3.8 Traffic and Circulation

3.8.1 Approach to Analysis

ESA's registered traffic engineer evaluated potential traffic and circulation impacts on the basis of the following, augmented by professional traffic engineering judgment:

- Field reconnaissance to determine the characteristics of roads that are proposed to accommodate construction-generated vehicle trips, including the number of travel lanes, traffic control, on-street parking (permitted or prohibited), bicycle routes, transit service (including bus stops), and land uses served by the affected roads (e.g., sensitive uses like fire stations, schools, etc.).

- Automatic (72-hour) traffic volume counts (Tuesday–Thursday) on key local roadways (i.e., Moraga Road, El Nido Ranch Road, Mt. Diablo Boulevard, Miner Road, and Happy Valley Road).

- Estimated vehicle trips that project-related activities would generate during each construction phase, on both a daily and peak hourly basis.

3.8.2 Setting

WTTIP project sites are within the cities of Lafayette, Moraga, Orinda, Walnut Creek, Oakland, and unincorporated Contra Costa County. The roadway network that would be used for pipeline installation and/or for access for construction workers and construction vehicles (including trucks that would transport excavated spoils and fill material to and from the work zones) consists of regional highways and local roadways, although pipeline installation would occur only within local roadways.

Existing Traffic Circulation Network

Regional Roadways

Highway 24 is an east-west freeway that connects the city of Oakland at the Interstate 580/980 (I-580/I-980) interchange with cities east of the Caldecott Tunnel (e.g., Walnut Creek) and I-680. The most recent data published by the California Department of Transportation (Caltrans) indicates the average daily traffic volume on Highway 24 ranges from 168,000 to 187,000 vehicles; trucks comprise about 3 percent of the daily traffic volume (Caltrans, 2005a, 2005b). Freeway ramps within the project area include those for Moraga Way / Camino Pablo, St. Stephens Drive, Acalanes Road, Oak Hill Road / Deer Hill Road, and Pleasant Hill Road.

Interstate 680 (I-680) is a north-south freeway that connects I-80 near the city of Fairfield with I-280 in San Jose. Freeway ramps within the project area include those for Rudgear Road and North Main Street (Walnut Creek), and Contra Costa Boulevard (Pleasant Hill). The most recent data published by Caltrans indicates the average daily traffic volume on I-680 ranges from 172,000 to 180,000 vehicles (with about 3 percent trucks), south of Highway 24; and about

276,000 to 302,000 vehicles (with about 3 to 4 percent trucks), north of Highway 24 (Caltrans, 2005a, 2005b).

Local Roadways

Table 3.8-1 presents roadway characteristics (e.g., number of lanes, traffic volumes [where available], bike lanes, parking availability, transit service, etc.) for the local roadways that are anticipated to be affected by the WTTIP (for in-street pipeline construction and/or for worksite access for construction workers and vehicles).

Transit Service

The project area is served by three transit agencies: the Central Contra Costa Transit Authority (County Connection), Alameda-Contra Costa (AC) Transit, and the Bay Area Rapid Transit District (BART). The County Connection is the principal bus service provider in the project area; AC Transit has a bus line on San Pablo Dam Road – Camino Pablo (serving the Orinda BART station). Table 3.8-1 indicates the project area roadways that carry bus lines. The BART system provides regional access to Alameda, Contra Costa, San Francisco, and northern San Mateo Counties, and there are BART stations (Orinda and Lafayette) within the area where access could be affected by project construction.

Bikeways/Pedestrian Circulation

There are bicycle routes (i.e., Class II or III) on some of the roadways that would be affected by project construction. Class II bikeways are bike lanes striped within the paved areas of roadways and established for the preferential use of bicycles. Class III bikeways consist of designated bike routes on streets that allow shared use of the road width by bicycles and vehicles. Table 3.8-1 indicates the project area roadways that have bikeways.

The level of pedestrian facilities (e.g., sidewalks versus edge-of-road paths) and pedestrian volumes varies in the project area, but the predominant travel mode in the area is by automobile. Exceptions include the commercial area on Mt. Diablo Boulevard where pedestrians use sidewalks, and on residential streets where sporadic pedestrian flows (e.g., dog walking, jogging, etc.) occur.

Traffic Volumes

The theoretical daily carrying capacity (i.e., the highest traffic volume that can travel on a roadway in a day) ranges up to about 15,000 vehicles (for a two-lane road), about 25,000 vehicles (for a four-lane undivided road), and about 30,000 vehicles (for a four-lane divided road). The theoretical hourly carrying capacity is generally 10 percent of the daily capacity. As seen in Tables 3.8-1 and 3.8-2, Moraga Road north of Sky-Hy Drive currently carries more traffic than its theoretical capacity (the latter table provides more detail based on the traffic counts conducted for this EIR). All other streets listed in Tables 3.8-1 and 3.8-2 carry traffic volumes that are lower than their theoretical capacities.

TABLE 3.8-1
CHARACTERISTICS OF ROADWAYS IN THE PROJECT AREA

Roadway / Segment	No. of Lanes (width)[a]	Traffic Volumes[b]	Bike Lanes?	On-Street Parking Permitted?	Public Transit Lines?[c]	Comments
Lafayette WTP						
Acalanes Road: ▪ El Nido Ranch Road to Mt. Diablo Boulevard	2–3 lanes	N/A	Yes	No	Yes	See Map A1
Mt. Diablo Boulevard: ▪ Acalanes Road to WTP access	4 lanes	10,710 vpd	Yes	No	Yes	See Maps A1 and A2
Orinda WTP						
Camino Pablo: ▪ Highway 24 to Miner Road	4 lanes	26,400 vpd	Yes	No	Yes	See Map A1
▪ Miner Road to Manzanita Drive	2 lanes	19,300 vpd	Yes	No	Yes	
Manzanita Drive: ▪ Camino Pablo to WTP access	2 lanes	N/A	No	No	No	See Map A1
Walnut Creek WTP						
Pinneman Way: ▪ Lawrence Way to N. Main Street	2 lanes	N/A	No	No	No	See Map A3
N. Main Street: ▪ Pinneman Way to San Luis Road	4 lanes	36,800 vpd	No	No	Yes	See Map A3
San Luis Road: ▪ N. Main Street to Larkey Lane	2 lanes	4,200 vpd	No	Yes	No	See Map A3
Larkey Lane: ▪ San Luis Road to WTP access	2 lanes	N/A	No	Yes	No	See Map A3
Alfred Avenue: ▪ San Luis Road to WTP access	2 lanes	N/A	No	Yes	No	See Map A3
Sobrante WTP						
San Pablo Dam Road: ▪ I-80 to Appian Way	4 lanes	N/A	Yes	No	Yes	See Map A4
▪ Appian Way to Valley View Road	4 lanes	N/A	Yes	No	Yes	
▪ Valley View Road to Castro Ranch Road	4 lanes	N/A	No	Yes	No	
▪ Castro Ranch Road to Bear Creek Road	2 lanes	14,600 vpd	No	No	Yes	
Valley View Road: ▪ San Pablo Dam Road to Amend Road	4 lanes	N/A	No	No	No	See Map A4
D'Avila Way: ▪ Near Valley View Road	2 lanes	N/A	No	No	No	See Map A4
Amend Road: ▪ Valley View Road to WTP access	2 lanes	N/A	No	Yes	No	See Map A4
Upper San Leandro WTP						
Keller Avenue: ▪ I-580 to Greenly Drive	2 lanes	N/A	No	Yes	Yes	See Map A4
Greenly Drive: ▪ Keller Avenue to WTP access	2 lanes	N/A	No	Yes	Yes	See Map A4
Orinda-Lafayette Aqueduct						
See Orinda WTP (above) for Camino Pablo						
Altarinda Drive: ▪ Elen Court to St. Stephens Drive	2 lanes	N/A	No	No	No	See Map A1
El Nido Ranch Road: ▪ St. Stephens Drive to Acalanes Road	2 lanes (40 feet)	1,540 vpd	Yes	Yes	Yes	See Map A1 Parking permitted, but minimal use of the spaces
▪ Acalanes Road to Upper Happy Valley Road	2 lanes (40 feet)	2,530 vph	No	Yes	Yes	Parking permitted, but minimal use of the spaces

