8. TRANSPORTATION AND CIRCULATION

This EIR chapter describes existing and projected transportation conditions in the Project Area vicinity, analyzes potential impacts of the proposed Project on these conditions, and recommends mitigation measures for identified significant impacts. The findings in this chapter are based on independent research and analysis undertaken by the EIR transportation consultant, DMJM Harris/AECOM.

This EIR chapter first describes Existing conditions (section 8.1, Setting) for the following transportation and circulation topics: roadways, transit, pedestrians, bicycles, and parking. The chapter then evaluates roadway (intersection, freeway segment, freeway on-ramp) conditions in the following sequence:

- Existing conditions (section 8.1, Setting),
- Existing plus Project (i.e., year 2025 Baseline) conditions (Impacts/Mitigations 8-1 through 8-3),
- Cumulative (year 2025) conditions (Impacts/Mitigations 8-4 through 8-6), and
- Cumulative (year 2025) conditions with planned regional roadway improvements (Impacts/Mitigations 8-7 and 8-8); planned improvements include an extension of Geneva Avenue to U.S. 101, a new U.S. 101 interchange at Geneva/Harney, and the widening of Harney Way.

The methodology for evaluating Project impacts and the description of the three 2025 Project scenarios are explained in subsection 8.3.2 (Project Travel Demand) of this chapter.

After Project Area and vicinity roadways and intersections are discussed, this EIR chapter evaluates future transit, pedestrian, bicycle, parking, loading, and construction traffic conditions with implementation of the proposed Project.

The transportation and circulation analysis in this chapter identifies the impacts on all modes of transportation in Visitacion Valley--transit, bicycle, pedestrian, and vehicular. Stated key goals of the proposed Visitacion Valley Redevelopment Plan (Goals 3 and 4), and the guiding principles of the Design for Development relevant to circulation, are to (1) create a pedestrian-oriented environment that encourages walking as the primary transportation mode in the Project Area; (2) encourage the use of alternative modes of transportation by future area residents, workers, and visitors; and (3) support the development of the adjacent Caltrain Bayshore station as a major multi-modal transit facility.

The Redevelopment Plan also includes a listing of associated objectives calling for: construction of walkable streets in redevelopment Zone 1 to facilitate easy pedestrian travel; providing multiple street level entrances to new residential and retail buildings to foster sidewalk activity; improving pedestrian safety along Bayshore Boulevard through pedestrian-oriented intersection

improvements and traffic calming; encouraging development that promotes alternative travel modes; enhancing the attractiveness and safety of transit stop locations in the area; and encouraging "regional connectivity" between Visitacion Valley, the Baylands area of Brisbane, and other areas. The Design for Development includes provisions directly coordinated with these Redevelopment Plan objectives. More details regarding the transportation and circulation goals of the proposed Project are described in section 8.2 (Regulatory Framework) of this EIR chapter.

8.1 SETTING

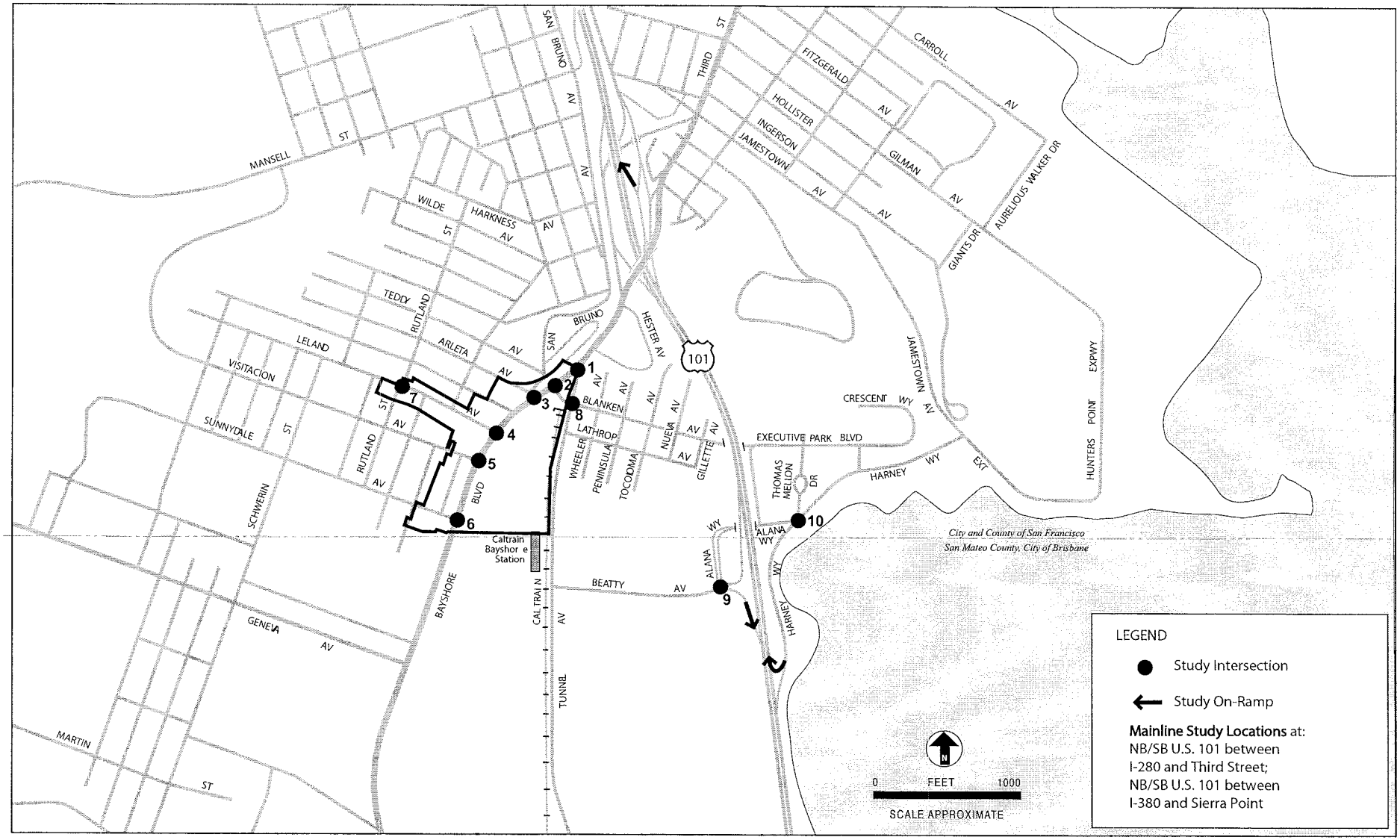
The existing transportation system serving the Project Area and vicinity consists of a network of regional roadways, local roadways, transit services, and pedestrian and bicycle facilities. Generally, existing circulation issues relevant to the proposed redevelopment program, as identified in the Design for Development (pages 10 and 11) include the following:

- The combination of transit modes (vehicular, transit, bicycle, pedestrian) in the neighborhood results in circulation and safety conflicts.
- The local east-west streets (e.g., Leland, Arleta, Raymond, and Visitacion Avenues) all terminate at Bayshore Boulevard and do not continue eastward into Redevelopment Zone 1. The configuration of Bayshore Boulevard does not permit vehicles to make left-turns into Redevelopment Zone 1 from these streets.
- Blanken Avenue provides access to the Little Hollywood neighborhood east of Bayshore Boulevard, as well as to the Caltrain Bayshore station.
- Vehicular access to Zone 1 from the north is limited, and pedestrian access to Zone 1 is difficult.
- Vehicular access to the Caltrain station is limited. Also, no public right-of-way extends east across Zone 1 to the station.
- Planned large-scale developments in the Project Area vicinity--Executive Park, Candlestick Point, India Basin Shoreline, Hunters Point Shipyard Phase 2, Brisbane Baylands Phases 1 and 2, and the Daly City Cow Palace development--will add traffic to the area in the future.

8.1.1 Existing Roadway Network

(a) Regional Access. The following existing regional roadway facilities serve the Project Area vicinity (see Figure 3.1 in chapter 3, Project Description, and Figure 8.1 which follows):

U.S. Highway 101 (U.S. 101) is generally a north-south freeway connecting San Francisco to Peninsula communities and beyond to the south, and Marin County communities and beyond to the north. In the Project Area vicinity, U.S. 101 is generally an eight- to ten-lane facility. U.S. 101 has nearby northbound on- and off-ramps at Third Street/Bayshore Boulevard, Harney Avenue and Sierra Point Parkway, and nearby southbound on- and off-ramps at San Bruno Avenue/Mansell Street, Alana Way/Beatty Avenue, and Sierra Point Parkway.



SOURCE: DMJM Harris | AECOM

Figure 8.1

ROADWAY NETWORK ANALYSIS LOCATIONS

Interstate 280 (I-280) is generally a north-south freeway, connecting San Francisco with the Peninsula and South Bay. I-280 serves the Project Area vicinity via U.S. 101; the I-280/U.S. 101 interchange is located north of the Project Area. At the interchange, I-280 is a six- to eight-lane freeway.

Interstate 80 (I-80) is generally an east-west freeway, connecting San Francisco with the East Bay. I-80 is a six- to eight-lane facility from the west side of the San Francisco-Oakland Bay Bridge to the connection with U.S. 101 south of downtown San Francisco. Access between I-80 and Project Area is via U.S. 101. U.S. 101 merges with I-80 in downtown San Francisco.

(b) Local Access. The following key local roadways serve the Project Area and vicinity (see Figure 8.1):

Bayshore Boulevard is a two-way, north-south arterial that generally parallels U.S. 101 in the Project Area vicinity, extending from Airport Boulevard in South San Francisco, through the City of Brisbane, to Cesar Chavez Street in San Francisco. In the Project Area vicinity, Bayshore Boulevard has two travel lanes in each direction and a center median containing the new Muni Third Street Light Rail System extension (Muni T line), which terminates at Sunnydale Avenue. In the San Francisco General Plan, Bayshore Boulevard is designated as: a Major Arterial[1] in the CMP Network,[2] part of the MTS Network,[3] a Transit Preferential Street[4] (Other – Secondary

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[1] "Major Arterials" are defined in the General Plan as cross-town thoroughfares whose primary function is to link districts within the city and to distribute traffic from and to the freeways. These are routes generally of citywide significance.

[2] The Congestion Management (CMP) Network is the network of freeways, state highways and major arterials established by the San Francisco County Transportation Authority (SFCTA) in accordance with state Congestion Management legislation.

[3] The Metropolitan Transportation System (MTS) is the nine-county regional network of freeways, major and secondary arterials, transit facilities and recreational streets identified by the Metropolitan Transportation Commission as meeting the nine "regional network" definition criteria of the Regional Transportation Plan. The criteria identify facilities that provide relief to congested corridors, improve connectivity, accommodate travel demand and serve a regional transportation function.

[4] The San Francisco General Plan-defined Transit Preferential Street network classification system takes into consideration all transportation functions, and identifies the major transit routes from which general vehicular traffic should be routed away. There are two General Plan-identified classifications of transit preferential streets: Primary Transit Streets, which are either transit-oriented or transit-important; and Secondary Transit Streets.

Primary Transit Streets (Transit-Oriented) are not major arterials, with either high transit ridership, a high frequency of service, or surface rail. Along these streets, the emphasis should be on moving transit vehicles, and impacts on automobile traffic should be of secondary concern.

Primary Transit Streets (Transit-Important) are Major arterials, with either high transit ridership, high frequency of service, or surface rail. Along these streets, the goal is to improve the balance between modes of transportation, and the emphasis should be on moving people and goods, rather than on moving vehicles.

Secondary Transit Streets are medium transit ridership routes with low-to-medium frequency of service, or medium frequency of service routes with low-to-medium transit ridership, or connecting two or more major destinations.

Transit Street), a Neighborhood Commercial Street,[1] and a part of Citywide Bicycle Route #5 and Route #25. Within the Project Area, Bayshore Boulevard has metered parking with two-hour limits on both sides of the street.

Tunnel Avenue is a two-way north-south roadway that extends south of Bayshore Boulevard near the Project Area and merges into Bayshore Boulevard at Old County Road. The roadway has one lane in each direction with sidewalks and unrestricted on-street parking on both sides of the street. Tunnel Avenue provides access from the Project Area to the Bayshore Caltrain Station and to the U.S. 101 ramps at Alana Way/Beatty Avenue. Tunnel Avenue is Citywide Bicycle Route #905.

Rutland Avenue is a two-way north-south roadway that runs parallel to Bayshore Boulevard in the Visitacion Valley neighborhood. The roadway has one lane in each direction with sidewalks and on-street parking on both sides of the street. In the San Francisco General Plan, Rutland Avenue is designated as a Transit Preferential Street (Primary - Transit Oriented) and a Neighborhood Commercial Street.

Alana Way is a short two-way roadway segment that connects Beatty Avenue with Harney Way and serves as the primary connection in the Project Area vicinity between the east and west sides of U.S. 101. Alana Way has one travel lane in the eastbound direction towards Harney Way and two travel lanes in the westbound direction towards Beatty Avenue. Sidewalks are not provided along either side of the street. On-street parking is not permitted at any time. Alana Way is part of Citywide Bicycle Route #805.

Beatty Avenue is a two-way east-west roadway on the west side of U.S. 101 between Tunnel Avenue and Alana Way. Beatty Avenue has one travel lane in each direction. On-street parking is generally permitted on both sides of the street, and sidewalks are discontinuously provided on both sides. Beatty Avenue is part of Citywide Bicycle Route #805.

Harney Way is a two-way roadway on the east side of U.S. 101 that provides Project Area access to and from northbound U.S. 101 via Beatty Avenue and Alana Way. South of Alana Way, Harney Way has two travel lanes in the northbound direction and one travel lane in the southbound direction. Harney Way also extends to the east and provides access to Executive Park and Candlestick Point. On-street parking is not permitted at any time.

Blanken Avenue is a two-way east-west roadway that extends from Bayshore Boulevard through the Little Hollywood area to Executive Park. The roadway has one lane in each direction with sidewalks and unrestricted parking on both sides of the street. Commercial vehicles weighing more than 6,000 pounds are prohibited from using this roadway as a through route.

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[1]The Citywide Pedestrian Network is a street classification system used by the City to identify streets devoted to or primarily oriented to pedestrian use. The main classifications are: Citywide Pedestrian Network Streets, which are inter-neighborhood connections with "citywide significance" and include both exclusive pedestrian and pedestrian-oriented vehicular streets; and Neighborhood Network Streets, which are neighborhood commercial, residential or transit streets that serve pedestrians from the general vicinity. As part of the Neighborhood Network Street network, streets are classified as Neighborhood Commercial Streets, which are streets that are predominately commercial use with parking and loading conflicts, or Neighborhood Network Connection Streets, which are intra-neighborhood connection streets that connect neighborhood destinations.

Arleta Avenue is a two-way east-west roadway that extends west of Bayshore Boulevard to Elliot Street. The roadway has one lane in each direction with sidewalks and on-street parking on both sides of the street. In the San Francisco General Plan, Arleta Avenue is designated as a Transit Preferential Street (Primary - Transit Oriented) and a Neighborhood Commercial Street.

Leland Avenue is a two-way east-west roadway that extends west of Bayshore Boulevard to Hahn Street. The roadway has one lane in each direction with sidewalks and metered parking on both sides of the street between Bayshore Boulevard and Rutland Street. In the San Francisco General Plan, Leland Avenue is designated as a Neighborhood Commercial Street.

Visitacion Avenue is a two-way east-west roadway that extends west of Bayshore Boulevard to Mansell Street. The roadway has one lane in each direction with sidewalks and unrestricted on-street parking on both sides of the street. In the San Francisco General Plan, Visitacion Avenue is designated as a Transit Preferential Street (Primary - Transit Oriented) and a Neighborhood Commercial Street.

Sunnydale Avenue is a two-way east-west roadway that extends west of Bayshore Boulevard to Persia Avenue/Mansell Street. To the east of Bayshore Boulevard, Sunnydale Avenue is an unpaved dead-end roadway. West of Bayshore Boulevard, the roadway has one lane in each direction with sidewalks and on-street parking on both sides of the street.

Geneva Avenue is a two-way east-west roadway that extends west of Bayshore Boulevard to Phelan Avenue in the Balboa Park neighborhood. The roadway has two lanes in each direction with sidewalks on both sides of the street and on-street parking to the west of Talbert Street. In the San Francisco General Plan, Geneva Avenue is designated as a Major Arterial in the CMP Network, a Transit Preferential Street (Primary - Transit Important), a Neighborhood Commercial Street, and a part of Citywide Bicycle Route #5.

(c) Roadway Network Operational Analysis Methodology. To provide a baseline for identification of Project and Project-plus-cumulative impacts on the local roadway network, existing traffic operating conditions have been determined for key local intersections, key freeway segments, and associated nearby freeway on-ramps in the Project Area vicinity. Figure 8.1 illustrates these selected analysis locations.

(1) Study Intersections. Intersections, rather than midblock roadway segments, are almost always the critical capacity-controlling locations for vehicular travel on urban roadway networks. Ten (10) "study intersections" have been selected by the City and the EIR transportation consultant as those most likely to be affected by the proposed Project (redevelopment program) and warranting study in this EIR. The ten study intersections are mapped on Figure 8.1 and listed below:

- 1 -- Bayshore Boulevard/Tunnel Avenue (signalized),
- 2 -- Bayshore Boulevard/Blanken Avenue (signalized),
- 3 -- Bayshore Boulevard/Arleta Avenue/San Bruno Avenue (signalized),
- 4 -- Bayshore Boulevard/Leland Avenue (signalized),

- 5 -- Bayshore Boulevard/Visitacion Avenue (signalized),
- 6 -- Bayshore Boulevard/Sunnydale Avenue (signalized),
- 7 -- Leland Avenue/Rutland Avenue (all-way stop),
- 8 -- Tunnel Avenue/Blanken Avenue (all-way stop),
- 9 -- Alana Way/Beatty Avenue (all-way stop), and
- 10 -- Alana Way/Harney Way/Thomas Mellon Drive (two-way stop).

(2) Intersection Analysis Methodology. Existing operational conditions at the ten study intersections have been evaluated using the 2000 *Highway Capacity Manual* (*HCM*) "Level of Service" methodology.[1] Intersection Level of Service (LOS) is a qualitative description or rating of the performance of an intersection based on the average delay per vehicle. The LOS rating range runs from LOS A, which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays.

For signalized intersections, the *HCM* methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average delay and LOS are presented for the intersection. Table 8.1 summarizes the HCM-defined relationship between LOS and average delay for signalized intersections.

For unsignalized (all-way stop controlled and two-way stop controlled) intersections, the average delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn) for those movements that are subject to delay. In general, the operating conditions for unsignalized intersections are presented for the worst approach. Table 8.2 summarizes the *HCM*-defined relationship between LOS and average delay for unsignalized intersections.

In San Francisco, for signalized intersections, LOS ratings of A through D are considered satisfactory operational levels, and LOS ratings of E and F conditions are considered unsatisfactory operational service levels. Unsignalized intersections are considered to operate at unsatisfactory conditions if one approach operates at LOS E or F and Caltrans-defined peak hour volume warrants for traffic-signal installation are met.

The operating conditions for both the freeway mainline and ramp junctions have also been evaluated using the *Highway Capacity Manual (HCM)* methodology. For freeway mainlines, this methodology determines LOS based on the "density" of the segment, which is the number of vehicles within a given section of roadway for a period of time (presented in passenger cars per

[1] As part of the *HCM methodology*, adjustments are typically made to the capacity of each intersection to account for various factors that reduce the ability of the streets to accommodate vehicles (such as the downtown nature of the area, number of pedestrians, vehicle types, lane widths, grades, on-street parking and queues). These adjustments are performed to ensure that the LOS analysis results reflect the operating conditions that are observed in the field.

Table 8.1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Control Delay (seconds/vehicle)
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	≤ 10
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10 to 20
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20 to 35
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 to 55
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80

SOURCE: *Highway Capacity Manual*, Transportation Research Board, 2000.

Table 8.2
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Control Delay (seconds/vehicle)
A	No delay for stop-controlled approaches.	0 to 10
B	Operations with minor delays.	> 10 to 15
C	Operations with moderate delays.	> 15 to 25
D	Operations with some delays.	> 25 to 35
E	Operations with high delays and long queues.	> 35 to 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

SOURCE: *Highway Capacity Manual*, Transportation Research Board, 2000.

mile per lane, or pc/mi/ln).[1] For the freeway-ramp junctions, the level of service is based on the amount of vehicles in the area of the freeway directly downstream of the analysis ramp, combining the mainline volume with the on-ramp volume. Table 8.3 summarizes the *HCM*-defined relationship between LOS and density range for freeway mainline and ramp facilities. Density values of LOS A through E represent stable non-breakdown operations, while LOS F signifies that a breakdown condition exists or is expected to occur. In San Francisco, LOS E and F are considered unacceptable conditions. The *Visitacion Valley Redevelopment Program DEIR Transportation Analysis Appendix* (February 26, 2008) by DMJM Harris/AECOM *(Traffic Analysis Appendix),* which is available for review at the San Francisco Redevelopment Agency and at the Planning Department of the City and County of San Francisco, contains the *HCM* definitions applied in this EIR for freeway segment and ramp junction LOS thresholds.

(d) Roadway Network Operational Conditions. The existing intersection geometry and traffic counts at the ten "study" intersections for weekday AM and PM peak hours are presented in the *Traffic Analysis Appendix.* Table 8.4 summarizes the associated LOS computation results for the existing weekday AM and PM peak hour conditions (the corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*).

As shown in Table 8.4, all signalized study intersections currently operate at acceptable conditions (LOS D or better) during the weekday AM and PM peak hours. For the unsignalized study intersections, the worst approaches all currently operate at LOS B or better. Overall, all ten study intersections currently operate at acceptable LOS ratings during both the weekday AM and PM peak hours.

In general, the northbound/southbound movements along Bayshore Boulevard have substantially longer green times, to accommodate through traffic volumes and Muni T line operations, than the eastbound/westbound movements along side streets. Consequently, long delays were occasionally noticed on the side streets to Bayshore Boulevard during field observations; however, the intersections as a whole operated with acceptable conditions (since intersection LOS is based on the average delay per vehicle from all movements). In addition, it was also observed during field observations that due to tight curb radii and the presence of vehicles in on-street parking spaces, some buses and long trucks had difficulty making right-turn movements onto the side streets from Bayshore Boulevard, which resulted in minor vehicular traffic delays.

Other intersections within the Project Area vicinity were qualitatively reviewed for existing operating conditions, including the Little Hollywood and Visitacion Valley neighborhoods. In general, these intersections operated with acceptable conditions throughout the day, with minimal delays to traffic operations. During peak hours, however, some intersections operated with minor congestion, especially on movements to and from Bayshore Boulevard.

(e) Freeway Segment Operational Conditions. The following two key "study" freeway segments were identified along U.S. 101 as most likely to be affected by the Project and thus warranting mainline capacity analysis to provide the basis for identification of any potential Project-generated traffic impacts:

[1]Density is not computed when free-flow speed is less than 55 miles per hour (mph). Under LOS F conditions, free-flow speed drops to below 55 mph.

Table 8.3
FREEWAY FACILITY LEVEL OF SERVICE DEFINITIONS

Freeway Segment LOS Criteria		Freeway Ramp Merge/Diverge Criteria	
Level of Service	Density Range (pc/mi/ln)[a]	Level of Service	Density Range (pc/mi/ln)[a]
A	0 to 11	A	≤ 10
B	> 11 to 18	B	>10 to 20
C	> 18 to 26	C	> 20 to 28
D	> 26 to 35	D	> 28 to 35
E	> 35 to 45	E	> 35
F	> 50	F	Demand exceeds capacity

SOURCE: *Highway Capacity Manual*, Transportation Research Board, 2000.

Notes:
a) pc/mi/ln = passenger cars per mile per lane.

Table 8.4
EXISTING INTERSECTION LEVEL OF SERVICE CONDITIONS

Intersection		Traffic Control	Weekday AM Peak Hour		Weekday PM Peak Hour	
			LOS	Delay[a]	LOS	Delay[a]
1	Bayshore Boulevard/Tunnel Avenue	Signalized	B	16.2	B	15.6
2	Bayshore Boulevard/Blanken Avenue	Signalized	B	14.7	B	14.1
3	Bayshore Boulevard/Arleta Avenue/San Bruno Avenue	Signalized	C	25.7	C	25.4
4	Bayshore Boulevard/Leland Avenue	Signalized	C	31.3	C	28.4
5	Bayshore Boulevard/Visitacion Avenue	Signalized	C	21.3	B	18.1
6	Bayshore Boulevard/ Sunnydale Avenue	Signalized	C	23.9	C	23.6
7	Leland Avenue/Rutland Street	AWSC[b]	A (eb)[c]	8.9	A (wb)[c]	8.7
8	Tunnel Avenue/Blanken Avenue	AWSC	B (eb)	11.9	A (wb)	9.7
9	Alana Way/Beatty Avenue	AWSC	B (eb)	12.9	B (sb)[c]	10.2
10	Alana Way/Harney Way/ Thomas Mellon Drive	TWSC[d]	B (wb)	13.4	B (wb)	12.0

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) Delay presented in seconds per vehicle.
b) AWSC – All Way Stop Controlled (level of service and delay are reported for the worst approach).
c) eb = eastbound; wb = westbound; sb = southbound.
d) TWSC – Two Way Stop Controlled (level of service and delay are reported for the worst approach).

- U.S. 101 northbound and southbound between I-280 and Third Street, and
- U.S. 101 northbound and southbound between Sierra Point Parkway and I-380.

Table 8.5 presents the corresponding freeway segment capacity analysis results for existing weekday AM and PM peak hour conditions (the corresponding LOS analysis calculation work sheets are presented in the *Traffic Analysis Appendix*).

As shown in Table 8.5, the U.S. 101 study freeway segment to the north of the Project Area currently operates at an unacceptable condition (LOS E) in the southbound direction during the morning peak hour and in the northbound direction during the evening peak hour. The U.S. 101 study freeway segment south of the Project Area operates at unacceptable condition (LOS E or LOS F) in the southbound direction during the morning peak hour and in both directions during the evening peak hour. Under these existing peak period conditions, travel speeds along these two U.S. 101 study segments are reduced, with some delays to traffic and minor breakdowns in flow.

(f) Freeway On-Ramp Operational Conditions. The point of most traffic congestion for freeway ramps is typically at the ramp-freeway junction (merge). Three key freeway on-ramps most likely to be affected by the Project were selected for existing baseline analysis in order to identify any potential Project-generated traffic impacts. The three "study" ramp junctions identified for analysis include:

- U.S. 101 northbound on-ramp from Bayshore Boulevard/Third Street,
- U.S. 101 northbound on-ramp from Harney Way, and
- U.S. 101 southbound on-ramp from Beatty Avenue/Alana Way.

