizing the earth embankment around the reservoir in conformance with Division of Safety of Dams requirements to minimize the potential for movement during an earthquake (SFPUC, 2005b).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2005–2008
SFP-18	CCSF (SFPUC)	Central Pump Station	Structural and seismic improvements to the Central Pump Station and new emergency generator system (SFPUC, 2007c).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2004-2007
SFP-19	CCSF (SFPUC)	East-West Transmission Main	Construction of 4.5 miles of new underground pipeline from the Alemany Pump Station in the Potrero District to Junipero Serra Boulevard at Holloway Avenue. This pipeline connects the water supply on the east side of the city to the west (SFPUC, 2007c).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2007-2009
SFP-20	CCSF (SFPUC)	Fulton at 6th Avenue – 30" Main Replacement	Replacement of deteriorated Richmond supply main along 6th Avenue between Lincoln Way and Fulton Street (SFPUC, 2007c).	Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2007-2008
SFP-21	CCSF (SFPUC)	Lake Merced Pump Station Essential Upgrade	Full evaluation of pump station facilities; development of phased master plan to assist completion of future projects; assessment of San Andreas #2 supply pipeline (SFPUC, 2007c).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	TBD

TABLE 4.17-5 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN FRANCISCO REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects in the San Francisco Region (cont.)						
SFP-22	CCSF (SFPUC)	Lincoln Park Pump Station and Tank Upgrades	The previous pump station and tank were demolished in 2005. A new pump station is being built, including four new 10-horse power pumps, a new sprinkler system, new electrical system, water quality monitoring and disinfection systems, and new hydropneumatic pumps. A new seismically reinforced 100,000-gallon water tank is also being constructed (SFPUC, 2007c).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2005–2007
SFP-23	CCSF (SFPUC)	Lincoln Way Transmission Line	Installation of 2.5 miles of new 48-inch transmission line that would supply water from Sunset Reservoir to the northern and eastern zones of the city. The transmission line would be installed from Pacheco Street at the Sunset Reservoir to 29th Avenue and along 29th Avenue to Lincoln Way (SFPUC, 2007c).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	Completed 2006
SFP-24	CCSF (SFPUC)	Merced Manor Reservoir	Structural and seismic improvements to the Merced Manor Reservoir located on Ocean Avenue between 22nd and 23rd Avenues. Other improvements include security upgrades, replacement of the reservoir lining, inlet/outlet valve repairs, removal of sediments, and disinfection and chlorination (SFPUC, 2007c).	SAPL 3 Installation (SF-1), Groundwater Projects (SF-2), Recycled Water Projects (SF-3)	Treated water discharges, construction-related traffic impacts on local access roads and associated air quality and noise impacts	2004-2006
Other SFPUC Projects at Various Locations						
N/A	CCSF (SFPUC)	Chemical Feed System	Installation of chemical feed systems and related sewer work at various locations to mitigate odors from storage/transport facilities. Instrumentation improvements on the existing chemical feed systems (SFPUC, 2006).	Depends on specific facility locations	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2005–2008
N/A	CCSF (SFPUC)	Major Electrical and Mechanical Equipment Reliability Improvements	Replacement of critical and aging mechanical and electrical equipment at various facilities, including pumping and treatment facilities (SFPUC, 2006).	Depends on specific facility locations	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2005–2010

TABLE 4.17-5 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN FRANCISCO REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects at Various Locations (cont.)						
N/A	CCSF (SFPUC)	Miscellaneous Odor Control Improvements	Various odor control facilities for collection system, pumping stations, and treatment facilities (SFPUC, 2006).	Depends on specific facility locations	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2010–2020
N/A	CCSF (SFPUC)	Wastewater Facilities Equipment Replacement	Ongoing replacement program for mechanical and electrical equipment to reestablish the reliability of pumping and treatment facilities (SFPUC, 2006).	Depends on specific facility locations	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	Ongoing
N/A	CCSF (SFPUC)	Miscellaneous Improvements to Structurally Inadequate Sewers	Replacement/rehabilitation of existing structurally inadequate sewers in locations throughout San Francisco (SFPUC, 2006).	Depends on specific facility locations	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; potential to share same pipeline alignment	Current to 2030
N/A	CCSF (SFPUC)	Miscellaneous Sewer Replacements	Ongoing sewer replacement to reestablish structural reliability and improve capacity (SFPUC, 2006).	Depends on specific facility locations	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; projects could share the same pipeline alignment	Ongoing
N/A	CCSF (SFPUC)	SFPUC Sewer Master Plan	Development of a sewer master plan to develop a long-term vision and strategy for the management of the City's wastewater and storm water; address specific challenges facing the system; and maximize system reliability and flexibility. The plan will guide sewer system improvements over the next 30 years. Short-term problems with the system are being addressed through the Five-Year Wastewater Capital Improvement Program (SFPUC, 2007d).	Depends on specific facility locations	Construction-related traffic impacts on local access roads and associated air quality and noise impacts; potential to share same pipeline alignment	Ongoing
N/A	CCSF (SFPUC)	Wet Weather Improvements	Project to maximize and/or expand capacity of the collection system and wet-weather facilities to reduce street flooding and overflow discharges (SFPUC, 2006).	Depends on specific facility locations	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2010–2020
N/A	CCSF (SFPUC)	Miscellaneous Improvements to Sewerage Facilities	Replacement and upgrade of mechanical components and structures within sewage treatment plants, pumping facilities, and other sewerage facilities throughout San Francisco (SFPUC, 2006).	Depends on specific facility locations	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	Current to 2030

TABLE 4.17-5 (Continued)
CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES IN THE SAN FRANCISCO REGION

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule[b]
Other SFPUC Projects at Various Locations (cont.)						
N/A	CCSF (SFPUC)	Street Lighting Replacing and Repairs	Street lighting replacement and repair in multiple areas (SFPUC, 2006).	Depends on specific facility locations	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	TBD

[a] A WSIP facility that, in conjunction with the cumulative project, could contribute to a potential cumulative impact, depending on construction timing or affected resources. Potentially cumulative projects with the Regional Groundwater Projects to be constructed under SF-2 were not identified because specific well locations have not been determined and could be anywhere in the South Westside Groundwater Basin.

[b] Construction schedules for non-SFPUC projects were estimated based on information obtained in project-related documents such as initial studies and EIRs; city, county, and regional agency websites; and interviews with representatives from local jurisdictions or regional agencies. In some cases, project schedules could not be estimated from these sources, but the projects were in sufficient stages of planning to be considered likely to start or complete construction before 2014, the planning horizon for construction of WSIP facilities. The schedules for these projects are listed as "TBD" (To Be Determined). The estimated schedules are based on the most current information available during preparation of this PEIR (as of July 2006). However, as with all proposed development projects, estimated construction schedules are subject to revisions and delays and therefore could vary from the time periods indicated.

TABLE 4.17-6
OTHER SFPUC SYSTEMWIDE CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule
CSYS-1	CCSF (SFPUC)	Installation of SCADA System – Phase 2 & System Security Upgrades	Installation of monitoring and control equipment as well as security systems at various locations throughout the regional system. The project is in the initial stages and includes preparation of a needs assessment report. The project would include installing a series of water quality and flow monitoring facilities at various locations, and developing and implementing the integration of security components at 14 critical sites in the regional system (SFPUC, 2005b).	SJPL System (SJ-3), SJPL Rehabilitation (SJ-4), BDPL Reliability Upgrade (BD-1), BDPL Nos. 3 and 4 Crossovers (BD-2), Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault (BD-3), Baden and San Pedro Valve Lots (PN-1)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2009–2011
CSYS-2	CCSF (SFPUC)	Cross Connection Controls	Upgrade of the existing configuration for air/vacuum valves and blowoffs at approximately 30 locations along the transmission system to eliminate and prevent cross connections and backflow from unapproved sources into the water system. The project would provide compliance with California water quality regulations for cross-connections. Typical project elements would include small-diameter valve and piping reconfigurations, installation of backflow prevention devices and air gaps at blowoffs and air valves, and other site-specific system modifications as necessary (SFPUC, 2005b).	BDPL Reliability Upgrade (BD-1), BDPL Nos. 3 and 4 Crossovers (BD-2), Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault (BD-3), Baden and San Pedro Valve Lots (PN-1)	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2008
CSYS-3	CCSF (SFPUC)	Habitat Reserve Program (HRP)	The HRP is a program to develop wetland and other habitat mitigation credits required to implement WSIP projects through early habitat creation or enhancement at select mitigation sites on existing SFPUC lands or on acquired sites (under development).	All WSIP projects	Biological resources; water quality; agricultural resources	No construction required
CSYS-4	CCSF (SFPUC)	Watershed and Environmental Improvement Program (WEIP)	The WEIP would seek to identify, prioritize, protect, and restore lands within the hydrologic boundaries, which contribute to SFPUC source waters in the Alameda Creek, Peninsula, and Tuolumne River watersheds. This program would ensure the delivery of high-quality water to Bay Area communities and the preservation and restoration of significant ecological resources throughout SFPUC watershed lands (under development).	All WSIP projects	Biological resources; water quality	No construction required

TABLE 4.17-6 (Continued)
OTHER SFPUC SYSTEMWIDE CUMULATIVE PROJECTS AND IMPACTS RELATED TO WSIP FACILITIES

Cumulative Project No.	Jurisdiction	Project Name	Project Description	Potentially Contributing WSIP Project[a]	Potential Cumulative Impact Topics	Estimated Construction Schedule
CSYS-6	CCSF (SFPUC)	Expansion of Solar and Renewable Energy Generation in San Francisco	The CCSF plans to expand the San Francisco's solar and renewable energy resources, including the formation of public-private partnerships that would leverage new state legislation and available financing mechanisms to facilitate and support the development of large-scale solar and other renewable energy resources on public and private property in the city. The plan would boost solar generation from less than 2 megawatts today to nearly 35 megawatts in the future (SFPUC, 2007e).	N/A	Energy resources	TBD

[a] A WSIP facility that, in conjunction with the cumulative project, could contribute to a potential cumulative impact, depending on construction timing or affected resources.