(See last page of table for footnotes)

TABLE 3.8-1 (Continued)
CHARACTERISTICS OF ROADWAYS IN THE PROJECT AREA

Roadway / Segment	No. of Lanes (width)[a]	Traffic Volumes[b]	Bike Lanes?	On-Street Parking Permitted?	Public Transit Lines?[c]	Comments
Orinda-Lafayette Aqueduct (cont.)						
▪ Upper Happy Valley Road to Mt. Diablo Boulevard	2 lanes (27–40 feet)	2,530 vph	No	Discontinuous	No	Bentley School (access driveways)
Mt. Diablo Boulevard: ▪ West of El Nido Ranch Road to WTP access	4 lanes (median)	10,710 vpd	Yes	No	Yes	See Maps A1 and A2
Ardith Reservoir and Donald Pumping Plant						
Moraga Way: ▪ Highway 24 to Glorietta Boulevard	4 lanes to 2 lanes	N/A	Yes	Discontinuous	Yes	See Map A2
▪ Glorietta Boulevard to Ivy Drive	2 lanes	13,770 vpd	Yes	Discontinuous	Yes	
▪ Ivy Drive to Canyon Road / Moraga Road	2 lanes to 4 lanes	13,770 vpd	Yes	Discontinuous	Yes	School; fire station
Ivy Drive: ▪ Moraga Way to Ardith Drive	2 lanes	N/A	No	Yes	No	See Map A1
Ardith Drive: ▪ Ivy Drive to site	2 lanes	N/A	No	Yes	No	See Map A1
Fay Hill Pumping Plant						
Deer Hill Road: ▪ Highway 24 westbound off-ramp to Oak Hill Road	4 lanes	N/A	Yes (Class II)	No	No	See Map A2
Oak Hill Road: ▪ Deer Hill Road to Mt. Diablo Boulevard	4 lanes	N/A	No	Yes	Yes	See Map A2
Mt. Diablo Boulevard: ▪ Oak Hill Road to Moraga Road	4 lanes	19,860 vpd	No	Yes	Yes	See Map A2
Moraga Road: ▪ Mt. Diablo Boulevard to St. Marys Road	4 lanes	22,500 vpd	No	Yes	Yes	See Map A2
▪ St. Marys Road to Madrone Drive	2 lanes	N/A	No	No	Yes	
▪ Madrone Drive to Rheem Boulevard	2 lanes	15,410 vpd	Yes	No	Yes	Campolindo High School
Fay Hill Pipeline Improvements						
See Fay Hill Pumping Plant (above) from Highway 24 to Rheem Boulevard						
Rheem Boulevard: ▪ Moraga Road to Chalda Way	3–4 lanes (52 feet)	N/A	No	No	No	See Map A2
Fay Hill Reservoir						
See Fay Hill Pumping Plant and Pipeline Improvements (above) from Highway 24 to Chalda Way						
Rheem Boulevard: ▪ Chalda Way to reservoir access road (south of Via Barcelona)	2–3 lanes	N/A	No	No	No	See Map A2
Glen Pipeline Improvements						
Nordstrom Lane: ▪ Hilltop Drive to Glen Road	2 lanes (30 feet)	N/A	No	No	No	See Map A2
Glen Road: ▪ Nordstrom Lane to Monticello Road	2 lanes (22 feet)	N/A	No	No	No	See Map A2
▪ Nordstrom Lane to Thompson Road	2 lanes	N/A	No	No	No	

(See last page of table for footnotes)

TABLE 3.8-1 (Continued)
CHARACTERISTICS OF ROADWAYS IN THE PROJECT AREA

Roadway / Segment	No. of Lanes (width)[a]	Traffic Volumes[b]	Bike Lanes?	On-Street Parking Permitted?	Public Transit Lines?[c]	Comments
Glen Pipeline Improvements (cont.)						
Thompson Road: ▪ Glen Road to Deer Hill Road	2 lanes	N/A	No	No	No	See Map A2
Deer Hill Road: ▪ Thompson Road to Oak Hill Road	4 lanes	N/A	Yes	No	Yes	See Map A2 Lafayette BART station
Happy Valley Pumping Plant and Pipeline						
Camino Pablo: ▪ Highway 24 to Miner Road	4 lanes	26,400 vpd	Yes	No	Yes	See Map A1
Miner Road: ▪ Camino Pablo to Lombardy Lane	2 lanes (22 feet)	6,140 vpd	No	No	Yes	See Map A1
Lombardy Lane: ▪ Miner Road to Van Ripper Lane	2 lanes (24 feet)	N/A	No	Yes	No	See Map A1
Highland Reservoir and Pipelines						
See Lafayette WTP (page 3.8-**Error! Bookmark not defined.**, above)						
Leland Isolation Pipeline						
Lacassie Drive: ▪ N. California Street to N. Main Street	2 lanes (43 feet)	N/A	No	Yes	No	See Map A3
Leland Isolation Bypass Value						
Danville Boulevard: ▪ Near Rudgear Road	2 lanes	6,300 vpd	Yes	No	Yes	See Map A3 Trailhead (with parking) for Iron Horse Trail is located on west side in this area.
Moraga Reservoir						
Moraga Way: ▪ Highway 24 to Canyon Road–Moraga Road	2 lanes to 4 lanes	13,770 vpd	Yes	Discontinuous	Yes	See Map A2
Moraga Road: ▪ Moraga Way to Draeger Drive	4 lanes to 2 lanes	18,170 vpd	No	No	Yes	See Map A2
Draeger Drive: ▪ Moraga Road to reservoir site	2 lanes	N/A	No	Discontinuous	No	See Map A2
Moraga Road Pipeline						
See Fay Hill Pumping Plant (page 3.8-4, above) from Highway 24 to Madrone Drive						
Moraga Road: ▪ Nemea Court to Sky-Hy Drive	2 lanes (24 feet)	15,410 vpd	No	No	Yes	See Map A2
▪ Sky-Hy Drive to Campolindo Drive	2 lanes (42–65 feet)	15,410 vpd	Yes	No	Yes	
▪ Campolindo Drive to Dolores Court	2 lanes (42–52 feet)	15,410 vpd	Yes	Discontinuous	Yes	Campolindo High School
▪ Dolores Court to Rheem Boulevard	4 lanes (divided)	15,410 vpd	Yes	No	Yes	
▪ Rheem Boulevard to Donald Drive	4 lanes (divided)	18,170 vpd	Yes	No	Yes	
▪ Donald Drive to Draeger Drive	4 lanes	18,170 vpd	No	Yes	Yes	

(See last page of table for footnotes)

TABLE 3.8-1 (Continued)
CHARACTERISTICS OF ROADWAYS IN THE PROJECT AREA

Roadway / Segment	No. of Lanes (width)[a]	Traffic Volumes[b]	Bike Lanes?	On-Street Parking Permitted?	Public Transit Lines?[c]	Comments
Sunnyside Pumping Plant						
Deer Hill Road: ▪ Highway 24 Westbound off-ramp to Oak Hill Road	4 lanes	N/A	Yes	No	No	See Map A1
▪ Oak Hill Road to Happy Valley Road	4 lanes	N/A	Yes	No	Yes	
Happy Valley Road: ▪ Deer Hill Road to Upper Happy Valley Road	2 lanes	5,000 vpd	No	No	Yes	See Map A1
▪ Upper Happy Valley Road to Sundown Terrace	2 lanes	N/A	No	Discontinuous	Yes	
Acalanes Road: ▪ Highway 24 eastbound off-ramp to El Nido Ranch Road	2 lanes	N/A	Yes	No	Yes	See Map A1
El Nido Ranch Road: ▪ Acalanes Road to Upper Happy Valley Road	2 lanes	2,530 vpd	No	Yes	Yes	See Map A1
Upper Happy Valley Road: ▪ El Nido Ranch Road to Happy Valley Road	2 lanes	4,440 vpd	No	No	Yes	See Map A1
Tice Valley Pumping Plant and Pipeline						
Pleasant Hill Road: ▪ Highway 24 to Olympic Boulevard	4 lanes	17,260 vpd	Yes	No	Yes	See Map A3
Olympic Boulevard: ▪ Pleasant Hill Road to Boulevard Way	2 lanes	20,900 vpd	Yes	No	Yes	See Map A3
▪ Boulevard Way to I-680	4 lanes	N/A	Yes	Discontinuous	Yes	
Boulevard Way: ▪ Olympic Boulevard to Warren Road	2 lanes (25 feet)	N/A	No	Yes	Yes	See Map A3
Withers Pumping Plant						
Contra Costa Boulevard: ▪ I-680 northbound off-ramp to Gregory Lane	6 lanes	36,000 vpd	No	No	No	See Map A4
Gregory Lane: ▪ Contra Costa Boulevard to Pleasant Hill Road	4 lanes	14,700 vpd	No	Discontinuous	Yes	See Map A4
Grayson Road: ▪ Pleasant Hill Road to Taylor Boulevard	2 lanes	7,430 vpd	Yes	Yes	No	See Map A4
▪ Taylor Boulevard to Reliez Valley Road	2 lanes	6,040 vpd	Yes	Yes	No	
Reliez Valley Road: ▪ Grayson Road to Silverhill Way	2 lanes	N/A	Yes	No	No	See Map A4