Table 8.6 presents the results of the study freeway on-ramp analysis for existing weekday AM and PM peak hour conditions (corresponding LOS analysis calculation work sheets are presented in the *Transportation Analysis Appendix*). As shown in the table, all of the study on-ramp junctions currently operate at acceptable conditions (LOS D or better) during both analysis periods except the U.S. 101 southbound on-ramp from Beatty Avenue/Alana Way, which currently operates at an unacceptable condition (LOS F) during the weekday AM peak hour. Due to the high mainline AM peak hour volumes, vehicles entering the freeway from this on-ramp can sometimes result in queuing within the adjacent mainline lane. The operations of freeway on-ramp/mainline junctions is primarily dictated by the freeway mainline volumes; as a result, relatively low on-ramp volumes like those found at the U.S. 101 southbound on-ramp from Beatty Avenue/Alana Way can result in acceptable conditions.

8.1.2 Transit Network

The Project Area is well served by public transit, with regional service provided by SamTrans and Caltrain to the adjacent Bayshore Caltrain multi-modal transit station on Tunnel Avenue, and local service provided by the San Francisco Municipal Railway (Muni). Muni also provides the Project Area with access to and from all regional transit operators (including BART, AC Transit, Golden Gate Transit, SamTrans, and Caltrain). Figure 8.2 illustrates existing transit services in the Project Area vicinity.

Table 8.5
EXISTING FREEWAY SEGMENT LEVEL OF SERVICE CONDITIONS

	Location	Direction[a]	Weekday AM Peak Hour LOS[b]	Weekday AM Peak Hour Density[c]	Weekday PM Peak Hour LOS[b]	Weekday PM Peak Hour Density[c]
1	U.S. 101 between I-280 and Third Street/Bayshore Boulevard	NB	D	33.0	**E**	**38.4**
		SB	**E**	**39.5**	D	31.5
2	U.S. 101 between Sierra Point Parkway and I-380	NB	D	33.9	**F**	**>45**
		SB	**F**	**>45**	**E**	**38.6**

SOURCE: DMJM Harris/AECOM, 2007

Notes:

a) NB = Northbound; SB = Southbound.
b) LOS = Level of Service.
c) Density presented in pc/mi/ln (passenger cars per mile per lane).
Bold indicates unacceptable conditions.

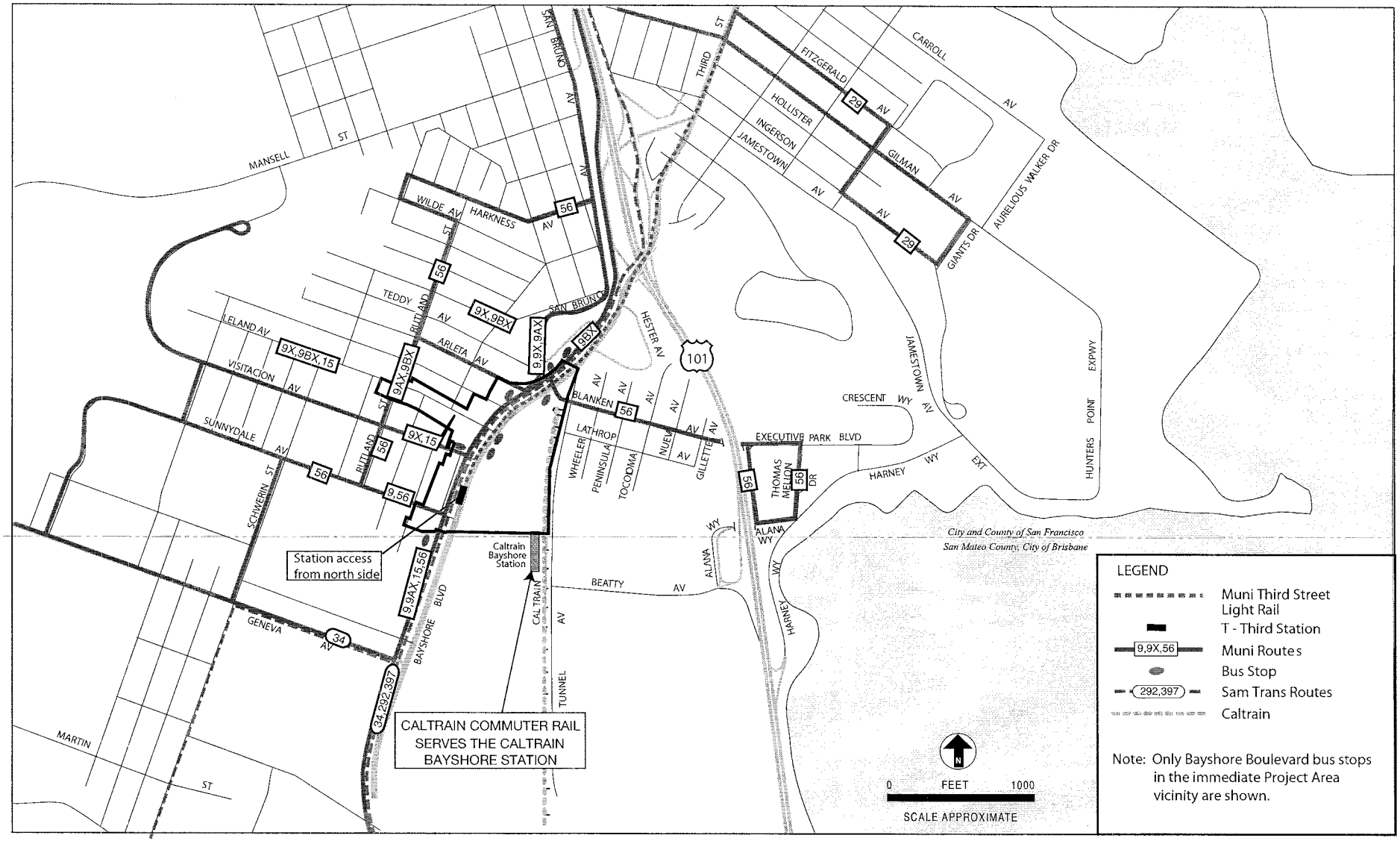
Table 8.6
EXISTING FREEWAY ON-RAMP LEVEL OF SERVICE CONDITIONS

	Location	Weekday AM Peak Hour LOS[a]	Weekday AM Peak Hour Density[b]	Weekday PM Peak Hour LOS[a]	Weekday PM Peak Hour Density[b]
1	U.S. 101 NB on-ramp from Bayshore Boulevard/Third Street	C	21.7	C	22.8
2	U.S. 101 NB on-ramp from Harney Way	C	25.3	D	28.8
3	U.S. 101 SB on-ramp from Beatty Avenue/Alana Way	**F**	**N/A**	C	26.3

SOURCE: DMJM Harris/AECOM, 2007

Notes:

a) LOS = Level of Service.
b) Density presented in pc/mi/ln.
N/A indicates oversaturated conditions (demand exceeds capacity).
Bold indicates unacceptable conditions.



SOURCE: DMJM Harris | AECOM

Figure 8.2

TRANSIT NETWORK WITH NEARBY STOPS

(a) Local Transit Services. Muni provides bus (diesel and electric trolley), light rail (Metro), streetcar, and cable car line services throughout San Francisco. In the Project Area vicinity, Muni provides five regular bus lines (9, 9X, 9AX, 9BX and 56), one light rail line (Muni T line) and two night-time bus lines (90 and 91 – Owl). Table 8.7 lists Muni service frequencies and nearest stop locations to the Project Area. Local Muni service routes and frequencies are further described below:

- The **Muni Third Street Light Rail System (Muni T line)** connects the Castro district to Visitacion Valley. This service runs approximately every 8-10 minutes from 7:00 AM to 7:00 PM, with less frequent service in the early morning and evening periods. The Muni T line provides access to the BART stations at Civic Center, Powell, Montgomery and Embarcadero. This service also provides access to the Muni Metro stations at West Portal, Forest Hill, Castro, Church and Van Ness.

- The **9 – San Bruno** bus service connects Visitacion Valley to downtown San Francisco. This service runs approximately every 10 minutes from 7:00 AM to 7:00 PM.

- The **9X – San Bruno Express** bus service connects City College to downtown San Francisco and North Beach via Visitacion Valley. This service runs approximately every 10 minutes in the outbound direction (from downtown) during the AM peak hour and in the inbound direction (to downtown) during the PM peak hour. 9X service runs in both directions during off-peak hours.

- The **9AX – San Bruno "A" Express** bus service connects San Francisco City College to downtown San Francisco and North Beach via Visitacion Valley. This service runs approximately every 10 minutes in the inbound direction during the AM peak hour and outbound direction during the PM peak hour.

- The **9BX – San Bruno "B" Express** bus service connects San Francisco City College to downtown San Francisco and North Beach via Visitacion Valley. This service runs approximately every 15 minutes in the inbound direction during the AM peak hour and approximately every 10 minutes in the outbound direction during the PM peak hour.

- The **56 – Rutland** is a community service that currently provides service between Visitacion Valley and Executive Park via Blanken Avenue. This service runs approximately every 30 minutes from 7:00 AM to 9:00 PM.

- The **90 – Owl** is a cross-town limited service route that connects Visitacion Valley to Fort Mason via Civic Center. This service runs approximately every 30 minutes from 1:00 AM to 5:00 AM.

- The **91 – Owl** is a cross-town limited service route that connects West Portal to San Francisco State University via Visitacion Valley, Bayview, downtown, Chinatown and Fisherman's Wharf. This service connects with the Marina, Richmond and Sunset districts. This service runs approximately every 30 minutes from 1:00 AM to 5:00 AM.

(b) Local Transit Ridership Conditions. The new Muni T line extension has stations in the Project Area along Bayshore Boulevard at Arleta Avenue and Sunnydale Avenue (see Figure 7.2 in chapter 7 of this EIR, showing the local view down Bayshore Boulevard). Field

Table 8.7
NEARBY MUNI SERVICE

Route	Weekday Service Frequency AM	Midday	PM	Nearest Stop Location
9 – San Bruno	10 min.	10 min.	8-10 min.	San Bruno Avenue/Arleta Avenue
9X – San Bruno Express	10-15 min.	12-15 min.	10-15 min.	San Bruno Avenue/Arleta Avenue and Bayshore Boulevard/Arleta Avenue
9AX – San Bruno "A" Express	10 min.	-	10 min.	San Bruno Avenue/Arleta Avenue
9BX – San Bruno "B" Express	10 min.	-	10 min.	Bayshore Boulevard/Arleta Avenue
56 – Rutland	30 min.	30 min.	30 min.	San Bruno Avenue/Arleta Avenue
Muni T line	10 min.	10 min.	8 min.	Sunnydale Station (Sunnydale Avenue/Bayshore Boulevard) and Arleta Station (Arleta Avenue/Bayshore Boulevard)
90 – Owl	--	--	--	Driver will stop at any corner when requested
91 – Owl	--	--	--	Driver will stop at any corner when requested

SOURCE: Muni, 2007

Notes:

AM = 7:00 AM – 9:00 AM; Midday = 9:00 AM – 4:00 PM; PM = 4:00 PM – 6:00 PM.

observations of current Muni T line ridership levels were conducted in August 2007 during the weekday morning, midday, and evening periods. During these times, the new Muni T line extension was observed to have relatively low ridership, as the two Project Area stations are at the southern end of the line. During the field observations, there were typically less than 10 passengers alighting or boarding each train during the peak hours.

Muni buses make several stops in the Project Area, including along Bayshore Boulevard and Visitacion Avenue. During field observations, passengers were observed boarding and alighting in the weekday AM and PM peak hours at most of the existing Project Area bus stops. The apparent maximum numbers of passengers were identified at bus stops near the Bayshore/Arleta/San Bruno intersection, a major local transfer point. During the field observations, buses were running at less than capacity with unoccupied seats and no standing passengers.

(c) Regional Transit Services. The following regional transit service connections are provided in the Project Area vicinity:

East Bay: Transit service to and from the East Bay is provided by **BART** and **AC Transit**. BART operates regional rail transit service between the East Bay (the Pittsburg/Bay Point, Richmond, Dublin/Pleasanton and Fremont stations) and San Francisco, and between San

Mateo County (the Millbrae and San Francisco Airport stations) and San Francisco. The nearest BART station to the Project Area is the Balboa Park station, about three miles to the west.

The Alameda-Contra Costa Transit District (AC Transit) is the primary bus operator serving the East Bay, including Alameda and western Contra Costa Counties. AC Transit currently operates 29 routes between the East Bay and San Francisco, all of which terminate at the Transbay Terminal.

South Bay: Transit service to and from the South Bay is provided by **BART, SamTrans,** and **Caltrain**. BART provides service from San Francisco to one station each in Daly City, Colma, South San Francisco, San Bruno, San Francisco International Airport, and Millbrae. The nearest BART station to the Project Area is the Balboa Park station, which can be accessed by the Muni system.

SamTrans provides bus service between San Mateo County and San Francisco. SamTrans lines 292 and 397 run along Bayshore Boulevard through the Project Area with stops at the Bayshore/Visitacion intersection.

Caltrain provides commuter heavy rail passenger service between the Peninsula (Santa Clara County) and San Francisco. Caltrain currently operates 96 trains and 22 baby bullet trains each weekday, with a combination of express and local service. The recently relocated and reconstructed Caltrain Bayshore multi-modal transit station is located on Tunnel Avenue immediately south of the Project Area and is served by 38 trains (19 trains each in the northbound and southbound directions). Of the 38 trains per day on this Peninsula line, four (two each in the northbound and southbound directions) run during the morning peak hour and four (two each in the northbound and southbound directions) run during the evening peak hour.

North Bay: Transit service to and from the North Bay is provided by **Golden Gate Transit** buses and ferries. Between the North Bay (Marin and Sonoma Counties) and San Francisco, Golden Gate Transit operates 22 commute bus routes and five basic bus routes. Golden Gate Transit also operates ferry service between the North Bay and San Francisco. During the morning and evening commute periods, ferries run from San Francisco to Larkspur and Sausalito. The San Francisco terminal is located at the Ferry Building, on The Embarcadero at Market Street.

The regional transit providers described above can all be accessed from the Project Area via nearby Muni bus and Muni T line service. The Balboa Park BART Station can be accessed by the 9X, 9AX and 9BX lines. The Transbay Terminal can be accessed by the 9 or Muni T line. The San Francisco Ferry Terminal can be accessed by one of the Muni bus lines or the Muni T line.

8.1.3 Pedestrian Conditions

Sidewalks are provided along all streets in the Project Area except on Alana Way and Sunnydale Avenue to the east of Bayshore Boulevard, where no sidewalks are provided on either side of the route. The existing sidewalks along Bayshore Boulevard are 12- to 15-feet wide, and crosswalks across Bayshore Boulevard are also 12- to 15-feet wide. Existing sidewalks on all other Project Area streets are generally 5- to 8-feet wide. All intersections in

the vicinity of the Project Area have crosswalks, and pedestrian signals for independent pedestrian movements are provided at the major intersections along Bayshore Boulevard.

Generally, Project Area pedestrian volumes were observed to be low to moderate during both the weekday AM and PM peak periods. During both time periods, Project Area sidewalk and crosswalk conditions were observed to be operating at free-flow conditions with pedestrians moving at normal walking speeds and generally without significant interference from buses or vehicles. Existing pedestrian activity at the Bayshore/Arleta/San Bruno and Bayshore/ Sunnydale intersections was relatively high compared to other intersections in the Project Area, primarily due to pedestrians walking to and from the Arleta and Sunnydale Muni T line stations. Pedestrian volumes were observed to be generally higher during the weekday midday peak, due primarily to the substantial number of school children traveling to nearby elementary and middle schools.

8.1.4 Bicycle Conditions

The major bicycle routes serving the Project Area are illustrated in Figure 8.3. There are three major bicycle routes designated in the Project Area vicinity, consisting of Class II and Class III route types. Class II bicycle routes are separate bicycle lanes adjacent to the curb lane. Class III bicycle facilities are signed routes, where bicyclist share travel lanes with vehicles. The local bicycle routes illustrated on Figure 8.3 are described below:

- *Route #5* is a Class II bicycle facility along Bayshore Boulevard from Geneva Avenue to Third Street and is a Class III bicycle facility along Third Street north of Bayshore Boulevard.

- *Route #25* is a Class II bicycle facility along Bayshore Boulevard and San Bruno Avenue. Route #25 serves as a primary north-south route linking the southeastern part of San Francisco to the Marina District.

- *Route #90* is a Class III bicycle facility along Geneva Avenue extending west from Bayshore Boulevard. The segment of Route #90 between Brookdale Avenue and Pasadena Street is a Class II facility.

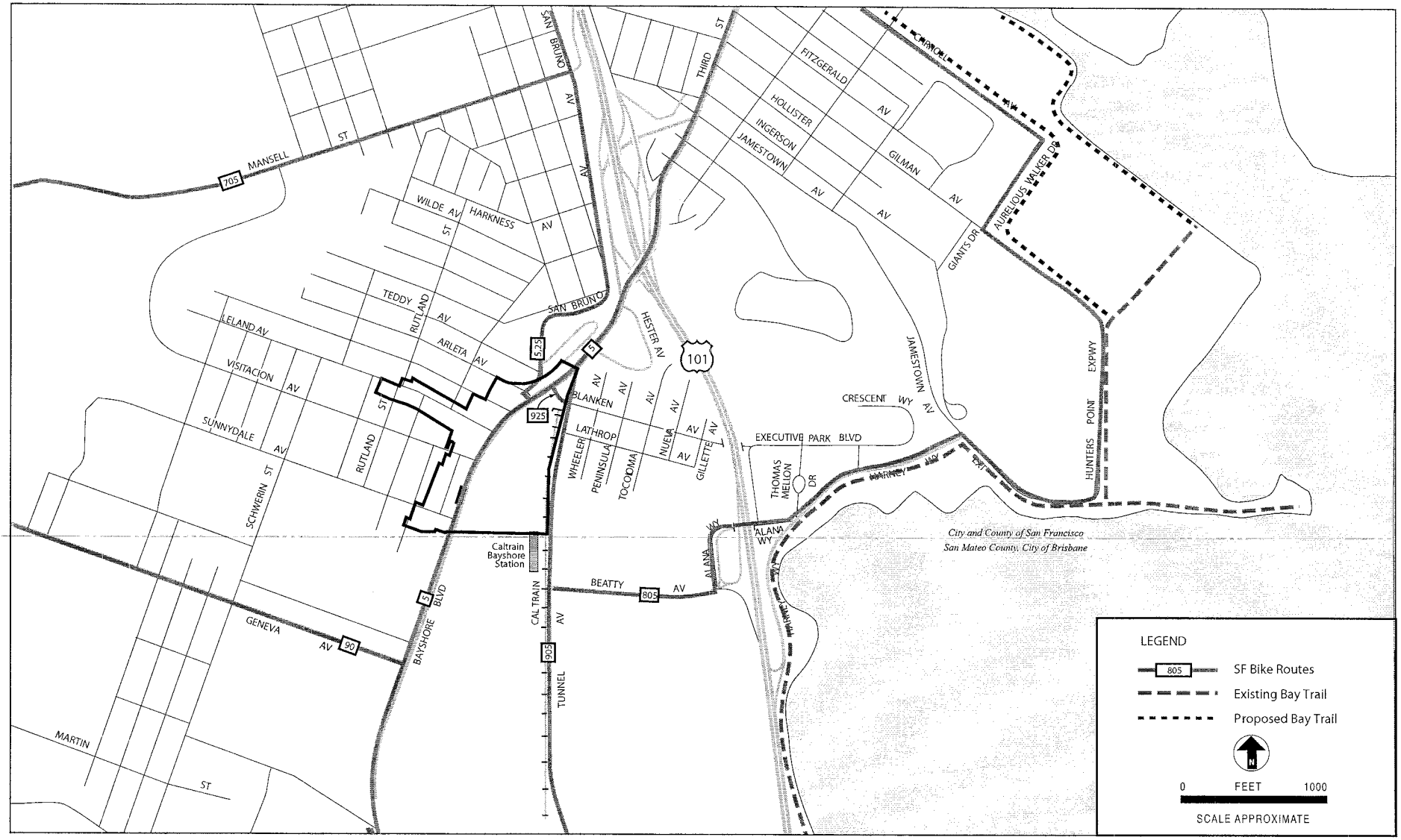
- *Route #805* is a Class III bicycle facility along Alana Way and Harney Way. The route continues along Jamestown Avenue and Hunters Point Expressway providing access to the Hunters Point and Candlestick Point areas.

- *Route #905* is a Class III bicycle facility along Tunnel Avenue south, east of Bayshore Boulevard.

- *Route #925* is a Class III bicycle facility along Blanken Avenue between Tunnel Avenue and Bayshore Boulevard, connecting Route #5 and Route #905.

There are no Class I bicycle facilities serving the Project Area--i.e., dedicated bike paths separated from the roadway. The one Class I bicycle facility in the Project Area vicinity is located along San Francisco Bay near U.S. 101 northbound on- and off-ramps at Harney Way.

On typical weekdays, bicycle activity in the Project Area vicinity is comparatively light throughout the day, with bicyclists observed using the designated on-street bicycle facilities as well as other area-wide streets.



SOURCE: DMJM Harris | AECOM

Figure 8.3

BICYCLE AND BAY TRAIL NETWORK

8.1.5 Parking Conditions

The existing on-street parking supply and occupancy were qualitatively assessed for streets in the vicinity of the Project Area. The parking supply and occupancy were estimated based on field observation conducted in August 2007 during the weekday AM, midday and PM peak hours. A combination of metered, time-limited and free parking is provided along most streets in the Project Area vicinity. Metered parking is limited to one hour or two hours from 7:00 AM to 6:00 PM along Bayshore Boulevard and Leland Avenue. Unrestricted parking (with the exception of street cleaning restrictions) is available on all the other streets. There are no public off-street parking facilities in or near the Project Area, with the exception of the parking lot for Caltrain (located on the west side of Tunnel Avenue to the south of Blanken Avenue).

On-street (curbside) parking along Bayshore Boulevard was observed to be approximately 75 percent occupied during the weekday morning and midday periods and approximately 90 percent occupied during the weekday evening period. On-street parking along Leland, Rutland, Arleta and Visitacion Avenues was generally fully occupied throughout the day. On-street parking along other streets was approximately 50 percent occupied throughout the day.

8.2 REGULATORY FRAMEWORK

The following adopted City transportation goals and policies are pertinent to consideration of the transportation-related environmental impacts of the proposed Project:

8.2.1 San Francisco General Plan Transportation Element

The *Transportation Element* of the San Francisco General Plan is composed of objectives and policies that relate to the nine aspects of the citywide transportation system: General, Regional Transportation, Congestion Management, Vehicle Circulation, Transit, Pedestrian, Bicycles, Citywide Parking, and Goods Movements. The *Transportation Element* contains the following objectives and policies that are directly pertinent to consideration of the proposed Visitacion Valley redevelopment program:

- *Use the transportation system as a means for guiding development and improving the environment.* (Transportation Element Objective 2)
- *Use rapid transit and other transportation improvements in the City and region as the catalyst for desirable development, and coordinate new facilities with public and private development.* (Transportation Element Objective 2, Policy 2.1)
- *Organize the transportation system to reinforce community identity, improve linkages among interrelated activities, and provide focus for community activities.* (Transportation Element Objective 2, Policy 2.4)
- *Improve bicycle access to San Francisco from all outlying corridors.* (Transportation Element Objective 9)
- *Where bicycles are prohibited on roadway segments, provide parallel routes accessible to bicycles or shuttle services that transport bicycles.* (Transportation Element Objective 9, Policy 9.2)

- *Establish public transit as the primary mode of transportation in San Francisco and as a means through which to guide future development and improve regional mobility and air quality.* (Transportation Element Objective 11)

- *Develop and implement a plan for operational changes and land use policies that will maintain mobility and safety, despite a rise in travel demand that could otherwise result in system capacity deficiencies.* (Transportation Element Objective 14)

- *Ensure that traffic signals are timed and phased to emphasize transit, pedestrian, and bicycle traffic as part of a balanced multimodal transportation system.* (Transportation Element Objective 14, Policy 14.2)

- *Improve transit operation by implementing strategies that facilitate and prioritize transit vehicle movement and loading.* (Transportation Element Objective 14, Policy 14.3)

- *Reduce congestion by encouraging alternatives to the single-occupancy auto through the reservation of right-of-way and enhancement of other facilities dedicated to multiple modes of transportation.* (Transportation Element Objective 14, Policy 14.4)

- *Encourage the use of transit and other alternative modes of travel to the private automobile through the positioning of building entrances and the convenient location of support facilities that prioritize access from these modes.* (Transportation Element Objective 14, Policy 14.7)

- *Establish a street hierarchy system in which the function and design of each street are consistent with the character and use of adjacent land.* (Transportation Element Objective 18)

- *Design streets for a level of traffic that serves, but will not cause a detrimental impact on, adjacent land uses or eliminate the efficient and safe movement of transit vehicles and bicycles.* (Transportation Element Objective 18, Policy 18.2)

- *Discourage high-speed through traffic on local streets in residential areas through traffic "calming" measures that are designed not to disrupt transit service or bicycle movement...."* (Transportation Element Objective 18, Policy 18.4)

- *Improve the city's pedestrian circulation system to provide for efficient, pleasant, and safe movement.* (Transportation Element Objective 23)

- *Widen sidewalks where intensive commercial, recreational, or institutional activity is present and where residential densities are high.* (Transportation Element Objective 23, Policy 23.2)

- *Maintain a strong presumption against reducing sidewalk widths, eliminating crosswalks, and forcing indirect crossings to accommodate automobile traffic.* (Transportation Element Objective 23, Policy 23.3)

- *Ensure convenient and safe pedestrian crossings by minimizing the distance pedestrians must walk to cross a street.* (Transportation Element Objective 23, Policy 23.6)

- *Improve the ambience of the pedestrian environment.* (Transportation Element Objective 24)

- *Provide secure and convenient parking facilities for bicycles.* (Transportation Element Objective 28)

- *Provide secure bicycle parking in new governmental, commercial, and residential developments.* (Transportation Element Objective 28, Policy 28.1)

- *Provide parking facilities which are safe, secure, and convenient.* (Transportation Element Objective 28, Policy 28.3)

- *Relate the amount of parking in residential areas and neighborhood commercial districts to the capacity of the City's street system and land use patterns.* (Transportation Element Objective 34)

- *Regulate off-street parking in new housing so as to guarantee needed spaces without requiring excesses and to encourage low auto ownership in neighborhoods that are well served by transit and are convenient to neighborhood shopping.* (Transportation Element Objective 34, Policy 34.1)

- *Permit minimal or reduced off-street parking for new buildings in residential and commercial areas adjacent to transit centers and along transit preferential streets.* (Transportation Element Objective 34, Policy 34.3)

- *Meet short-term parking needs in neighborhood shopping districts consistent with preservation of a desirable environment for pedestrians and residents.* (Transportation Element Objective 35)

- *Provide convenient on-street parking specifically designed to meet the needs of shoppers dependent upon automobiles.* (Transportation Element Objective 35, Policy 35.1)

- *Assure that new neighborhood shopping district parking facilities and other auto-oriented uses meet established guidelines.* (Transportation Element Objective 35, Policy 35.2)

- *Make freeway and major surface street improvements to accommodate and encourage truck/service vehicles in industrial areas away from residential neighborhoods.* (Transportation Element Objective 39)

As discussed in subsection 8.1.2(b) (Transit Network) above, Muni experiences low ridership on the T line light rail extension and Muni buses run at less than capacity. Also, as described in subsections 8.1.3 and 8.1.4, respectively, existing pedestrian volumes in the Project Area are low to moderate during both AM and PM peak periods and bicycle activity is light. Contrary to these current trends and consistent with the objectives and policies of the General Plan, stated key goals of the proposed Redevelopment Plan (Goals 3 and 4) are to create a pedestrian-oriented environment that encourages walking as the primary transportation mode within the Project Area, encourage the use of alternative modes of transportation by future area residents, workers, and visitors, and support the development of the adjacent Caltrain Bayshore station as a major multi-modal transit facility. The Plan includes a listing of associated objectives that would specifically serve to implement the General Plan transportation objectives and policies

listed above, including objectives calling for: construction of walkable streets in Redevelopment Zone 1 to facilitate easy pedestrian travel; providing multiple street level entrances to new residential and retail buildings to foster sidewalk activity; improving pedestrian safety along Bayshore Boulevard through pedestrian-oriented intersection improvements and traffic calming; encouraging development that promotes alternative travel modes; enhancing the attractiveness and safety of transit stop locations in the area; and encouraging "regional connectivity" between the Visitacion Valley area and the Baylands area of Brisbane and other areas.