TABLE 4.17-7
CUMULATIVE PROJECTS WITH OVERLAPPING CONSTRUCTION SCHEDULES

WSIP Facility	Proposed WSIP Project Construction Schedule (duration)	Other SFPUC Cumulative Projects with Potentially Overlapping Schedules[a,b]	Other Non-SFPUC (Public and Private) Cumulative Projects with Potentially Overlapping Schedules[a,c]
San Joaquin Region			
SJ-1: Advanced Disinfection	2009–2010 (1–2 years)	**Possibly Direct:** SJP-1a, SJP-1b, SJP-1c, SJP-1d, SJP-1e	**Direct:** SJC-17, SJC-18, **Possibly Direct:** SJC-14 **Indirect:** SJC-19
SJ-2: Lawrence Livermore Supply Improvements	2010–2011 (1 year)	**Possibly Direct:** SJP-1d, SJP-2	**Indirect:** SJC-19
SJ-3: San Joaquin Pipeline System	2011–2014 (3 years)	**Possibly Direct:** SJP-1a, SJP-1b, SJP-1c, SJP-1d, SJP-1e, CSYS-1	**Direct:** SJC-1, SJC-3, SJC-4, SJC-5, SJC-6, SJC-7, SJC-8, SJC-9, SJC-10, SJC-12, SJC-15, SJC-16, SJC-17, SJC-18 **Possibly Direct:** SJC-11, SJC-13, SJC-14 **Indirect:** SJC-19
SJ-4: Rehabilitation of Existing San Joaquin Pipelines	2007–2014 (7–8 years)	**Possibly Direct:** SJP-1a, SJP-1b, SJP-1c, SJP-1d, SJP-1e, CSYS-1	**Direct:** SJC-1, SJC-2, SJC-3, SJC-4, SJC-5, SJC-6, SJC-7, SJC-8, SJC-9, SJC-10, SJC-12, SJC-15, SJC-16, SJC-17, SJC-18 **Possibly Direct:** SJC-11, SJC-13, SJC-14 **Indirect:** SJC-19
SJ-5: Tesla Portal Disinfection Station	2009–2011 (1–2 years)	**Possibly Direct:** SJP-1a, SJP-1b, SJP-1c, SJP-1d, SJP-1e	**Direct:** SJC-17, SJC-18, **Possibly Direct:** SJC-14 **Indirect:** SJC-19
Sunol Valley Region			
SV-1: Alameda Creek Fishery Enhancement	2011 (1 year)	**Indirect:** SVP-1a, SVP-1b, SVP-1d, SVP-2, SVP-3, SVP-4a, SVP-4b, SVP-4c, SVP-5c, SVP-6, SVP-7, SVP-8, SVP-12, SVP-13, SVP-14, SVP-15, SVP-16	**Possibly Direct:** SVC-3 **Indirect:** SVC-1, SVC-2, SVC-3, SVC-4, SVC-5, SVC-6
SV-2: Calaveras Dam Replacement	2009–2011 (2–3 years)	**Direct:** SVP-14, PNP-9 **Indirect:** SVP-1a, SVP-1b, SVP-1c, SVP-1d, SVP-2, SVP-3, SVP-4a, SVP-4b, SVP-4c, SVP-4d, SVP-5a, SVP-5b, SVP-5c, SVP-6, SVP-7, SVP-8, SVP-9, SVP-10, SVP-12, SVP-13, SVP-14, SVP-15, SVP-16, PNP-9	**Indirect:** SVC-1, SVC-2, SVC-3, SVC-4, SVC-5, SVC-6
SV-3: Additional 40-mgd Treated Water Supply	2010–2013 (2–3 years)	**Possibly Direct:** SVP-1a, SVP-1b, SVP-1d **Indirect:** SVP-1a, SVP-1b, SVP-1d, SVP-2, SVP-3, SVP-4a, SVP-4b, SVP-4c, SVP-4d, SVP-5c, SVP-6, SVP-7, SVP-8, SVP-9, SVP-12, SVP-13, SVP-14, SVP-15, SVP-16, PNP-9	**Indirect:** SVC-1, SVC-2, SVC-3, SVC-4, SVC-5, SVC-6
SV-4: New Irvington Tunnel	2009–2013 (3–4 years)	**Direct:** SVP-5a, SVP-5b, SVP-5c, BDP-1, BDP-2 **Possibly Direct:** SVP-3 **Indirect:** SVP-1a, SVP-1b, SVP-1c, SVP-1d, SVP-2, SVP-3, SVP-4a, SVP-4b, SVP-4c, SVP-4d, SVP-5a, SVP-5b, SVP-5c. SVP-6, SVP-7, SVP-8, SVP-9, SVP-10, SVP-12, SVP-13, SVP-14, SVP-15, SVP-16, PNP-9	**Direct:** BDC-6 **Possibly Direct:** SVC-3 **Indirect:** SVC-1, SVC-2, SVC-3, SVC-4, SVC-5, SVC-6

TABLE 4.17-7 (Continued)
CUMULATIVE PROJECTS WITH OVERLAPPING CONSTRUCTION SCHEDULES

WSIP Facility	Proposed WSIP Project Construction Schedule (duration)	Other SFPUC Cumulative Projects with Potentially Overlapping Schedules[a,b]	Other Non-SFPUC (Public and Private) Cumulative Projects with Potentially Overlapping Schedules[a,c]
Sunol Valley Region (cont.)			
SV-5: SVWTP – Treated Water Reservoirs	2008–2010 (2 years)	**Direct:** SVP-1c, SVP-10 **Possibly Direct:** SVP-1a, SVP-1b, SVP-1d **Indirect:** SVP-1a, SVP-1b, SVP-1c, SVP-1d, SVP-2, SVP-3, SVP-4a, SVP-4b, SVP-4c, SVP-4d, SVP-5a, SVP-5b, SVP-5c, SVP-6, SVP-7, SVP-8, SVP-9, SVP-10, SVP-12, SVP-13, SVP-14, SVP-15, SVP-16, PNP-9, PNP-11	**Indirect:** SVC-1, SVC-2, SVC-3, SVC-4, SVC-5, SVC-6
SV-6: San Antonio Backup Pipeline	2009–2011 (2 years)	**Direct:** SVP-8, SVP-9, SVP-13 **Possibly Direct:** SVP-2, SVP-3, SVP-6, SVP-7 **Indirect:** SVP-1a, SVP-1b, SVP-1c, SVP-1d, SVP-2, SVP-3, SVP-4a, SVP-4b, SVP-4c, SVP-4d, SVP-5a, SVP-5b, SVP-5c, SVP-6, SVP-7, SVP-8, SVP-9, SVP-10, SVP-12, SVP-13, SVP-14, SVP-15, SVP-16, PNP-9	**Possibly Direct:** SVC-3 **Indirect:** SVC-1, SVC-2, SVC-3, SVC-4, SVC-5, SVC-6
Bay Division Region			
BD-1: Bay Division Reliability Upgrade	2009–2013 (4 years)	**Direct:** BDP-1, BDP-2, BDP-3, BDP-4, BDP-5, BDP-6, BDP-7, BDP-8, BDP-9, BDP-15, BDP-16, CSYS-1, CSYS-2	**Direct:** BDC-1, BDC-4, BDC-5, BDC-6, BDC-7, BDC-9; BDC-17, BDC-21, BDC-22, BDC-23, BDC-24, BDC-25, BDC-26 **Possibly Direct:** BDC-2, BDC-3, BDC-18, BDC-19, BDC-20 **Indirect:** SVC-1, BDC-9, BDC-15, BDC-26
BD-2: BDPL Nos. 3 and 4 Crossovers	2010–2012 (2 years)	**Direct:** BDP-13, BDP-14, CSYS-1, CSYS-2	**Direct:** BDC-9, BDC-10, BDC-11, BDC-12, BDC-14, BDC-15, BDC-16, BDC-21 **Possibly Direct:** BDC-13 **Indirect:** BDC-9, BDC-15, BDC-26
BD-3: Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault	2010–2012 (1–2 years)	**Direct:** BDP-12, CSYS-1, CSYS-2	**Direct:** BDC-1, BDC-8 **Indirect:** BDC-9, BDC-15, BDC-26
Peninsula Region			
PN-1: Baden and San Pedro Valve Lots Improvements	2009–2011 (2 years)	**Direct:** PNP-8, PNP-16, PNP-19, PNP-24, PNP-25, PNP-28, PNP-29, CSYS-1, CSYS-2 **Possibly Direct:** PNP-6, PNP-26, PNP-27	**Direct:** PNC-3, PNC-4
PN-2: Crystal Springs/San Andreas Transmission Upgrade	2011–2013 (2–3 years)	**Direct:** PNP-4, PNP-7, PNP-10, PNP-14, PNP-15, PNP-16, PNP-21 **Possibly Direct:** PNP-3, PNP-5, PNP-23, PNP-31	**Direct:** PNC-1, PNC-2
PN-3: HTWTP Long-Term Improvements	2011–2013 (2–3 years)	**Direct:** PNP-1e, PNP-1g, PNP-13 **Possibly Direct:** PNP-1a, PNP-1b, PNP-1c, PNP-1f	None

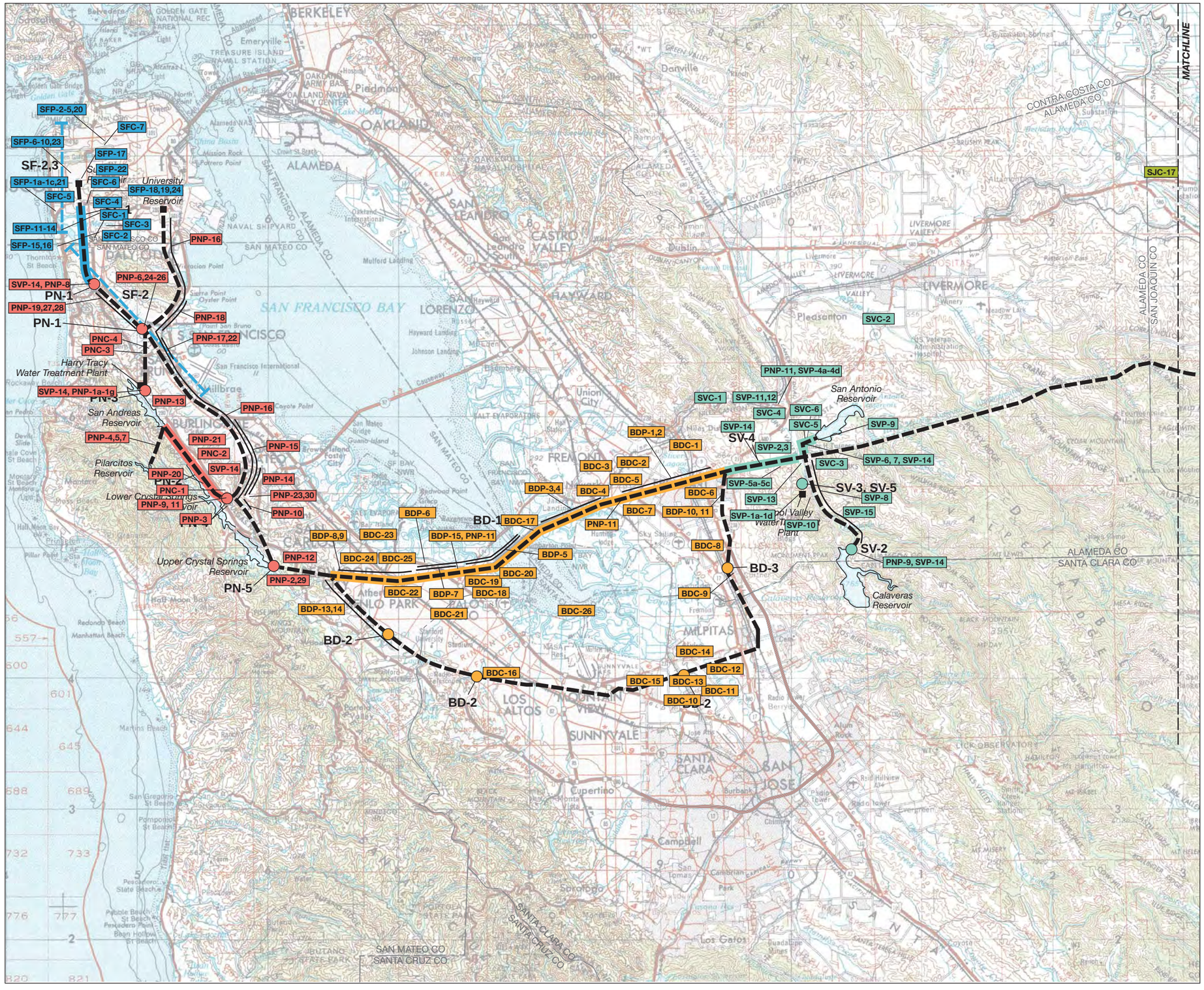
TABLE 4.17-7 (Continued)
CUMULATIVE PROJECTS WITH OVERLAPPING CONSTRUCTION SCHEDULES