[a] Pavement width (in feet) is given for two-lane segments in which pipeline installation would occur; otherwise only the number of travel lanes is given.
[b] Abbreviations: N/A = not available; vpd= vehicles per day.
[c] Transit service in the project area is provided by the County Connection and AC Transit; route maps for each service provider were accessed in April 2006 for this project (Alameda-Contra Costa Transit District, 2006; County Connection, 2006).

SOURCE: ESA; traffic volume data obtained from appropriate jurisdictions and from new counts conducted for this analysis (see Table 3.8-2).

TABLE 3.8-2
EXISTING TRAFFIC VOLUMES ON AREA ROADWAYS

Roadway	Average Daily Traffic (Total)[a]	Average (Highest) Volume Per Hour[b] 7:00 a.m. to 9:00 a.m.	9:00 a.m. to 4:00 p.m.	4:00 p.m. to 6:00 p.m.
Moraga Road north of Sky-Hy Drive	15,410	1,065 (1,155)	985 (1,285)	1,215 (1,320)
Moraga Road south of Rheem Boulevard	18,170	1,370 (1,690)	1,195 (1,650)	1,526 (1,580)
Mt. Diablo Boulevard east of El Nido Ranch Road	10,710	544 (690)	774 (865)	895 (1,135)
El Nido Ranch Road between St. Stephens Drive and Acalanes Road	1,540	95 (125)	100 (140)	180 (230)
El Nido Ranch Road between Acalanes Road and Mt. Diablo Boulevard	2,530	185 (225)	175 (240)	220 (255)
Miner Road between Lombardy Lane and Oak Arbor Road	6,140	520 (570)	410 (520)	470 (510)
Happy Valley Road between Deer Hill Road and Mt. Diablo Boulevard	10,300	715 (865)	725 (865)	926 (1,000)

[a] Average daily (two-way) traffic over three days of continuous counting (Tuesday–Thursday, all November 1–3, 2005, except April 4–6, 2006 on Mt. Diablo Boulevard).
[b] The first number equals the average hourly (two-way) volume over the time period, and the second number (in parentheses) equals the highest hourly (two-way) volume counted on the three survey days.

SOURCE: ESA.

3.8.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistent with Appendix G of the CEQA Guidelines, a WTTIP project that would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system is considered to have a significant impact on the environment. The project is also considered to have a potentially significant impact if:

- Traffic generated by construction workers and construction vehicular activities substantially affects roadway traffic flow, especially during peak traffic hours;
- Construction substantially affects parking availability, causing traffic safety/operational problems;
- Construction activities pose a traffic safety hazard to motor vehicles, bicyclists, or pedestrians;
- Construction activities significantly affect local transit service; or
- Movement of heavy vehicles causes substantial damage or wear of public roadways.

The project would not cause long-term effects because the various project facilities, once installed, would only require maintenance activities similar to those that occur under existing

conditions. The duration of the potential significant impacts would be limited to the period of time needed to construct the project. Therefore, mitigation measures for traffic-related impacts identified in this EIR focus on reducing construction-phase project effects.

Impacts and Mitigation Measures

Table 3.8-3 summarizes traffic and circulation impact significance by WTTIP project facility.

TABLE 3.8-3
SUMMARY OF POTENTIAL PROJECT-LEVEL TRAFFIC AND CIRCULATION IMPACTS

Facility	Impact 3.8-1 Increased Traffic	Impact 3.8-2 Reduced Road Width (Pipelines)	Impact 3.8-3 Parking	Impact 3.8-4 Traffic Safety	Impact 3.8-5 Access (Pipelines)	Impact 3.8-6 Transit (Pipelines)	Impact 3.8-7 Pavement Damage/Wear
Lafayette WTP							
Alternative 1	SM	SM	SM	SM	–	–	LTS
Alternative 2	SM	SM	SM	SM	–	–	LTS
Orinda WTP							
Alternative 1	SM	–	SM	SM	–	–	LTS
Alternative 2	SM	–	SM	SM	–	–	LTS
Walnut Creek WTP							
Alternative 1 or 2	SM	–	LTS	SM	–	–	SM
Sobrante WTP							
Alternative 1 or 2	SM	–	SM	SM	–	–	LTS
Upper San Leandro WTP							
Alternative 1 or 2	SM	–	LTS	SM	–	–	SM
Orinda-Lafayette Aqueduct							
Alternative 2 only	SM	SM	SM	SM	SM	SM	LTS
Ardith Reservoir/ Donald Pumping Plant	SM	–	SM	SM	–	–	SM
Fay Hill Pumping Plant and Pipeline Improvements	SM	SM	SM	SM	SM	LTS	LTS
Fay Hill Reservoir	SM	–	LTS	SM	–	–	LTS
Glen Pipeline Improvements	SM	SU	SM	SM	SU	–	SM
Happy Valley Pumping Plant and Pipeline	SM	SM	SM	SM	SM	SU	SM
Highland Reservoir and Pipelines	SM	SM	SM	SM	LTS	LTS	LTS
Lafayette Reclaimed Water Pipeline	SM	SM	SM	SM	LTS	LTS	LTS
Leland Isolation Pipeline and Bypass Valves	SM	SM	SM	SM	LTS	LTS	LTS
Moraga Reservoir	SM	–	SM	SM	–	–	SM
Moraga Road Pipeline	SM	SM	SM	SM	SM	SM	LTS
Sunnyside Pumping Plant	SM	–	LTS	SM	–	–	LTS
Tice Pumping Plant and Pipeline	SM	SM	SM	SM	SM	SU	SM
Withers Pumping Plant	SM	–	LTS	SM	–	–	LTS

SM = Significant Impact, Can Be Mitigated
SU = Significant Impact, Unavoidable
LTS = Less-Than-Significant Impact
– = No Impact

Table 3.8-4 summarizes the applicability of mitigation measures to project facilities.

TABLE 3.8-4
SUMMARY OF APPLICABLE MITIGATION MEASURES – IMPACTS 3.8-1 TO 3.8-7[a]

Facility	Measure 3.8-1 Encroachment Permit and/or Traffic Safety / Traffic Management Plan	Measure 3.8-7 Document Pre- and Post-construction Pavement Conditions, and Repair as Required
Lafayette WTP		
Alternative 1	✓	–
Alternative 2	✓	–
Orinda WTP		
Alternative 1	✓	–
Alternative 2	✓	–
Walnut Creek WTP		
Alternative 1 or 2	✓	✓
Sobrante WTP		
Alternative 1 or 2	✓	–
Upper San Leandro WTP		
Alternative 1 or 2	✓	✓
Orinda-Lafayette Aqueduct		
Alternative 2 only	✓	–
Ardith Reservoir and Donald Pumping Plant	✓	✓
Fay Hill Pumping Plant and Pipeline Improvements	✓	–
Fay Hill Reservoir	✓	–
Glen Pipeline Improvements	✓	✓
Happy Valley Pumping Plant and Pipeline	✓	✓
Highland Reservoir and Pipelines	✓	–
Lafayette Reclaimed Water Pipeline	✓	–
Leland Isolation Pipeline and Bypass Valves	✓	–
Moraga Reservoir	✓	✓
Moraga Road Pipeline	✓	–
Sunnyside Pumping Plant	✓	–
Tice Pumping Plant and Pipeline	✓	✓
Withers Pumping Plant	✓	–

[a] The mitigation measures for Impacts 3.8-2 through 3.8-6 are to implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce impacts to a less-than-significant level.