The Design for Development is intended to implement the Redevelopment Plan goal of promoting the development of a pedestrian-friendly environment through a number of development controls, such as:

- Planting street trees along public streets and publicly accessible streets, mews, and alleys;
- Including corner bulb-outs at all major intersections;
- Installing pedestrian-scaled streetlights along all streets; and
- Undergrounding all utilities on new streets.

It is expected that enhancement of the pedestrian environment, particularly in Redevelopment Zone 1, will encourage increased pedestrian activity and increased use of the Muni T line light rail and Muni buses.

8.2.2 Transit-First Policy

In 1998, the San Francisco voters amended the City Charter (section 16.102) to include a Transit-First Policy. The Transit-First Policy is a set of principles which underscore the City's commitment that travel by transit, bicycle, and on foot be given priority over the private automobile. These principles are embodied in the policies and objectives of the *Transportation Element*. All City boards, commissions, and departments are required, by law, to implement transit-first principles in conducting City affairs.

The proposed Visitacion Valley redevelopment program has been formulated to implement the City's Transit-First Policy by encouraging development that promotes use of public transit. Specifically, the proposed Redevelopment Plan component of the program includes the following transit-oriented goals and objectives:

- encourage the use of alternative modes of transportation by future area residents, workers and visitors, and support the development of the Caltrain [Bayshore] station as a major multi-modal transit facility;
- encourage development that promotes the use of public transit;
- coordinate with local and regional transportation and planning agencies to facilitate rights-of-way connectivity and access to public transportation;
- enhance the attractiveness, safety and functionality of transit stop locations within the Project Area; and

- encourage new buildings on adjacent parcels to include safe pedestrian connections to the Caltrain facility.

The extension of the Muni T line along the Bayshore Boulevard median, terminating at the city/county line and southern boundary for the Project Area, has been recently completed and is now operational. In addition, the Caltrain Bayshore station has been recently relocated to its current location at the southeast corner of the Project Area (400 Tunnel Avenue). The reconstructed and enhanced new station includes a pedestrian bridge over the four tracks with stair/elevator towers on either side which directly serve the Project Area. In addition, plans are underway to further extend the Muni T line eastward from its current Bayshore Boulevard terminus at the city/county line east to connect with the relocated Caltrain Bayshore station, creating a full-service, multi-modal transit facility at the southeast corner of the Project Area.

Largely in response to these significant recent local and regional multi-modal transit improvements, the Visitacion Valley redevelopment program--including the proposed Redevelopment Plan, Design for Development and associated amendments to General Plan and Planning Code provisions--is specifically intended to encourage transit-oriented residential development along the recently completed Muni T line extension and adjacent to the Caltrain Bayshore multi-modal transit station.

8.2.3 San Francisco Bicycle Plan

The San Francisco Bicycle Plan describes a City program to provide the safe and attractive environment needed to promote bicycling as a transportation mode. An update to the Bicycle Plan was adopted by the Board of Supervisors in the spring of 2005. The updated Plan's proposed changes to citywide bicycle facilities are undergoing environmental review, with an EIR expected to be published in late 2008. The EIR is assessing a total of 56 short-term and long-term bicycle improvement projects. No changes to bicycle facilities in the Project Area vicinity are currently proposed.

8.2.4 Transit Effectiveness Project

The San Francisco Municipal Transportation Agency (SFMTA) has recently published draft recommendations from its Transit Effectiveness Project (TEP). The TEP proposals are focused on improving Muni bus and light rail lines, primarily in terms of improved on-time performance and reliability systemwide. In the Project Area vicinity, the TEP is proposing minor bus routing changes to the nearby 9-San Bruno and 9X-San Bruno Express, the extension of a new 28L-19th Avenue Limited line, and the elimination of the 56-Rutland line. These proposed changes to City transit service are only preliminary in nature, and will need to be approved with environmental review clearance prior to implementation.

8.2.5 Visitacion Valley Community Facilities and Infrastructure Fee and Fund

Planning Code sections 319 through 319.7 describe the Visitacion Valley Community Facilities and Infrastructure Fee and Fund. Currently, the fee applies to proposed residential development in Redevelopment Zone 1 (in the Project Area) and at Executive Park (not in the Project Area; see Table 5.1 in chapter 5, Land Use), and is intended to mitigate impacts from new residential development on public infrastructure in Visitacion Valley, including libraries, streets, playgrounds, recreational facilities, and community centers. The Ordinance states, "Substantial new investments in community infrastructure, including active recreational spaces,

community facilities, and other public services are necessary to mitigate the impacts of new development at these sites....The fee would be solely used to fund acquisition, design, and construction of community facilities in the Visitacion Valley neighborhood. The proposed fees only cover impacts caused by new development and are not intended to remedy already existing deficiencies...."

The fee has been set at $4.58 per square foot of new residential development. The with-Project residential growth increment in Redevelopment Zone 1 is estimated at up to 1,250 multi-family units (see Table 6.2 in chapter 6, Population and Housing, of this EIR), with an anticipated overall average size (floor area) of approximately 1,000 square feet per unit; therefore, the total Community Facilities and Infrastructure Fee associated with the Project-facilitated growth increment would be up to approximately $5,725,000 ($4.58 x 1,250 x 1,000).

8.3 IMPACTS AND MITIGATION MEASURES

8.3.1 Significance Criteria

Based on the CEQA Guidelines, the Project (the redevelopment program and the redevelopment program-facilitated growth scenario) would be considered in this EIR to have a *significant* transportation or circulation impact if it would: [1]

(a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections).

(b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways;

(c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses;

(d) Result in inadequate emergency access; or

(e) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

The transportation and circulation impact findings herein are also based on the following significance criteria used by the San Francisco Planning Department for the determination of impacts associated with a proposed project:

(f) Intersections: Project-related operational impacts on intersections are considered significant if project-related traffic causes the Level of Service (LOS) rating to deteriorate from LOS D or better to LOS E or F, or from LOS E to LOS F. The project may result in significant adverse impacts at intersections that operate at LOS E or F under existing conditions depending upon the magnitude of the project's contribution to the worsening of delay. In addition, the project would have a significant adverse effect if it would cause major traffic hazards, or would

[1] CEQA Guidelines, Appendix G, item XV(a, b, d, e, and g).

contribute considerably to the cumulative traffic increases that would cause the deterioration in levels of service to unacceptable levels. Unsignalized intersections are considered to operate at unsatisfactory conditions if one approach operates at LOS E or F ***and*** Caltrans-defined peak hour volume warrants for traffic-signal installation are met.

(g) Freeway Facilities: The operational impacts on freeway mainline and on-ramp locations are considered significant when project-related traffic causes the level of service to deteriorate from LOS D or better to LOS E or F, or from LOS E to LOS F. In addition, a project would have a significant effect on the environment if it would contribute substantially to congestion already at unacceptable levels, so that the peak period of congestion would be substantially lengthened.

(h) Parking: San Francisco does not consider parking supply as part of the permanent physical environment. Parking conditions are not static, as parking supply and demand varies from day to day, from day to night, from month to month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel.

Parking deficits are considered to be social effects, rather than impacts on the physical environment as defined by CEQA. Under CEQA, a project's social impacts need not be treated as significant impacts on the environment. The social inconvenience of parking deficits, such as having to hunt for scarce parking spaces, is not an environmental impact. Environmental documents should, however, address the secondary physical impacts that could be triggered by a social impact, such as increased traffic congestion at intersections, air quality impacts, safety impacts, or noise impacts caused by congestion (CEQA Guidelines section 15131[a]). In the experience of San Francisco transportation planners, the absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service in particular would be in keeping with the City's Transit First Policy. The City's Transit First Policy established in the City's Charter (section 16.102) provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation."

(i) Transit: The project would have a significant effect on the environment if it would cause a substantial increase in transit demand that could not be accommodated by adjacent transit capacity, resulting in unacceptable levels of transit service; or cause a substantial increase in operating delay or costs such that significant adverse impacts in transit service levels could result.

(j) Pedestrian System: The project would have a significant effect on the environment if it would result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian accessibility to the site and adjoining areas.

(k) Bicycle System: The project would have a significant effect on the environment if it would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.

(l) Loading: The project would have a significant effect on the environment if it would result in a loading demand during the peak hour of loading activities that could not be accommodated

within the proposed on-site loading supply or within on-street loading zones, and if it would create potentially hazardous traffic conditions.

(m) Construction Period: Construction-related transportation and circulation impacts generally would not be considered significant due to their temporary and limited duration.

8.3.2 Project Travel Demand

(a) Methodology/Approach. The San Francisco County Transportation Authority (SFCTA) countywide travel demand forecasting model (SFCTA Model) has been used in this analysis to develop the travel forecasts for the new development that would result with the Project, including person-trips by mode (auto, transit, walk, bicycle, and additional modes) and vehicle-trips, and has been used to develop the travel forecasts for the two analyzed 2025 Project plus Cumulative scenarios.

The SFCTA Model divides San Francisco into approximately 766 geographical areas, known as Transportation Analysis Zones (TAZs). The SFCTA Model also includes zones outside the City for which data is obtained from the current Metropolitan Transportation Commission (MTC) Model. For each TAZ, the SFCTA Model estimates the travel demand based on TAZ population and employment growth assumptions, determines the origin and destination and mode of travel (auto, transit, walk and bicycle) for each trip, and assigns those trips to the transportation system (roadway network and transit lines). The SFCTA Model output is developed on a weekday daily and 3-hour AM and PM period basis.

The SFCTA Model travel demand estimates incorporate the Association of Bay Area Governments (ABAG) land use and socio-economic database and growth forecasts for the year 2025 (*Projections 2004*), which provide forecasts of economic and population growth for the County of San Francisco, as well as for the remaining eight Bay Area counties. Within San Francisco, the San Francisco Planning Department is responsible for allocating ABAG's countywide growth is forecast to each SFCTA Model TAZ, based on existing zoning and approved plans, using an area's potential zoning capacity and the anticipated extent of redevelopment of existing uses.

However, these SFCTA Model projections do not specifically include several major developments currently pending (i.e., reasonably foreseeable) in the Project vicinity. Therefore, for the purposes of this EIR and other recent individual development traffic studies in the Project vicinity, the SFCTA Model was rerun in 2007 to add the following pending development plans into the future land use forecasts (consistent with Table 5.1, Substantive Cumulative Development Pending in the Project Vicinity--November 2007):

- Visitacion Valley redevelopment program (i.e., the Project);
- Executive Park (conversion of office space to residential, neighborhood-serving commercial, and community space);
- Candlestick Point (residential, regional-serving commercial, office, and 10,000-seat arena);
- India Basin Shoreline (residential, neighborhood-serving commercial, office, and hotel);

- Hunters Point Shipyard Phase 2 (residential, neighborhood-serving commercial, office, hotel, and 69,000-seat stadium);

- Brisbane Baylands Phases 1 and 2 (residential, community- and neighborhood-serving commercial, office, R&D, light industrial, hotel/extended stay, and convention center); and

- Daly City Cow Palace (residential, community-serving commercial, office, and R&D/industrial).

The following scenarios were run with the SFCTA Model:

- Existing conditions;

- 2025 Baseline conditions, incorporating anticipated background growth to year 2025 in San Francisco and the entire Bay Area; and

- 2025 Cumulative conditions, including the additional seven Project vicinity development plans listed above.

For each anticipated future development, the estimated travel demand by mode and trip distribution patterns was obtained from the SFCTA Model. The trip generation, modal split, and trip distribution data were compared with the standard rates from the San Francisco Planning Department's *Transportation Impact Analysis Guidelines* (*SF Guidelines*) and the Institute of Transportation Engineer's *Trip Generation* manual, and post-processing of the data was conducted to ensure consistency between the various methodologies and assumptions. These refined travel demand, mode split, and trip distribution values were then used to determine the vehicle-trip generation and distribution characteristics of the Project and other anticipated future developments, as further discussed below. The new vehicle-trips associated with each development, including the Project, were then manually added to the SFCTA Model 2025 Baseline.

The Institute of Transportation Engineers relies on transportation survey data in compiling trip generation rates. Typically, most of the transportation surveys are conducted in suburban locations, rather than in relatively dense, transit-rich communities such as the Project Area. Accordingly, the travel demand projections presented herein are conservative for CEQA purposes (i.e., the distribution of person trips by mode favors vehicular use rather than use of transit or other modes).

The Project's development growth increments were aggregated into the following two Project Area geographic groupings (or redevelopment zones), consistent with the Design for Development (see Table 3.1, Project Area Growth Projections With Project, in chapter 3, Project Description, herein):

- Redevelopment Zone 1: including approximately 1,253 new residential units, 105,000 square feet of new commercial space, and 15,000 square feet of new community-serving cultural/institutional/educational space; and

- Redevelopment Zone 2, including:

- Infill development along Bayshore Boulevard--approximately 250 new residential units and 20,800 square feet of new commercial space; and

- Infill development along Leland Avenue--approximately 85 new residential units, 5,700 square feet of new commercial space, and 10,000 square feet of new community-serving space.

Table 8.8 presents the projected person trips by mode of travel (i.e., auto, transit or walk/bike) generated by the Project (i.e., the Project-facilitated growth increment) during the weekday AM and PM peak hours, as estimated from the SFCTA Model analysis. As the table indicates, approximately 70 percent of the Project-related new person-trips would be by automobile, 14 percent would be by transit, and 16 percent would be walking, biking, or other modes.

As shown on Table 8.8, the projected mode split is generally 70 percent auto, 14 percent transit, and 16 percent other. These projections are consistent with the current low ridership on the Muni T line and buses, low pedestrian volumes on streets in the area, and light bicycle activity, as discussed in subsections 8.1.2, 8.1.3, and 8.1.4, respectively, of this chapter. As described in section 8.2.1, both the Redevelopment Plan and the Design for Development are intended to improve the pedestrian environment with development controls that would encourage alternative modes of travel. It is expected that the actual mode split with Project implementation would shift from predominantly auto to transit and other modes.

Table 8.9 presents the weekday daily and peak hour vehicle-trips generated by the Project. Overall, the Project would generate approximately 13,173 vehicle-trips on a weekday daily basis, including 1,660 vehicle-trips during the AM peak hour and 1,685 vehicle-trips during the PM peak hour. Of these totals, Redevelopment Zone 1 would generate approximately 80 percent of daily and peak hour vehicle-trips, while Redevelopment Zone 2 (Leland and Bayshore infill areas) would generate approximately 20 percent.

8.3.3 Trip Distribution

To estimate the distribution of the new trips that would be generated with the Project, the anticipated origin and destination of each trip was obtained from the SFCTA Model, on a TAZ by TAZ basis. This data has been aggregated by the SFTCA-designated 15 planning neighborhoods and San Francisco Planning Department's standard geographical regions. As shown in Table 8.10, it has been estimated that about 61 percent of the new trips generated by the Project would be within San Francisco and about 39 percent to and from other regions. Overall, the majority of the trips would occur within the southeast area of San Francisco (37.1 percent) and to and from the Peninsula/South Bay (33.5 percent).

The Project-generated vehicular trips to and from the Project Area were assigned to the local and regional roadway network based on the most-direct local and regional access routes. Based on the projected trip distribution breakdown in Table 8.10, approximately 59 percent of the added vehicular traffic generated by the Project would enter and exit the Project Area to the north (i.e., onto northbound Bayshore Boulevard), 34 percent would enter and exit to the south (i.e., onto southbound Bayshore Boulevard), and 7 percent would enter and exit to and from points west of Bayshore Boulevard. As a result, there would be a concentration of Project-generated traffic activity at study intersections to the north of the Project Area, along Bayshore

Table 8.8
PROJECT TRAVEL DEMAND PROJECTION: PERSON TRIPS BY TRAVEL MODE

	AM Peak Hour			PM Peak Hour			Daily Trips		
Project	Auto	Transit	Other	Auto	Transit	Other	Auto	Transit	Other
Redevelopment Zone 1	1,762	347	391	1,762	347	391	13,850	2,731	3,074
Redevelopment Zone 2	451	86	118	486	93	127	3,720	706	972
Totals	2,213	433	509	2,248	440	518	17,570	3,437	4,046

SOURCE: DMJM Harris/AECOM, 2007

Note: "Other" includes walk, bike, and additional modes

Table 8.9
PROJECT-GENERATED VEHICULAR TRIPS

Project	AM Peak Hour	PM Peak Hour	Daily
Redevelopment Zone 1	1,331	1,331	10,461
Redevelopment Zone 2	329	354	2,712
Totals	1,660	1,685	13,173

SOURCE: DMJM Harris/AECOM, 2007

Table 8.10
PROJECTED TRIP DISTRIBUTION

Origin/Destination	Percentage of Weekday Daily, AM and PM Peak Hour Trips
Northeast San Francisco	10.9%
Northwest San Francisco	6.6%
Southeast San Francisco	37.1%
Southwest San Francisco	6.5%
East Bay	4.7%
North Bay	0.7%
South Bay	33.5%
Total	100.0%

SOURCE: DMJM Harris/AECOM, 2007

Boulevard and at the Harney Way and Alana Way/Beatty Avenue ramps. Resulting peak hour operational impacts on the local and regional roadway network are described beginning with Table 8.11 (Existing plus Project Intersection Level of Service Conditions) and subsection 8.3.5 (Roadway System Impacts).

8.3.4 Intersection Operation

Projected intersection turning movement volumes for Existing plus Project conditions at the ten study intersections during the weekday AM and PM peak hours are described in the *Traffic Analysis Appendix*. The results of the associated intersection LOS computations are presented in Table 8.11 (the detailed LOS calculation sheets for each study intersection are presented in the *Traffic Analysis Appendix*).

8.3.5 Roadway System Impacts

Impact 8-1: Existing Plus Project Impacts on Intersection Operation. Projected intersection turning movement volumes under Existing plus Project conditions would cause significant deterioration in levels of service at the following local intersections during typical weekday peak hours:

Weekday AM peak hour:
- Bayshore Boulevard/Blanken Avenue (LOS B to LOS F),
- Bayshore Boulevard/Leland Avenue (LOS C to LOS F),
- Bayshore Boulevard/Visitacion Avenue (LOS C to LOS F),
- Bayshore Boulevard/Sunnydale Avenue (LOS C to LOS F), and
- Tunnel Avenue/Blanken Avenue (LOS B to LOS F).

Weekday PM peak hour:
- Bayshore Boulevard/Arleta Avenue/San Bruno (LOS C to LOS F), and
- Bayshore Boulevard/Leland Avenue (LOS C to LOS F).

These intersection LOS changes would represent a ***potentially significant impact*** (see criteria [a], [b], and [f] in subsection 8.3.1, "Significance Criteria," above).

Future vehicular traffic coming in and out of Redevelopment Zone 1 would make use of the three proposed access points along Bayshore Boulevard--one each at Leland Avenue, Visitacion Avenue and Sunnydale Avenue. Vehicular traffic to and from Zone 1 has been distributed to these three Bayshore Boulevard access points based on the Design for Development-proposed land use layout and internal circulation system. Southbound left-turn pockets already exist at the intersections of Bayshore Boulevard/Visitacion Avenue and Bayshore Boulevard/Sunnydale Avenue. Both are approximately 100 feet long. As part of the Project, a new, third southbound left-turn pocket would be established at the intersection of Bayshore Boulevard/Leland Avenue to provide additional access into Zone 1. This pocket would also be approximately 100 feet long, and would require the removal of on-street

Table 8.11
EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

		Weekday AM Peak Hour				Weekday PM Peak Hour			
		Existing		Existing plus Project		Existing		Existing plus Project	
Intersection		LOS	Delay[a]	LOS	Delay[a]	LOS	Delay[a]	LOS	Delay[a]
1	Bayshore Boulevard/ Tunnel Avenue	B	16.2	B	17.7	B	15.6	B	16.3
2	Bayshore Boulevard/ Blanken Avenue	B	14.7	**F**	**>80.0**	B	14.1	C	34
3	Bayshore Boulevard/ Arleta Avenue/San Bruno Avenue	C	25.7	D	51.9	C	25.4	**F**	**>80.0**
4	Bayshore Boulevard/ Leland Avenue	C	31.3	**F**	**>80.0**	C	28.4	**F**	**>80.0**
5	Bayshore Boulevard/ Visitacion Avenue	C	21.3	**F**	**>80.0**	B	18.1	D	41.8
6	Bayshore Boulevard/ Sunnydale Avenue	C	23.9	**F**	**>80.0**	C	23.6	D	46.9
7	Leland Avenue/ Rutland Street	A (eb)	8.9	A (eb)	9.6	A (wb)	8.7	B (wb)	10.1
8	Tunnel Avenue/ Blanken Avenue	B (eb)	11.9	**F (eb)[d]**	**>50.0**	A (wb)	9.7	C (nb)	22.5
9	Alana Way/Beatty Avenue	B (eb)	12.9	F (eb)[e]	>50.0	B (sb)	10.2	C (eb)	17.9
10	Alana Way/Harney Way/Thomas Mellon Drive	B (wb)	13.4	C (wb)	16.1	B (wb)	12	C (wb)	21.4

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) Delay in Seconds per vehicle.
b) AWSC – All Way Stop Controlled (LOS and delay is reported for the worst approach).
c) TWSC – Two Way Stop Controlled (LOS and delay is reported for the worst approach).
d) Meets criteria for peak hour signal warrant; therefore considered to be unacceptable.
e) Does not meet criteria for peak hour signal warrant; therefore considered to be acceptable.
Bold indicates unacceptable conditions.

parking spaces along the west side of Bayshore Boulevard between Raymond and Leland Avenues. For the infill development in Redevelopment Zone 2 along Bayshore Boulevard and Leland Avenue, direct access would be provided via those roadways.

As indicated in Table 8.11, the with-Project traffic volume condition would result in a *potentially significant impact* on the following study intersections: 2 -- Bayshore/Blanken (AM peak hour), 3 -- Bayshore/Arleta/San Bruno (PM peak hour), 4 -- Bayshore/Leland (AM and PM peak hours), 5 -- Bayshore/Visitacion (AM Peak Hour), 6 -- Bayshore/Sunnydale (AM peak hour), and 8 -- Tunnel/Blanken (AM peak hour).

It should be noted that although the worst approach at the unsignalized Alana Way/Beatty Avenue intersection is projected to operate at LOS F during the weekday AM Peak hour under this scenario, the conditions would not meet Caltrans' peak hour signal warrants (see Table 8.11, footnote [e]). This intersection would therefore be considered to still operate with acceptable conditions and the Project impact would be *less-than-significant* (see criterion [f] in subsection 8.3.1, "Significance Criteria," above).

In addition to these intersection operational (LOS and signal warrant) impacts, the proposed southbound left-turn pocket at Bayshore Boulevard/Leland Avenue into Redevelopment Zone 1 would result in a potentially significant impact to traffic (queuing), transit, and bicycle operations along southbound Bayshore Boulevard. To install this left-turn pocket, the existing on-street bicycle lane and parking lane would need to be eliminated, which would provide sufficient space for three narrow travel lanes (two through lanes and the left-turn pocket). These narrow lanes could lead to localized congestion, and the new left-turn crossing of the Muni T line would lead to the potential for additional delays to train operations. In addition, the elimination of a portion of the bicycle lane would severely affect bicycle circulation in the area. These intersection left-turn pocket impacts and associated mitigation needs are addressed herein under *Impact 8-3 (Project Queuing Impacts at Redevelopment Zone 1 Access Points)*, *Impact 8-9 (Project Impacts on Transit Service)*, and *Impact 8-10 (Project Impacts on Bicycle Conditions)*.

The Existing plus Project intersection LOS conditions (impacts) are summarized in Table 8.11, and the effectiveness of the mitigations described below is indicated in Table 8.12.

Table 8.12
MITIGATED EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

	Intersection	Traffic Control	Weekday AM Peak Hour LOS	Weekday AM Peak Hour Delay[a]	Weekday PM Peak Hour LOS	Weekday PM Peak Hour Delay[a]
2	Bayshore Boulevard/Blanken Avenue	Signalized	**F**	**>80.0**	C	32.8
3	Bayshore Boulevard/Arleta Avenue/San Bruno Avenue	Signalized	D	49.6	**F**	**>80.0**
4	Bayshore Boulevard/Leland Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
5	Bayshore Boulevard/ Visitacion Avenue	Signalized	D	54.7	D	40.4
6	Bayshore Boulevard/ Sunnydale Avenue	Signalized	C	34.7	D	37.9
8	Tunnel Avenue/Blanken Avenue	Signalized	C	31.1	C	22.7

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) Delay in Seconds per vehicle.
Bold indicates unacceptable conditions.

Mitigation 8-1A: Incorporate the following intersection improvement measures into the Project to reduce impacts on vehicular movement:

- *Bayshore Boulevard/Blanken Avenue:* Restripe the westbound approach to create two additional lanes: an added exclusive left-turn and an added right-turn lane. Coordinate associated traffic-light phasing, signage, pedestrian crosswalk lights, and/or other traffic calming means to assist pedestrians using the Muni T platform on Bayshore Boulevard near Blanken Avenue.