WSIP Facility	Proposed WSIP Project Construction Schedule (duration)	Other SFPUC Cumulative Projects with Potentially Overlapping Schedules[a,b]	Other Non-SFPUC (Public and Private) Cumulative Projects with Potentially Overlapping Schedules[a,c]
Peninsula Region (cont.)			
PN-4: Lower Crystal Springs Dam Improvements	2010–2011 (1 year)	**Direct:** PNP-9, PNP-10, PNP-15, PNP-16 **Possibly Direct:** PNP-3, PNP-23, PNP-31	**Direct:** PNC-1, PNC-2
PN-5: Pulgas Balancing Reservoir Rehabilitation	2007–2008, 2010–2013 (1 and 3 years)	**Possibly Direct:** PNP-2, PNP-12, PNP-29, PNP-31	**Direct:** PNC-1, PNC-2
San Francisco Region			
SF-1: San Andreas Pipeline No. 3 Installation	2009–2010 (2 years)	**Direct:** PNP-8, PNP-19, PNP-28, SFP-1a, SFP-1b, SFP-1c, SFP-11, SFP-12, SFP-13, SFP15, SFP-16, SFP-17, SFP-18, SFP-19, SFP-22 **Possibly Direct:** PNP-27, SFP-14, SFP-21	**Possibly Direct:** SFC-1, SFC-2, SFC-3, SFC-4, SFC-5
SF-2: Groundwater Projects – Local and Lake Merced	2009–2012 (3 years, intermittent)	**Direct:** SFP-1a, SFP-1b, SFP-1c, SFP-6, SFP-9, SFP-11, SFP-12, SFP-13, SFP-15, SFP-16, SFP-17, SFP-18, SFP-19, SFP-22 **Possibly Direct:** SFP-14, SFP-21	**Possibly Direct:** SFC-5
SF-2: Groundwater Projects – Regional	2010–2014 (4 years)	Potentially cumulative projects not identified because specific well locations have not been selected.	
SF-3: Recycled Water Projects	2010–2012 (2 years for treatment facility, longer for pipelines)	**Direct:** SFP-1a, SFP-1b, SFP-1c, SFP-5, SFP-6, SFP-9, SFP-11, SFP-12, SFP-16, SFP-17, SFP-19, SFP-20 **Possibly Direct:** SFP-14, SFP-21	**Possibly Direct:** SFC-5

[a] Cumulative projects in the same vicinity as a WSIP facility with proposed schedules that have start or end dates within two years of each other. See Tables 4.17-1 through 4.17-6 for the names and descriptions of the potentially cumulative projects.

[b] For SFPUC projects, a project is considered to have a direct cumulative impact with a WSIP project if construction would occur at the same facility or within a distance that could result in direct physical environmental effects. Projects that could have a direct cumulative effect but don't have a defined schedule are indicated as "Possibly Direct"; these projects could possibly have overlapping construction schedules with the indicated WSIP facility, depending on the timing of construction. For the Sunol Valley Region, a project is considered to have an indirect effect if it would contribute to traffic on Calaveras Road or regional roads (Highway 84). Sunol Valley projects without a defined schedule are included in the list of indirect projects because they could cumulatively contribute to areawide or regional traffic, air quality, and noise impacts.

[c] For non-SFPUC projects (public and private), a project is considered to have a direct cumulative impact with a WSIP facility if construction would occur within a distance that could result in direct physical environmental effects. Projects that could have a direct cumulative effect but don't have a defined schedule are indicated as "Possibly Direct;" these projects could have overlapping construction schedules with the indicated WSIP facility, depending on the timing of construction. A few non-SFPUC projects that have a defined schedule are also considered to have indirect effects because the size, location, or regional attraction of these projects would contribute to areawide or regional effects, such as traffic, air quality, and noise impacts. These include SJC-19, the Mountain House development; BDC-9, Cisco Field, the proposed Oakland A's ballpark; BDC-15, the proposed 49er's Stadium Complex; and BDC-26, the South Bay Salt Pond Restoration Project, a 15,000-acre wetland restoration project.

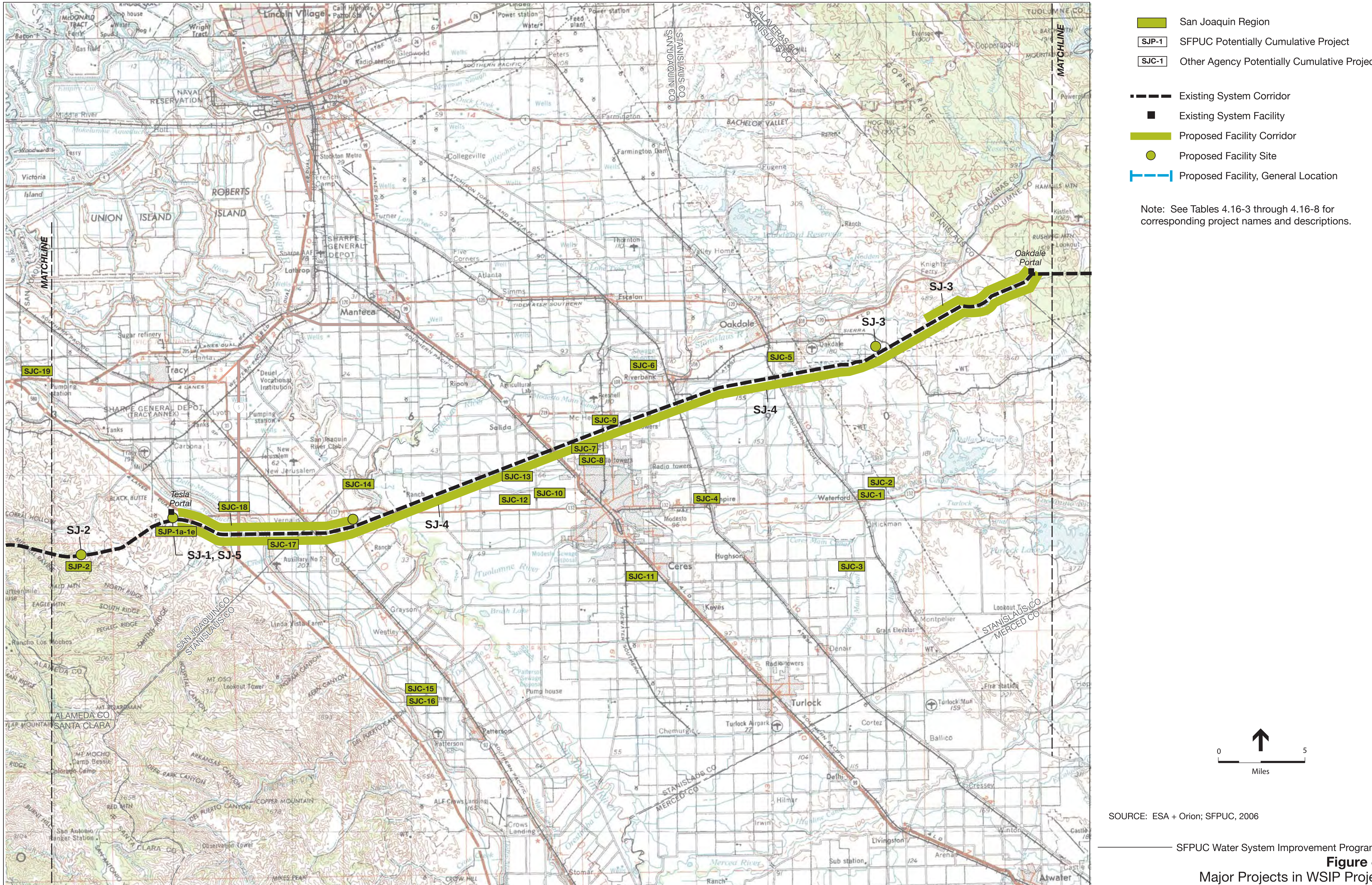


Note: See Tables 4.16-3 through 4.16-8 for corresponding project names and descriptions.

SOURCE: ESA + Orion; SFPUC, 2006

SFPUC Water System Improvement Program . 203287

Figure 4.17-1a
Major Projects in WSIP Project Area with Potential for Cumulative Impacts



SOURCE: ESA + Orion; SFPUC, 2006

SFPUC Water System Improvement Program . 203287

Figure 4.17-2b
Major Projects in WSIP Project Area with Potential for Cumulative Impacts

As shown in Tables 4.17-1 through 4.17-6, the cumulative projects identified in the WSIP study area include development projects (e.g., residential, commercial, industrial, educational, and hospital uses), transportation infrastructure projects (e.g., freeways, roadways, and rail), and utility infrastructure projects (water, wastewater, and power facilities), with construction schedules ranging from 2006 to 2068. In these tables, the column entitled *Potential Cumulative Impact Areas* for each project presents a general list of the types of impacts that could be associated with the listed projects; no site-specific environmental review was conducted for each listed project. Additionally, the cumulative impact areas identified for the listed projects in these tables would relate mostly to construction, since the primary facility impacts associated with the WSIP would occur during construction.