✓ = Applicable Impact
– = No Impact

Impact 3.8-1: Short-term increases in vehicle trips by construction workers and construction vehicles.

Trip Generation – Overview

The proposed facility improvements would generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways. Appendix B contains detailed trip generation estimates for each WTTIP project. Table 3.8-1 describes local roadways that would be directly affected by project construction traffic. Construction-generated traffic would be temporary and therefore would not result in long-term degradation in operating conditions or level of service on project area roadways.[1] The primary offsite impacts from the movement of construction trucks would include a short-term and intermittent lessening of roadway capacities due to the slower movements and larger turning radii of the trucks compared to passenger vehicles.

Traffic-generating construction activities related to project facilities would consist of the daily arrival and departure of personnel (construction work crews and supervisory staff); trucks hauling equipment and materials to the worksites; and the hauling of excavated spoils from, and import of new fill to, the sites. The number of construction-related trips would vary among the different facilities studied herein, and among the tasks needed to complete facility construction. The analysis of potential impacts associated with each project facility, below, focuses on the maximum number of daily and hourly vehicle trips during the duration of each facility construction. Impacts during other tasks would be less than those described for the maximum trips.

The following assumptions were made as part of the trip generation estimate:

- The capacity of haul trucks would average 9 cubic yards (cy), except for water treatment plants (12.5 cy) and for tunnel work for the Orinda-Lafayette Aqueduct (20 cy); the capacity of concrete trucks would average 9 cy.
- The work schedule would be Monday through Friday, eight hours within 7:00 a.m. to 6:00 p.m.[2] (except as noted below for pipelines).
- For Water Treatment Plants:
  - Excavated soil would be used for backfill, but it is assumed there would be no onsite capacity to stockpile that material, so fill would be imported from a temporary offsite stockpile location.[3] Soil stockpiling for the Orinda WTP (for either Alternative 1 or 2) would occur at the nearby ballfields, which would be accessed via public roads.

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1 Level-of-service standards for roadways that are part of the Contra Costa County Congestion Management Plan (CMP) network are intended to regulate long-term traffic increases from operation of new development and do not apply to temporary construction projects. As such, the proposed project facilities would not exceed level-of-service standards established by the Contra Costa Transportation Authority for designated CMP roadways.

2 It is possible that work could last longer than eight hours each day, and to the degree that were true, the assumption that truck trips would be spread over eight hours is conservative, and the assumed hourly trip generation estimate is overstated.

3 It is possible that locations could have some capacity for stockpiling material, and to the degree that were true, the assumption of no onsite capacity is conservative, and the assumed trip generation estimate is overstated.

  - The offsite haul schedule would be Monday through Friday, six hours within 9:00 a.m. to 4:00 p.m.[4]

- For Reservoirs:
  - Trips were calculated on the basis of estimated peak rates of loading and unloading trucks (i.e., based on the length of time needed to load a truck, and that rate continued over the number of hours of the workday).

- For Pipelines:
  - Trench dimensions: width of 2.5 feet and depth of 5.0 feet (for 12- and 16-inch-diameter pipes); width of 4.9 feet and depth of 11.6 feet (for 36-inch-diameter pipe); and width of 5.9 feet and depth of 11.6 feet (for 48-inch-diameter pipe).
  - The pace of installation would average about 80 feet of pipe each workday in paved areas, and up to 120 feet of pipe each workday in unpaved areas.
  - Excavated soil would be hauled offsite and replaced by aggregate base in roads; in unpaved areas, the soil would be stockpiled and reused.
  - The work schedule would be Monday through Friday, 7:00 a.m. to 6:00 p.m., and in accordance with encroachment permits.

The construction scenario characteristics described for each WTTIP project below have been developed to allow for a general assessment of the nature and magnitude of potential construction impacts associated with each individual facility. The final construction scheduling of specific facility projects would likely result in simultaneous or overlapping construction for more than one facility. If construction were to overlap for two facilities with a haul route in common, then the total number of vehicle trips added to that road could be the sum of the maximum number of daily and hourly vehicle trips. See Chapter 5, Cumulative Impacts, for a discussion of traffic and circulation impacts associated with overlapping construction.

Trip Generation – Facility-Specific

Table 3.8-5 presents estimated maximum daily and hourly one-way vehicle trip generation for each project facility (tied to the task during which the maximum daily trips would occur) and identifies the roadways that construction-generated vehicles would be expected to use traveling to and from the worksites. The information in this table is extracted from the more detailed, project-specific tables presented in Appendix B.

Project Impact – Common to All Facilities

Project-generated truck trips would be dispersed throughout the day, and construction workers would commute to and from the worksite primarily before or after peak traffic hours. Construction-related truck traffic occurring on roadways in the peak direction on weekdays during the hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. would coincide with peak-period traffic on access roadways and therefore would have the greatest potential to impede

[4] It is possible that offsite hauling could occur for more six hours each day, and to the degree that were true, the assumption that haul truck trips would be spread over six hours is conservative, and the assumed hourly trip generation estimate is overstated.

TABLE 3.8-5
ESTIMATED MAXIMUM VEHICLE TRIP GENERATION – BY WTTIP PROJECT

Facility	Task[a]	Vehicles per Day[a]	Trucks per Hour	Autos per Hour[b]	Haul Routes
Lafayette WTP					
Alternative 1	Foundation – Concrete	312	12	120	Acalanes Road; Mt. Diablo Boulevard
Alternative 2	Excavation	52	2	20	Acalanes Road; Mt. Diablo Boulevard
Orinda WTP					
Alternative 1	Foundation – Concrete	162	10	60	Camino Pablo; Manzanita Drive
Alternative 2	Excavation	324	21	120	Camino Pablo; Manzanita Drive
Walnut Creek WTP					
Alternative 1 or 2	Foundation – Concrete	84	4	30	Pinneman Lane; N. Main Street; San Luis Road; Larkey Lane; Alfred Avenue
Sobrante WTP					
Alternative 1 or 2	Foundation – Concrete	252	10	120	San Pablo Dam Road; Valley View Road; Amend Road; D'Avila Way
Upper San Leandro WTP					
Alternative 1 or 2	Foundation – Concrete	252	10	120	Keller Avenue; Greenly Drive
Orinda-Lafayette Aqueduct					
Alternative 2	Tunnel Portion	302	16	84	Camino Pablo
Alternative 2	Pipeline Installation	110	10	13	Altarinda Drive; St. Stephens Drive; El Nido Ranch Road; Mt. Diablo Boulevard
Ardith Reservoir	Excavation	178	24	15	Moraga Way; Ivy Drive; Ardith Drive
Donald Pumping Plant	Excavation/ Site Work	66	10	10	Moraga Way; Ivy Drive; Ardith Drive
Fay Hill Pumping Plant and Pipeline Improvements	Pipeline Installation	48	3	13	Deer Hill Road; Oak Hill Road; Mt. Diablo Boulevard; Moraga Road
Fay Hill Reservoir	Temporary Tank	178	24	10	Same as Fay Hill facilities above, plus Rheem Boulevard
Glen Pipeline Improvements	Pipeline Installation	48	3	13	Deer Hill Road; Thompson Road; Glen Road; Nordstrom Lane
Happy Valley Pumping Plant and Pipeline	Pipeline Installation	48	3	13	Camino Pablo; Miner Road; Lombardy Lane
Highland Reservoir and Pipelines[c]	Excavation	178	24	15	Acalanes Road; Mt. Diablo Boulevard
Leland Isolation Pipeline and Bypass Valves	Pipeline Installation	50	3	13	Ygnacio Valley Boulevard; Main Street; Lacassie Avenue; Danville Boulevard; Rudgear Road
Moraga Reservoir	Excavation	178	24	15	Moraga Way; Moraga Road; Draeger Drive
Moraga Road Pipeline	Pipeline Installation	102	10	13	Deer Hill Road; Oak Hill Road; Mt. Diablo Boulevard; Moraga Road
Sunnyside Pumping Plant	Foundation – Concrete	34	2	10	Deer Hill Road; Happy Valley Road; Acalanes Road; El Nido Ranch Road; Upper Happy Valley Road
Tice Pumping Plant and Pipeline	Excavation/ Site Work	66	10	13	Pleasant Hill Road; Olympic Boulevard; Boulevard Way
Withers Pumping Plant	Foundation – Concrete	118	12	10	Contra Costa Boulevard; Gregory Lane; Grayson Road; Reliez Valley Road

[a] Task during which the maximum daily one-way vehicle trips would be generated.
[b] One-way auto trips assumes that all workers would arrive and/or depart during one hour at the beginning and/or end of the workday.
[c] Includes Lafayette Reclaimed Water Pipeline.