  Currently, Blanken Avenue is approximately 40 feet wide at the westbound approach, with one travel lane in each direction and no on-street parking. It would therefore be possible to restripe the westbound approach as proposed to provide three lanes, one eastbound and two westbound.

- *Bayshore Boulevard/Arleta Avenue/San Bruno Avenue:* Modify signal timing by shifting 6 seconds of green time from the northbound left-turn movement to the southbound through movement as the delays associated with the southbound through movement are considerably higher than the delay associated with northbound left-turn movement.

  This change could add delays to the 9 – San Bruno bus line, which turns from northbound Bayshore Boulevard to San Bruno Avenue.

- *Bayshore Boulevard/Leland Avenue:* Restripe the existing Leland Avenue connection to the west side of Bayshore Boulevard (now two travel lanes--one eastbound and one westbound) to create three lanes--one shared left-through eastbound lane, one exclusive right-turn eastbound lane, and one westbound through lane.

  The existing Leland Avenue connection to the west side of Bayshore Boulevard is approximately 40 feet wide curb-to-curb, with one travel lane in each direction and on-street parking on both sides of the street. It would therefore be *possible* to restripe the connection to provide three travel lanes--two eastbound and one westbound, with the removal of two on-street parking spaces on both sides of the street. This change may conflict with the *Leland Avenue Street Design Project*, which proposes to remove parking on the north side of the street and shift the travel lanes to the south.

  A new Leland Avenue connection to the east side of Bayshore, creating a four-way intersection, would be implemented with the proposed Design for Development.

(continued)

Mitigation 8-1A (continued):

- *Bayshore Boulevard/Visitacion Avenue:* Restripe the existing Visitacion Avenue connection to the west side of Bayshore Boulevard (now two travel lanes--one eastbound and one westbound) to create three lanes--one shared left-through eastbound lane, one exclusive right-turn eastbound lane, and one westbound through lane.

  The existing Visitacion Avenue connection to the west side of Bayshore Boulevard is approximately 40 feet wide curb-to-curb, with one travel lane in each direction and on-street parking on both sides of the street. It is possible to restripe the connection to provide three travel lanes--two eastbound and one westbound, by shifting the Muni bus stop farther down and removing two on-street parking spaces on the south side. This change may result in safety concerns for through vehicular traffic (turning lane queue interference), as well as conflicts with operation of the Muni 9X and 9AX bus lines. Buses need to make wide turns from southbound Bayshore Boulevard to westbound Visitacion Avenue, and therefore, with the restriping, buses would need to cross the relocated center line of the street. If queues were present at the eastbound approach to Bayshore Boulevard, buses making this right-turn would be delayed, and the configuration would result in safety concerns for vehicles. These secondary impacts associated with these striping changes and associated additional secondary mitigation needs are addressed herein under *Impact 8-3 (Project Queuing Impacts on Redevelopment Zone 1 Access Points)* and *Impact 8-9 (Project Impacts on Transit Service).*

  A new Visitacion Avenue connection to the eastside of Bayshore, creating a four-way intersection, would be implemented with the proposed Design for Development.

- *Bayshore Boulevard/Sunnydale Avenue:* Restripe the existing Sunnydale Avenue connection to the west side of Bayshore Boulevard (now two travel lanes--one eastbound and one westbound) to create three lanes--one shared left-through eastbound lane, one exclusive right-turn eastbound lane, and one westbound through lane.

The existing Sunnydale Avenue connection to the west side of Bayshore Boulevard is approximately 40 feet wide curb-to-curb, with one travel lane in each direction and on-street parking on both sides of the street. It would therefore be possible to restripe the connection to provide three travel lanes--two eastbound and one westbound, by removal of two on-street parking spaces on both sides of the street. This change may conflict with operations of the Muni 9 bus line. Buses need to make wide turns from southbound Bayshore Boulevard to westbound Sunnydale Avenue,

(continued)

Mitigation 8-1A (continued):

and therefore with the restriping, buses would need to cross the relocated center line of the street. If queues were present at the eastbound approach to Bayshore Boulevard, buses making this right-turn would be delayed, and the configuration would result in safety concerns for vehicles. These secondary impacts associated with these striping changes and associated additional secondary mitigation needs are addressed herein under *Impact 8-3 (Project Queuing Impacts on Redevelopment Zone 1 Access Points)* and *Impact 8-9 (Project Impacts on Transit Service).*

A new Sunnydale Avenue connection to the east side of Bayshore, creating a four-way intersection, would be implemented with the proposed Design for Development.

- *Tunnel Avenue/Blanken Avenue:* Signalize this intersection. As indicated in Table 8.11, this intersection meets the criteria for the Caltrans peak hour signal warrant under Existing plus Project conditions.

Implementation of the mitigation measures listed above, if they were feasible, would reduce the seven listed weekday peak hour Project impacts on intersection operations to less-than-significant levels, with the exception of the following four impacts which would remain at LOS F:

- Bayshore Boulevard/Blanken Avenue (weekday AM peak hour),
- Bayshore Boulevard/Arleta Avenue/San Bruno Avenue (weekday PM peak hour), and
- Bayshore Boulevard/Leland Avenue (weekday AM and PM peak hours).

For these four remaining impacts, the following two additional more substantial mitigation alternatives have been investigated: (1) establishment of an internal connection from Redevelopment Zone 1 to the east side of the Bayshore Boulevard/ Geneva Avenue intersection; or (2) construction of a bridge from Zone 1 over the Caltrain right-of-way to Tunnel Avenue. Without one of these connections, all vehicles traveling between Zone 1 and the nearby U.S. 101 ramps at Harney Way and Beatty Avenue/Alana Way would need to travel through the intersections of Alana/Beatty, Bayshore/Blanken, Bayshore/Arleta/San Bruno, and Bayshore/Leland. Either connection would serve to reduce the amount of Project traffic on Bayshore Boulevard by providing more direct access for vehicles destined to and from Redevelopment Zone 1. Nevertheless, these four remaining weekday peak hour LOS impacts would remain unacceptable (i.e., at LOS F) with either of these

(continued)

Mitigation 8-1A (continued):

additional connections. Therefore, with or without these added measures, the Project is considered to have a ***significant unavoidable impact*** at these three Bayshore Boulevard intersections.

In addition, as discussed above, implementation of the mitigation measures at Bayshore Boulevard/Arleta Avenue/San Bruno Avenue, Bayshore Boulevard/Leland Avenue, Bayshore Boulevard/Visitacion Avenue, and Bayshore Boulevard/Sunnydale Avenue, would result in potential significant secondary impacts to traffic operations, transit operations, on-street parking supply, and pedestrian conditions. Also, these mitigations conflict with General Plan objectives and policies and Project goals discussed in section 8.2 (Regulatory Framework) of this EIR chapter. Therefore, the Project impacts at two additional Bayshore Boulevard intersections, Bayshore Boulevard/Visitacion Avenue and Bayshore Boulevard/Sunnydale Avenue, are also considered to be ***significant and unavoidable.***

In conclusion, only the Project impact at the intersection of Tunnel Avenue/Blanken Avenue would be reduced to a ***less-than-significant level*** with implementation of the associated mitigation described above (sixth "bullet").

Mitigation 8-1B: As an alternative measure to reduce the Project impact listed above on the Bayshore Boulevard/Leland Avenue intersection (weekday AM and PM peak hours), incorporate the following changes into the Project:

- *Bayshore Boulevard/Leland Avenue southbound left-turn:* Eliminate the proposed left-turn from southbound Bayshore Boulevard into Redevelopment Zone 1 at Leland Avenue.

Implementation of this measure would eliminate the identified potential significant impacts at this intersection to traffic, transit and bicycle conditions (see associated *Impact 8-10, Project Impacts on Bicycle Conditions*, herein)--i.e., would reduce the Project impact at *this location* to a ***less-than-significant level***. However, removal of this left-turn location would have a *significant secondary impact*, forcing Project vehicular traffic to utilize the left-turn locations at Visitacion and Sunnydale Avenues, which would exacerbate anticipated queuing impacts at these two remaining left-turn locations (see *Impact 8-3, Project Queuing Impacts*, herein).

Mitigation 8-1C: In addition to Mitigation 8-1A or 8-1B, to reduce all of the Project impacts listed above, incorporate the following improvements into the Project:

Implement a Transportation Management Plan for Redevelopment Zone 1. To reduce the amount of auto use and auto ownership rates, and thereby reduce the traffic impacts of Zone 1 development, future applicants for developments in Zone 1 shall prepare, fund, and implement project-specific Transportation Management Plans (TMP). The TMPs could include the following elements:

- Identification of a transportation coordinator,
- Establishment of a resident website,
- Carpool match services,
- Carshare hubs,
- Real-time transit information,
- Reduced fee transit pass program,
- Parking supply reductions,
- Unbundled parking supply, and/or
- Metered/paid parking.

Also see similar measures in *Mitigation 9-2* (chapter 9, Air Quality) of this EIR.

After the first phase of Zone 1 development of 450 residential units, the Project will conduct a follow-up analysis of the Bayshore Boulevard corridor and the Tunnel/Blanken intersection. This analysis will revisit the status of neighboring projects, account for any shifts in travel patterns, mode share, and transit service (as described in subsection 8.2.4) within the Project Area, and reconsider the range of mitigations available for travel on Bayshore Boulevard, Tunnel Avenue, Blanken Avenue, and affected intersections--including revised signal phasing, pedestrian improvements, and/or traffic calming measures. This future study may provide opportunities to revise TMP elements and explore additional mitigation options based on revised information regarding Cumulative conditions.

While implementation of this measure would reduce Project impacts on the adjacent intersections and roadways to an unspecified but limited degree, the Project impacts listed above as significant and unavoidable would remain ***significant and unavoidable***.

Impact 8-2: Existing Plus Project Impacts on Freeway Segment Operation. Projected Existing plus Project traffic volume increases in the weekday peak hours would result in significant deterioration in levels of service on the following two freeway segments:

Weekday AM peak hour:

- U.S. 101 between I-280 and Third/Bayshore--northbound (LOS D to LOS E); and
- U.S. 101 between Sierra Point Parkway and I-380--northbound (LOS D to LOS E).

These weekday peak hour freeway segment LOS changes would represent a ***potentially significant impact*** (see criteria [a], [b], and [g] in subsection 8.3.1, "Significance Criteria," above).

Table 8.13 presents the results of the freeway segment analysis conducted for the Existing plus Project weekday AM and PM peak hour scenario (the corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*, available for review at the San Francisco Redevelopment Agency and at the Planning Department of the City and County of San Francisco).

Mitigation 8-2: Due to freeway geometry and space constraints at these two locations, there are no feasible mitigation measures that could be implemented to reduce the Project's LOS impacts to less-than-significant levels. Implementation of *Mitigation 8-1C (individual project Transportation Management Plans)* would decrease the number of vehicle trips generated by the Project and reduce the impacts to the study freeway segments, but not to a less-than-significant level. Therefore, the Project would have a ***significant unavoidable impact*** on these two freeway segments.

Existing Plus Project Impacts on Freeway On-Ramp Operation. Table 8.14 presents the results of the freeway on-ramp junction analysis conducted for Existing plus Project weekday AM and PM peak hour conditions (the corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*). The table indicates that all of the study freeway on-ramp junctions would continue to operate at acceptable LOS during both weekday peak hours with the addition of Project-generated traffic except the U.S. 101 southbound on-ramp from Beatty Avenue/Alana Way, which would operate at an unacceptable condition (LOS F) during the AM peak hour. However, since this on-ramp was determined to already operate at LOS F under Existing conditions, and the Project would not contribute substantially to congestion so as to substantially lengthen existing weekday peak period congestion, this Project effect on local freeway on-ramp operation would be ***less-than-significant*** (see criterion [g] in subsection 8.3.1, "Significance Criteria," above).

Mitigation. No significant environmental impact has been identified; no mitigation is required.

Table 8.13
EXISTING PLUS PROJECT FREEWAY SEGMENT LEVEL OF SERVICE CONDITIONS

Location		Direction[a]	Weekday AM Peak Hour				Weekday PM Peak Hour			
			Existing		Existing plus Project		Existing		Existing plus Project	
			LOS[b]	Density[c]	LOS[b]	Density[c]	LOS[b]	Density[c]	LOS[b]	Density[c]
1	U.S. 101 between I-280 and Third Street/Bayshore Boulevard	NB	D	33.0	**E**	**35.9**	**E**	**38.4**	**E**	**40.3**
		SB	**E**	**39.5**	**E**	**41.1**	D	31.5	D	33.6
2	U.S. 101 between Sierra Point Parkway and I-380	NB	D	33.9	**E**	**35.7**	**F**	**>45.0**	**F**	**>45.0**
		SB	**F**	**>45.0**	**F**	**>45.0**	**E**	**38.6**	**E**	**42.6**

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) NB = Northbound; SB = Southbound.
b) LOS = Level of Service.
c) Density presented in pc/mi/ln (passenger cars per mile per lane).
Bold indicates unacceptable conditions.

Table 8.14
EXISTING PLUS PROJECT FREEWAY ON-RAMP LEVEL OF SERVICE CONDITIONS

Location		Weekday AM Peak Hour				Weekday PM Peak Hour			
		Existing		Existing plus Project		Existing		Existing plus Project	
		LOS[a]	Density[b]	LOS[a]	Density[b]	LOS[a]	Density[b]	LOS[a]	Density[b]
1	U.S. 101 NB on-ramp from Bayshore Boulevard/Third Street	C	21.7	C	22.7	C	22.8	C	23
2	U.S. 101 NB on-ramp from Harney Way	C	26.3	C	25.3	D	28.8	D	28.8
3	U.S. 101 SB on-ramp from Beatty Avenue/Alana Way	**F**	**N/A**	**F**	**N/A**	C	26.3	C	26

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) LOS = Level of Service.
b) Density presented in pc/mi/ln (passenger cards per mile per lane).
N/A indicates oversaturated conditions (demand exceeds capacity).
Bold indicates unacceptable conditions.

Impact 8-3: Project Queuing Impacts at Redevelopment Zone 1 Access Points. Under the proposed Design for Development, access to Redevelopment Zone 1 would be provided from Bayshore Boulevard via the three intersections at Leland Avenue, Visitacion Avenue, and Sunnydale Avenue. The existing southbound left-turn pocket length at the Bayshore Boulevard/Visitacion Avenue and Bayshore Boulevard/Sunnydale Avenue intersections is 100 feet. The Design for Development proposes introduction of a similar southbound left-turn pocket of 100 feet at the Bayshore Boulevard/Leland Avenue intersection. A queuing analysis performed for this EIR to evaluate the adequacy of these existing and added southbound left-turn pocket lengths indicates that:

- *AM Peak Hour:* The average southbound left-turn queue that would occur at each intersection could be accommodated within the 100-foot left-turn pocket lengths, but the maximum queue length could not be accommodated at the Bayshore Boulevard/Visitacion Avenue or Bayshore Boulevard/Sunnydale Avenue intersections.

- *PM Peak Hour:* The average southbound left-turn queue could not be accommodated within the Bayshore Boulevard/Visitacion Avenue or Bayshore Boulevard/Sunnydale Avenue left-turn pockets, and the maximum queue length could not be accommodated within the left-turn pockets at all three intersections.

Under these with-Project AM peak hour maximum queue length conditions and PM peak hour average and maximum queue length conditions, queues waiting to turn left might not be fully contained within the existing and proposed left-turn pockets. These queues would extend into the adjacent southbound travel lane, affecting through-traffic operations along southbound Bayshore Boulevard, and resulting in significant delays to vehicular and transit traffic. These possible Project-related queuing effects on local roadway and transit operations would represent a ***potentially significant impact*** (see criteria [a], [f], and [i] in subsection 8.3.1, "Significance Criteria," above).

Two types of queue length measurements have been estimated: the average queue and the 95th percentile queue. The average queue represents the length of the queue that would form if vehicles arrived at the intersection at an average, constant rate. The 95th percentile queue represents the theoretical maximum queue length and accounts for the actual, non-constant intersection arrival rates of vehicles. The typical turn pocket design standard is to have a pocket of sufficient length to accommodate the 95th percentile queue. The with-Project queuing analysis results are presented in Table 8.15.

Table 8.15
REDEVELOPMENT ZONE 1 ACCESS POINTS: QUEUING ANALYSIS (EXISTING PLUS PROJECT CONDITIONS)

Location	SB Left Turn Pocket Length (ft)	Weekday AM Peak Hour			Weekday PM Peak Hour		
		No. of Cars	Avg. Queue (ft)	Max. Queue (ft)	No. of Cars	Avg. Queue (ft)	Max. Queue (ft)
Bayshore Boulevard/ Leland Avenue	100[a]	73	46	93	155	104	231
Bayshore Boulevard/ Visitacion Avenue	100[b]	118	82	177	259	267	430
Bayshore Boulevard/ Sunnydale Avenue	100[b]	102	66	135	218	189	339

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) Proposed
b) Existing

Mitigation 8-3: Implementation of *Mitigation 8-1C (Transportation Management Plan)* would help decrease the number of vehicle trips generated by the Project and reduce the potential for queuing at these Bayshore Boulevard left-turn pockets, but not to a less-than-significant level.

Extend the southbound left-turn pocket lengths at all three Redevelopment Zone 1 access intersections along Bayshore Boulevard. At Sunnydale Avenue, the southbound Bayshore Boulevard left-turn pocket could be extended an additional 100 feet through removal of the existing bicycle lane. At Visitacion Avenue, the southbound Bayshore Boulevard left-turn pocket could be extended by an additional 80 feet by relocating the Muni bus stop currently located at the south side of the Bayshore Boulevard/Leland Avenue intersection to a new location one block south on the south side of the Bayshore Boulevard/Visitacion Avenue intersection. At Leland Avenue, the southbound Bayshore Boulevard left-turn pocket could be extended by an additional 40 feet through elimination of existing on-street parking spaces and removal of portions of the bicycle lane.

Although these 100-foot left-turn pocket extensions could accommodate projected with-Project <u>average</u> queues that could develop during the weekday AM and PM peak hours and with-Project <u>maximum</u> queues that could develop in the weekday AM peak hour, they would not be sufficient to accommodate maximum queues in the weekday PM peak hour. During the weekday PM peak hour, projected with-Project maximum queue lengths would still spill into the southbound Bayshore Boulevard regular travel lanes.

In addition, full implementation of each of these left-turn pocket extension measures could potentially result in significant secondary impacts to Muni bus operations (with the relocation of the bus stop), bicycle operations (with the elimination of portions of the southbound bicycle lane, which directly conflicts with the San Francisco Bicycle Plan and *Mitigation 8-1C* discussed in this chapter; also see *Impact 8-10* herein), and parking (with the elimination of on-street parking spaces on Bayshore Boulevard). Therefore, these left-turn pocket extension measures are considered infeasible as they would create their own potentially significant impacts, and the Project's Bayshore Boulevard southbound access queuing impacts are considered to be ***significant and unavoidable***.

Impact 8-4: 2025 Cumulative Impacts on Intersection Operation. Projected intersection turning movement volumes under 2025 Cumulative conditions (background traffic growth plus buildout of the Project Area, Executive Park, Candlestick Point, India Basin Shoreline, Hunters Point Shipyard Phase 2, Brisbane Baylands Phases 1 and 2, and Daly City [Cow Palace] developments) would cause significant deterioration in levels of service at a number of local intersections during weekday peak hours. The Project would generate between approximately 8 and 28 percent of the projected cumulative growth in traffic volumes between Existing and 2025 Cumulative conditions in the weekday AM peak hour, and between 10 and 33 percent in the weekday PM peak hour, at the following intersections:

Weekday AM peak hour:

- Bayshore Boulevard/Tunnel Avenue (LOS B to LOS E);

Weekday PM peak hour:

- Bayshore Boulevard/Blanken Avenue (LOS B to LOS F),
- Bayshore Boulevard/Arleta Avenue/San Bruno (LOS C to LOS F),
- Bayshore Boulevard/Leland Avenue (LOS C to LOS F),
- Bayshore Boulevard/Visitacion Avenue (LOS B to LOS F),
- Bayshore Boulevard/Sunnydale Avenue (LOS C to LOS F),
- Tunnel Avenue/Blanken Avenue (LOS A to LOS F), and
- Alana Way/Beatty Avenue (LOS B to LOS F).

These anticipated Project contributions to projected cumulative intersection operational impacts would be considerable and would represent a ***significant impact*** (see criteria [a], [b], and [f] under subsection 8.3.1, "Significance Criteria," above).

(a) 2025 Cumulative Scenario Assumptions. As discussed in subsection 8.3.2 herein, anticipated cumulative new development in the vicinity of the Project Area includes, in addition to the Project, developments at the Executive Park, Candlestick Point, India Basin Shoreline and Hunters Point Shipyard Phase 2 sites, and developments in the adjacent communities of Brisbane (Baylands Phases 1 and 2) and Daly City (Cow Palace).

Since the SFCTA Model was developed as a tool to forecast future traffic volumes on major regional traffic facilities and major local streets, and not to forecast turning movements at individual intersections or freeway ramps, post-processing of the SFCTA Model output has been conducted to develop the turning movement data required to determine intersection and ramp operating conditions. To develop 2025 Cumulative turning movement volumes at the study intersections, freeway ramps, and freeway mainline locations, the percentage increase in traffic volumes between the 2005 Base and 2025 Baseline model scenarios has been determined for each street serving the Project Area. These growth increases have then been assigned to the study intersection turning movements (e.g., eastbound left-turn, through, and right-turn) based on the existing turning movement counts, and to the study freeway ramp and freeway segment volumes based on the existing hourly volumes. The traffic volumes

associated with each of the anticipated future cumulative developments were then manually added to the 2025 Baseline volumes to develop the projected 2025 Cumulative volumes for each study intersection, freeway on-ramp, and freeway segment.

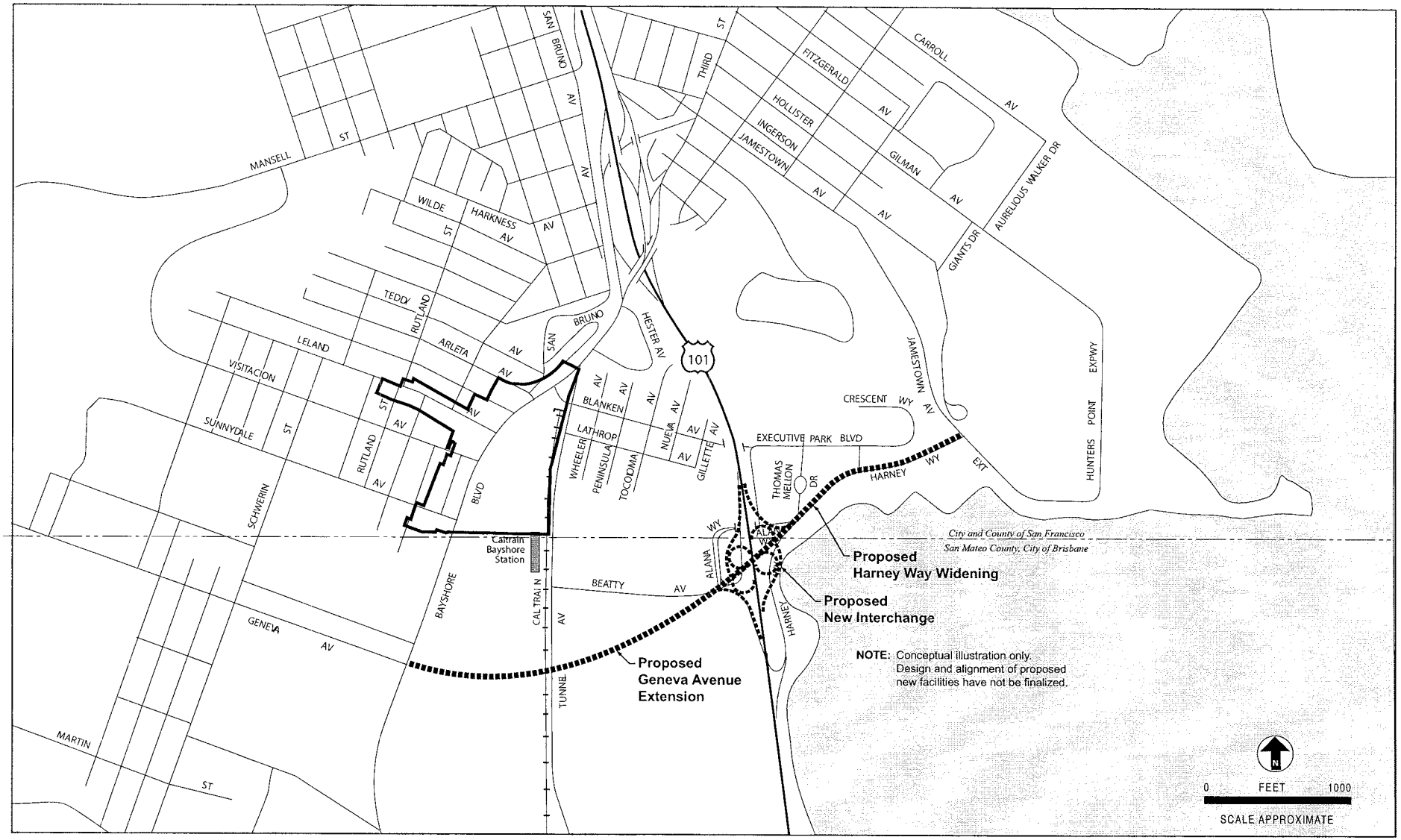
As part of some of these cumulative developments, changes to the local and regional roadway network have been proposed. However, only the proposed changes associated with the Executive Park project are fully funded and able to be implemented without requiring approvals from numerous city, county, and state agencies. Therefore, only the proposed Executive Park roadway network improvements have been assumed in this EIR as part of the 2025 Cumulative scenario--the other planned improvements have been assessed separately in an additional "with Planned Roadway Improvements" scenario (see Impacts 8-7 through 8-9 herein). With the Executive Park project, the current intersection of Alana Way/Harney Way/Thomas Mellon Drive would be spilt into two intersections: Alana Way/Harney Way and Thomas Mellon Drive/Harney Way. This intersection reconfiguration is depicted in Figure 8.4.

(b) 2025 Cumulative Intersection Analysis. Based on the projected cumulative turning movement volumes and planned new intersection geometry, a 2025 cumulative LOS analysis has been performed for all study intersections for the weekday AM and PM peak hours. The results of the analysis are presented in Table 8.16 (the corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*).

As indicated in Table 8.16, all study intersections except Leland Avenue/Rutland Street and Thomas Mellon Drive/Alana Way would operate at unacceptable levels of service (LOS E or F) during either the weekday AM or PM peak hours.