Most projects' construction schedules range between 2006 and 2010, although some extend to about 2015. There are a few that extend beyond 2017 (2021 to 2048) and one project that extends to 2068.[3] Table 4.17-7 shows that construction of most WSIP projects would be underway by 2008–2010 and completed by 2012–2013, and also indicates which cumulative projects could have overlapping construction schedules with each WSIP project.
Tables 4.17-1 through 4.17-6 indicate the following:

- *San Joaquin Region*. There are 25 identified projects that could potentially contribute to cumulative impacts in the San Joaquin Region (Table 4.17-1). Nineteen of these projects are public or private development projects located in adjacent jurisdictions, while six are planned SFPUC infrastructure projects near Tesla Portal or Thomas Shaft. As indicated in Table 4.17-1, cumulative development in this region would involve the following: over 1,700 residential units, 700,000 square feet of commercial/office space, more than 2.5 million square feet of light/medium/heavy industrial space, expansion of agricultural operations, expansion of hospital facilities, and various highway improvements. Mountain House, a new community between Tracy and Livermore with approximately 16,000 residential units as well as commercial, educational, and business park uses, represents the largest potentially cumulative development project in the San Joaquin Region.

  Although construction schedules for a number of listed projects are unknown or yet to be determined, all but three of the projects with estimated construction schedules would be completed by 2017. The exceptions are the Kaiser Modesto Medical Center, Phase C, (completion by 2025), RMC Pacific Vernalis Quarry Mining and Reclamation Project (completion by 2068), and Mountain House (completion by 2048). Table 4.17-7 indicates that construction of up to 24 projects could directly overlap with WSIP projects in this region.

- *Sunol Valley Region*. There are 30 identified projects that could potentially contribute to cumulative impacts in the Sunol Valley Region (Table 4.17-2). Six of these projects are public or private development projects located in adjacent jurisdictions, while 24 are planned SFPUC infrastructure projects near the Sunol Valley Water Treatment Plant (WTP), Alameda Portals, Sunol Yard, Alameda Siphons, or the Sunol Valley Region in general. As indicated in Table 4.17-2, cumulative development in this region would involve the following: quarry expansions, road and highway improvements, and a Chevron pipeline relocation.

[3] RMC Pacific Vernalis Quarry Mining and Reclamation Project, SJC-17, a sand and gravel extraction project proposed to operate in San Joaquin and Stanislaus Counties until 2068.

Although construction schedules for a number of listed projects are unknown or yet to be determined, all but one of the projects with estimated construction schedules would be completed by 2012. The exception is Mission Valley Rock Company Quarries, which would continue to operate and expand until 2045 and beyond. Table 4.17-7 indicates that construction of up to 26 projects could directly overlap with WSIP projects in this region, while up to 37 additional projects could indirectly overlap.[4]

- *Bay Division Region*. There are 42 identified projects that could potentially contribute to cumulative impacts in the Bay Division Region (Table 4.17-3). Twenty-six of these projects are public or private development projects located in adjacent jurisdictions, while 16 are planned SFPUC infrastructure projects near the Bay Division Pipelines Nos. 1, 2, 3, or 4 or the Bay Division Region in general. As indicated in Table 4.17-2, cumulative development in this region would involve the following: over 1,500 residential units, more than 2.5 million square feet of commercial/office/research and development (R&D) space, over 2 million square feet of hospital replacement/expansion space, electricity generation and transmission facilities, rail service extension (including BART), a college campus, a major-league baseball stadium, football stadium complex, tidal wetland restoration, and various highway improvements.

  Although construction schedules for a number of listed projects are unknown or yet to be determined, all of the projects with estimated construction schedules would be completed by 2014. Table 4.17-7 indicates that construction of up to 41 projects could directly overlap with WSIP projects in this region, while up to 4 additional projects could indirectly overlap.

  Peninsula Region. There are 41 identified projects that could potentially contribute to cumulative impacts in the Peninsula Region (Table 4.17-4). Four of these projects are public or private development projects located in adjacent jurisdictions, while 37 are planned SFPUC infrastructure projects near the Harry Tracy WTP or the Peninsula Region in general. As indicated in Table 4.17-4, cumulative development in this region would involve the following: more than 700 residential units as well as commercial uses.

  Although construction schedules for a number of listed projects are unknown or yet to be determined, all but eight of the projects with estimated construction schedules would be completed by 2010. The SFPUC Sunset Supply Pipeline Inspection (M40 to M50) project, to be completed by 2021, would be the last project in the region to be constructed. Table 4.17-7 indicates that construction of up to 42 projects could directly overlap with WSIP projects in this region.

- *San Francisco Region*. There are 33 identified projects that could potentially contribute to cumulative impacts in the San Francisco Region (Table 4.17-5). Seven of these projects are public or private development projects located in adjacent jurisdictions, while 36 are planned SFPUC infrastructure projects near the San Francisco Region in general.[5] As indicated in Table 4.16-1, cumulative development in this region would involve the following: over 232 residential units, approximately 26,000 square feet of office/commercial/R&D space, expansion or improvements to parks and schools (up through college level), and traffic calming measures.

4 See Table 4.16-9, footnotes b and c, for definitions of "direct" and "indirect."

5 Of these, 10 SFPUC projects have unknown or undefined locations. Therefore, potential overlap with these projects could not be determined.

Although construction schedules for a number of listed projects are unknown or yet to be determined, all but four of the projects with estimated construction schedules would be completed by 2014. The exceptions are four SFPUC projects involving storm drainage, wastewater, and transformer improvements that are scheduled for completion by 2030. Table 4.17-7 indicates that construction of up to 29 projects could directly overlap with WSIP projects in this region.

- *Entire Region – Systemwide*. Six identified systemwide cumulative projects involving multiple sites have the potential to overlap with many of the WSIP projects. However, construction activities associated with these projects would be very limited in terms of area (involving installation of pipe, valves, and electronic equipment at existing facilities) and timeframe, which would minimize the potential for overlap. Two of these projects are habitat protection, enhancement, or restoration projects and would not involve construction. Therefore, the potential contribution of these projects to the construction and operational impacts identified below would not be cumulatively considerable, and the projects are not considered further in this analysis.

  The WSIP PEIR Notice of Preparation (SFPUC, 2005b) identified four WSIP projects that are not considered in the cumulative impact analysis below. They are as follows:

- *Slipline Bay Division Pipeline 4 PCCP Sections (formerly BD-3)*. This project would be located along the alignment of the Bay Division Pipelines Nos. 3 and 4 and could overlap with WSIP projects also located along this alignment. However, this project consists of a conditions assessment only, and no construction activities or schedule have been identified. If the conditions assessment were to indicate the need for pipeline rehabilitation, construction would not occur until after the WSIP projects have been completed. Therefore, this project would not contribute to any cumulative impacts identified below for the WSIP and other cumulative development near WSIP projects.

- *SFPUC/EBMUD Intertie (formerly BD-5), Capuchino Valve Lot (formerly PN-3), and University Mound Reservoir (formerly SF-4)*. These projects are not contiguous with any of the WSIP facilities analyzed in Sections 4.3 through 4.15. Therefore, these projects would not contribute to any cumulative construction and operational impacts identified below for the WSIP in combination with other nearby SFPUC and non-SFPUC development projects (listed in Tables 4.17-1 through 4.17-6).

4.17.3 Cumulative Facility Impacts

In general, there are two categories of cumulative impacts that could result from implementation of the WSIP in combination with other projects identified in Tables 4.17-1 through 4.17-6: (1) direct cumulative impacts related to facility construction and operation; and (2) indirect or secondary cumulative impacts due to planned growth that would result from increased water supply. This section evaluates the direct cumulative impacts of facility construction and operation. Secondary growth impacts resulting from increased water supply are evaluated in Chapter 7, Growth Inducement Potential and Secondary Effects of Growth, which describes the environmental effects associated with planned growth (including the proposed and approved non-SFPUC projects listed in Tables 4.17-1 through 4.17-6). It should be noted that the projects listed in these tables represent recent, present, and future projects in the vicinity of WSIP facilities. This section focuses on the

cumulative impacts of projects that overlap geographically and projects with overlapping schedules (shown in Table 4.17-7).

Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to cumulative effects, but generally considers that implementation of the proposed program would have significant cumulative impacts if it were to:

- Have impacts that would be individually limited but cumulatively considerable ("cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past, present, and probable future projects)

WSIP impacts that would be "individually limited" are based on the impact analyses and significance criteria presented in Sections 4.3 through 4.15 for the various environmental resource topics.

Impact Summary

Potential cumulative impacts of the WSIP are described in this section by environmental resource topic, since the geographic scope of the impact can vary by topic. Each impact discussion below assesses the potential for the WSIP as a whole to contribute to significant cumulative impacts when considered in combination with the effects of other projects listed in Tables 4.17-1 through 4.17-6. Cumulative impact significance determinations for the entire WSIP study area are presented by environmental topic in **Table 4.17-8**.

Land Use and Visual Quality

Impact 4.17-1: Cumulative disruption of established communities, changes in existing land use patterns, and impacts on the existing visual character.

With respect to land use and visual impacts, the geographic scope of potential cumulative impacts encompasses the WSIP facility sites and immediate vicinities, including major construction staging areas (when known). However, major developments in the region are considered when characterizing overall regional changes in established land use patterns and visual quality.

Tables 4.17-1 through 4.17-6 indicate that cumulative development in the WSIP study area (including the San Joaquin, Sunol Valley, Bay Division, Peninsula, and San Francisco Regions) would result in development of over 20,000 residential units; more than 3 million square feet of commercial, office, or R&D uses; more than 2 million square feet of medical/hospital facilities; and more than 2.5 million square feet of industrial uses. Cumulative development would also include expansion of educational facilities (schools and colleges), transportation projects (including highway improvements, expansion of transit services), infrastructure improvements (including electricity generation/transmission and pipeline facilities), and quarry expansions. Such levels of development could disrupt established communities and significantly alter existing land use patterns

TABLE 4.17-8
SUMMARY OF CUMULATIVE FACILITIES IMPACTS

Impact Number and Topic	Cumulative Impacts
4.17-1a: Land Use	LS
4.17-1b: Visual Quality	LS
4.17-2: Geology, Soils, and Seismicity	B/LS
4.17-3: Hydrology and Water Quality	LS
4.17-4: Biological Resources	LS
4.17-5: Cultural Resources	PSU
4.17-6: Traffic, Transportation, and Circulation	PSU
4.17-7: Air Quality	PSU
4.17-8: Noise and Vibration	PSU
4.17-9: Public Services and Utilities	LS
4.17-10: Recreational Resources	LS
4.17-11: Agricultural Resources	LS
4.17-12: Hazards	LS
4.17-13: Energy Resources	LS

NOTE: The significance determinations presented in this table assume implementation of all SFPUC standard construction measures, federal/state/local regulations, and mitigation measures identified in Chapter 6.