SOURCE: ESA and EBMUD (see Appendix B – Trip Generation Tables).

traffic flow. The percent increase in traffic volumes caused by project-generated construction traffic on the arterials and freeways serving the project worksite would not be substantial relative to background traffic conditions (i.e., the estimated maximum daily one-way vehicle trip generation in Table 3.8-5 would increase the daily traffic volume on area roadways by less than 3 percent, and by no more than about 0.2 percent on Highway 24), nor would project traffic significantly disrupt daily traffic flow on these roadways.[5] Drivers could experience delays if they were traveling behind a construction truck. Traffic volume increases caused by project construction would be most noticeable on local-serving roadways. With implementation of Measure 3.8-1, identified below, this impact would be reduced to a less-than-significant level.

Project Impact – Facility-Specific

As described above, project-generated traffic volume increases would be most noticeable on local-serving roadways. Examples are as follows:

- *Walnut Creek WTP*. An increase in traffic volume on Larkey Lane would be more noticeable than on higher-volume North Main Street and the I-680 freeway.
- *Upper San Leandro WTP*. An increase in traffic volume on Greenly Drive would be more noticeable than on higher-volume Keller Avenue and the I-580 freeway.
- *Ardith Reservoir and Donald Pumping Plant*. An increase in traffic volume on Ivy Drive and Ardith Drive would be more noticeable than on higher-volume Moraga Way and Highway 24.
- *Moraga Reservoir*. An increase in traffic volume on Draeger Drive would be more noticeable than on higher-volume Moraga Way and Moraga Road.
- *Tice Pumping Plant and Pipeline*. An increase in traffic volume on Boulevard Way would be more noticeable than on higher-volume Olympic Boulevard, Pleasant Hill Road, and Highway 24.

Although project-generated trips on local-serving roadways would represent a higher (more noticeable) percent increase in daily traffic volumes on those local roads, the effect on traffic flow would be less than significant because the traffic volumes would remain at levels clearly less than the carrying capacity of the roads (which, as described above, is about 15,000 vehicles per day on two-lane roads).

Mitigation Measure

Measure 3.8-1: The following requirements will be incorporated into contract specifications for the project:

- The contractor(s) will obtain any necessary road encroachment permits prior to construction and will comply with conditions of approval attached to project implementation. As part of the road encroachment permit process, the contractor(s) will submit a traffic safety / traffic management plan (for work in the public right-of-way)

[5] Day-to-day traffic volumes typically vary by as much as 10 percent (i.e., ±5 percent), and an increase of less than that is unlikely to be perceptible to the average motorist.

to the agencies having jurisdiction over the affected roads. Elements of the plan will likely include, but are not necessarily limited to, the following:

- Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible. Use flaggers and/or signage to guide vehicles through and/or around the construction zone.

- Control and monitor construction vehicle movements through the enforcement of standard construction specifications by periodic onsite inspections.

- To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours.

- Limit lane closures during peak hours to the extent possible. Restore roads and streets to normal operation by covering trenches with steel plates outside of allowed working hours or when work is not in progress.

- Limit, where possible, the pipeline construction work zone to a width that, at a minimum, maintains alternate one-way traffic flow past the construction zone. Parking may be prohibited if necessary to facilitate construction activities or traffic movement. If the work zone width will not allow a 10-foot-wide paved travel lane, then the road will be closed to through-traffic (except emergency vehicles) and detour signing on alternative access streets will be used.

- Include signage to direct pedestrians and bicyclists around project construction work zones that displace sidewalks and/or bike lanes.

- Store all equipment and materials in designated contractor staging areas on or adjacent to the worksite, in such a manner to minimize obstruction to traffic.

- Identify locations for parking by construction workers (within the construction zone or, if needed, at a nearby location with transport provided between the parking location and the worksite).

- Comply with roadside safety protocols. Provide “Road Work Ahead” warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) to achieve required speed reductions for safe traffic flow through the work zone.

- Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, transit stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities and the locations of detours and lane closures.

- Coordinate construction activities, to extent possible, to minimize traffic disturbances adjacent to schools (e.g., do work during summer months when there is less activity at schools). For construction activities that occur during the school year, then at the start and end of the school day at schools adjacent to a pipeline project (e.g., Bentley School on El Nido Ranch Road, and Campolindo High School on Moraga Road), the contractor(s) will provide flaggers in the school areas to ensure traffic and pedestrian safety.

- Coordinate with the County Connection so the transit provider can temporarily relocate bus routes or bus stops in work zones as it deems necessary.
- To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule construction of project elements to avoid overlapping maximum trip-generation construction phases.

Implementation of Measure 3.8-1 would ensure that effects on traffic flow conditions in the project vicinity would be less than significant.

Impact 3.8-2: Reduction in the number of, or the available width of, travel lanes on roads where pipeline construction would occur, resulting in short-term traffic delays for vehicles traveling past the construction zones.

The WTTIP includes installation of new pipelines in both unpaved areas and paved roadways. These actions could temporarily disrupt existing transportation and circulation patterns in the vicinity. Impacts would include direct disruption of traffic flows and street operations. Lane blockages or street closures during construction would result in a reduction in travel lanes and curb parking. Construction operations related to facility installation within and/or across high-traffic volume arterials could have a significant adverse impact on traffic flow and operations at these locations.

Construction Zone Requirements – Overview

Three construction methods for the installation of pipelines would be used: (1) open-cut trenching, which is the primary installation method, (2) bore and jacking, and (3) microtunneling. The latter two methods would not reduce the number or available width of travel lanes (pits used for bore and jack and microtunneling are assumed to be located out of public roadways). As stated in the roadway description section above, the pavement of pipeline alignment segments (including parking lanes in some cases) generally ranges from two-lane segments with widths of about 22 to 65 feet, to four-lane segments (some divided by a median).

As described on page 3.8-11, above, trench width and depth for pipeline installation would range from 2.5 to 5.9 feet and 5.0 to 11.6 feet, respectively, depending on the size of the pipeline being installed. The active work area along the open trench would be wider than the trench width to facilitate access by trucks and loaders (see Figure 2-9, in Chapter 2). Removed pavement and excavated soil would be loaded directly into dump trucks and hauled offsite for disposal. Imported backfill would be delivered to stockpiles near the open trench. Once the new pipeline is in place, backfill would be placed in the trench, and the streets would be compacted and paved; a temporary patch would be used until final repaving occurs.

From an engineering perspective, the ideal temporary construction zone for pipeline installation would be about 40 feet wide, which would allow truck and equipment access alongside the trench. However, the construction zone width could be as narrow as 25 feet, which was the assumed width for the assessment of potential project impacts in roadways, except in one case: on

Moraga Road in Moraga (see below), a width as narrow as about 22 feet could be used to maintain two-way traffic flow. There are areas where road closure would be required during construction hours.[6]

Project Impact

The pace of open-trench work for proposed pipeline improvements in paved areas is estimated to average 80 feet per day, and the work schedule would be 8:30 a.m. to 4:30 p.m., Monday through Friday. Depending on where the pipeline would be located within the roadway width and on whether on-street parking is currently provided, either two traffic lanes, or one travel lane and a parking lane, would be needed to accommodate the construction zone. Table 3.8-6 presents the proposed widths of the construction work zones, the method for maintaining traffic flow affected by the construction, and roadway segments that would have to be closed during pipeline construction. Some roadway segments would have sufficient pavement width outside of the construction zone to accommodate two-way traffic flow, but other roadways would not have sufficient remaining pavement width to maintain two-way traffic flow. In the latter case, alternate one-way traffic flow would be maintained on pavement as narrow as 10 feet. Traffic would be delayed as it travels past the construction zone, but implementation of Measure 3.8-1, above, would ensure that effects on traffic flow conditions would be less than significant.