(c) Project Contribution to 2025 Cumulative Roadway System Impacts. In order to assess the relative significance of the Project-generated contribution to 2025 Cumulative conditions (both without and with the planned regional roadway improvements), two calculations of the relative Project contribution were performed: the Project-generated traffic as a percent of the total cumulative traffic volumes, and the Project-generated traffic as a percent of the increase in traffic volumes between Existing and 2025 Cumulative conditions. The percent Project contributions to impacts at the study intersections, freeway segments, and on-ramps, for the weekday AM and PM peak hours, are presented in Tables 8.17 and 8.18, respectively. As shown in the tables, under 2025 Cumulative conditions, the Project would generate up to approximately 19.4 percent of the total volume at the analysis locations and up to 33.6 percent of the growth in traffic between Existing and 2025 Cumulative conditions in the weekday AM peak hour, and up to 21.6 percent of the total volume and 32.8 percent of the growth in volumes in the weekday PM peak hour. Under the 2025 Cumulative with Regional Improvements conditions, the Project would generate up to 36.6 percent of the total volume at the analysis locations and over 100 percent of the growth in traffic between Existing and 2025 Cumulative with Regional Improvements conditions in the weekday AM peak hour, and up to 39.3 percent of the total volume and over 100 percent of the growth in volumes in the weekday PM peak hour. (The Project contribution would be greater than 100 percent since some background volumes would decrease due to the rerouting of traffic with the regional transportation improvements.)

The Project's 0.0 to 0.1 percent contribution to 2025 cumulative growth at the Thomas Mellon Drive/Harney Way intersection (Tables 8.17 and 8.18, intersection #11), as well as the



SOURCE: DMJM Harris | AECOM

Figure 8.4

ANTICIPATED 2025 ROADWAY NETWORK IMPROVEMENTS

Table 8.16
2025 CUMULATIVE INTERSECTION LEVEL OF SERVICE CONDITIONS

	Intersection	Traffic Control	Weekday AM Peak Hour LOS	Weekday AM Peak Hour Delay[a]	Weekday PM Peak Hour LOS	Weekday PM Peak Hour Delay[a]
1	Bayshore Boulevard/Tunnel Avenue	Signalized	**E**	**77.6**	D	52.8
2	Bayshore Boulevard/Blanken Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
3	Bayshore Boulevard/Arleta Avenue/San Bruno Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
4	Bayshore Boulevard/Leland Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
5	Bayshore Boulevard/ Visitacion Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
6	Bayshore Boulevard/ Sunnydale Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
7	Leland Avenue/Rutland Street	AWSC[b]	C (wb)	16.2	B (wb)	14.4
8	Tunnel Avenue/Blanken Avenue	AWSC[b]	**F (eb)[c]**	**>50.0**	**F (eb)[c]**	**>50.0**
9	Alana Way/Beatty Avenue	AWSC[b]	**F (eb)[c]**	**>50.0**	**F (eb)[c]**	**>50.0**
11	Thomas Mellon Drive/Harney Way	Signalized	C	24.1	C	22.8
12	Harney Way/Alana Way	Signalized	**F**	**>80.0**	**F**	**>80.0**

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) Delay in Seconds per vehicle.
b) AWSC – All Way Stop Controlled (Delay is reported for the worst approach).
c) Meets criteria for peak hour signal warrant; therefore considered to be unacceptable.
Bold indicates unacceptable conditions.

Table 8.17
PROJECT'S CONTRIBUTION TO 2025 CUMULATIVE CONDITIONS--WEEKDAY AM PEAK HOUR

	Location	Contribution to 2025 Cumulative Volumes[a]	Contribution to 2025 Cumulative Growth[b]	Contribution to 2025 Cumulative with Regional Improvements Volumes	Contribution to 2025 Cumulative with Regional Improvements Growth
U.S. 101 segments:					
1	Between I-280 and Third Street/Bayshore Boulevard	**2.7%**	**14.0%**	**2.7%**	**13.8%**
2	Between Sierra Point Parkway and I-380	**4.4%**	**14.2%**	**4.3%**	**13.8%**
U.S. 101 on-ramps:					
1	NB on-ramp from Bayshore Boulevard/Third Street	**16.6%**	**33.6%**	18.9%	45.0%
2	NB on-ramp from Harney Way or Geneva Avenue	0.0%	0.0%	**0.0%**	**0.0%**
3	SB on-ramp from Beatty Avenue/Alana Way or Geneva Avenue	**17.0%**	**19.5%**	**14.1%**	**15.8%**
Intersections:					
1	Bayshore Boulevard/Tunnel Avenue	**16.0%**	**27.7%**	19.8%	41.7%
2	Bayshore Boulevard/Blanken Avenue	**17.4%**	**25.2%**	33.0%	80.7%
3	Bayshore Boulevard/Arleta Avenue/San Bruno Avenue	**17.8%**	**27.5%**	34.4%	>100%
4	Bayshore Boulevard/Leland Avenue	**19.4%**	**27.9%**	**36.6%**	**87.0%**
5	Bayshore Boulevard/Visitacion Avenue	**18.7%**	**26.6%**	**35.6%**	**81.6%**
6	Bayshore Boulevard/ Sunnydale Avenue	**13.6%**	**18.9%**	**25.0%**	**52.3%**
7	Leland Avenue/Rutland Street	14.2%	27.8%	19.8%	62.2%
8	Tunnel Avenue/Blanken Avenue	**11.0%**	**14.5%**	**27.7%**	**70.8%**
9	Alana Way/Beatty Avenue	**7.2%**	**8.3%**	N/A	N/A
10	Alana Way/Harney Way/ Thomas Mellon Drive	N/A	N/A	N/A	N/A
11	Thomas Mellon Dr/Harney Way	0.1%	0.1%	**0.1%**	**0.1%**
12	Harney Way/Alana Way	**1.7%**	**1.9%**	N/A	N/A

SOURCE: DMJM Harris/AECOM, 2007

Notes:
N/A indicates the intersection does not exist under the scenario.
Bold indicates location operates at unacceptable conditions.
For intersection #3 (Bayshore/Arleta/San Bruno), the Project contribution to cumulative growth with the regional transportation improvements would be greater than 100 percent since some background volumes would decrease due to the rerouting of traffic with the regional improvements.
[a] Project's percentage of total volume of vehicles in 2025.
[b] Project's percentage of increase in volume between 2007 and 2025.

Table 8.18
PROJECT'S CONTRIBUTION TO 2025 CUMULATIVE CONDITIONS--WEEKDAY PM PEAK HOUR

	Location	Contribution to 2025 Cumulative Volumes[a]	Contribution to 2025 Cumulative Growth[b]	Contribution to 2025 Cumulative Volumes with Regional Improvements	Contribution to 2025 Cumulative Growth with Regional Improvements
U.S. 101 segments:					
1	Between I-280 and Third Street/Bayshore Boulevard	**2.6%**	**14.2%**	**2.6%**	**14.5%**
2	Between Sierra Point Parkway and I-380	**2.9%**	**9.1%**	**3.0%**	**10.8%**
U.S. 101 on-ramps:					
1	NB on-ramp from Bayshore Boulevard/Third Street	11.7%	30.7%	14.6%	62.8%
2	NB on-ramp from Harney Way or Geneva Avenue	**0.0%**	**0.0%**	**0.0%**	**0.0%**
3	SB on-ramp from Beatty Avenue/Alana Way or Geneva Avenue	**13.3%**	**14.9%**	**11.6%**	**12.7%**
Intersections:					
1	Bayshore Boulevard/Tunnel Avenue	16.3%	31.0%	19.7%	46.3%
2	Bayshore Boulevard/Blanken Avenue	**17.3%**	**26.7%**	29.6%	75.2%
3	Bayshore Boulevard/Arleta Avenue/San Bruno Avenue	**19.0%**	**29.8%**	**34.7%**	**>100%**
4	Bayshore Boulevard/Leland Avenue	**21.6%**	**32.8%**	**39.3%**	**>100%**
5	Bayshore Boulevard/Visitacion Avenue	**20.2%**	**30.2%**	35.9%	88.0%
6	Bayshore Boulevard/ Sunnydale Avenue	**15.5%**	**23.6%**	27.3%	70.4%
7	Leland Avenue/Rutland Street	15.5%	32.0%	19.9%	58.8%
8	Tunnel Avenue/Blanken Avenue	**12.5%**	**15.4%**	35.1%	74.3%
9	Alana Way/Beatty Avenue	**8.7%**	**9.6%**	N/A	N/A
10	Alana Way/Harney Way/ Thomas Mellon Drive	N/A	N/A	N/A	N/A
11	Thomas Mellon Dr/Harney Way	0.0%	0.0%	0.0%	0.0%
12	Harney Way/Alana Way	**0.0%**	**0.0%**	N/A	N/A

SOURCE: DMJM Harris/AECOM, 2007

Notes:
N/A indicates the intersection does not exist under the scenario.
Bold indicates location operates at unacceptable conditions.
For intersections #3 and #4, the Project contribution to cumulative growth with the regional transportation improvements would be greater than 100 percent since some background volumes would decrease due to the rerouting of traffic with the regional improvements.
[a] Project's percentage of total volume of vehicles in 2025.
[b] Project's percentage of increase in volume between 2007 and 2025.

Project's 0.0 to 1.9 percent contribution to 2025 cumulative growth at the Harney Way/Alana Way intersection (Tables 8.17 and 8.18, intersection #12) are considered less-than-significant Project contributions to 2025 Cumulative conditions at these two intersections.

In general, the Project-related percent contributions would be greatest at the intersections along Bayshore Boulevard and the U.S. 101 northbound on-ramp from Bayshore Boulevard/ Third Street. In the context of the generally poor operating conditions along Bayshore Boulevard, freeway mainline segments, and freeway ramp-junctions under the 2025 Cumulative conditions, the Project's contributions to the cumulative traffic impacts identified in *Impact 8-4* would be considerable and would constitute a *significant cumulative impact.*

Mitigation 8-4: In addition to the Existing plus Project measures identified under Mitigations 8-1A and 8-1B above, incorporate the following measures into the Project:

- Bayshore Boulevard/Tunnel Avenue: Modify signal timing by shifting one second from the southbound left-turn movement to the northbound/southbound through movements. Prior to implementation of this mitigation measure, assess transit and traffic coordination along Bayshore Boulevard to ensure that the changes would not substantially affect Muni transit operations, signal progressions, pedestrian minimum green time requirements, and programming limitations of signals (see *Mitigation 8-1C*).

- Alana Way/Beatty Avenue: As indicated in Table 8.16, this intersection meets accepted criteria for peak hour signal warrant. Signalize the intersection, restripe the southbound Alana Way approach to create exclusive left-, through and right-turn lanes; and restripe the eastbound Beatty Avenue approach to create two lanes: an exclusive left-turn lane (northbound) and a shared through-right turn lane (eastbound and southbound). The existing Alana Way connection is approximately 40 feet wide, with one travel lane in each direction and no parking available on the street. It would therefore be possible to restripe the existing Alana Way connection to provide three lanes--one right-turn (westbound), one through (southbound), and one left-turn (eastbound).

Since the Project would have significant contributions to the future impacts at these two locations, establish a mechanism for Project fair share contribution to the implementation of these mitigation measures.

These two study intersections would continue to operate with unacceptable conditions (LOS E or F) during the weekday AM peak hour with these mitigations. Implementation of *Mitigation 8-1C (Transportation Management Plan)* would decrease the number of vehicle trips generated by the Project and reduce the magnitude of the Project's significant contribution at these locations, but not to a less-than-significant level. No feasible additional mitigation measures have been

(continued)

Mitigation 8-4 (continued):

identified that would sufficiently improve 2025 Cumulative intersection operating conditions to LOS D or better conditions, except implementation of the Regional Transportation Improvements (see *Impact 8-7*), which has not been funded. The Project contributions to this cumulative effect would therefore be considered ***significant unavoidable impacts***.

The effect of the above mitigations on 2025 Cumulative intersection LOS conditions is summarized in Table 8.19.

Impact 8-5: 2025 Cumulative Impacts on Freeway Segment Operation. Study freeway segments north and south of the Project Area would operate at unacceptable levels of service in both directions during both the AM and PM peak hours under projected 2025 Cumulative conditions. Traffic volumes on U.S. 101 are anticipated to substantially increase due to the combination of general background growth and the anticipated major new development projects in the Project Area vicinity (i.e., buildout of the Project Area plus the planned Executive Park, Candlestick Point, India Basin Shoreline, Hunters Point Shipyard Phase 2, Brisbane Baylands Phases 1 and 2, and Daly City [Cow Palace] developments), causing significant cumulative deterioration in levels of service at the following freeway segments during both the weekday AM and PM peak hours:

Weekday AM peak hour:

- U.S. 101 between I-280 and Third/Bayshore -- northbound (LOS D to LOS F);
- U.S. 101 between I-280 and Third/Bayshore -- southbound (LOS E to LOS F);
- U.S. 101 between Sierra Point Parkway and I-380 -- northbound (LOS D to LOS F); and
- U.S. 101 between Sierra Point Parkway and I-380 -- southbound (LOS F to LOS F).

Weekday PM peak hour:

- U.S. 101 between I-280 and Third/Bayshore -- northbound (LOS E to LOS F);
- U.S. 101 between I-280 and Third/Bayshore -- southbound (LOS D to LOS F);
- U.S. 101 between Sierra Point Parkway and I-380 -- northbound (LOS F to LOS F); and
- U.S. 101 between Sierra Point Parkway and I-380 -- southbound (LOS E to LOS F).

The Project would generate about 14 percent of the projected cumulative growth in traffic volumes on the affected freeway segments in the AM peak hour, and between 9 and 14 percent in the PM peak hour (see Tables 8.17 and 8.18 herein). These

(continued)

Impact 8-5 (continued):

anticipated Project contributions to projected cumulative freeway segment operational impacts would be considerable and would represent a ***significant impact*** (see criteria [a], [b], and [g] in subsection 8.3.1, "Significance Criteria," above).

Table 8.20 presents the results of the study freeway segment capacity analysis for 2025 Cumulative conditions during the weekday AM and PM peak hours (the corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*).

Mitigation 8-5: To improve the affected freeway segment conditions, additional mainline capacity would be needed, which would require land acquisition and involve substantial costs and jurisdictional issues. Mitigation of this impact is therefore considered to be infeasible and the Project-related contribution to 2025 cumulative freeway segment congestion represents a ***significant unavoidable impact***.

Implementation of *Mitigation 8-1C (Transportation Management Plan)* would decrease the number of vehicle trips generated by the Project and reduce the magnitude of the Project's significant contribution at these locations, but not to a less-than-significant level.

Table 8.19
MITIGATED 2025 CUMULATIVE INTERSECTION LEVEL OF SERVICE CONDITIONS

	Intersection	Traffic Control	Weekday AM Peak Hour LOS	Weekday AM Peak Hour Delay[a]	Weekday PM Peak Hour LOS	Weekday PM Peak Hour Delay[a]
1	Bayshore Boulevard/Tunnel Avenue	Signalized	**E**	**77.2**	D	54.2
2	Bayshore Boulevard/Blanken Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
3	Bayshore Boulevard/Arleta Avenue/San Bruno Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
4	Bayshore Boulevard/Leland Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
5	Bayshore Boulevard/ Visitacion Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
6	Bayshore Boulevard/ Sunnydale Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
8	Tunnel Avenue/Blanken Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**
9	Alana Way/Beatty Avenue	Signalized	**F**	**>80.0**	**F**	**>80.0**

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) Delay in Seconds per vehicle.
Bold indicates unacceptable conditions.

Table 8.20
2025 CUMULATIVE FREEWAY SEGMENT LEVEL OF SERVICE CONDITIONS

	Location	Direction[a]	Weekday AM Peak Hour LOS[b]	Weekday AM Peak Hour Density[c]	Weekday PM Peak Hour LOS[b]	Weekday PM Peak Hour Density[c]
1	U.S. 101 between I-280 and Third Street/Bayshore Boulevard	NB	**F**	**>45**	**F**	**>45**
		SB	**F**	**>45**	**F**	**>45**
2	U.S. 101 between Sierra Point Parkway and I-380	NB	**F**	**>45**	**F**	**>45**
		SB	**F**	**>45**	**F**	**>45**

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) NB = Northbound; SB = Southbound.
b) LOS = Level of Service.
c) Density in pc/mi/ln (passenger cars per mile per lane).
Bold indicates unacceptable conditions.

Impact 8-6: 2025 Cumulative Impacts on Freeway On-Ramp Operation. The following local freeway on-ramps are projected to operate at unacceptable levels of service during weekday peak hours under 2025 Cumulative conditions:

Weekday AM peak hour:

- U.S. 101 northbound on-ramp from Bayshore Boulevard/Third Street (LOS C to LOS F); and
- U.S. 101 southbound on-ramp from Beatty Avenue/Alana Way (LOS F to LOS F).

Weekday PM peak hour:

- U.S. 101 northbound on-ramp from Harney Way (LOS D to LOS F); and
- U.S. 101 southbound on-ramp from Beatty Avenue/Alana Way (LOS C to LOS F).

The Project would generate between approximately 20 and 34 percent of the projected cumulative growth in traffic on the two affected on-ramps in the weekday AM peak hour and between approximately 0 and 15 percent to the two affected on-ramps in the weekday PM peak hour. The anticipated Project contributions of 15 percent or greater to projected cumulative freeway on-ramp operational impacts would be considerable and would represent a ***potentially significant impact*** (see criteria [a], [b], and [g] in subsection 8.3.1, "Significance Criteria," above).

Table 8.21 presents the results of the on-ramp junction impacts analysis for the 2025 Cumulative development scenario for the three study freeway on-ramps during the weekday AM and PM peak hour (the corresponding LOS analysis calculation sheets are presented in the *Transportation Analysis Appendix*). As the table indicates, the U.S. 101 northbound on-ramp from Bayshore Boulevard/Third Street would operate at unacceptable LOS during the weekday AM peak hour, the U.S. 101 northbound on-ramp from Harney Way would operate at unacceptable LOS in the weekday PM peak hour, and the U.S. 101 southbound on-ramp from Beatty Avenue/Alana Way would operate at unacceptable LOS during both the weekday peak hours, under 2025 cumulative conditions. All the other study ramp-junctions would continue to operate acceptably during both peak hours. The degree of the Project contribution to this cumulative impact is indicated in Tables 8.17 and 8.18.

Mitigation 8-6: These projected 2025 cumulative freeway on-ramp operating condition impacts are anticipated to be resolved by the construction of the proposed new ramps at Geneva Avenue, a planned regional transportation improvement measure. Project fair-share contribution to these planned regional improvements would therefore be required, and would reduce the anticipated 2025 cumulative freeway on-ramp impacts to a ***less-than-significant level***.

Table 8.21
2025 CUMULATIVE FREEWAY ON-RAMP LEVEL OF SERVICE CONDITIONS

Location		Weekday AM Peak Hour		Weekday PM Peak Hour	
		LOS[a]	Density[b]	LOS[a]	Density[b]
1	U.S. 101 NB on-ramp from Bayshore Boulevard/Third Street	**F**	*	C	23.9
2	U.S. 101 NB on-ramp from Harney Way	C	25.6	**F**	**N/A**
3	U.S. 101 SB on-ramp from Beatty Avenue/Alana Way	**F**	**N/A**	**F**	**N/A**

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) LOS = Level of Service.
b) Density in pc/mi/ln (passenger cars per mile per lane).
* indicates breakdown conditions on the on-ramp.
N/A indicates oversaturated conditions (demand exceeds capacity).
Bold indicates unacceptable conditions.

Impact 8-7: 2025 Cumulative Impacts on Intersection Operation with Planned Regional Roadway Improvements. The following three regional roadway system improvements are currently in the planning stages to help accommodate forecasted cumulative traffic increases:

- an extension of Geneva Avenue from its current terminus at Bayshore Boulevard to a new interchange with U.S. 101;
- a new U.S. 101 interchange at Geneva Avenue/Harney Way; and
- widening of Harney Way between U.S. 101 and Jamestown Avenue.

Because funding for these improvements has not been identified, they have not been assumed as part of the 2025 Cumulative scenario described in this EIR under Impacts 8-4 through 8-6. Instead, this "with Planned Regional Improvements" scenario has been analyzed separately to isolate the effects of these planned improvements, if they were to occur.

Assuming implementation of these three planned future regional roadway network changes, projected (redistributed) intersection turning movement volumes under 2025 Cumulative conditions would cause significant deterioration in levels of service at a number of local intersections during typical weekday peak hours. The Project would generate between approximately 52 and 87 percent of the projected cumulative traffic growth in the AM peak hour, and over 100 percent in the PM peak hour (the Project contribution would be greater than 100 percent where background volumes would decrease due to the rerouting of traffic due to regional roadway network changes), at the following intersections:

Weekday AM peak hour only:

- Bayshore Boulevard/Visitacion Avenue (LOS E),
- Bayshore Boulevard/Sunnydale Avenue (LOS F), and
- Tunnel Avenue/Blanken Avenue (LOS E);

Weekday PM peak hour only:

- Bayshore Boulevard/Arleta Avenue/San Bruno (LOS E); and

Weekday AM and PM peak hours:

- Bayshore Boulevard/Leland Avenue (LOS F in the AM and LOS E in the PM).

These anticipated Project contributions to projected cumulative intersection operational impacts would be considerable and would represent a ***significant impact*** (see criteria [a], [b], and [f] in subsection 8.3.1, "Significance Criteria," above).

In the vicinity of the Project Area, and directly influencing the study analysis locations, the following potential improvements are currently in the planning stages (see previous Figure 8.4):

- Extension of Geneva Avenue: Geneva Avenue is proposed to be extended as a four-to-six lane roadway from its current terminus at Bayshore Boulevard to a new interchange with U.S. 101.

- New U.S. 101 interchange at Geneva Avenue/Harney Way: An updated interchange with U.S. 101 is proposed with the planned Geneva Avenue extension at Harney Way, with full on- and off-ramps; this interchange would replace the current separated on- and off-ramps at Harney Way and Alana Way/Beatty Avenue.

- Widening of Harney Way: Harney Way is proposed to be widened from between three and four lanes to six-lanes from U.S. 101 to Jamestown Avenue.

Based on these planned future roadway network changes (illustrated on Figure 8.4), 2025 cumulative weekday AM and PM peak hour level of service analyses have been conducted for the study intersections.[1] The results of this analysis are presented in Table 8.22.

Comparing the results presented in Table 8.16 (2025 Cumulative Intersection Level of Service Conditions) to those in Table 8.22 indicates that the planned regional transportation improvements listed above would significantly improve operations at several of the study intersections, including:

Weekday AM peak hour:

- Bayshore Boulevard/Tunnel Avenue (LOS E to LOS C),
- Bayshore Boulevard/Blanken Avenue (LOS F to LOS D), and
- Bayshore Boulevard/Arleta Avenue/San Bruno (LOS F to LOS C);

Weekday PM peak hour:

- Bayshore Boulevard/Tunnel Avenue (LOS E to LOS C),
- Bayshore Boulevard/Blanken Avenue (LOS F to LOS D),
- Bayshore Boulevard/Visitacion Avenue (LOS F to LOS D),
- Bayshore Boulevard/Sunnydale Avenue (LOS F to LOS D), and
- Tunnel Avenue/Blanken Avenue (LOS F to LOS D).

The degree of the Project contribution to these cumulative impacts is indicated in previous Tables 8.17 and 8.18.

[1]With the planned new Geneva Avenue/Harney Way interchange, the study intersections of Alana Way/Beatty Avenue and Harney Way/Alana Way would be eliminated. In addition, with the planned extension of Geneva Avenue and the new interchange, it is anticipated that the majority of the vehicles that currently use Tunnel Avenue, Beatty Avenue, and Alana Way to travel to and from the local U.S. 101 on- and off-ramps would reroute to the Geneva Avenue extension. The 2025 Cumulative analysis scenario assignments of traffic from the anticipated future development projects have been adjusted to account for these revised travel patterns. (The adjusted weekday AM and PM peak hour volumes for this scenario are further described in the *Transportation Analysis Appendix*.)

Table 8.22
2025 CUMULATIVE INTERSECTION LEVEL OF SERVICE CONDITIONS WITH PLANNED REGIONAL TRANSPORTATION IMPROVEMENTS

	Intersection	Traffic Control	Weekday AM Peak Hour LOS	Weekday AM Peak Hour Delay[a]	Weekday PM Peak Hour LOS	Weekday PM Peak Hour Delay[a]
1	Bayshore Boulevard/Tunnel Avenue	Signalized	C	23.6	C	23.5
2	Bayshore Boulevard/Blanken Avenue	Signalized	D	43.0	D	40.1
3	Bayshore Boulevard/Arleta Avenue/San Bruno Avenue	Signalized	C	34.7	**E**	**74.0**
4	Bayshore Boulevard/Leland Avenue	Signalized	**F**	**>80.0**	**E**	**68.3**
5	Bayshore Boulevard/ Visitacion Avenue	Signalized	**E**	**64.3**	D	42.8
6	Bayshore Boulevard/ Sunnydale Avenue	Signalized	**F**	**>80.0**	D	37.4
7	Leland Avenue/Rutland Street	AWSC[b]	B (eb)	10.9	B (wb)	10.4
8	Tunnel Avenue/Blanken Avenue	AWSC[b]	**E (wb)[c]**	**43.8**	D (sb)	29.8
11	Thomas Mellon Drive/Harney Way	Signalized	**E**	**75.2[d]**	D	38.8

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) Delay in Seconds per vehicle.
b) AWSC – All Way Stop Controlled (Delay is reported for the worst approach).
c) Meets criteria for peak hour signal warrant; therefore considered to be unacceptable.
d) The proposed redevelopment program would have a less-than-significant contribution to this intersection (see Tables 8.17 and 8.18).
Bold indicates unacceptable conditions.

Mitigation 8-7: Although the planned Regional Transportation Improvements listed above would substantially improve projected 2025 cumulative operational conditions at the five study intersections listed in *Impact 8-7*, unacceptable operating conditions (LOS E or F) would remain at these five locations. To mitigate these remaining impacts, implement *Mitigation 8-1* plus the following additional measures:

- *Bayshore Boulevard/Leland Avenue:* Modify signal timing by shifting 6 seconds from the northbound/southbound left-turn movements to the through movements and also restripe the eastbound and westbound approaches to create two lanes at the intersection: a left-through lane and an exclusive right-turn lane. Implementation of this proposed signal timing modification mitigation measure would be dependent upon an assessment of transit and traffic coordination along Bayshore Boulevard to ensure that the changes would not substantially affect Muni transit operations, signal progressions, pedestrian minimum green time requirements, and programming limitations of signals. Because this finding cannot be assured, and because the mitigation could potentially impact transit operations and conflict with General Plan objectives and policies (see section 8.2), this 2025 cumulative intersection impact is considered to be ***significant and unavoidable***.