B = Beneficial impact
LS = Less than Significant impact, no mitigation required
PSU = Potentially Significant Unavoidable impact

in some parts of the WSIP study area (particularly in rural areas such as the San Joaquin Region, where the Mountain House and Patterson Gardens projects are located). However, cumulative development can be expected to occur consistent with each jurisdictional agency's planned development (as specified in their general plans).

The WSIP projects would contribute incrementally to cumulative land use changes where the acquisition of easements or land could permanently displace existing land uses at discrete locations adjacent to or near specific facility sites. However, as described in Section 4.16 under Impact 4.16-1a, the WSIP would not result in a collective or additive impacts associated with land use displacement, and, as described in Section 4.3, implementation of SFPUC construction measures and Measures 4.3-1 and 4.3-2 would reduce the WSIP's potential land use impacts to a less-than-significant level. The cumulative projects listed in Tables 4.17-1 through 4.17-6 include some SFPUC infrastructure and water facilities projects similar to the proposed WSIP facilities; however, these projects would be almost entirely within existing SFPUC facility sites, would not result in land use changes, and there would be limited, if any, overlap of additional land acquisition at the same locations as the WSIP projects. Therefore, the WSIP's residual contribution to cumulative impacts on land use would not be cumulatively considerable (*less than significant*).

The cumulative projects listed in Tables 4.17-1 through 4.17-6 include numerous major development projects that could substantially alter the visual character of areas within the WSIP study area, particularly in rural areas such as the San Joaquin Region. With a few exceptions (e.g., Mountain House and Patterson Gardens, which are located in and west of the San Joaquin Region), most of the areas where cumulative development would occur are in or adjacent to urbanized areas, minimizing the potential for significant cumulative changes in visual quality. These cumulative projects would, by and large, add to the urban/developed character of the region. When considered in combination with these projects, the WSIP's incremental contribution to long-term visual impacts, with proposed mitigation (Measure 4.3-3), would not be cumulatively considerable (*less than significant*).

Geology, Soils, and Seismicity

Impact 4.17-2: Cumulative exposure of people or structures to geologic and seismic hazards.

The geographic scope of potential cumulative geologic and seismic impacts encompasses the WSIP facility sites and immediate vicinities. These types of impacts are generally site specific and depend on local geologic and soil conditions.

As described in Sections 4.4 and 4.16, the WSIP consists of projects to strengthen and improve water system components that could be subject to seismic hazards in the event of an earthquake on one of the regional faults, and to provide redundancy in the system should substantial damage and/or a failure of part of the system occur. In addition, several potentially cumulative SFPUC projects would improve the seismic safety of water system facilities, including pipeline repairs and replacements, and would therefore cumulatively contribute to *beneficial* effects related to the seismic safety of the regional water system.

Other potential geologic and seismic impacts associated with implementation of the WSIP, which include impacts related to slope instability during construction, erosion, alteration of topography, squeezing ground, and expansive or corrosive soils (Impacts 4.4-4 through 4.4-9), would be site-specific (dependent on local geologic and soil conditions) and would be less than significant or mitigated on a site-specific basis (Measures 4.4-1, 4.4-4, and 4.4-9). Similarly, impacts for the cumulative projects listed in Tables 4.17-1 through 4.17-6 would also be less than significant with compliance with applicable regulations (e.g., Uniform Building Code) or would be mitigated on a site-specific basis. With site-specific mitigation, the WSIP's contribution to any localized cumulative impacts related to geology, soils, and seismicity would not be cumulatively considerable (*less than significant*).

Hydrology and Water Quality

Impact 4.17-3: Cumulative impacts related to the degradation of water quality, alteration of drainage patterns, increased surface runoff, and flooding hazards.

The geographic scope of potential cumulative hydrology and water quality impacts encompasses the SFPUC watershed lands, the multiple creeks, streams, and associated drainage areas within the WSIP study area, as well as San Francisco Bay, which ultimately receives drainage from all WSIP regions (except for sites on the west side of San Francisco, which drain to the Pacific Ocean).

Sections 4.5 and 4.16 (Impact 4.16-4) address program-level and collective hydrology and water quality impacts associated with implementation of the WSIP. The WSIP projects in conjunction with other projects identified in Tables 4.17-1 through 4.17-6 would not result in cumulative water quality and hydrology effects related to increased erosion and sedimentation, construction-related discharges of treated water or groundwater produced during dewatering, or operational discharges of treated water (Impacts 4.5-1, 4.5-3a, 4.5-3b, and 4.5-5), because these projects would incorporate best management practices for temporary and permanent erosion control as well as for other construction-related discharges, implement an inspection and maintenance program, and include corrective actions should any permit exceedance occur in accordance with SFPUC Construction Measure #3 and National Pollutant Discharge Elimination System (NPDES) discharge regulations. As described in Section 4.5, the NPDES discharge regulations are designed to protect water quality on a regionwide basis and incorporate measures to protect beneficial uses of water bodies based on overall consideration of past, present, and future conditions within the region. With compliance with permit conditions and implementation of control measures specified in the permit, any residual impact of the WSIP on regionwide water quality would not be cumulatively considerable (*less than significant*).

The WSIP projects would contribute to a cumulative increase in impervious surfaces in each WSIP region, potentially resulting in increased discharges of stormwater and related pollutants (Impact 4.5-6). However, projects located in the Sunol Valley, Bay Division, and Peninsula Regions, which drain to lower (or south) San Francisco Bay, would be subject to municipal stormwater permitting requirements (depending on the extent of impervious surfaces created or replaced); these requirements would include incorporation of post-construction stormwater controls that (1) minimize the stormwater flow rate and quantity to prevent offsite erosion and flooding, and (2) minimize stormwater pollutant discharges to the maximum extent possible, as specified in the stormwater management plan required under NPDES regulations. With compliance with permitting requirements and implementation of control measures, any residual contribution of the WSIP to regionwide or localized cumulative water quality impacts related to an increase in impervious surfaces would not be considerable for these regions (*less than significant*). Furthermore, many of the potentially cumulative projects would involve redevelopment within an existing impervious area, and replacement of the existing impervious surfaces would trigger the need to comply with updated municipal stormwater permitting requirements and to implement improved post-construction stormwater controls. Overall, such compliance would be beneficial to water quality in San Francisco Bay and other receiving waters.

In the San Joaquin Region and parts of the San Francisco Region, municipal stormwater permitting requirements would not apply. However, in the San Joaquin Region, most of the cumulative increases in impervious surfaces would result from construction of approximately 17,700 residential units, 700,000 square feet of commercial/office space, more than 2.5 million square feet of light/medium/heavy industrial space, and various highway improvements. The increase in impervious surfaces from WSIP projects in this region would be approximately 26,000 square feet, a minor contribution when compared with the total impervious surfaces associated with cumulative development, and the WSIP projects would incorporate post-construction stormwater controls that (1) minimize the stormwater flow rate and quantity to prevent offsite erosion and flooding, and (2) minimize stormwater pollutant discharges to the maximum extent possible, as specified in the stormwater management plan required under NPDES regulations or Measure 4.5-6. The WSIP projects would contribute less than 1 percent of the impervious surfaces in the San Joaquin Region, and would incorporate post-construction stormwater management controls such that the residual effects on stormwater and related pollutants would be minimal. Therefore, the WSIP's contribution to cumulative increases in discharges of stormwater and related pollutants in the San Joaquin Region would not be considerable (*less than significant*).

Because most of San Francisco is developed with impervious surfaces, construction of new projects in the San Francisco Region would generally involve replacement of existing surfaces and would not result in an increase in stormwater flows to the city's combined sewer system. Therefore, neither the WSIP projects nor other cumulative projects would be expected to contribute to an increase in the number or frequency of combined sewer overflows. Furthermore, stormwater discharges to the combined system are regulated under San Francisco's NPDES permit in conformance with the Combined Sewer Overflow Control Policy and all new development would likely incorporate improved stormwater controls, which would reduce the rate and quantity of stormwater discharged to the combined sewer system. With compliance with the applicable permit requirements, the WSIP projects would not be expected to contribute to an increase in the number or frequency of combined sewer overflows. Therefore, the WSIP's potential impacts related to an increase in impervious surfaces would not be cumulatively considerable for the San Francisco Region (*less than significant*).

None of the WSIP projects would contribute to a cumulative impact related to the alteration of drainage patterns that would result in offsite flooding, erosion, or sedimentation (Impact 4.5-6), because all projects would be required to implement SFPUC Construction Measures #3 and #10 (onsite water quality and project site measures) as well as comply with NPDES permits, which would require implementation of temporary and permanent erosion control measures in accordance with the regulatory-approved stormwater pollution prevention plan and stormwater management plan, or comply with erosion control measures enforced through Article 4.1 of the San Francisco Public Works Code in San Francisco. Other cumulative projects would be subject to similar requirements. The WSIP's potential impacts related to an alteration of drainage patterns would not be cumulatively considerable in any of the WSIP regions.

Impacts related to the diversion of flood flows and contribution of sediments and contaminants to flood flows during construction activities (Impact 4.5-4) would be mitigated to a less-than-significant level through implementation of flood flow protection measures (Measure 4.5-4a). Although projects located within 100-year floodplains could result in cumulative flooding impacts, the SFPUC would design facilities to avoid effects on flood flows. Therefore, the WSIP's incremental contribution to flooding impacts would not be cumulatively considerable (*less than significant*). Furthermore, identified private developments would be subject to local policies, which restrict new development within 100-year floodplains and specify measures for reducing flooding impacts.

Biological Resources

Impact 4.17-4: Cumulative loss of sensitive biological resources.

The geographic scope of potential biological resources impacts encompasses the wildlife and plant habitats of affected species in the WSIP study area (including wetlands, sensitive habitats, and riparian habitat).

Section 4.6 evaluates the impacts of each WSIP project on biological resources, including wetlands, sensitive habitats as defined by the California Department of Fish and Game, as well as heritage trees, special-status plant and wildlife species, and riparian habitat potentially subject to state and federal protection. As indicated in Tables 4.17-1 through 4.17-6, there could be cumulative impacts on sensitive biological resources located throughout the WSIP study area. These tables indicate that cumulative development in the WSIP study area (including the San Joaquin, Sunol Valley, Bay Division, Peninsula, and San Francisco Regions) would result in development of over 20,000 residential units; more than 3 million square feet of commercial, office, or R&D uses; more than 2 million square feet of medical/hospital facilities; and more than 2.5 million square feet of industrial uses. Cumulative development would also include expansion of educational facilities (schools and colleges), transportation projects (including highway improvements, expansion of transit services), infrastructure improvements (including electricity generation/transmission and pipeline facilities), and quarry expansions. Past, present, and projected future development within the Bay Area and Central Valley regions has and will result in significant unavoidable impacts on biological resources, regardless of whether the WSIP is implemented or not.