Maintenance of traffic flow during installation of the Moraga Road Pipeline in the two-lane undivided portion of Moraga Road between Sky-Hy Drive / Via Granada and Dolores Court (see Maps C-MORPL-4 and C-MORPL-5) could be handled under two possible scenarios. The pavement width varies from about 42 feet to about 65 feet, and with a construction zone width as narrow as 22 feet (and as wide as 45 feet), two-way flow could be maintained. Under that scenario, the bike lanes would have to be closed for the length of each day's construction zone; bus stops might need to be temporarily relocated; and, although on-street parking is prohibited on most of Moraga Road, the spaces near Campolindo High School (between Campolindo Drive and Buckingham Drive) would be unavailable during construction in that segment. The other scenario would involve maintaining alternate one-way flow in segments where the needed construction zone width would result in insufficient remaining width to maintain two-way traffic flow. Under either scenario, a voluntary detour (using St. Marys Road and Rheem Boulevard, or Moraga Way) would be available to motorists who wish to avoid delays on Moraga Road.

During installation of the Moraga Road Pipeline in the narrow (24-foot-wide) two-lane segment of Moraga Road between Nemea Court and Sky-Hy Drive / Via Granada, a 14-foot-wide construction zone would be used, and alternate one-way traffic flow would be maintained on the remaining 10 feet of pavement. The above-described voluntary detour route also would be available to motorists who wish to avoid delays on this portion Moraga Road.

6 For roadways where it is not possible to provide a minimum 10-foot travel width to maintain alternate one-way traffic flow past the construction zone, the roadway would have to be closed to all except emergency vehicles during construction work hours.

TABLE 3.8-6
METHODS FOR MAINTAINING TRAFFIC FLOW AFFECTED BY PROJECT CONSTRUCTION

Roadway / Segment	No. of Lanes (width)	Proposed Width of Construction Work Zone	Methods to Maintain Traffic Flow
Orinda-Lafayette Aqueduct (pipeline portion)			
Altarinda Drive: ▪ just west of St. Stephens Drive	2 lanes (40 feet)	Up to 28 feet	Alternate one-way flow in one 12-foot-wide lane
El Nido Ranch Road: ▪ St. Stephens Drive to Upper Happy Valley Road	2 lanes (40 feet)	Up to 28 feet	Alternate one-way flow in one 12-foot-wide lane
▪ Upper Happy Valley Road to Bentley School parking lot	2 lanes (33–40 feet)	21–28 feet	Alternate one-way flow in one 12-foot-wide lane
Mt. Diablo Boulevard: ▪ West of El Nido Ranch Road to WTP access	4 lanes (divided)	30 feet	One lane in each direction on one (eastbound lanes) side of median
Fay Hill Pipeline Improvements			
Rheem Boulevard: ▪ Moraga Road to Chalda Way	3–4 lanes (52 feet)	Up to 32 feet	One lane in each direction on a minimum of 20 feet of clear pavement
Glen Pipeline Improvements			
Nordstrom Lane: ▪ Hilltop Drive to Glen Road	2 lanes (22 feet)	22 feet	Road closure (no detour available)
Glen Road: ▪ Nordstrom Lane to Monticello Road	2 lanes (22 feet)	22 feet	Road closure (no detour available)
Happy Valley Pumping Plant and Pipeline			
Miner Road: ▪ Oak Arbor Road to Lombardy Lane	2 lanes (22 feet)	22 feet	Road closure with detour routing
Lombardy Lane: ▪ Miner Road to Van Ripper Lane	2 lanes (24 feet)	24 feet	Road closure with detour routing
Highland Reservoir and Pipelines[a]			
Mt. Diablo Boulevard: ▪ East of El Nido Ranch Road to east of Lafayette WTP	4 lanes (divided)	30 feet	One lane in each direction on one (eastbound lanes) side of median
Leland Isolation Pipeline			
Lacassie Drive: ▪ N. California Street to N. Main Street	2 lanes (43 feet)	At least 23 feet; up to 31 feet	One lane in each direction on a minimum of 20 feet of clear pavement, *or* alternate one-way flow in one 12-foot-wide lane
Leland Isolation Bypass Valves			
Danville Boulevard: ▪ Near Rudgear Road	2 lanes (60 feet)	Up to 40 feet	One lane in each direction on a minimum of 20 feet of clear pavement
Moraga Road Pipeline			
Moraga Road: ▪ Nemea Court to Sky-Hy Drive	2 lanes (24 feet)	14 feet	Alternate one-way flow in one 10-foot-wide lane
Sky-Hy Drive to Dolores Court	2 lanes (42–65 feet)	At least 22 feet; up to 40 feet	One lane in each direction on a minimum of 20 feet of clear pavement
▪ Dolores Court to Draeger Drive	4 lanes	25 feet	One lane in each direction on a minimum of 20 feet of clear pavement
Tice Valley Pumping Plant and Pipeline			
Boulevard Way: ▪ Olympic Boulevard to Warren Road	2 lanes (25 feet)	25 feet	Road closure with detour routing
Olympic Boulevard: ▪ Boulevard Way to Acalanes Road	2–4 lanes (48+ feet)	Up to 28 feet	One lane in each direction on a minimum of 20 feet of clear pavement

[a] Includes Lafayette Reclaimed Water Pipeline.

There are roadways within proposed pipeline segments for which the construction zone would result in insufficient remaining width to maintain alternate one-way traffic flow. For example, segments of Nordstrom Lane, Glen Road, Miner Road, Lombardy Lane, and Boulevard Way (each 22 to 25 feet wide) would need to be closed to all through-traffic (except emergency vehicles) during work hours, with detour routing available in some, but not all, cases. See discussion about detour routing on page 3.8-21.

The impacts during peak traffic periods would be significant because levels of service would be reduced to an unacceptable level. The decrease in traffic volumes outside of the peak periods would typically, but not universally, be sufficient to allow the reduced number of travel lanes to accommodate the traffic flow without significant delays. Delays would also be experienced by drivers during off-peak hours, but because of the lower volume, fewer people would be affected by the delays during those periods.

As shown in Table 3.8-1, some roadways on the pipeline alignments have four travel lanes, in some cases divided by a median (raised or striped). Examples include Mt. Diablo Boulevard and part of Moraga Road (generally Dolores Court to Donald Drive). The proposed construction zone width would generally occupy the pavement on one side of the median plus the median itself, with two-way traffic flow (including turning vehicles and transit vehicles) accommodated on the opposite side of the median. The existing four through-traffic lanes (plus turn lanes and/or bike/parking lanes) divided by the median would need to be transitioned to two through-traffic lanes on one side of the median. This construction scenario would reduce the capacity of the roadway by more than the halving caused by the reduction in travel lanes from four to two; that is, because a choice would have to be made between (1) using 10 feet of the available width for left-turn lanes (removing all on-street parking and bike lanes, and forcing buses to stop at bus stops in the travel lane, temporarily blocking through-traffic) and (2) providing width for one-sided on-street parking, a bike lane, and bus stops along the outside curb lane (forcing vehicles to make left turns from the one through-lane, temporarily blocking through-traffic). The reduction in capacity on these four-lane roads during peak traffic periods would be a significant impact.

To ensure that the project effects are less than significant, contractor(s) would be required to limit lane closures during peak hours to the extent possible; restore roads and streets to normal operation when work is not in progress; and, where possible, limit the pipeline construction work zone to a width that, at a minimum, maintains alternate one-way traffic flow past the construction zone.

Mitigation Measure

> **Measure 3.8-2:** Implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce traffic flow impacts to a less-than-significant level.

Access impacts on roads for which no detour routing is available would be significant and unavoidable.

Impact 3.8-3: Demand for parking spaces to accommodate construction worker vehicles; temporary displacement of on-street parking along pipeline alignment routes.

Project Impact – Stationary Locations (WTPs, Reservoirs, and Pump Plants)

Proposed improvements would create temporary parking demand for construction workers and construction vehicles at the different worksites. For water treatment plants, reservoirs, and pumping plants, the worksites would generally have sufficient space for onsite parking. Exceptions to full onsite accommodation of parking demand are described below, and in some cases are discussed below under Project Impact – Pipeline Alignments.