- *Bayshore Boulevard/Sunnydale Avenue:* Modify signal timing by shifting 4 seconds from the northbound/southbound left-turn movements to the eastbound/westbound movements and restripe the eastbound and westbound approaches to create two lanes at the intersection: a shared left-through lane and exclusive right-turn lane. Implementation of this proposed signal timing modification mitigation measure would be dependent upon an assessment of transit and traffic coordination along Bayshore Boulevard to ensure that the changes would not substantially affect Muni transit operations, signal progressions, pedestrian minimum green time requirements, and programming limitations of signals. Because this finding cannot be assured, and because the mitigation could potentially impact transit operations and conflict with General Plan objectives and policies (see section 8.2), this 2025 cumulative intersection impact is considered to be ***significant and unavoidable***.

- *Tunnel Avenue/Blanken Avenue:* Signalize the intersection. As indicated in Table 8.22, this intersection meets the criteria for peak hour signal warrant. It would be possible to modify this intersection from an all-way stop to a signalized intersection under the 2025 Cumulative condition. Implementation of this measure would reduce this impact to a ***less-than-significant*** level.

Since the Project would have significant contributions to the future impacts at these locations, establish a mechanism for Project fair share contribution to the implementation of these mitigation measures.

(continued)

Mitigation 8-7 (continued):

Implementation of *Mitigation 8-1C (Transportation Management Plan)* would decrease the number of vehicle trips generated by the Project and reduce the magnitude of the Project's significant contribution at these three locations, but the two significant unavoidable impacts described above would remain.

The results of the level of service analysis assuming *Mitigation 8-7* for the 2025 Cumulative conditions with improvements scenario are presented in Table 8.23. With implementation of these additional improvements, all the intersections with significant Project contributions would operate at acceptable conditions. However, for the reasons discussed in *Mitigation 8-7*, the 2025 cumulative intersection impacts at the Bayshore Boulevard/Leland Avenue and Bayshore Boulevard/Sunnydale Avenue intersections are considered significant and unavoidable.

Impact 8-8: 2025 Cumulative Impacts on Freeway Segment Operation with Planned Regional Roadway Improvements. Assuming implementation of the planned future regional roadway network changes, listed under Impact 8-7 above, the projected 2025 Cumulative impacts on study freeway segments identified under Impact 8-5 above would still occur. The Project would generate between approximately 14 percent of the projected cumulative growth in traffic on these freeway segments in the AM peak hour, and between 11 and 15 percent in the PM peak hour. These anticipated Project contributions would be considerable and would represent a ***significant impact*** (see criteria [a], [b], and [g] in subsection 8.3.1, "Significance Criteria," above).

Table 8.24 presents the results of the study freeway segment capacity analysis for the 2025 Cumulative scenario with planned regional roadway improvements (Figure 8.4) during the weekday AM and PM peak hours (the corresponding LOS analysis calculation sheets are presented in the *Transportation Analysis Appendix*). As shown in Table 8.24, all of the study freeway segments would continue to operate at unacceptable conditions (LOS F) in both directions during both the analysis periods. The degree and significance of the Project contribution to this cumulative impact are indicated in previous Tables 8.17 and 8.18.

Mitigation 8-8: The projected poor 2025 cumulative conditions on these freeway segments could only be improved by creating additional mainline capacity, which is not feasible. These freeway segment impacts would therefore be considered ***significant and unavoidable***.

Implementation of *Mitigation 8-1C (Transportation Management Plan)* would help decrease the number of vehicle trips generated by the Project and reduce the magnitude of the Project's significant contribution at these locations, but not to a less-than-significant level.

Table 8.23
MITIGATED 2025 CUMULATIVE CONDITIONS INTERSECTION LEVEL OF SERVICE CONDITIONS WITH REGIONAL TRANSPORTATION IMPROVEMENTS

	Intersection	Traffic Control	Weekday AM Peak Hour LOS	Weekday AM Peak Hour Delay[a]	Weekday PM Peak Hour LOS	Weekday PM Peak Hour Delay[a]
3	Bayshore Boulevard/Arleta Avenue/San Bruno Avenue	Signalized	C	32.3	D	47.4
4	Bayshore Boulevard/Leland Avenue	Signalized	D	52.5	D	39.9
5	Bayshore Boulevard/ Visitacion Avenue	Signalized	C	34.0	D	41.4
6	Bayshore Boulevard/ Sunnydale Avenue	Signalized	D	48.1	D	38.3
8	Tunnel Avenue/Blanken Avenue	Signalized	C	21.1	C	23.6

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) Delay in Seconds per vehicle.
Bold indicates unacceptable conditions.

Table 8.24
2025 CUMULATIVE FREEWAY SEGMENT LEVEL OF SERVICE CONDITIONS WITH REGIONAL ROADWAY IMPROVEMENTS

	Location	Direction[a]	Weekday AM Peak Hour LOS[b]	Weekday AM Peak Hour Density[c]	Weekday PM Peak Hour LOS[b]	Weekday PM Peak Hour Density[c]
1	From South of I-280 split to North of Third Street/Bayshore Boulevard	NB	**F**	**>45**	**F**	**>45**
		SB	**F**	**>45**	**F**	**>45**
2	From South of Sierra Point Parkway to North of I-380 split	NB	**F**	**>45**	**F**	**>45**
		SB	**F**	**>45**	**F**	**>45**

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) NB = Northbound; SB = Southbound.
b) LOS = Level of Service.
c) Density in pc/mi/ln (passenger cars per mile per lane).
Bold indicates unacceptable conditions.

2025 Cumulative Impacts on Freeway On-Ramp Operation with Planned Regional Roadway Improvements. Assuming implementation of the planned future regional roadway network changes listed under *Impact 8-7* above, the new U.S. 101 northbound and southbound on-ramps at Geneva Avenue/Harney Way are projected to operate at unacceptable levels of service during both the AM and PM weekday peak hours under 2025 Cumulative conditions. However, as indicated in previous Tables 8.17 and 8.18, the Project contribution to this cumulative growth impact would be zero percent--i.e., ***less-than-significant***.

Table 8.25 presents the results of study freeway on-ramp capacity analysis for the 2025 Cumulative scenario with planned regional roadway improvements (Figure 8.4) for the weekday AM and PM peak hours (the corresponding LOS analysis calculation sheets are presented in the *Transportation Analysis Appendix*). As shown, the new U.S. 101 northbound and southbound on-ramps at Geneva Avenue/Harney Way are projected to operate at unacceptable conditions (LOS F) during both AM and PM peak hours, while the U.S. 101 northbound on-ramp from Bayshore Boulevard/Third Street is projected to operate at acceptable conditions (LOS C). The majority of the vehicular traffic coming in and out of the Project Area and the nearby vicinity would likely use the new interchange instead of ramps at Bayshore Boulevard/Third Street. This overall increase in volumes at the Geneva Avenue/Harney Way ramps would cause it to operate unacceptably under this scenario. However, as shown in Tables 8.17 and 8.18, the Project contribution to this cumulative impact would be zero percent compared to the overall increase in volumes from vehicles not associated with the proposed Project.

Mitigation. No significant Project contribution to the cumulative impact has been identified; no mitigation is required.

8.3.6 Impacts on Transit Operation

Impact 8-9: Project Impacts on Transit Service. The projected Project growth increment would generate about 433 additional transit trips in the weekday AM peak hour and 440 additional transit trips in the weekday PM peak hour. The additional transit trips to and from the Project Area would use the Muni T line (light rail) that runs along Bayshore Boulevard, other local Muni bus lines serving the Project Area vicinity, and nearby Caltrain service. The various existing Muni lines serving the Project Area currently operate at substantially less than capacity during both the weekday AM and PM peak hours. The additional Project-generated transit trips would therefore not be expected to significantly impact peak period transit capacity. However, several of the bus lines serving the Project Area operate along Bayshore Boulevard, including the Muni 9, 9X, 9AX, 9BX, 15, and 56 lines and the SamTrans 34, 292, and 397 routes. As indicated under Impacts 8-1, 8-3 and 8-4 above, the Project would result in or contribute substantially to congestion and delay along Bayshore Boulevard (as indicated by the projected LOS E and F operational conditions at Bayshore Boulevard study intersections). These Project-related conditions would negatively effect operations of the various Bayshore Boulevard transit lines (including the associated mitigation involving possible relocation of a Muni bus stop--see *Mitigation 8-1A*), resulting in a ***significant environmental impact*** (see criterion [k] under subsection 8.3.1, "Significance Criteria," above).

Table 8.25
2025 CUMULATIVE FREEWAY ON-RAMP LEVEL OF SERVICE CONDITIONS WITH REGIONAL TRANSPORTATION IMPROVEMENTS

	Location	Weekday AM Peak Hour LOS[a]	Weekday AM Peak Hour Density[b]	Weekday PM Peak Hour LOS[a]	Weekday PM Peak Hour Density[b]
1	U.S. 101 NB on-ramp from Bayshore Boulevard/Third Street	C	23.9	C	23.6
2	U.S. 101 NB on-ramp from Geneva Avenue/Harney Way	**F**	**N/A**	**F**	**N/A**
3	U.S. 101 SB on-ramp from Geneva Avenue/Harney Way	**F**	**N/A**	**F**	**N/A**

SOURCE: DMJM Harris/AECOM, 2007

Notes:
a) LOS = Level of Service.
b) Density in pc/mi/ln (passenger cars per mile per lane).
N/A indicates oversaturated conditions (demand exceeds capacity).
Bold indicates unacceptable conditions.

Mitigation 8-9: The addition of Project-related transit trips would not result in a significant impact to transit capacity (existing transit services currently have capacity to accommodate the new trips). As a result, no transit service capacity mitigation measures would be required. However, the new vehicle-trips generated by the Project would result in long delays at several Bayshore Boulevard intersections, as indicated above under Impacts 8-1, 8-3 and 8-4. Related intersection improvement and left-turn pocket extension measures have been identified under Mitigations 8-1, 8-3 and 8-4 to mitigate these traffic impacts. Because these measures would not fully mitigate the associated traffic impacts, and could result in additional impacts associated with the relocation of a Muni bus stop, this Project-related local transit service delay impact would be considered ***significant and unavoidable***.

Implementation of *Mitigation 8-1C (Transportation Management Plan)* would help decrease the number of vehicle trips generated by the Project and reduce the magnitude of the Project's impact on transit operations at these locations, but not to a less-than-significant level.

In addition, to encourage additional transit riders (thereby further reducing the amount of vehicular activity), the Project could implement the following measures:

- Consistent with the Design for Development, implement building design features that promote the primary access to new Project Area buildings from transit stops and pedestrian areas, and discourage the location of primary access points to new Project Area buildings through parking lots and other auto-oriented entryways.

- Implement recommendations of the *San Francisco Better Streets Plan* in the Project Area, which are designed to make the pedestrian environment safer and more comfortable for pedestrians, including traffic calming strategies, sidewalk corner bulbs, and other features.

- Provide transit amenities at key light rail and bus stops in the Project Area, including "Next Bus" passenger information, accurate and usable passenger information and maps, and adequate light, shelter, and sitting areas.

8.3.7 Pedestrian Impacts

Project Impacts on Vehicular/Pedestrian Safety Conditions. Because existing Project Area sidewalks and crosswalks currently have relatively low to moderate pedestrian volumes, the additional pedestrian trips generated by the Project could be readily accommodated on the existing and proposed Project Area sidewalk system and would not substantially affect pedestrian operations along these sidewalks and crosswalks. However, vehicles entering and exiting Redevelopment Zone 1 via the three primary Bayshore Boulevard access points would likely have negative effects on pedestrian crossing conditions at these locations. As currently designed, the existing traffic signals at the intersections of Bayshore Boulevard/Leland Avenue,

Bayshore Boulevard/Visitacion Avenue, and Bayshore Boulevard/Sunnydale Avenue allow for vehicles approaching Bayshore Boulevard from these three side streets to make right- and left-turns at the same time pedestrians are in the crosswalks.

Due to the Project's location in a relatively urban environment and the fact that the Project-facilitated development scenario would include a substantial increase in neighborhood-serving commercial uses, a substantial portion of the Project-generated trips would be by "Other" modes, as shown in previous Table 8.8. Most of these "other" trips would be walk trips. In addition, the "Transit" mode trip totals indicated in Table 8.8 would involve other increases in walk trips to and from nearby local/regional transit stops, such as the Muni T stations and the Caltrain Bayshore station.

The Design for Development and the *Leland Avenue Street Design Project* (both of which are components of the redevelopment program) propose a wide range of pedestrian amenities, including continuation of the existing street grid pattern eastward across Bayshore Boulevard through Redevelopment Zone 1, more convenient pedestrian access to public transit (including a temporary pedestrian path to the Caltrain station), traffic calming measures, a direct pedestrian connection from Visitacion Valley through Redevelopment Zone 1 to the Little Hollywood neighborhood, and (as a separate project subject to its own CEQA review) an extension of the Muni T line along Sunnydale Avenue to connect directly with the Caltrain station.

Corner bulbs are specifically suggested in the Design for Development for Bayshore Boulevard at Sunnyvale Avenue (southwest corner), Visitacion Avenue (southeast corner), Leland Avenue (northeast corner), Arleta Avenue (northeast corner), and at all intersections on Leland Avenue, to reduce the effective width of the streets for pedestrians. Also, the Design for Development proposes pedestrian-timed traffic lights and inset flashing lights at the Bayshore/Leland intersection. Further, since the majority of the vehicle-pedestrian conflicts would occur on the north side of each primary intersection (most of the Project-generated traffic would be making a right-turn from the Leland, Visitacion, or Sunnydale driveway to northbound Bayshore Boulevard), the Design for Development calls for the street network within Redevelopment Zone 1, along with the signage and internal sidewalks, to direct pedestrians to crosswalks on the south side of the intersections.

In addition, proposed development in Zone 1 would be assessed a Community Facilities and Infrastructure Fee of approximately $5,725,000, which could be used partly to fund public street improvements (see previous subsection 8.2.5 of this chapter).

Implementation of the pedestrian amenities and design features included in the Design for Development, and described above, would result in a ***less-than-significant impact*** on vehicular/pedestrian safety conditions (see criteria [c], [e], and [j] in subsection 8.3.1, "Significance Criteria," above).

Mitigation. No significant impact has been identified; no mitigation is required.

8.3.8 Bicycle Impacts

Impact 8-10: Project Impacts on Bicycle Conditions. Implementation of the Project-proposed new southbound Bayshore Boulevard left-turn pocket into Redevelopment Zone 1 at Leland Avenue (see associated *Mitigation 8-3*) would necessitate the elimination of the existing southbound bicycle lane segment between Leland Avenue and Raymond Avenue. This would result in a gap in the bicycle lane network, which would result in a ***potentially significant impact*** to bicycle conditions (see criterion [k] under subsection 8.3.1, "Significance Criteria," above).

The Project Area is located near several citywide bicycle routes (such as the #5 and #25 on Bayshore Boulevard and #90 on Geneva Boulevard), and is within convenient cycling distance to several nearby destinations. As a result, a portion of the trips generated by the Project (i.e., of the "Other" trips indicated in Table 8.8) would likely be by bicycle.

Residential and commercial developments in San Francisco are required by the San Francisco *Planning Code* to provide safe and secure bicycle parking, based on the number of residential units or the square footage of individual buildings. In addition, the *Planning Code* requires the provision of shower and locker facilities for bicycle riding employees at commercial and other buildings, based on the overall square footage.

As currently proposed, the Design for Development component of the Project proposes provision of one bicycle parking space per every two residential units, and Code-required bicycle parking for all other land uses. This would equate to a total of approximately 634 bicycle spaces in Redevelopment Zone 1 and 172 bicycle spaces in Redevelopment Zone 2. In addition, the Project-facilitated development would include the Code-required shower and locker facilities for all commercial buildings, including three showers and six clothes lockers within Zone 1. As a result, the Project would be expected to meet or exceed the *Planning Code* requirements for the provision of bicycle amenities.

Mitigation 8-10. To mitigate this potential impact to the Bayshore Boulevard bicycle lane, do not provide the proposed new southbound left-turn into Redevelopment Zone 1 at Leland Avenue (see associated *Mitigation 8-1B*). This would reduce the Project's impact on bicycle conditions to a ***less-than-significant*** level.

8.3.9 Parking Impacts

Project Parking Impacts. Parking demands are typically estimated in terms of both long-term demand (typically residents and employees) and short-term demand (typically visitors and patrons). For residential units, long-term parking demand is typically estimated based on the number and size of the unit. For retail, restaurant and community-serving uses, the long-term parking demand is typically estimated based on the number of employees, and the short-term parking demand is based on the total daily visitor trips and an average turnover rate.

Table 8.26 presents the estimated parking demand totals for midday and evening periods for Redevelopment Zone 1 and Redevelopment Zone 2 development based on demand rates described in the *SF Guidelines*. As the table indicates, under the *SF Guidelines*, Zone 1 would

Table 8.26
PROJECTED PARKING DEMAND AND SUPPLY

	Midday			Evening		
Project	Residential	Retail/Other (Long-term, Short-term)	Total	Residential	Retail/Other (Long-term, Short-term)	Total
Redevelopment Zone 1	1,367 [1,253]	551 (128, 423) [140]	1,918 [1,393]	1,708 [1,253]	465 (102, 362) [140]	2,173 [1,393]
Redevelopment Zone 2	370 [335]	194 (51, 143) [0]	564 [335]	462 [335]	155 (41, 114) [0]	617 [335]

SOURCE: DMJM Harris/AECOM, 2007

Note: Additional parking supply under the proposed redevelopment program is shown in [brackets]. Also, an as-yet unknown number of on-street parking spaces would be provided throughout Zone 1, primarily to serve short-term retail customers.

have an estimated midday demand for 1,918 spaces and an estimated evening demand for 2,173 spaces. Table 8.26 indicates that Zone 2 development would have a midday demand for 564 spaces and an evening demand for 617 spaces.

Under the Design for Development proposed parking program, all added residential units within the Project Area would be allowed to provide one off-street parking space for each unit; and for added retail and other uses, no off-street parking is proposed except for the 140 spaces indicated for the proposed 50,000 square-foot grocery store. Based on the residential development totals shown in previous Table 3.1 in the Project Description (chapter 3) of this EIR, approximately 1,393 parking spaces (one per each of the 1,253 total residential units anticipated in Redevelopment Zone 1 plus the 140 retail spaces) would be provided under the Design for Development in Zone 1, and 335 parking spaces would be provided in Zone 2 (one per each new residential unit). In addition, on-street parking spaces would be provided throughout Zone 1, primarily to serve short-term retail customers.

Comparing the *SF Guidelines*-based parking demand estimates in Table 8.26 with the Design for Development proposed parking provisions described above indicates that during the weekday midday period, Zone 1 could have a parking shortfall of 525 spaces (1,918 minus 1,393) and Zone 2 could have a parking shortfall of 229 spaces (564 minus 335). During the weekday evening period, Zone 1 could have a parking shortfall of 780 spaces (2,173 minus 1,393) and Zone 2 could have a parking shortfall of 282 spaces (617 minus 335). In addition, the proposed creation of a mid-block access point and left-turn pocket at the Bayshore Boulevard/Visitacion Avenue intersection would require the removal of about 18 existing on-street parking spaces.

If the City's current *Planning Code* parking requirements were applied, Redevelopment Zone 1 would be required to provide a total of 1,523 parking spaces, including 1,250 spaces for the residential units and 273 spaces for the retail and other uses. The anticipated infill development in Redevelopment Zone 2 would be allowed to provide 439 parking spaces, including 338 spaces for the residential uses and 101 spaces for the retail and other uses.

As discussed in subsection 8.1.5, existing on-street parking along Bayshore Boulevard is about 75 percent occupied during the weekday midday and evening; on-street parking along Leland, Rutland, Arleta and Visitacion Avenues is generally fully occupied; and on-street parking along other streets in the Project Area is approximately 50 percent occupied. Since on-street parking is typically available throughout the Project Area, a portion of the projected unmet demand associated with the added Project Area development could potentially be accommodated by the area's existing on-street parking supply. To the extent that sufficient and convenient on-street parking is not available, residents may park outside of the area, such as within the adjacent Little Hollywood neighborhood or in other locations throughout the Visitacion Valley neighborhood, or reduce their vehicle ownership. In addition, there may be effects to pedestrians, bicycles, and transit caused by resulting parking on the sidewalk, double-parking, parking at intersections, or other illegal parking activity.

The transportation analysis herein does account for potential secondary effects of any parking deficits, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the driver's destination, and then seek parking farther away if more convenient parking is not available. Moreover, the secondary effects of drivers searching for parking is typically offset by a reduction in vehicle-trips due to others who are aware of constrained parking conditions in a given area. Hence, any secondary environmental impacts which may result from a shortfall in parking in the vicinity of the proposed Project would be minor, and the traffic assignments used in this EIR transportation analysis, as well as in the associated pedestrian safety, air quality, and noise analyses of this EIR, reasonably address potential secondary effects.

In general, projected parking shortfalls relative to demand are not considered to represent significant "environmental" impacts in San Francisco. The anticipated Project parking shortfalls identified above would therefore represent a ***less-than-significant*** environmental impact.

Mitigation. No significant environmental impact has been identified; no mitigation is required.

8.3.10 Loading Impacts

(a) Loading Demand. "Loading demand" consists of the number of delivery and service vehicle-trips generated by a project, plus the number of loading spaces that would be required to accommodate the demand. The number of daily delivery/service vehicle-trips is typically projected based on the size of each land use and the truck trip generation rate specific to each land use. The number of loading spaces necessary to accommodate this demand is typically determined based on the anticipated hours of operation, turnover of loading spaces, and hourly distribution of trips. The information and rates used in the loading demand analysis for this EIR were obtained from the *SF Guidelines* for each identified land use.

Table 8.27 presents the weekday average and peak loading demand projections for Redevelopment Zones 1 and 2 at buildout. As shown, Zone 1 would generate about 64 truck trips per day, which would result in a demand for about 3 loading spaces during the average hour and 4 loading spaces during the peak hour of loading demand. The anticipated Zone 2 infill development along Bayshore Boulevard and Leland Avenue would generate 20 truck trips per day, which would result in a demand for about one loading space during the average hour during the peak hour of loading demand.

(b) Loading Impacts. As currently proposed in the Design for Development, Redevelopment Zone 1 would provide eight off-street loading spaces, one for each of seven planned residential blocks and one for the proposed grocery store. Due to the projected size of any individual new infill buildings that would be developed in Redevelopment Zone 2, it is anticipated that no off-street loading facilities would be provided. At this time, the dimensions of associated future loading docks in these instances are not known; however, it is anticipated that they would meet the width, length, and vertical clearance requirements of the San Francisco *Planning Code.*

Based on the estimated size of Zone 1 residential units and other land use square footages, Zone 1 would be required to provide 12 off-street loading spaces in total. Since the anticipated infill development potential within Zone 2 would be limited to occasional smaller buildings, it is projected that no off-street loading spaces would be required.[1]

As shown in Table 8.27, it is estimated that Zone 1 would generate about 64 daily delivery/service vehicle-trips per day, which would correspond to a demand for three loading spaces during an average hour and four spaces during the peak hour of loading activities. Therefore, the proposed supply of eight loading spaces would meet projected loading demand. The anticipated small amount of potential infill development in Zone 2 would generate about 20 daily delivery/service vehicle-trips (evenly split between the residential and the retail/other uses), which would correspond to a total demand for about one loading space during an average hour and during the peak hour of loading activities. Since no new off-street loading spaces would likely be created with these small, individual Zone 2 infill developments, all loading demand would need to be accommodated on-street through existing yellow loading zones, or would be accommodated within the design of individual buildings. Currently, there are existing yellow loading zones located throughout the Project Area, including along Bayshore Boulevard and Leland Avenue, plus along other side streets. As such, it is anticipated that the Project-related increases in loading demand could be accommodated without substantially affecting area-wide circulation conditions, and therefore would represent a ***less-than-significant*** environmental impact.

Mitigation. No significant environmental impact has been identified; no mitigation is required.

8.3.11 Construction Period

Project-Related Construction Period Transportation and Circulation Impacts. In general, the analysis of construction impacts is specific to individual development projects, and includes consideration of temporary roadway and sidewalk closures, relocation of bus stops, effects on roadway circulation due to construction trucks, and increases in vehicle-trips, transit trips and

[1]The San Francisco *Planning Code* does not require the provision of off-street loading spaces for retail uses with less than 10,000 gross square feet, and for all other uses with less than 100,000 gross square feet.

Table 8.27
DELIVERY SERVICE VEHICLE TRIPS AND LOADING DEMAND

Project	Daily Service Vehicle Trips			Estimated Loading Space Demand					
				Average Hour			Peak Hour		
	Residential	Retail/ Other	Total	Residential	Retail/ Other	Total	Residential	Retail/ Other	Total
Redevelopment Zone 1	38	26	64	1.7	1.2	2.9	2.2	1.5	3.7[a]
Redevelopment Zone 2	10	10	20	0.5	0.5	1.0	0.6	0.6	1.2[b]

SOURCE: DMJM Harris/AECOM, 2007

Notes:

a) The proposed Project would supply eight (8) loading spaces in Zone 1, which would meet projected loading demand (3.7 peak hour spaces) for Zone 1.
b) Since no new off-street loading spaces would likely be created in Zone 2, all loading demand (1.2 peak hour spaces) would need to be accommodated on-street through existing yellow loading zones, or would be accommodated within the design of individual buildings.

parking demand associated with construction workers. As such, construction impacts have not been assessed for the broader Project development program. Separate, site-specific construction analyses would be conducted for all future substantive individual development projects in the Project Area. In any event, the potential impacts associated with these individual developments would not be considered significant since they would be temporary and of short-term duration.

In general, Project-related construction-related activities would typically occur Monday through Friday, between 6:00 AM and 6:00 PM, with limited construction on weekends (on an as-needed basis). Construction staging typically occurs within individual development sites and from the adjacent sidewalks. Affected sidewalks along construction site frontages are usually closed throughout the construction duration, with temporary pedestrian walkways constructed in the adjacent parking lanes. Such temporary traffic lane closures would need to be coordinated with the City in order to minimize the impacts on local traffic. In general, such lane and sidewalk closures are subject to review and approval by the Department of Public Works (DPW) and the Interdepartmental Staff Committee on Traffic and Transportation (ISCOTT). Any required bus stops relocations would need to be coordinated with the City and the appropriate transit agencies.[1]

During the individual development construction periods, temporary and intermittent traffic and transit impacts may result from truck movements to and from the development sites. Truck movements during periods of peak traffic flow would have greater potential to create conflicts than truck movements during non-peak hours because of the greater number of vehicles on the streets during the peak hour that would have to maneuver around queued trucks. The sponsors of individual developments would have to meet with MTA, Interdepartmental Staff Committee on

[1] If it is determined that temporary Muni bus stop relocations would be needed, the relocations would be coordinated with the Muni Street Operations/Special Events office, which can be contacted at (415) 923-6058.

Traffic and Transportation (ISCOTT), and other responsible City agencies to coordinate construction activities so as to minimize construction impacts on vehicular, transit and pedestrian traffic.