The cumulative impacts on biological resources resulting from the WSIP in conjunction with projects listed in Tables 4.17-1 through 4.17-6 are best described as bioregional effects, operating beyond the level of individual plants or animals.[6] For example:

[6] This section addresses cumulative impacts within the WSIP study area, which spans from San Francisco on the west to Oakdale Portal on the east. See Section 5.7 for cumulative impacts within areas east of Oakdale Portal (Tuolumne River watershed).

- Genetic diversity impacts on small populations that become reduced and isolated by development
- Impacts on wildlife movement due to habitat fragmentation
- Suppression of natural disturbance regimes (e.g., fire, flood) as projects are constructed, operated, and maintained
- Reduced population recovery opportunities from stochastic events (e.g., random events such as disease)

Compliance with applicable state and federal regulations, general plan conservation measures, and project-specific permitting requirements would mitigate these bioregional effects to some extent. For the WSIP, implementation of mitigation measures that address wetlands and special-status species protection, habitat restoration, and tree protection (Measures 4.6-1 through 4.6-3) as well as combining habitat compensation through a coordinated program such as the Habitat Reserve Program or other means (Measure 4.16-4a) to address bioregional effects could provide additional protection of affected biological resources, thereby ensuring that the WSIP's contribution to these cumulative bioregional effects would be *less than significant*.

Tables 4.17-1 through 4.17-6 include approximately six cumulative projects in the Sunol Valley, Bay Division, and Peninsula Regions designed to restore, protect, and enhance biological resources through the implementation of conservation measures (e.g., open space acquisition) in the WSIP study area. These projects include the Alameda and Peninsula Watershed Management Plans, habitat conservation plans for the SFPUC's Alameda and Peninsula watersheds, the SFPUC's Watershed and Environmental Improvement Program, and the South Bay Salt Pond Restoration Project at the south end of San Francisco Bay. Additional enhancement, restoration, and protection projects are identified and discussed in Section 5.7, Cumulative Projects and Impacts Related to WSIP Water Supply and System Operations. Although these projects do not specifically address biological impacts of the WSIP, they would provide an overall net benefit in terms of these cumulative bioregional effects.

Cultural Resources

Impact 4.17-5: Cumulative increase in impacts on archaeological, paleontological, and historical resources.

The geographic scope of potential cumulative impacts on cultural resources encompasses the WSIP facility improvement project sites and immediate vicinities, and other SFPUC projects near WSIP sites.

As described in Section 4.7, there is a potential to encounter previously undiscovered cultural resources, including archaeological and paleontological resources, during construction of WSIP facilities; however, implementation of recommended mitigation measures would reduce impacts

to a less-than-significant level. The potential to encounter cultural resources associated with the other cumulative projects listed in Tables 4.17-1 through 4.17-6 is unknown, but does exist. However, since the WSIP's impacts on archaeological and paleontological resources would be site-specific and mitigated to a less-than-significant level with implementation of Measure 4.7-1, the WSIP's contribution to any such impacts would not be cumulatively considerable (*less than significant*).

As described in Impact 4.7-4 and in Section 4.16, Collective Impacts Related to WSIP Facilities, under Impact 4.16-5, implementation of the WSIP could alter historical resources within the SFPUC regional water system, but only has the potential to cause a collective impact on historic districts (if historic districts are determined to be present) within the Sunol Valley and Peninsula Regions. As shown on the tables, the SFPUC has implemented or proposes to implement other projects along the regional water system. These other projects generally involve varying degrees of facility repair, upgrade, and improvement. None of the projects listed in the tables would cause impacts on known historical resources that could also be affected by WSIP projects.

Similar to the analysis presented in Section 4.16, the WSIP contribution to potential cumulative effects would not be cumulatively considerable in the San Joaquin and Bay Division Regions, but could be cumulatively considerable in the Sunol Valley and Peninsula Regions. In the San Joaquin and Bay Division regions, the WSIP facility improvement projects are primarily pipeline projects located within the SFPUC's existing rights-of-way; there would be little overlap in the construction impact area of these projects and those of other development and infrastructure projects in these regions. SFPUC Construction Measure #9 along with mitigation measures identified in Chapter 6 (Measures 4.7-3 and 4.7-4a through 4.7-f) address the potential cultural resource effects of the projects in these regions and would minimize the contribution of these projects to cumulative effects.

There are several WSIP projects as well as several other SFPUC projects that have been implemented or are proposed in the Sunol and Peninsula Regions. In combination, these projects could result in significant impacts on individual historical resources or on potential historic districts (if historic districts were determined to be present in either region). More detailed, site-specific analysis of individual WSIP projects will be conducted during project-level environmental review, which may support a determination that the WSIP projects in these two regions would not make a considerable contribution to cumulative effects. Until this project-level analysis is completed, this PEIR conservatively considers the potential cumulative effect of the WSIP projects in the Sunol Valley and Peninsula Regions to be *potentially significant and unavoidable.* Even if implementation of Measures 4.7-4a through 4.7-4f could reduce the severity of the impact, this PEIR conservatively considers the impact to be significant. Project-level analysis may determine that the impact is less than significant or that additional mitigation measures are available to reduce the significant impact to a less-than-significant level.

Traffic, Transportation, and Circulation

Impact 4.17-6: Cumulative traffic increases on local and regional roads.

The geographic scope of potential cumulative traffic impacts includes regional facilities (e.g., highways and freeways) and local roads providing access to WSIP sites.

Tables 4.17-1 through 4.17-6 present the planned public and private projects that could be under construction during the WSIP construction period (2007 to 2014). The majority of these projects are related to planned and proposed commercial and residential development throughout the five regions. Cumulative traffic impacts associated with these developments include temporary short-term traffic increases related to construction vehicles traveling to and from the site, as well as long-term vehicle trips generated by the new land uses. A number of projects in Tables 4.17-1 through 4.17-6 involve extension and/or widening of existing roadways (primarily within the San Joaquin Region), and capacity and safety improvements along highway corridors and at interchanges (e.g., Highways 84, 99, and 132; I-680 and I-880). These transportation projects would not generate long-term vehicle trips, but would accommodate cumulative traffic growth.

The WSIP and other cumulative development projects listed in Tables 4.17-1 through 4.17-6 would result in long-term cumulative traffic increases. Most of the cumulative operational traffic increases would be generated by the development of more than 20,000 residential units, more than 3 million square feet of commercial/office/R&D uses, more than 2 million square feet of medical/hospital facilities, and more than 2.5 million square feet of industrial uses. The WSIP-related increases in operational traffic due to increased chemical deliveries or inspections (as described in Section 4.8) would not likely be discernible from future background increases in traffic. For the majority of the WSIP facility sites, periodic operations and maintenance of the facilities would be similar to existing operations and would not result in any new vehicle trips to the area. Some new and upgraded facilities would result in additional employees (up to two per location) and increased chemical deliveries (on average about one additional delivery per day). At these locations, there would be up to three vehicle trips to and three vehicle trips from the project site on a daily basis. Because this increase in vehicle trips on the roadway network would be minimal, the WSIP's contribution to cumulative traffic increases during operation of the proposed WSIP facility improvement projects would not be cumulatively considerable (*less than significant*).

Construction of the WSIP projects would result in short-term cumulative traffic increases. These cumulative impacts would be temporary and would only occur during the WSIP construction period (2007 to 2014). The following assessment of WSIP cumulative impacts therefore focuses on the WSIP's contribution to construction-related multi-regional and localized cumulative impacts.

The WSIP projects, both individually and collectively, would contribute incrementally to cumulative construction-related impacts, particularly when travel routes of individual drivers cross multiple roadways affected by WSIP projects, other SFPUC projects, and other public and private construction projects within one or more region, and/or when construction vehicles utilize regional facilities. Cumulative impacts would include increased travel times, although the extent

and duration of delay would vary depending on individual driver origins and destinations, time of travel, and use of alternate routes. Implementation of Measures 4.16-6a and 4.17-6 would serve to offset the WSIP's contribution to regionwide cumulative traffic impacts, but would not reduce impacts to a less-than-significant level. Therefore, the WSIP's contribution to regionwide cumulative traffic impacts is considered to be *potential significant and unavoidable*.

As described in Impact 4.16-6, the WSIP projects would collectively result in short-term increases in vehicle trips, increased potential for traffic safety conflicts, reduced access to and parking at adjacent land uses, disruptions to transit service, and increased wear-and-tear on designated haul routes. The localized impacts of WSIP projects would be reduced to a less-than-significant level with implementation of Measure 4.8-1, and the collective WSIP impacts would be reduced to a less-than-significant level with implementation of Measures 4.16-6a, 4.16-6b, and 4.16-6c; nonetheless, the WSIP could still contribute to localized cumulative construction-related traffic impacts when considered in combination with the projects listed in Tables 4.17-1 through 4.17-6.

These localized cumulative construction-related traffic impacts could occur as a result of: (1) cumulative projects that generate increased traffic at the same time on the same roads as the WSIP facility projects, causing increased congestion and delays; and (2) infrastructure projects in roads used by WSIP construction workers and trucks, which could affect detour routes around WSIP work zones or delay WSIP-generated vehicles past the work zones of the other projects. In addition to cumulative (additive) effects on traffic flow conditions, the WSIP and other cumulative projects could prolong the period of disruption (although not all disruption would be significant) in traffic flow on roadways affected by cumulative traffic.

The overlap of WSIP projects and other cumulative projects is presented in Table 4.17-7. The potential localized cumulative construction-related traffic impacts by region are characterized as follows:

- *San Joaquin Region*. As indicated in Table 4.16-3, development of the WSIP in conjunction with other public/private developments in this region could result in significant cumulative increases in construction-related traffic on regional roadways (e.g., Highways 132 and 99, I-5). Construction of the WSIP in combination with other SFPUC projects could result in significant cumulative increases in traffic on local roadways providing access to Tesla Portal and Thomas Shaft.

- *Sunol Valley Region*. As indicated in Table 4.17-2, development of the WSIP in conjunction with other public/private developments and SFPUC projects in this region could result in significant cumulative increases in construction-related traffic on regional roads (e.g., Calaveras Road, Highway 84, I-680). Construction of the WSIP in combination with other SFPUC projects could result in significant cumulative increases in traffic on Calaveras Road, which could conflict with businesses (nurseries, quarries) in the Sunol Valley.