- *Lafayette WTP*. In addition to parking onsite, parking spaces would be available beneath Highway 24 west of the plant.
- *Orinda WTP*. In addition to parking onsite, parking spaces would be available on the ballfields.
- *Sobrante WTP*. In addition to parking onsite, parking spaces would be available on nearby streets.
- *Ardith Reservoir/Donald Pump Plant*. In addition to parking onsite, parking spaces would be available on nearby Ardith Drive.
- *Moraga Reservoir*. In addition to parking onsite, parking spaces would be available on nearby streets.

Project Impact – Pipeline Alignments

As crews move along pipeline alignments, work within roads could temporarily displace on-street parking on affected streets. Assuming all personnel drive alone to each day's work location, the generated parking demand would be about 13 spaces (i.e., nine workers per crew, plus four for supervisory, inspector, and visitor personnel). As shown in Table 3.8-1, most of the roadways on proposed pipeline alignments do not have on-street parking spaces, and construction workers would have to park outside the immediate area of those streets. For the eastern pipeline segment of the Orinda-Lafayette Aqueduct, there is generally sufficient parking available on El Nido Ranch Road to accommodate the added parking demand. Given the proposed rate of construction during pipeline installation, impacts to parking would be relatively brief at any one location throughout the project area. To ensure that the project effects are less than significant, contractor(s) would be required to identify locations for parking by construction workers (within the construction zone or, if needed, at a nearby location with transport provided between the parking location and the worksite).

Mitigation Measure

Measure 3.8-3: Implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce parking impacts to a less-than-significant level.

Impact 3.8-4: Potential traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways.

Construction-generated trucks on project area roadways would interact with other vehicles. Creation of a construction work zone on high-volume roadways (e.g., Moraga Road) would potentially create traffic safety hazards where traffic is routed into the travel lane adjacent to the work zone. Potential conflicts could also occur between construction traffic and bicyclists and pedestrians. Table 3.8-1 shows what roads in the project area have bicycle lanes.

Mitigation Measure

Measure 3.8-4: Implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce potential traffic safety impacts to a less-than-significant level.

Impact 3.8-5: Access disruption to adjacent land uses and streets for both general traffic and emergency vehicles, as well as disruption to bicycle/pedestrian access and circulation.

Pipeline construction within or across streets, and temporary reduction in travel lanes, could result in delays for emergency vehicle access in the vicinity of the worksites. In addition, access to driveways and to cross streets along the construction route could be temporarily blocked due to trenching and paving. This could be an inconvenience to some and a significant problem for others, particularly schools and emergency service providers (e.g., police and fire). Table 3.12-3 in Section 3.12 (Public Services and Utilities) identifies by land use agency, name, and street address schools, (and preschools), hospitals, and fire stations in the vicinity of WTTIP project sites. Vehicle access would be restored at the end of each workday through the use of steel trench plates or trench backfilling. Employees and customers would continue to have access to the affected business establishments; only access to parking (on- or off-street) adjacent to the business would be affected, and truck deliveries could be made difficult. With sufficient advance notification regarding the timing of construction in front of each affected property, this short-term inconvenience would result in a less-than-significant impact.

The schools most likely to be adversely affected by project construction are Bentley School and Campolindo High School, which are located on roads proposed for pipeline installation (i.e., El Nido Ranch Road near Upper Happy Valley Road; and Moraga Road near Campolindo Drive). The aerial photograph maps presented after Chapter 2 show the location of schools identified in the vicinity of WTTIP projects during EIR preparation (see also Table 3.12-3). The Orinda-Lafayette Aqueduct (Alternative 2) would be constructed through the parking lot of Bentley School. Providing advance notification of construction and/or scheduling pipeline construction adjacent to schools during summer months (when there is less activity at schools) would mitigate adverse impacts. Providing flaggers in the school areas at the start and end of the school day would ensure traffic and pedestrian safety during construction activity.

Some of the proposed pipeline alignments could result in temporary full street closures because the width of the construction zone would not be sufficient to maintain alternate one-way traffic

flow (i.e., 10 feet of available pavement width for traffic) adjacent to the work zone. Locations that could be subject to temporary closures to through-traffic are described below.

- Glen Pipeline:
  - Nordstrom Lane and Glen Road (22 feet wide), with no detour routing available
- Happy Valley Pipeline:
  - Miner Road (22 feet wide) between Oak Arbor Road and Lombardy Lane (detour routing is available, via St. Stephens Drive, Via Las Cruces, Honey Hill Road, and Miner Road)
  - Lombardy Lane (22 feet wide) between Miner Road and Van Ripper Lane (detour routing is available, via Upper Happy Valley Road, Happy Valley Road, Sundown Terrace, and Dalewood Drive)
- Tice Valley Pipeline:
  - Boulevard Way (25 feet wide) between Olympic Boulevard and Warren Road (various detour routings available on local streets in the area)

In addition, lane blockages or roadway closures during pipeline installation could result in temporary alterations in bicycle and pedestrian circulation; the specific location of the pipelines within each roadway is not yet known, but such blockages or closures would inconvenience bicyclists and pedestrians and is considered a significant impact.

Mitigation Measure

> **Measure 3.8-5:** Implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce access impacts to a less-than-significant level.

Access impacts on roads for which no detour routing is available would be significant and unavoidable.

Impact 3.8-6: Disruptions to transit service on pipeline alignment routes.

As discussed above, the proposed project could have temporary effects on traffic flow, particularly during pipeline installations proposed within road segments. Pipeline construction within or across streets, and temporary reduction in travel lanes, could result in delays for County Connection transit service in the vicinity of the worksites.

Table 3.8-1 shows the roads in the project area that carry bus routes. While buses could be slowed by project construction trucks on roads used as haul routes, a greater potential effect would occur on roads in which pipeline installation is proposed. Installation of new pipelines could disrupt access to bus stops along the alignments and could slow bus movements. Bus routes might need to be temporarily detoured, and/or bus stops temporarily relocated, on the following roads:

- Orinda-Lafayette Aqueduct (pipeline east of St. Stephens Drive):

  - El Nido Ranch Road (St. Stephens Drive to Upper Happy Valley Road), County Connection Bus Line 206L (limited service, peak periods only)
  - Mt. Diablo Boulevard (west of El Nido Ranch Road to the end of the work zone), County Connection Bus Line 206L (limited service, peak periods only)

- Happy Valley Pipeline:
  - Miner Road (Camino Pablo to Lombardy Lane), County Connection Bus Line 126, subject to temporary road closure (as described in Impact 3.8-5, above)

- Moraga Road Pipeline:
  - Moraga Road (Nemea Court to Draeger Drive), County Connection Bus Line 106

- Tice Pipeline:
  - Boulevard Way (Olympic Boulevard to Warren Road), County Connection Bus Line 101, subject to temporary road closure (as described in Impact 3.8-5, above)

Pipeline installation in Miner Road and Boulevard Way would require road closure to through-traffic (except emergency vehicles) during construction work hours (as described in Impact 3.8-5, above). Road closures during the hours of transit service would displace the County Connection bus lines that travels on those roads. Unless adequate alternative routing were provided, such displacement would have a significant impact on transit service and on people who use that service. While there would be detour routing available for regular traffic during temporary closure of Miner Road (Happy Valley Pipeline) and Boulevard Way (Tice Pipeline) (as described in Impact 3.8-5, above), those detour routings would not serve as adequate replacement routing for the affected bus lines. County Connection would be consulted to devise acceptable mitigation on a segment-by-segment basis in order to minimize impacts on transit service for riders on the affected bus lines.

Mitigation Measure

Measure 3.8-6: Implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce impacts to transit service to a less-than-significant level.

Transit impacts on roads for which adequate replacement routing for bus lines is not available would be significant and unavoidable.

Impact 3.8-7: Increased wear-and-tear on the designated haul routes used by construction vehicles.