Temporary parking demand from construction workers' vehicles and impacts on local intersections from construction worker traffic would occur in proportion to the number of construction workers who would use automobiles. Parking of construction workers' vehicles would temporarily increase occupancy levels in off-street parking lots, either by those vehicles or by vehicles currently parking in on-street spaces that would be displaced by construction workers' vehicles.

It is possible that construction activity associated with an individual development would overlap with that of other nearby developments. As a condition of street closure, use of parking lanes for construction and other permits, the City could require that construction contractors for multiple developments meet to determine ways to minimize traffic and transit disruption due to the combined construction activities. In summary, anticipated environmental impacts associated with Project-related construction activities would be ***less-than-significant***.

Mitigation. No significant environmental impact has been identified; no mitigation is required.

8.4 SUMMARY OF TRANSPORTATION AND CIRCULATION IMPACTS AND MITIGATION MEASURES

As discussed in the introduction to this EIR chapter, the transportation and circulation analysis is intended to identify the optimum balance of the four primary transportation modes in Visitacion Valley--transit, bicycle, pedestrian, and vehicular--that would result in the most benefit and the least environmental impact. This analysis framework has resulted in some possible mitigation measures for vehicular traffic impacts being considered "infeasible"--and therefore the associated impacts being considered significant and unavoidable--because the mitigations would conflict with the circulation and safety of transit, bicyclists, and/or pedestrians, as well as proposals contained in the Design for Development and *Leland Avenue Street design Project*. In addition, the U.S. 101 freeway in the Project Area vicinity is a heavily traveled roadway and is expected to remain so in the future; this existing and future condition (including vehicle-trips from the proposed Project) has contributed to significant unavoidable impacts.

The following transportation and circulation impacts identified in this chapter are considered *significant and unavoidable*:

- Impact 8-1: Existing Plus Project Impacts on Intersection Operation (Bayshore/Blanken, Bayshore/Arleta/San Bruno, Bayshore/Leland, Bayshore/Visitacion, Bayshore/Sunnydale);
- Impact 8-2: Existing Plus Project Impacts on U.S. 101 Freeway Segment Operation;
- Impact 8-3: Project Queuing Impacts at Redevelopment Zone 1 Access Points (Bayshore at Leland, Visitacion, and Sunnydale);
- Impact 8-4: 2025 Cumulative Impacts on Intersection Operation (Bayshore/Tunnel, Alana/Beatty);

- Impact 8-5: 2025 Cumulative Impacts on Freeway Segment Operation;
- Impact 8-7: 2025 Cumulative Impacts on Intersection Operation with Planned Regional Roadway Improvements (Bayshore/Leland, Bayshore/Sunnydale);
- Impact 8-8: 2025 Cumulative Impacts on Freeway Segment Operation with Planned Regional Roadway Improvements; and
- Impact 8-9: Project Impacts on Transit Service.

As described in *Mitigation 8-1C* in this chapter, transportation and circulation conditions in the Project Area and vicinity would continue to be monitored as the redevelopment program is implemented, thereby providing opportunities to revise and coordinate the range of available and feasible mitigations.

9. AIR QUALITY

This EIR chapter describes the impacts of the proposed redevelopment program on local and regional air quality. The chapter was prepared using methodologies and assumptions recommended within the air quality impact assessment guidelines of the Bay Area Air Quality Management District (BAAQMD).[1] In keeping with these guidelines, the chapter describes existing air quality, potential short-term construction-related impacts, potential direct and indirect long-term emissions associated with the Project, the impacts of these emissions on both the local and regional scale, and mitigation measures warranted to reduce or eliminate any identified significant impacts.

This chapter also discusses the Project's potential effects, both beneficial and adverse, on greenhouse gases and global climate change.

9.1 SETTING

9.1.1 Air Basin Characteristics

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The Project Area is located in the City and County of San Francisco and is within the boundaries of the San Francisco Bay Area air basin (Bay Area). The Bay Area encompasses the nine-county region including all of Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, Marin, and Napa counties, and the southern portions of Solano and Sonoma counties. The climate of the Bay Area is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. During winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During summer and fall, emissions generated within the Bay Area can combine with abundant sunshine, under the influences of topography and subsidence inversions, to create conditions conducive to the formation of photochemical pollutants such as ozone and other pollutants such as nitrates, sulfates, and small particulates.

More specifically, the Project Area is located in the Peninsula climatological sub-region. The Peninsula sub-region extends from the area northwest of San Jose to the Golden Gate. The Santa Cruz Mountains extend up the center of the Peninsula, with elevations exceeding 2,000 feet at the south end, and gradually decreasing to 500 feet elevation (with the exception of San Bruno Mountain, whose elevation is 1,314 feet). At the north end of the Peninsula lies San Francisco. Because most of the topography of San Francisco is below 200 feet, the marine

[1]Bay Area Air Quality Management District. BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans; April 1996 (Revised December 1999).

layer is able to flow across most of the city, resulting in a cool and windy climate. Rainfall in San Francisco averages approximately 21 inches per year.[1]

The effect of the Santa Cruz Mountains can be seen in the summertime maximum temperatures. In San Francisco, the maximum daily temperatures from June through August are in the mid-60s, while daily maximum temperatures during the winter months are in the high-50s. Annual average wind speeds generally range from 5 to 10 miles per hour throughout the Peninsula. Individual sites, however, can experience significant differences.[2]

On the Peninsula, there are three important gaps in the Santa Cruz Mountains. The largest is the San Bruno Gap, extending from Fort Funston on the ocean side to the San Francisco Airport on the bay side. Because the gap is oriented in the same northwest to southeast direction as the prevailing winds, and because the elevations along the gap are under 200 feet, marine air is easily able to penetrate into the bay. Another gap in the Santa Cruz Mountains is the Crystal Springs Gap, along the Highway 92 route between Half Moon Bay and San Carlos. Finally, Visitacion Valley is located downwind (east) of the Alemany Gap that lies between the San Miguel Hills to the north and San Bruno Mountain (height 1,314 feet) to the south. This gap generally has accelerated winds when the wind direction is off the ocean (from the west); the gap also has a relatively high frequency of low stratus clouds.

Air pollution potential is highest along the southeastern portion of the Peninsula because this area is most protected from the high winds and fog of the marine layer, the emission density is relatively high, and pollutant transport from upwind sites is possible. In San Francisco, to the north (including Visitacion Valley), pollutant emissions are high, but winds are generally fast enough to carry the pollutants away before they can accumulate.

9.1.2 Wind Characteristics

Winds in San Francisco are most frequently from the west to northwest, reflecting the persistence of sea breezes. Wind direction is most variable in the winter. The approach of winter storms often results in southerly winds. Although not as frequent as westerly winds, these southerly winds are often strong. The strongest winds in San Francisco are typically from the south during the approach of a winter storm.

Long-term wind data in San Francisco is available from historical wind records from the U.S. Weather Bureau weather station atop the old Federal Building at 50 United Nations Plaza. The average wind speeds (maximum 14.5 knots) are greatest in the summer and least in the fall (maximum 12.8 knots). Winds also exhibit a diurnal (daily) variation, with the strongest winds occurring in the afternoon, and lightest winds occurring in the early morning.

9.1.3 Current Regulatory Context

The United States Environmental Protection Agency (EPA) is responsible for implementing the programs established under the federal Clean Air Act, such as establishing and reviewing the federal ambient air quality standards and judging the adequacy of State Implementation Plans (SIPs), which are required reports detailing how states will attain the standards. However, the

[1]Don Ballanti, Certified Consulting Meteorologist, December 2007; and City of San Francisco, Consolidated Annual Precipitation Records, revised July 30, 1990.

[2]Ballanti.

EPA has delegated authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

In California, the California Air Resources Board (CARB) is responsible for establishing and reviewing the state ambient air quality standards, developing and managing the California SIP, securing approval of the SIP from the U.S. EPA, and identifying toxic air contaminants (TACs). CARB also regulates mobile emission sources in California, such as construction equipment, trucks, and automobiles, and oversees the activities of air quality management districts, which are organized at the county or regional level.

An air quality management district is responsible primarily for regulating stationary emission sources at facilities within its geographic areas and for preparing the air quality plan is required under the federal Clean Air Act and California Clean Air Act. The Bay Area Air Quality Management District (BAAQMD) is the regional agency with regulatory authority over emission sources in the Bay Area, which includes all of San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Marin, and Napa counties, and the southern portions of Sonoma and Solano counties.

9.1.4 Air Pollutants and Ambient Standards

Air pollutant levels are typically described in terms of "concentrations," which refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Standards were established by the federal Clean Air Act for six "criteria" pollutants, including ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulates (PM_{10} and $PM_{2.5}$), and lead (Pb); the EPA refers to these pollutants as "criteria" pollutants because the agency has regulated them by developing public health- and welfare-based criteria as the basis for setting permissible concentrations.

Pollutants regulated under the California Clean Air Act are similar to those regulated under the federal Clean Air Act. The federal and California ambient air quality standards are summarized in Table 9.1. The California air quality standards are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, and vinyl chloride. Both the EPA and CARB review ambient air quality standards on a regular basis and make necessary adjustments in response to updated scientific information.

(a) Ozone (O_3). Ozone is the principal component of smog. Ozone is not directly emitted into the atmosphere, but instead forms through a photochemical reaction of reactive organic gases (ROG) and nitrogen oxides (NO_X), which are known as ozone precursors. Ozone levels are highest from late spring through autumn when precursor emissions are high and meteorological conditions are warm and stagnant. Motor vehicles create the majority of reactive organic gas and nitrogen oxide emissions in the Bay Area region.

Exposure to levels of ozone above current ambient air quality standards can lead to human health effects such as lung inflammation and tissue damage and impaired lung functioning. Ozone exposure is also associated with symptoms such as coughing, chest tightness, shortness of breath, and the worsening of asthma symptoms. The greatest risk for harmful health effects belongs to outdoor workers, athletes, children, and others who spend greater amounts of time outdoors during smoggy periods. Elevated ozone levels can reduce crop and timber yields, as well as damage native plants. Ozone can also damage materials such as rubber, fabrics, and plastics.

Table 9.1
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Federal Primary Standard[1]	State Standard[2]
Ozone (O_3)	8-Hour	0.075 ppm[3]	0.07 ppm
	1-Hour	--	0.09 ppm
Carbon Monoxide (CO)	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide (NO_2)	Annual Average	0.05 ppm	0.03 ppm
	1-Hour	--	0.18 ppm
Sulfur Dioxide (SO_2)	Annual Average	0.03 ppm	--
	24-Hour	0.14 ppm	0.04 ppm
	1-Hour	--	0.25 ppm
Particulates (PM_{10})	Annual Average	--	20 ug/m3
	24-Hour	150 ug/m3	50 ug/m3
Particulates ($PM_{2.5}$)	Annual Average	15 ug/m3	12 ug/m3
	24-Hour	35 ug/m3	--
Lead (Pb)	3-Month	1.5 ug/m3	--
	30-Day	--	1.5 ug/m3
Sulfates	24-Hour	--	25 ug/m3
Hydrogen Sulfide	1-Hour	--	0.03 ppm
Vinyl Chloride	24-Hour	--	0.01 ppm

SOURCE: California Air Resources Board, Ambient Air Quality Standards (2/22/07) and http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

ppm = parts per million, ug/m3 = micrograms per cubic meter

[1] Federal standards other than for ozone and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year.

[2] California standards for ozone, carbon monoxide (except Lake Tahoe), nitrogen dioxide, sulfur dioxide (1-hour and 24-hour), and PM_{10} are values that are not to be exceeded. The standards for lead are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average, then some measurements may be excluded. In particular, measurements are excluded which CARB determines would occur less than once per year on the average.

[3] On March 12, 2008, the EPA revised the federal 8-hour ozone standard from 0.080 ppm to 0.075 ppm.

In April 2005, CARB approved a new 8-hour standard of 0.070 ppm and retained the one-hour ozone standard of 0.09 ppm after an extensive review of the scientific literature. Evidence from the reviewed studies indicate that significant harmful health effects could occur among both adults and children if exposed to levels above these standards.

(b) Carbon Monoxide (CO). CO is a non-reactive pollutant that is highly toxic, invisible, and odorless. It is formed by the incomplete combustion of fuels. The largest sources of CO emissions are motor vehicles, wood stoves, and fireplaces. Unlike ozone, CO is directly emitted to the atmosphere. The highest CO concentrations occur during the nighttime and early mornings in late fall and winter. CO levels are strongly influenced by meteorological factors such as wind speed and atmospheric stability.

The health threat from elevated ambient levels of CO is most serious for those who suffer from heart disease, chronic lung disease, and anemia. For a person with heart disease, a single exposure to CO at relatively low levels may cause chest pain and reduce that person's ability to exercise; repeated exposure may contribute to other cardiovascular effects. High levels of CO can also affect healthy people. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death. CO levels measured in the Bay Area are well below the health-based standards.

(c) Nitrogen Dioxide (NO_2). NO_2 is an essential ingredient in the formation of ground-level ozone pollution. NO_2 is one of the nitrogen oxides (NO_x) emitted from high-temperature combustion processes, such as those occurring in trucks, cars, and power plants. Home heaters and gas stoves also produce NO_2 in indoor settings.

Besides causing adverse health effects, NO_2 is responsible for the visibility reducing reddish-brown tinge seen in smoggy air in California. NO_2 is a reactive, oxidizing gas capable of damaging cells lining the respiratory tract. Studies suggest that NO_2 exposure to levels near the current standard may worsen the effect of allergens in allergic asthmatics, especially in children. Levels measured in the Bay Area are well below current standards.

(d) Sulfur Dioxide (SO_2). SO_2 is a colorless gas with a pungent, irritating odor. Its major sources are diesel vehicle exhaust, coal- and oil-powered power plants, and various industrial processes. SO_2 can aggravate "chronic obstruction" lung disease and increase the risk of acute and chronic respiratory disease. SO_2 is an ingredient in acid rain, which can damage trees, waterbodies, and property, and can reduce visibility.

(e) Particulate Matter (PM_{10} and $PM_{2.5}$). Particulate matter (PM) is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials such as metals (including lead), soot, soil, and dust. Particles 10 microns or less in diameter are defined as "respirable particulate matter" or "PM_{10} ".

Fine particles are 2.5 microns or less in diameter ($PM_{2.5}$) and can contribute significantly to regional haze and reduction of visibility. Inhalable particulates come from smoke, dust, aerosols, and metallic oxides. Although particulates are found naturally in the air, most particulate matter found in the Bay Area are emitted either directly or indirectly by motor vehicles, industry, construction, agricultural activities, and wind erosion of disturbed areas. Most $PM_{2.5}$ is comprised of combustion products such as smoke.

Extensive research reviewed by CARB indicates that exposure to outdoor PM_{10} and $PM_{2.5}$ levels exceeding current ambient air quality standards is associated with increased risk of hospitalization for lung and heart-related respiratory illness, including emergency room visits for asthma. PM exposure is also associated with increased risk of premature deaths, especially in the elderly and people with pre-existing cardiopulmonary disease. In children, studies have shown associations between PM exposure and reduced lung function and increased respiratory symptoms and illnesses. Besides reducing visibility, the acidic portion of PM (nitrates, sulfates) can harm crops, forests, and aquatic and other ecosystems.

(f) Lead (Pb). Leaded gasoline (phased out of U.S. since 1996), paint (houses, cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects; children are at special risk. Some lead-containing chemicals cause cancer in animals.

(g) Toxic Air Contaminants (TAC). TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer or serious illness) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., benzene near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level. The identification, regulation, and monitoring of TACs is relatively new compared to that for criteria air pollutants that have established ambient air quality standards. TACs are regulated or evaluated on the basis of risk to human health rather than comparison to an ambient air quality standard or emission-based threshold.

(h) Asbestos. Asbestos is a fibrous mineral, which is both naturally occurring in ultramafic rock (a rock type commonly found in California), and used as a processed component of building materials. Because asbestos has been proven to cause serious adverse health effects, such as asbestosis and lung cancer, it is strictly regulated either based on its natural widespread occurrence or in its use as a building material. The BAAQMD regulates the demolition of buildings and structures that may contain asbestos. The provisions that cover these operations are found in BAAQMD Regulation 11, Rule 2: *Hazardous Materials; Asbestos Demolition, Renovation and Manufacturing* (also see chapter 11, Hazards and Hazardous Materials, of this EIR).

(i) Diesel Exhaust. Diesel exhaust is the predominant TAC in urban air, with the potential to cause cancer. It is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to CARB, diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by CARB, and are listed as carcinogens either under the state's Proposition 65 or under the federal Hazardous Air Pollutants programs. California has adopted a comprehensive diesel risk reduction program. The EPA and CARB have adopted low sulfur diesel fuel standards that will reduce diesel particulate matter substantially. These standards went into effect in June 2006.

(j) Greenhouse Gases and Global Climate Change. Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs has been implicated as a driving force for global climate change. Climate change is

commonly used interchangeably with "global warming" and the "greenhouse effect." Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and human activities which alter the composition of the global atmosphere.

Individual projects contribute to the cumulative effects of climate change by emitting GHGs during demolition, construction, and operational phases. The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. (Ozone--not directly emitted, but formed from other gases--in the troposphere, the lowest level of the earth's atmosphere, also contributes to retention of heat.) While the presence of the primary GHGs in the atmosphere are naturally occurring, carbon dioxide (CO_2), methane, and nitrous oxide (N_2O) are largely emitted from human activities, accelerating the rate at which these compounds occur within the earth's atmosphere. Carbon dioxide is the "reference gas" for climate change, meaning that emissions of GHGs are typically reported in "carbon dioxide-equivalent" measures. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs, with much greater heat-absorption potential than carbon dioxide, include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes. There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming, although there is uncertainty concerning the magnitude and rate of the warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years.[1] Secondary effects are likely to include global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

The California Energy Commission (CEC) estimated that in 2004 California produced 500 million gross metric tons (about 550 million U.S. tons) of carbon dioxide-equivalent GHG emissions.[2] The CEC found that transportation is the source of 38 percent of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent and industrial sources at 13 percent.[3] In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of the Bay Area's GHG emissions, accounting for just over half of the Bay Area's 85 million tons of GHG emissions in 2002. Industrial and commercial sources were the second largest contributors of GHG emissions with about one-fourth of total emissions. Domestic sources (e.g., home water heaters, furnaces, etc.) account for about 11 percent of the Bay

[1]California Air Resources Board (CARB), 2006a. Climate Change website (http://www.arb.ca.gov/cc/120106workshop/intropres12106.pdf), accessed December 4, 2007.

[2]Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

[3]California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004--Final Staff Report*, publication # CEC-600-2006-013-SF, December 22, 2006; and January 23, 2007 update to that report. Available on the internet at: http://www.arb.ca.gov/cc/ccei/emsinv/emsinv.htm.

Area's GHG emissions, followed by power plants at 7 percent. Oil refining currently accounts for approximately 6 percent of the total Bay Area GHG emissions.[1]

9.1.5 Current Air Quality

The BAAQMD operates a regional air quality monitoring network that provides information on ambient concentrations of criteria air pollutants. Monitored ambient air pollutant concentrations reflect the number and strength of emission sources and the influence of climate and topography. Table 9.2 presents a five-year summary (2002-2006) of monitoring data from the monitoring station closest to the Project Area for those pollutants for which the overall Bay Area is, or has been, designated "nonattainment" (i.e., exceed federal or state standards).

The monitoring data shown in Table 9.2 were collected at the BAAQMD monitoring station on Arkansas Street in San Francisco. This station is located a few miles north of the Project Area. As shown by the table, the two air pollutants of primary concern in San Francisco are ozone and PM_{10}. The state 1-hour ozone standard has not been exceeded since 2001 in San Francisco;[2] however, ozone standards have been exceeded in the overall Bay Area many times since 2001, and San Francisco pollutants contribute to these regional ozone exceedances. In addition, the state daily PM_{10} standard was exceeded occasionally over the past five years, though not since 2004.

9.1.6 Existing Pollutant Sources and Sensitive Receptors in the Project Area

The largest existing source of pollutants in the Project Area are vehicles on the local roadway network. In addition, industrial activities, commercial businesses, and homes in and near the Project Area contribute air pollutants through industrial processes and combustion of fuels for space heating and water heating. Locomotives operating on the rail lines east of the Schlage Lock site are another existing source of pollutants.

The BAAQMD defines sensitive receptors as facilities where sensitive receptor population groups (children, the elderly, the acutely ill, and the chronically ill) are likely to be located. These land uses include residences, schools, playgrounds, child care centers, retirement homes, convalescent homes, hospitals, and medical clinics. There are numerous such receptors in and near the Project Area.

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[1]BAAQMD, *Source Inventory of Bay Area Greenhouse Gas Emissions: Base Year 2002*, November 2006. Available on the internet at: http://www.baaqmd.gov/pln/ghg_emission_inventory.pdf.

[2]Measured ambient concentrations of ozone did *meet* the state 1-hour ozone standard in 2003 and 2004. However for the purposes of evaluating attainment relative to the California Clean Air Act, concentrations must *exceed* the state 1-hour standards to be in violation.

Table 9.2
SAN FRANCISCO AIR QUALITY DATA SUMMARY (2002-2006)

Pollutant	Standard[1]	Monitoring Data by Year[2] 2002	2003	2004	2005	2006
Ozone:						
Highest 1-Hour Average (ppm)[3]		0.05	0.09	0.09	0.06	0.05
Days over State Standard	0.09	0	0	0	0	0
Days over Federal Standard	0.12	0	0	0	0	0
Highest 8-Hour Average (ppm)[3]	0.08	0.05	0.06	0.06	0.05	0.05
Days over Federal Standard		0	0	0	0	0
Carbon Monoxide:						
Highest 8-Hour Average (ppm)[3]	9.0	2.6	2.8	2.2	2.1	2.1
Days over State Standard		0	0	0	0	0
Particulate Matter (PM_{10}):						
Highest 24-Hour Average -						
State (ug/m3)[3,4]	50	**78.6**	**51.7**	**51.8**	**46.4**	**61.4**
Federal (ug/m3)[3,4]	150	74.1	50.8	48.6	44.6	58.0
Estimated days over State Standard[5]		24	6	6	0	0
Estimated days over Federal Standard[5]		0	0	0	0	0
State Annual Average (ug/m3)[3,4]	20	**26.0**	**22.7**	**22.5**	**20.1**	**22.9**
Federal Annual Average (ug/m3)[3,4]	50	24.7	21.8	21.6	19.2	22.0
Particulate Matter ($PM_{2.5}$):						
Highest 24-Hour Average -						
Federal (ug/m3)[3,4]	65	**70.2**	41.6	45.8	43.6	54.3
Estimated days over Federal Standard[5]		4	0	0	0	0
State Annual Average (ug/m3)[3,4]	12	**13.1**	10.1	11.2	9.5	8.7
National Annual Average (ug/m3)[3,4]	15	13.1	10.1	9.9	9.5	NA

SOURCE: California Air Resources Board, Summaries of Air Quality Data, 2002 through 2006; hftp:/twww.arb.ca.gov/adam.

Notes:

[1] Generally, state standards are not to be exceeded, and federal standards are not to be exceeded more than once per year. The federal 1-hour standard for ozone (0.12 ppm) and the federal annual average standard for PM_{10} (50 ug/m3) have since been revoked, but they were in effect at the time these data were collected.
[2] Data are from the Arkansas Street station in San Francisco.
[3] ppm = parts per million; ug/m3 = micrograms per cubic meter.
[4] State and federal data for PM_{10} vary because state statistics are based on California approved samplers, whereas federal statistics are based on samplers using federal reference or equivalent methods.
[5] PM_{10} is not measured every day of the year. Therefore, the number of days the standard is exceeded in the entire year is estimated based on the collected data.

Values in **bold** are in excess of applicable standard. NA = Not Available.

9.2 REGULATORY FRAMEWORK

9.2.1 Regional Air Quality Plans and Attainment Status

The 1977 federal Clean Air Act Amendments require that each regional planning and air pollution control agency prepare a regional air quality plan. The plan must outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards specified in the federal Clean Air Act. The 1988 California Clean Air Act also requires development of air quality plans and strategies to meet state air quality standards in areas designated as nonattainment (with the exception of areas designated as nonattainment for the state PM standards). Maintenance plans are required for attainment areas that had previously been designated nonattainment in order to ensure continued attainment of the standards. Air quality plans developed to meet federal requirements are referred to as State Implementation Plans (SIPs).

The BAAQMD prepares air quality attainment and maintenance plans for the Bay Area in cooperation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG). Currently, there are three air quality plans for the Bay Area. These are:

- the *Ozone Attainment Plan for the 1-Hour National Ozone Standard* (ABAG, 2001), developed to meet federal ozone air quality planning requirements,

- the adopted *Bay Area 2005 Ozone Strategy* (BAAQMD, 2006), developed to meet the planning requirements related to the state ozone standard; and

- the 1996 *Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas,* developed by the air districts with jurisdiction over the ten planning areas, including the BAAQMD, to ensure continued attainment of the federal carbon monoxide standard. In June 1998, the EPA approved this plan and designated the ten areas as attainment. The maintenance plan was revised most recently in 2004.

The *Ozone Attainment Plan* (2001) was prepared as a proposed revision to the Bay Area part of California's plan to achieve the federal ozone standard. The plan was prepared in response to U.S. EPA's partial approval and partial disapproval of the Bay Area's 1999 *Ozone Attainment Plan*, including a finding of failure to attain the national ambient air quality standard for ozone. The Revised Plan was adopted by the Boards of the co-lead agencies and approved by the California Air Resources Board (CARB) in 2001. In July 2003, EPA signed a rulemaking proposing to approve the Plan. EPA also made an interim final determination that the Plan corrects deficiencies identified in the 1999 Plan.

Following three years of low ozone levels (2001, 2002, and 2003), in October 2003, the EPA proposed a finding that the Bay Area had attained the national one-hour standard and that certain components of the 2001 Plan were no longer required. In April 2004, the EPA made final the finding that the Bay Area had attained the one-hour standard and approved the remaining applicable components of the 2001 Plan: emission inventory, control measure commitments, motor vehicle emission budgets, reasonably available control measures, and commitments to further study measures.

EPA recently transitioned from the federal 1-hour ozone standard to a more health protective 8-hour standard. In April 2004, EPA designated regions for the new federal 8-hour standard.

Defined as "concentration-based," the new ozone standard was set at 0.080 parts per million (ppm) averaged over eight hours. The new standard was considered to be more health protective because it protected against health effects that occur with longer exposure to lower ozone concentrations. On March 12, 2008, the EPA revised the 8-hour ozone standard from 0.080 ppm to 0.075 ppm.