- *Bay Division Region*. As indicated in Table 4.17-3, construction of the WSIP in combination with other public/private developments in this region could result in significant cumulative traffic impacts on local and regional roads (e.g., the I-880 corridor, I-680, the Highway 101 corridor including various interchanges, the University Avenue/Highway 84 interchange, and arterial streets providing access to SFPUC facilities

such as Paseo Padre Parkway and Mowry Boulevard in Fremont). Cumulative construction-related traffic impacts could occur near at-grade rail crossings proposed in Fremont, Newark, East Palo Alto, and Menlo Park if the Dumbarton Rail Corridor Project was under construction or operating at the same time WSIP facilities were being constructed. Cumulative construction-related traffic impacts could occur on local access roads to SFPUC facilities wherever WSIP facility construction overlapped with other SFPUC facility construction (see Table 4.17-7).

- *Peninsula Region*. As indicated in Table 4.17-4, construction of the WSIP facilities in combination with other public/private developments in this region could result in cumulative construction-related impacts on local or regional roads (e.g., various Highway 101, I-280, and I-380 freeway interchanges). Cumulative construction-related traffic impacts could occur on local access roads to SFPUC facilities in this region where WSIP facility construction overlaps with other SFPUC facility construction (see Table 4.16-9).

- *San Francisco Region*. As indicated in Table 4.17-6, construction of the WSIP in combination with other public/private developments in this region could result in significant cumulative traffic impacts on local access streets (e.g., the Highway 101/Airport Boulevard/I-380 interchange and Oyster Point ramps, Highway 101/Bayshore Boulevard ramps, and major arterials including Bayshore Boulevard, Geneva Avenue, Brotherhood Way). Cumulative construction-related traffic impacts could occur on local access roads to SFPUC facilities in this region where WSIP facility construction overlaps with other SFPUC facility construction (see Table 4.17-7).

- *Systemwide Projects*. Construction of the systemwide projects listed in Table 4.17-6 would result in traffic increases on access routes to existing SFPUC facilities at multiple locations within the system between Oakdale Portal and the San Francisco Bay Area. In general, construction of these systemwide improvements would not occur within or across public roads. Because of the short-term nature and minimal construction activities associated with these projects, their contribution to cumulative construction-related traffic would not likely be considerable. However, given the unspecified location and timing of these projects, their potential to contribute to significant cumulative construction-related traffic impacts cannot be completely ruled out.

Given the lack of certainty about the timing of many of the projects shown in Tables 4.17-1 through 4.17-6, significant cumulative traffic and circulation impacts could occur on some roadways, such as Calaveras Road in the Sunol Valley. Implementation of traffic control plans (as specified in Measure 4.8-1) and coordination of these traffic control plans by a SFPUC WSIP construction coordinator (as specified in Measure 4.16-6a) would reduce the WSIP's contribution to cumulative impacts in overlapping areas. However, some traffic disruption and increased delays would still occur during WSIP construction, even with mitigation. When added to traffic delay and disruption effects of other projects listed in Tables 4.17-1 through 4.17-6, it is possible that significant cumulative construction-related traffic impacts on local or regional roadways could still occur.

Caltrans, county agencies, and local jurisdictions would issue encroachment permits for public and private project construction affecting public rights-of-way (e.g., roadway widening, in-road sewer replacement, interchange improvements), which would generally mitigate the construction impacts of such projects. However, because a traffic control plan might not always be required as part of every project approval, most construction traffic associated with new development might

not be regulated or monitored. Significant cumulative impacts could occur during simultaneous construction of nearby projects, particularly since the SFPUC would have no control over construction schedules or traffic from other projects outside its jurisdiction. For example, construction activities of one or more projects that adversely affect roadway capacity, combined with construction vehicle traffic traveling to and from these projects and nearby development projects, could result in increased delays due to traffic diversions and substantial increases in truck traffic. Reasonably practical mitigation measures are not available to regulate construction activities of all overlapping projects within the five regions. Coordination of maintenance traffic, construction traffic generated by other SFPUC projects, and WSIP-related construction traffic (see Measure 4.17-6) would help minimize the WSIP's contribution to cumulative construction-related impacts on local and regional roadways. However, interagency coordination of construction traffic might not always be possible; therefore, these localized cumulative traffic impacts would be *potentially significant and unavoidable*.

Air Quality

Impact 4.17-7: Cumulative increases in construction and/or operational emissions in the region.

Criteria Pollutants

The geographic scope for cumulative air quality impacts is the San Joaquin Valley Air Basin and San Francisco Bay Area Air Basin for regionwide impacts, and haul routes for localized impacts.

As described in Section 4.9, potential air quality impacts associated with implementation of the WSIP include increased dust and equipment emissions during construction, exposure to diesel particulate matter (DPM), emissions from ventilation fans, emissions during operation of the WSIP facility improvement projects, odors, secondary emissions from power use, and conflicts with regional and statewide air quality planning (Impacts 4.9-1 through 4.9-7). The WSIP, in combination with other cumulative projects listed in Tables 4.17-1 through 4.17-6, would result in regionwide cumulative increases in air emissions during project operations. The majority of cumulative increases in air pollutant emissions would be due to regional traffic increases and energy use associated with development of over 20,000 residential units, more than 3 million square feet of commercial/office/R&D uses, more than 2 million square feet of medical/hospital facilities, and more than 2.5 million square feet of industrial uses. The WSIP's emissions during facility operation would be associated primarily with equipment operation, not maintenance-related traffic increases. Therefore, with required compliance of WSIP equipment with the Bay Area Air Quality Management District (BAAQMD) and the San Joaquin Valley Air Pollution Control District (SJVAPCD) air quality regulations, the WSIP's contribution to operational cumulative air quality impacts would not be considerable (see Section 4.16.2 for discussion of WSIP collective operational air quality impacts). New emissions sources during project operations would be primarily limited to minor increases in traffic due to project maintenance and emergency generators (approximately 10 generators, operating only during power outages and testing exercises).

Where construction of WSIP facility improvement projects overlaps with other cumulative projects (see Table 4.17-7), regional cumulative increases in construction-related air quality emissions in both air basins would also occur. Although both the BAAQMD and SJVAPCD consider construction-related emissions to be less than significant with implementation of each district's standard control measures (as specified in Measures 4.9-1a through 4.9-1d), there would still be a residual contribution from each project to the region's nonattainment status for ozone and particulate matter (PM_{10} and $PM_{2.5}$) in both air basins. Therefore, the WSIP's contribution to construction-related, regionwide cumulative air quality impacts on the nonattainment status for ozone and particulate matter is considered *potentially significant and unavoidable.*

When WSIP construction projects overlap with construction of other cumulative projects (see Table 4.17-7), it is possible that localized cumulative increases in DPM emissions could occur along haul routes, potentially exposing sensitive receptors to elevated DPM levels. Given the lack of certainty about the timing of many of the projects listed in these tables, it is prudent to conclude that significant cumulative increases in DPM are possible on streets that might serve as common haul routes. Coordination of all SFPUC-related maintenance traffic, construction traffic generated by other SFPUC projects, and WSIP-related construction traffic (see Measure 4.17-6) would help minimize the potential for cumulative construction-related DPM impacts on local roadways. However, the SFPUC would have no control over construction schedules or traffic from other projects outside its jurisdiction, and interagency coordination of construction traffic might not always be possible. Therefore, localized DPM impacts are considered *potentially significant and unavoidable*.

GHG Emissions

Sources of GHGs from WSIP projects, including those associated with construction equipment, increases in vehicle traffic and use of refrigerants during facility operations, and secondary operational increases in GHG emissions resulting from electricity generation would overlap with similar sources of GHG emissions from other projects. However, as documented previously, increases in GHG emissions from these sources associated with WSIP projects would be minimal and the contribution from the WSIP projects would not result in a considerable contribution to cumulative GHG emissions.

GHG emissions from peak project construction activities would represent 0.0022 percent of the statewide total of GHG emissions during the time these peak construction activities are carried out. WSIP projects largely involve improvements to existing operations and would result in few new operational activities associated with GHG emission increases.

The WSIP would also result in secondary operational increases in GHG emissions as a result of electricity generated to meet the WSIP's increase in energy demand (Impact 4.9-7). Although electricity for the WSIP projects would be derived primarily from hydroelectric sources, power would need to be purchased by current customers of the SFPUC Power Enterprise from the grid or other sources when less hydroelectric power is available, particularly during the summer and fall months. Power generation is regional in nature and could occur outside the San Francisco and San Joaquin Valley air basins or outside of California. Therefore, the WSIP's incremental

increase in power demand during project operations (the portion that is not from hydroelectric or alternative energy sources) would indirectly serve to sustain rather than reduce current GHG emissions from these emission sources. The WSIP projects at completion would create approximately 14,260 metric tons of CO_2-equivalent emissions by consuming hydroelectric power that is no longer available to current users. Compared to the current annual inventory of 427,000,000 metric tons in California, this represents 0.0033 percent of that inventory. Planned increases in water distribution and treatment system efficiencies would offset a limited portion of the increased power demand, but not enough to eliminate the increase in GHG emissions that would result from WSIP-diverted electrical power. Nevertheless, the total increased power demand associated with the operation of the WSIP projects is a small fraction of total state demand.

These minor increases in GHG emissions would be offset in several ways. As the CARB's Early Action Measures and CEC's greenhouse gases emission performance standard for local, public-owned electric utilities become effective (see discussion under Regulatory Framework, Greenhouse Gas Emissions Limits), the SFPUC will implement them as required to reduce GHG emissions from the WSIP project operations. Also, continuing implementation of GHG reduction actions by the CCSF and SFPUC, and additional GHG reduction actions that SFPUC will take as part of the WSIP project (see above under "Existing Setting"), would assure that the WSIP projects would not conflict with the State's goals of reducing GHG emissions to 1990 levels by 2020. Therefore, the cumulative contribution of GHG emissions associated with the WSIP to GHG emissions from other sources as a whole would be less than significant.

As part of implementation of the WSIP, the SFPUC will be required to implement mitigation measures to address other identified impacts that would also reduce GHG emissions. They include exhaust controls (Measures 4.9-1b, 4.9-1d and 4.16-7a), waste reduction measures (Measure 4.11-2) and energy efficiency measures (Measure 4.15-2). In addition, CARB regulations (Title 13 of the California Code of Regulations, Sections 2480 and 2485), which limit idling of diesel-fueled commercial motor vehicles, would help to limit GHG emissions associated with WSIP-related construction vehicles.

Noise and Vibration

Impact 4.17-8: Cumulative increases in construction-related and operational noise.

The geographic scope of potential cumulative noise impacts encompasses the WSIP sites and their immediate vicinities as well as areas adjacent to access and haul routes to the WSIP sites.