The use of large trucks to transport equipment and material to and from the project worksites could affect road conditions on the designated haul routes by increasing the rate of roadwear. The degree to which this impact would occur depends on the roadway design (pavement type and thickness) and the existing condition of the roads that the construction trucks would use. Major arterials, such as Camino Pablo, Acalanes Road, El Nido Ranch Road, Mt. Diablo Boulevard, and Moraga Way are designed to handle a mix of vehicle types, including heavy trucks. The project's

impacts are expected to be negligible on those roads. Collector streets, such as Deer Hill Road and Oak Hill Road, are likewise designed to handle a mix of vehicle types. Residential streets are generally not built to withstand substantial truck traffic volumes. Examples of local roads that could be adversely affected by heavy truck traffic are Ivy Drive, Ardith Drive, Larkey Lane, and Greenly Drive. Because of the potential for excessive roadwear due to project construction trucks, the following measure is proposed to mitigate this potentially significant impact.

Mitigation Measure

Measure 3.8-7: Prior to project construction, road conditions will be documented for all routes that will be used by project-related vehicles. Road conditions will also be documented after project construction is completed. Roads damaged by construction will be repaired to a structural condition equal to that which existed prior to construction activity.

Program-Level Elements

Program-level elements include facility improvements at the Lafayette, Orinda, and Walnut Creek WTPs, the Leland Reservoir Replacement, New Leland Pressure Zone Reservoir and Pipeline, the St. Mary's Road/Rohrer Drive Pipeline, and the San Pablo Pipeline. Potential traffic and circulation impacts associated with these elements are discussed below, recognizing that there are insufficient design details to reliably estimate trip generation.

Lafayette WTP

The proposed program facility improvements at the Lafayette WTP would generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways under Alternative 1 only. Construction-generated traffic would be temporary and therefore would not result in long-term degradation in operating conditions or level of service on project area roadways. The primary offsite impacts from the movement of construction trucks would include a short-term and intermittent lessening of roadway capacities due to the slower movements and larger turning radii of the trucks compared to passenger vehicles.

Project-generated truck trips would be dispersed throughout the day, and construction workers would commute to and from the worksite primarily before or after peak traffic hours. Construction-related truck traffic occurring on weekdays during the hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. would coincide with peak-period traffic on access roadways and therefore would have the greatest potential to impede traffic flow. Drivers would experience intermittent delays if they were traveling behind a construction truck. Traffic volume increases caused by project construction would be most noticeable on local-serving roadways. With implementation of mitigation measures similar to Measures 3.8-1 and 3.8-7, identified above for the project-level elements, this impact would be reduced to a less-than-significant level.

Orinda WTP

The proposed program facility improvements at the Orinda WTP would generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways under both alternatives. Construction-generated traffic would be temporary and therefore would not result in long-term degradation in operating conditions or level of service on project area roadways. The primary offsite impacts from the movement of construction trucks would include a short-term and intermittent lessening of roadway capacities for reasons similar to that described above for the Lafayette WTP.

Project-generated truck trips would be dispersed throughout the day, and construction workers would commute to and from the worksite primarily before or after peak traffic hours. Traffic volume increases and delays caused by project construction would be most noticeable on local-serving roadways, particularly Camino Pablo. With implementation of mitigation measures similar to Measures 3.8-1 and 3.8-7, identified above for the project-level elements, this impact would be reduced to a less-than-significant level.

Walnut Creek WTP

The proposed program facility improvements at the Walnut Creek WTP would generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways under both alternatives. Construction-generated traffic would be temporary and therefore would not result in long-term degradation in operating conditions or level of service on project area roadways. The primary offsite impacts from the movement of construction trucks would include a short-term and intermittent lessening of roadway capacities, potential conflicts with weekday peak-hour commute traffic, and delays caused by slower moving trucks.

Traffic volume increases caused by project construction would be most noticeable on local-serving roadways such as Larkey Lane and San Luis Road. With implementation of mitigation measures similar to Measures 3.8-1 and 3.8-7, identified above for the project-level elements, this impact would be reduced to a less-than-significant level.

Leland Reservoir Replacement

The proposed reservoir replacement would generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways. Construction-generated traffic would be temporary and therefore would not result in long-term degradation in operating conditions or level of service on project area roadways. The primary offsite impacts from the movement of construction trucks would include a short-term and intermittent lessening of roadway capacities due to the slower movements and larger turning radii of the trucks compared to passenger vehicles.

Project-generated truck trips would be dispersed throughout the day, and construction workers would commute to and from the worksite primarily before or after peak traffic hours. Construction-related truck traffic occurring on weekdays during the hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. would coincide with peak-period traffic on access roadways

and therefore would have the greatest potential to impede traffic flow. Drivers would experience intermittent delays if they were traveling behind a construction truck. Traffic volume increases caused by project construction would be most noticeable on local-serving roadways. With implementation of mitigation measures similar to Measures 3.8-1 and 3.8-7, identified above for the project-level elements, this impact would be reduced to a less-than-significant level.

New Leland Pressure Zone Reservoir and Pipeline

The proposed reservoir and pipeline would generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways. In addition, construction activity associated with the proposed reservoir would include substantial haul truck traffic to remove excavated material. Several haul route options are under consideration some of which would involve use of residential streets and others that would primarily traverse open space lands. Truck traffic on residential streets would reduce the number or the available width of travel lanes on roads, resulting in short-term traffic delays for vehicles traveling past the construction zone on the affected roadways.

Construction activity on Danville Boulevard (New Leland Pressure Zone Pipeline) could also affect access to the parking lot for the Iron Horse Trail on the west side of the road near Rudgear Road. Construction-generated traffic would be temporary and therefore would not result in long-term degradation in operating conditions or level of service on project area roadways. The primary offsite impacts from the movement of construction trucks would include a short-term and intermittent lessening of roadway capacities due to the slower movements and larger turning radii of the trucks compared to passenger vehicles. Other potential impacts would include conflicts with weekday commute traffic and delays while traveling behind slower-moving construction trucks.

With implementation of mitigation measures similar to Measures 3.8-1 and 3.8-7, identified above for the project-level elements, this impact would be reduced but would likely remain significant and unavoidable at a program-level.

St. Mary's Road/Rohrer Drive Pipeline

The proposed pipeline project would generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways. In addition, construction activity would reduce the number or the available width of travel lanes on St. Mary's Road, resulting in short-term traffic delays for vehicles traveling past the construction zone. Rohrer Drive in particular is narrow and windy and it is likely that there would be access delays for residents and others during daytime pipeline construction as only alternate one-way access could be provided through the active construction zone. This impact would be considered potentially significant and unavoidable at a program-level.

Construction-generated traffic would be temporary and therefore would not result in long-term degradation in operating conditions or level of service on project area roadways. The primary offsite impacts from the movement of construction trucks would include a short-term and

intermittent lessening of roadway capacities due to the slower movements and larger turning radii of the trucks compared to passenger vehicles. Project-generated truck trips would be dispersed throughout the day, and construction workers would commute to and from the worksite primarily before or after peak traffic hours. Therefore, conflicts with peak-period traffic on St. Mary's Road and Rohrer Drive would likely be less than significant. With implementation of mitigation measures similar to Measures 3.8-1 and 3.8-7, identified above for the project-level elements, impacts would be reduced.

San Pablo Pipeline

While the proposed pipeline would not be constructed within any public roadway, the project would generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways providing access, primarily Camino Pablo/San Pablo Dam Road. In addition, haul trucks would likely use Camino Pablo and could result in short-term traffic delays for vehicles traveling behind those trucks. Construction-generated traffic would be temporary and therefore would not result in long-term degradation in operating conditions or level of service. The primary offsite impacts from the movement of construction trucks would include a short-term and intermittent lessening of roadway capacities due to the slower movements and larger turning radii of the trucks compared to passenger vehicles.

Project-generated truck trips would be dispersed throughout the day, and construction workers would commute to and from the worksite primarily before or after peak traffic hours. Construction-related truck traffic occurring on weekdays during the hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. would coincide with peak-period traffic on access roadways and therefore would have the greatest potential to impede traffic flow. With implementation of mitigation measures similar to Measures 3.8-1 and 3.8-7, identified above for the project-level elements, this impact would be reduced to a less-than-significant level.

References – Traffic and Circulation

Alameda-Contra Costa Transit District, Bus System Map, available online at http://www.actransit.org, April 17, 2006.

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