As described in Section 4.10 and Section 4.16 (Impact 4.16-9), noise increases associated with construction and operation of proposed WSIP facilities would be specific to each facility site, except in the event that any cumulative project sites adjoined WSIP facility sites or used the same haul/delivery/access routes. Cumulative projects listed in Tables 4.17-1 through 4.17-6 would presumably be subject to applicable noise regulations (e.g., local noise ordinance and guidelines), while all WSIP projects would be required to implement noise control measures (SFPUC

Construction Measure #6, compliance with local noise ordinances to the extent feasible, and/or Measure 4.10-1a). With site-specific mitigation for all projects, regionwide or multi-regional cumulative noise impacts at any adjoining construction sites would be less than significant.

Potential cumulative impacts could occur if other cumulative projects generated truck traffic and used the same delivery/haul/access routes at the same time as the WSIP projects, causing localized cumulative construction-related noise increases. Given the lack of certainty about the timing of many of the projects in Tables 4.17-1 through 4.17-6, it is prudent to conclude that significant cumulative truck noise increases are possible on streets that might serve as common haul routes. Cumulative traffic increases on regional roadways such as freeways, highways, and arterials would not likely alter noise levels significantly along these routes (identified in Tables 4.17-1 through 4.17-6), given the high ambient noise levels that typically occur along these types of streets. However, if cumulative truck traffic increases occurred on any local residential streets providing access to SFPUC facilities, cumulative noise increases could be significant. As required in Measures 4.10-2a and 4.10-2b, limiting the hourly truck volumes and restricting truck operations on local residential streets would help reduce the WSIP's contribution to this cumulative impact. Coordination of maintenance traffic, construction traffic generated by other SFPUC projects, and WSIP-related construction traffic (see Measure 4.17-8) would help minimize the WSIP's contribution to cumulative construction-related impacts on local and regional roadways. However, interagency coordination of construction traffic might not always be possible; therefore, these localized cumulative noise impacts would be *potentially significant and unavoidable*.

Public Services and Utilities

Impact 4.17-9: Cumulative impacts related to disruption of utility service or relocation of utilities.

The geographic scope of potential cumulative public services and utilities impacts encompasses the WSIP sites, immediate vicinities, and the service areas of regional service/utility providers.

As described in Section 4.16, Impact 4.16-9, construction of the WSIP projects could disrupt utility services or require temporary or permanent relocation of utilities. Construction of other cumulative development in the region would also increase the potential for such utility impacts. These potential impacts would be site-specific rather than additive and would be mitigated on a site-specific basis (presumably including cumulative development). Therefore, the WSIP would not result in localized cumulative impacts on existing public utilities.

As discussed under Impact 4.16-9, the WSIP's demand on landfills represents less than approximately one percent of the total existing landfill capacity in the region. Therefore, the WSIP's contribution to cumulative construction-related demand on regional landfill capacity would not be cumulatively considerable, and the impact would be *less than significant*.

Recreational Resources

Impact 4.17-10: Cumulative effects on recreational resources during construction.

The geographic scope of potential cumulative recreational impacts encompasses the WSIP sites and immediate vicinities. However, major developments in the area are considered when characterizing overall cumulative regional impacts on recreational resources.

As described in Section 4.12 and Section 4.16, Impact 4.16-10, construction activities associated with some WSIP facilities could temporarily disrupt access to or use of recreational facilities within the WSIP study area. However, given the availability and diversity of recreational opportunities in the vicinity of the WSIP projects and the region as a whole, the diversion of recreationists to alternative facilities would not likely result in overcrowding and associated deterioration of recreational resources. Since the private development projects listed in Tables 4.17-1 through 4.17-6 would be located on privately owned lands, they would not likely directly affect publicly owned recreational facilities. Since the identified road improvement projects would be located in roadways, they would also not be likely to directly affect recreational facilities. However, if other SFPUC projects listed in the tables were located within recreational facilities and coincided with construction of WSIP projects, localized cumulative disruption of recreational facilities could result. Implementation of SFPUC construction measures (including advanced notification) and coordination with recreational facility managers and schools (Measures 4.12-1a and 4.12-1b) would reduce the WSIP's impact to a less-than-significant level, and any residual effects of the WSIP would not contribute considerably to any regionwide cumulative impacts on recreational resources (*less than significant*).

Agricultural Resources

Impact 4.17-11: Cumulative conversion of farmland to nonagricultural uses.

The geographic scope of potential cumulative agricultural resources impacts encompasses the WSIP sites and their immediate vicinities. However, major developments in non-urbanized areas are considered when characterizing overall cumulative regional impacts on farmland.

As described in Section 4.16, Impact 4.16-11, implementation of the WSIP would result in less-than-significant regionwide collective impacts on agricultural resources. When other cumulative development projects listed in Tables 4.17-1 through 4.17-6 are considered (specifically, the 300-acre Patterson Gardens and the 659-acre RMC Pacific Vernalis Quarry Mining and Reclamation Project, located in the San Joaquin Region), there would be a cumulative conversion of farmland to nonagricultural uses in the San Joaquin Region. While the WSIP would not contribute to any regionwide cumulative loss of farmland in the Bay Area (Sunol Valley, Bay Division, Peninsula, and San Francisco Regions), it could incrementally contribute to the regional cumulative loss of farmland in the San Joaquin Region. The regional loss of farmland in the Central Valley is a concern due to the rapid pace of urban development

and associated conversion of agricultural land to nonagricultural uses. Therefore, siting WSIP facilities to avoid prime agricultural lands or to offset any loss of such lands (Measure 4.13-2) would reduce the WSIP's contribution such that its contribution to the regionwide cumulative loss of farmland would not be considerable (*less than significant*).

Hazards

Impact 4.17-12: Cumulative effects related to hazardous conditions and exposure to or release of hazardous materials.

The geographic scope of impacts associated with hazards and hazardous materials encompasses the WSIP sites and their general vicinities, particularly WSIP facilities near urbanized industrial uses and areas of wildland fire hazard.

As described in Section 4.14, the potential to encounter hazardous materials or hazardous conditions during construction would be less than significant or mitigated to a less-than-significant level at all sites through project-specific assessment of hazards and compliance with regulatory requirements. Due to the site-specific nature of hazardous materials impacts and mitigation measures, there would be no potential for cumulative effects from construction of WSIP projects in conjunction with other cumulative development listed in Tables 4.17-1 through 4.17-6.

Similarly, impacts related to the potential for accidental releases of chemicals stored at the water treatment plants would also be site-specific and not additive. Compliance with hazardous materials regulations (including preparation or updating of hazardous materials business plans at all sites, and preparation of a risk management plan for the new use of ammonia, if required, at the Sunol Valley WTP and changes to the risk management plan for changes in the use of ammonia at the Harry Tracy WTP) would ensure that site-specific impacts are less than significant.

Due to the site-specific nature of these impacts, compliance with applicable laws and regulations, and implementation of SFPUC construction measures and mitigation measures identified in Section 4.14, there would be no potential for regionwide or localized cumulative effects related to the exposure to hazardous materials during construction or operation of the WSIP projects.

As discussed in Section 4.16, Impact 4.16-12, there would be an increased risk of wildland fires during WSIP construction in high fire hazard areas. If construction of cumulative development overlapped in high fire hazard areas, there could be a cumulative increase in wildland fire risk, particularly in areas such as the Sunol Valley where access and haul roads would be shared. The potentially compounded increase in wildland fire risk could place an additional burden on local fire departments, particularly if access for emergency vehicles were impeded. With site-specific mitigation (Measure 4.8-1) and compliance with Public Resources Code provisions governing the

use of construction equipment in fire-prone areas, the WSIP's residual contribution to any localized cumulative wildland fire impacts would not be considerable (*less than significant*).

Construction of the WSIP projects could also contribute to a cumulative impact related to hazardous waste disposal. However, as discussed in Impact 4.16-12, based on worst-case estimates, the WSIP's potential hazardous waste disposal requirements would represent approximately 1.5 percent of the total existing hazardous waste disposal capacity in the region, and less than 1 percent of the disposal volume expected to be available by 2013. Therefore, the WSIP's contribution to this cumulative impact on hazardous waste disposal capacity would not be considerable (*less than significant*).

Energy Resources

Impact 4.17-13: Cumulative increases in the use of nonrenewable energy resources.

As described in Section 4.15 and Section 4.16, Impact 4.16-13, existing energy consumption for operation of the SFPUC regional water system in the WSIP study area totals approximately 44 million kilowatt-hours (kWh), and operation of the WSIP facilities would increase the SFPUC's regionwide energy consumption by approximately 39 million kWh, an 89 percent increase over existing conditions. As discussed in Impact 4.16-13, the net loss in available hydroelectric energy as a result of WSIP implementation would be 30 million kWh, less than 0.1 percent of the estimated total energy usage in the counties within the WSIP study area.

The potentially cumulative SFPUC projects listed in Tables 4.17-1 through 4.17-6 would not substantially increase energy use in the WSIP region, because they would generally not involve an increase in energy use during operation of WSIP facilities, would be non-energy-intensive improvements to the water system, would be upgrades that would include energy efficiency improvements, or would include improvements to facility electrical systems. In addition, the New Electrical Transmission Line from Newark to San Francisco (BDP-16) would improve electricity transmission capabilities to San Francisco. Furthermore, future implementation of large-scale solar and other renewable energy resources on public and private property in the city under project CSYS-5 would help offset any increase in the use of hydroelectric power generated by SFPUC Power Enterprise, although the amount cannot be quantified at this time.

On the other hand, implementation of the cumulative non-SFPUC development projects listed in Tables 4.17-1 through 4.17-6 would contribute to increased energy consumption in Tuolumne, San Joaquin, Alameda, Santa Clara, San Mateo, and San Francisco Counties. However, these projects would generally not use hydroelectric power produced by SFPUC Power Enterprise and would be required to meet Energy Efficiency Standards for Residential and Nonresidential Buildings (see Section 14.15), which would ensure that energy is not used in a wasteful manner for these projects. Furthermore, the increase in energy consumption from these projects is accounted for in the 1.2 percent annual increase projected by the California Energy Commission, as discussed in Section 4.15. Because the net loss in available hydroelectric energy as a result of

WSIP implementation would be less than 0.1 percent of the estimated total energy usage in the counties within the WSIP study area, the WSIP's contribution to cumulative increases in long-term energy demand would not be considerable (*less than significant*).

Construction activities associated with WSIP projects in all regions would require the use of fuels to operate construction equipment and transport employees and materials. Implementation of exhaust control measures (limiting idling time and performing low-emissions tune-ups, as specified in Measures 4.9-1b and 4.9-1d) would ensure that fuels are not used in a wasteful or inefficient manner. Therefore, the WSIP's contribution to the regionwide cumulative increase in construction-related energy consumption would not be considerable (*less than significant*).

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