Also in April 2004, the EPA designated regions as attainment and nonattainment areas for the 8-hour standard. These designations took effect on June 15, 2004. EPA formally designated the Bay Area as a nonattainment area for the national 8-hour ozone standard, and classified the region as "marginal" according to five classes of nonattainment areas for ozone, which range from "marginal" to "extreme." Marginal nonattainment areas were given an attainment date of Jun 15, 2007, although there was no requirement for these areas to demonstrate their attainment. The marginal nonattainment status for the Bay Area remains after passage of the original attainment deadline, but no sanctions are being considered. The EPA's revision of its 8-hour ozone standard from 0.080 ppm to 0.075 ppm began a new designation/attainment planning process that will eventually determine a new attainment deadline. Currently, CARB has until March 2009 to recommend new attainment designations to the EPA. By March 2010, EPA will make final designations. Attainment plans will be due three years later, in 2013. Revised attainment dates will be established by the EPA at the time of redesignation.[1]

For state air quality planning purposes, the Bay Area is classified as a "serious" non-attainment area for ozone. The serious classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that the Bay Area update its Clean Air Plan (CAP) every three years to reflect progress in meeting the air quality standards and to incorporate new information regarding the feasibility of control measures and new emission inventory data. The Bay Area's record of progress in implementing previous measures must also be reviewed. On January 4, 2006, the BAAQMD adopted the most recent revision to the CAP--the *Bay Area 2005 Ozone Strategy*. The control strategy for the 2005 Ozone Strategy is to implement all feasible measures on an expeditious schedule in order to reduce emissions of ozone precursors and consequently reduce ozone levels both in the Bay Area and downwind regions.

In April 2005, CARB established a new 8-hour average ozone standard of 0.07 ppm. The new standard took effect in 2006. CARB is currently working on designations and implementation guidance for the new standard. The 1-hour state standard has been retained. The San Francisco Bay Area has not attained the state 8-hour standard, and will be taking action as necessary to address attainment.

9.2.2 San Francisco General Plan

(a) General Plan Air Quality Element. The adopted San Francisco General Plan *Air Quality Element* contains the following objectives and policies relevant to air quality in the Project Area:

- *Adhere to state and federal air quality standards and regional programs.* (Objective 1)
- *Cooperate with regional agencies to promote air quality improvement in San Francisco which, in turn, will contribute to air quality improvements at the regional level.* (Policy 1.1)

[1]David Burch, Environmental Planner, BAAQMD; telephone conversation with Don Ballanti, Certified Consulting Meteorologist, April 21, 2008.

- *Reduce mobile sources of air pollution through implementation of the Transportation Element of the General Plan.* (Objective 2)

- *Decrease the air quality impacts of development by coordination of land use and transportation decisions.* (Objective 3)

- *Take advantage of the high-density development in San Francisco to improve the transit infrastructure and also encourage high-density and compact development where an extensive transportation infrastructure exists.* (Policy 3.1)

- *Encourage mixed land use development near transit lines and provide retail and other types of service-oriented uses within walking distance to minimize automobile dependent development.* (Policy 3.2)

- *Continue existing City policies that require housing development in conjunction with office development, and expand this requirement to other types of commercial developments.* (Policy 3.3)

- *Continue past efforts and existing policies to promote new residential development in and close to the downtown area and other centers of employment, to reduce the number of auto commute trips to the city and to improve the housing/job balance within the city.* (Policy 3.4)

- *Continue existing growth management policies in the city and give consideration to the overall air quality impacts of new development, including its impact on the local and regional transportation system, in the permit review process. Ensure that growth will not outpace improvements to transit or the circulation system.* (Policy 3.5)

- *Link land use decision-making policies to the availability of transit, and consider the impacts of these policies on the local and regional transportation system.* (Policy 3.6)

- *Encourage and require planting of trees in conjunction with new development to enhance the pedestrian environment, and select species of trees that optimize achievement of air quality goals.* (Policy 3.9)

- *Minimize exposure of San Francisco's population, especially children and the elderly, to air pollutants.* (Policy 4.3)

- *Minimize particulate matter emissions from road and construction sites.* (Objective 5)

- *Encourage the use of building and other construction materials and methods which generate minimum amounts of particulate matter during construction as well as demolition.* (Policy 5.2)

- *Encourage emission reduction through energy conservation to improve air quality.* (Policy 6.1)

- *Encourage energy conservation through retrofitting of existing facilities.* (Policy 6.3)

(b) General Plan Environmental Protection Element. The adopted San Francisco General Plan *Environmental Protection Element* (Air Quality Section) contains the following objective and policies relevant to air quality in the Project Area:

- *Assure that the ambient air of San Francisco and the Bay Region is clean, provides maximum visibility, and meets air quality standards.* (Objective 4)

- *Support and comply with objectives, policies, and air quality standards of the Bay Area Air Quality Management District.* (Policy 4.1)

- *Encourage the development and use of urban mass transportation systems in accordance with the objectives and policies of the Transportation Element.* (Policy 4.2)

Also relevant to air quality, chapter 11 (Hazards and Hazardous Materials) of this EIR discusses mandated remediation activities and regulations.

The adopted San Francisco General Plan *Urban Design Element* contains the following policy relevant to air quality in the Project Area:

- *Protect residential areas from the noise, pollution, and physical danger of excessive traffic.* (Policy 4.1)

9.2.3 Statewide Actions

(a) Assembly Bill 32. In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gases (GHG) would be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.[1]

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), which requires the California Air Resources Board (CARB) to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

AB 32 establishes a timetable for the CARB to adopt emission limits, rules, and regulations designed to achieve the intent of the Act. CARB staff is recommending a total of 44 discrete early action measures.[2] Measures that could become effective during implementation of the proposed redevelopment program could pertain to construction-related equipment operations. Some proposed early action measures will require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. Applicable early action measures that are ultimately adopted will

[1]There are 12 exceptions to this requirement (e.g., emergency situations, military, adverse weather conditions, etc.), including: when a vehicle's power takeoff is being used to run pumps, blowers, or other equipment; when a vehicle is stuck in traffic, stopped at a light, or under direction of a police officer; when a vehicle is queuing beyond 100 feet from any restricted area; or when an engine is being tested, serviced, or repaired.

[2]California Air Resources Board (CARB), *Draft Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration,* September 2007.

become effective during implementation of the proposed redevelopment program and could be subject to these requirements, depending on the proposed program's timeline.

9.2.4 Local Actions

(a) San Francisco Sustainability Plan. In July 1997, the San Francisco Board of Supervisors approved the *Sustainability Plan for the City of San Francisco,* establishing sustainable development as a fundamental goal of municipal public policy.

(b) Electricity Resource Plan (Revised December 2002). San Francisco adopted the *Electricity Resource Plan* to help address growing environmental health concerns in San Francisco's southeast community, home of two power plants. The Plan presents a framework for assuring a reliable, affordable, and renewable source of energy for the future of San Francisco.

(c) The Climate Action Plan for San Francisco. 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 GHG emissions reduction goal of 20 percent below 1990 levels by the year 2012. In September 2004, the San Francisco Department of the Environment and the Public Utilities Commission published the *Climate Action Plan for San Francisco: Local Actions to Reduce Greenhouse Emissions.*[1]

The Climate Action Plan provides the context of climate change in San Francisco and examines strategies to meet the 20 percent GHG emissions reduction target. Although the 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, the Plan serves as a blueprint for GHG emission reductions. The City is currently implementing a range of actions presented in the Plan.

(d) LEED Silver for Municipal Buildings. In 2004, the City of San Francisco amended Chapter 7 of the Environment Code, requiring all new municipal construction and major renovation projects to achieve LEED Silver Certification from the U.S. Green Building Council.

(e) Zero Waste. In 2004, the City committed to a goal of diverting 75 percent of its' waste from landfills by 2010, with the ultimate goal of zero waste by 2020. San Francisco currently recovers 69 percent of discarded material (also see section 15.3, Solid Waste Disposal/Recycling, of this EIR).

(f) Construction and Demolition Debris Recovery Ordinance. In 2006, the City adopted Ordinance No. 27-06, requiring all construction and demolition debris to be transported to a registered facility that can divert a minimum of 65 percent of the material from landfills. This ordinance applies to all construction, demolition, and remodeling projects in the city (also see section 15.3, Solid Waste Disposal/Recycling, of this EIR).

(g) Other Local Actions. The City has also passed ordinances to reduce waste from retail and commercial operations. Ordinance 295-06, the Food Waste Reduction Ordinance, prohibits the

[1]San Francisco Department of the Environment and San Francisco Public Utilities Commission, *Climate Action Plan for San Francisco: Local Actions to Reduce Greenhouse Emissions*, September 2004.

use of polystyrene foam disposable food service ware and requires biodegradable/compostable or recyclable food service ware by restaurants, retail food vendors, City departments, and City contractors. Ordinance 81-07, the Plastic Bag Reduction Ordinance, requires stores located within the City and County of San Francisco to use compostable plastic, recyclable paper, and/or reusable checkout bags.

The San Francisco Planning Department and Department of Building Inspection have also developed a streamlining process for Solar Photovoltaic (PV) Permits and priority permitting mechanisms for projects pursuing LEED Gold Certification.

Each of the plans, policies, and ordinances discussed above in (a) through (g) includes measures that would decrease the amount of greenhouse gases emitted into the atmosphere and decrease San Francisco's overall contribution to climate change.

9.3 IMPACTS AND MITIGATION MEASURES

9.3.1 Significance Criteria

Based on the CEQA Guidelines,[1] BAAQMD impact assessment guidelines (BAAQMD Guidelines),[2] and current state and federal ambient air quality standards,[3] the proposed redevelopment program and its anticipated growth-inducing effects would create a significant impact on air quality if they would:

(1) Conflict with or obstruct implementation of the applicable air quality plan;

(2) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

(3) Result in a cumulatively considerable net increase of any criteria pollutant for which the redevelopment program region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

(4) Expose sensitive receptors to substantial pollutant concentrations;

(5) Have the potential to expose sensitive receptors or the general public to substantial levels of toxic air contaminants;

(6) Create objectionable odors affecting a substantial number of people;

(7) Contribute to carbon monoxide (CO) concentrations exceeding the State Ambient Air Quality Standard of 9 parts per million (ppm) averaged over 8 hours, or 20 ppm for one hour; or

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[1]CEQA Guidelines, Appendix G, item III(a-e).

[2]Bay Area Air Quality Management District. BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans; April 1996 (Revised December 1999).

[3]See previous Table 9.1.

(8) Generate criteria air pollutant emissions in excess of the BAAQMD annual or daily thresholds; the current thresholds are 15 tons/year or 80 pounds/day for reactive organic gases (ROG), nitrogen oxides (NO_x), or PM_{10}.

In addition, for construction-period air emissions impacts, the BAAQMD significance threshold for construction dust impact is based on the appropriateness of construction dust controls. The BAAQMD Guidelines provide feasible control measures for construction emission of PM_{10}. If the appropriate construction controls are to be implemented, then air pollutant emissions for construction activities would be considered less-than-significant.

9.3.2 Remediation and Construction Period Air Quality Impacts

Remediation and construction activities associated with Project-facilitated public and private development in the Project Area may include remediation of hazardous materials conditions (see EIR chapter 11--Hazards and Hazardous Materials), building demolition, building renovation or modification, grading, new building construction, landscaping, and paving. Such remediation and construction would generate pollutants intermittently. Generally, the most substantial air pollutant emissions would be dust generated from building demolition or site grading and diesel exhaust from construction equipment. The physical demolition of existing structures and other infrastructure can generate substantial dust. In addition to the dust created during demolition, substantial dust emissions could be created as debris is loaded into trucks for disposal; for example, for the proposed Redevelopment Zone 1 development, the number of trucks carrying excavated soil is anticipated to be a maximum of seven 22-ton trailer trucks per hour (49 trucks per day) over a ten-day period. Without adequate dust control measures, visible dust clouds extending beyond the construction or demolition site could occur.

Wind erosion and disturbance to exposed (graded) ground areas would also be sources of dust emissions. Dust can affect local air quality during construction in terms of elevated PM_{10} levels. Remediation and construction activities can generate exhaust emissions, primarily in the form of particulate matter (PM_{10} and $PM_{2.5}$) and nitrogen oxides. These emissions would contribute to both local and regional air quality levels. Construction activities are also a source of organic gas emissions. Solvents in adhesives, non-waterbase paints, thinners, some insulating materials, and caulking materials can evaporate into the atmosphere and participate in the photochemical reaction that creates urban ozone. Asphalt used in paving is also a source of organic gases for a short time after its application.

If uncontrolled, remediation and construction emissions associated with fugitive dust and construction equipment could lead to both health and nuisance impacts. Although temporary, such uncontrolled effects would represent a *significant adverse impact* on local air quality.

Impact 9-1: Remediation- and Construction-Related Air Quality Impacts. Remediation, demolition, and construction activities permitted and/or facilitated by the proposed redevelopment program may generate exhaust emissions and fugitive dust that could temporarily but noticeably affect local air quality. This would represent a ***potentially significant impact*** (see criteria 2, 4, and 6 in subsection 9.3.1, "Significance Criteria," above).

Mitigation 9-1A. For all discretionary ***demolition*** activity in the Project Area, require implementation of the following dust control measures by demolition contractors, where applicable:

- Water active demolition areas to control dust generation during demolition of structures and break-up of pavement.
- Cover all trucks hauling demolition debris from the site.
- Use dust-proof chutes to load debris into trucks whenever feasible.

The above measures may be revised or supplemented over time by new BAAQMD regulations. Implementation of these measures would reduce the demolition-related air quality impacts of the redevelopment program to a ***less-than-significant level***. [Additional, mandatory procedures for soil excavation and handling during remediation are described in EIR chapter 11, Hazards and Hazardous Materials.]

Mitigation 9-1B. For all discretionary ***remediation, grading, or construction*** activity in the Project Area, require implementation of the following dust control measures by construction (also remediation) contractors, where applicable:

- Water all active remediation and construction areas at least twice daily, or as needed to prevent visible dust plumes from blowing off-site.
- Cover all trucks hauling soil, sand, and other loose materials.
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- Limit the area subject to excavation, grading, and other construction activity at any one time.

(continued)

Mitigation 9-1B (continued):

The above measures may be revised or supplemented over time by new BAAQMD regulations. Implementation of these measures would reduce the remediation-, grading-, and construction-related dust impacts of the redevelopment program to a ***less-than-significant level***. [Additional, mandatory procedures for soil excavation and handling during remediation are described in EIR chapter 11, Hazards and Hazardous Materials.]

Mitigation 9-1C. The following are measures to control emissions by diesel-powered construction (including remediation and demolition) equipment used by contractors, where applicable:

- Ensure that emissions from all on-site, diesel-powered construction equipment do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired or replaced immediately.
- The contractor shall install temporary electrical service whenever possible to avoid the need for independently powered equipment (e.g., compressors).
- Diesel equipment standing idle for more than three minutes shall be turned off. This would include trucks waiting to deliver or receive soil, aggregate, or other bulk materials. Rotating drum concrete trucks could keep their engines running continuously as long as they were on-site and away from residences.
- Properly tune and maintain equipment for low emissions.
- Use late model heavy-duty diesel-powered equipment at each construction site to the extent that the equipment is readily available in the San Francisco Bay Area.
- Use diesel-powered equipment that has been retrofitted with after-treatment products (e.g., engine catalysts) to the extent that it is readily available in the San Francisco Bay Area.
- Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.

(continued)

Mitigation 9-1C (continued):

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.
- Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.
- Install wind breaks, or plant trees/vegetation wind breaks at windward side(s) of construction sites.
- Suspend excavation and grading where winds (instantaneous gusts) exceed 25 miles per hour.
- Use low-emission diesel fuel and/or biodiesel for all heavy-duty diesel-powered equipment operating and refueling at each construction site to the extent that the fuel is readily available and cost effective in the San Francisco Bay Area (this does not apply to diesel-powered trucks traveling to and from the site).
- Utilize alternative fuel construction equipment (i.e., compressed natural gas, liquid petroleum gas, and unleaded gasoline) to the extant that the equipment is readily available and cost effective in the San Francisco Bay Area.

The above measures may be revised or supplemented over time by new BAAQMD regulations. Implementation of these measures would reduce the remediation-, demolition-, and construction-related air quality impacts of diesel-powered equipment to a ***less-than-significant level***. [Additional, mandatory procedures for soil excavation and handling during remediation are described in EIR chapter 11, Hazards and Hazardous Materials.]

Some buildings that may be demolished under the redevelopment program may include materials containing asbestos that would have to be removed. Asbestos is a fibrous mineral, which is both naturally occurring in ultramafic rock (a rock type commonly found in California), and used as a processed component of building materials. Because asbestos has been proven to cause serious adverse health effects, such as asbestosis and lung cancer, it is strictly regulated either based on its natural widespread occurrence or in its use as a building material. The BAAQMD regulates the demolition of buildings and structures that may contain asbestos. The provisions that cover these operations are found in BAAQMD Regulation 11, Rule 2: *Hazardous Materials; Asbestos Demolition, Renovation and Manufacturing* (also see chapter 11, Hazards and Hazardous Materials, of this EIR).

The individual project contractor would be required to implement standard state and federal procedures for asbestos containment and worker safety. Specifically, the demolition,

renovation, or removal of asbestos-containing building materials is subject to the limitations of BAAQMD Regulation 11, Rule 2. The rule requires special handling of asbestos containing materials (e.g., by keeping materials continuously wetted). The Rule prohibits any visible emissions of asbestos-containing materials to outside air. Project applicants would be required to consult with the BAAQMD's Enforcement Division prior to commencing demolition of a building containing asbestos materials. If a project adheres to this requirement, asbestos-related impacts would be considered ***less-than-significant.***

9.3.3 Long-Term Local Air Quality Effects

Changes in Local Carbon Monoxide Levels. Development activity resulting from the redevelopment program would generate new vehicle trips and change traffic patterns. At the local level, the resultant pollutant of greatest concern is carbon monoxide. Concentrations ("hot spots") of carbon monoxide are greatest near intersections and roadways with congested traffic. Such carbon monoxide emissions can be a problem in wintertime when stagnant meteorological conditions occur (i.e., very little vertical or horizontal mixing of air in the lower atmosphere).

To evaluate "hot spot" potential, a microscale impact analysis was conducted adjacent to five signalized intersections most impacted by Project traffic (see Table 9.3). The intersections chosen were based on their level of service (LOS) and percentage contribution of Project-generated traffic. For this analysis, local carbon monoxide concentrations were estimated by applying the BAAQMD's methodology for manual calculation of concentrations along roadways and intersections to the results of the traffic study prepared for this EIR (see chapter 8, Transportation and Circulation). BAAQMD's methodology included an assumed wind direction parallel to the primary roadway, a wind speed of less than one meter per second, extreme atmospheric stability, and a receptor at the edge of the roadway--all of which are conservative assumptions consistent with CEQA.

As shown in Table 9.3, the analysis demonstrated that no exceedances would occur in the vicinity of the analyzed intersections under any of the Project or cumulative scenarios. Therefore, the effect of the Project on local carbon monoxide levels would be ***less-than-significant*** (see criterion 6 in subsection 9.3.1, "Significance Criteria," above). Carbon monoxide concentrations are projected to progressively lower compared to existing conditions due to improvements in the automobile fleet, increasing use of hybrid vehicles, attrition of older, high-polluting vehicles, and improved fuel mixtures. Such reductions would offset effects of increased traffic due to cumulative development. Thus, Project-related and cumulative traffic would have a ***less-than-significant*** impact on local carbon monoxide concentrations.

Mitigation. No significant local carbon monoxide impact has been identified; no mitigation is required.

9.3.4 Long-Term Regional Air Quality Effects

Compared to land use policy under the current San Francisco General Plan, growth facilitated by the redevelopment program would allow *more intensive* residential development in the Project Area. The Project would both provide for an increase in the number of residential units and in the amount of retail uses over existing conditions (see Table 3.1 in EIR chapter 3, Project Description). Project implementation would therefore result in an increase in *predicted* (i.e., based on current General Plan vs. proposed redevelopment program) vehicle miles traveled, which the BAAQMD CEQA Guidelines suggest as a measure of significance for plans and programs. However, the proposed redevelopment program also includes many features that

Table 9.3
ESTIMATED CARBON MONOXIDE CONCENTRATIONS AT SELECTED INTERSECTIONS IN PROJECT VICINITY

Intersection	Averaging Time (hours)	State Standard	Concentrations (ppm)[1] Existing[2]	Existing + Project	Cumulative (2025) + Project[2]
Bayshore/Sunnydale	1	20.0	6.5	7.0	6.0
	8	9.0	4.4	4.7	4.1
Bayshore/Visitacion	1	20.0	6.6	7.4	6.1
	8	9.0	4.5	5.0	4.1
Bayshore/Leland	1	20.0	6.9	7.7	6.2
	8	9.0	4.6	5.2	4.2
Bayshore/Arleta	1	20.0	7.1	8.0	6.2
	8	9.0	4.8	5.4	4.2
Bayshore/Blanken	1	20.0	7.0	7.9	6.2
	8	9.0	4.7	5.4	4.2

SOURCE: Donald Ballanti, Certified Consulting Meteorologist, December 2007.

[1] Concentrations (parts per million/ppm) result from a location 25 feet from the edge of the roadways that form the intersection. The carbon monoxide analysis focuses on the weekday peak-hour (AM or PM, depending on which is higher). Carbon monoxide estimates shown above include background concentrations of 5.4 ppm, one-hour average, and 3.6 ppm, eight-hour average, for 2007; and 5.2 ppm, one-hour average, and 3.5 ppm, eight-hour average, for 2025.

[2] Carbon monoxide concentrations are projected to progressively lower compared to existing conditions due to improvements in the automobile fleet, increasing use of hybrid vehicles, attrition of older, high-polluting vehicles, and improved fuel mixtures. Such reductions would offset effects of increased traffic due to cumulative development.

would reduce vehicular trip generation within the Project Area. In particular, the Project would provide for more housing concentration near available local and regional transit and convenient to services and employment.

These factors would tend to reduce the number of expected vehicle trips, and thus reduce air pollutant emissions. As described in EIR chapter 6 (Population and Housing), the Project would improve the balance between employed residents and jobs, by providing more housing.

Implementation of the redevelopment program would be expected to reduce the number of people that are in-commuting to jobs located in the Project Area, thereby reducing air pollutant emission contributions.

Overall, the proposed redevelopment program is expected to induce an increased rate and amount of growth within the Project Area. Resultant additional vehicle trips to and from the Project Area would generate new mobile air pollutant emission increases. The Project also would result in an increase in air pollutant emissions from a variety of area sources (e.g., space and water heaters, landscape maintenance equipment).

Project-facilitated growth in terms of potential net additional air pollutant emissions was evaluated using the URBEMIS 2007 model (Version 9.2.2). The incremental changes to land use under the proposed redevelopment program were input into the model assuming the Project would reach full buildout by the year 2025 (see Table 3.1 in EIR chapter 3, Project Description). The URBEMIS 2007 model calculates emissions from vehicle travel (including tire and road dust) and area sources such as space/water heating and landscape equipment. Inputs to the model include size and types of land uses proposed, geographic region, season, and year of analysis. The model also included inputs specific to the City of San Francisco and this EIR's traffic analysis (see chapter 8), such as shorter vehicular trip lengths and increased transit and bicycle use. Results are shown in Table 9.4.

Guidelines for the evaluation of project impacts issued by the BAAQMD consider emission increases of ozone precursors and PM_{10} to be significant if they exceed 80 pounds per day. Potential development in the Project Area facilitated by the redevelopment program is expected to generate increases over existing conditions in particulate matter (PM_{10}, mostly from vehicle tire and road dust) that would exceed the threshold of significance used by the BAAQMD, and would represent a *significant adverse impact* on regional air quality.

Impact 9-2: Long-Term Regional Emissions Impacts. Development in accordance with the proposed redevelopment program would generate traffic-related regional air pollutant emission increases that would exceed the applicable thresholds of significance for particulate matter (PM_{10}). This Project-related effect is considered a ***significant project and cumulative impact*** (see criteria 1, 2, 3, 4, and 8 in subsection 9.3.1, "Significance Criteria," above).

The Design for Development and the Planning Code provide urban design requirements and guidelines that would serve as emission-reducing strategies in the Project Area. All new streets would be designed with general sidewalks, enhanced landscaping, bike parking, and traffic calming measures as incentives for pedestrian, bicycle, and transit modes of travel. Furthermore, the Design for Development requires bike parking in all new residential

Table 9.4
ESTIMATED DAILY EMISSIONS FROM PROJECT-FACILITATED DEVELOPMENT

	Project Emissions (pounds/day)			
Air Pollutant	Area Source Emissions	Vehicular Emissions[1]	Total	Significance Threshold (pounds/day)
NO_x	15.98	43.98	59.96	80
PM_{10}	0.04	216.04	216.04	80
ROG	1.61	54.05	55.66	80
CO	11.85	530.15	542.00	550[2]

SOURCE: Don Ballanti, Certified Consulting Meteorologist; and DMJM Harris/AECOM, Transportation Consultants; December 2007.

[1] Emission factors were generated by the Air Board's URBEMIS2007 (Version 9.2.2) model for the San Francisco Bay Air Basin, and assume a default vehicle mix. For a worst-case analysis, all daily estimates are for summertime conditions except for CO, which assumes wintertime conditions.
[2] Projects for which mobile source CO emissions exceed 550 pounds per day do not necessarily have a significant air quality impact, but are required to estimate localized CO concentrations. Refer to previous Table 9.3 for analysis of Project CO emissions.

development and, along with the Planning Code, requires parking and showers for bicycle commuters to large employment centers.

Mitigation 9-2. In addition to those strategies already included in the Design for Development and Planning Code (see above), apply the following emissions control strategies where applicable to Project-facilitated discretionary mixed use, residential, commercial, and cultural development activities within the Project Area in order to reduce overall emissions from traffic and area sources.

Transportation:

- New or modified roadways should include bicycle lanes where reasonable and feasible.
- Provide transit information kiosks.
- Where practical, employment-intensive development proposals (e.g., retail) shall include measures to encourage use of public transit, ridesharing, van pooling, use of bicycles, and walking, as well as to minimize single passenger motor vehicle use.

(continued)

Mitigation 9-2 (continued):

- Develop parking enforcement and fee strategies that encourage alternative modes of transportation.
- Parking lots or facilities should provide preferential parking for electric or alternatively fueled vehicles.
- Implement and enforce truck idling restrictions of three minutes.
- Require large commercial land uses (e.g., 10,000 square feet or 25 employees) that would generate home-to-work commute trips to implement Transportation Demand Management (TDM) programs. Components of these programs should include the following (also see similar measures in *Mitigation 8-1C* [chapter 8, Transportation and Circulation] of this EIR):
  - a carpool/vanpool program, e.g., carpool ride-matching for employees, assistance with vanpool formation, provision of vanpool vehicles, etc.;
  - a transit use incentive program for employees, such as on-site distribution of passes and/or subsidized transit passes for local transit systems;
  - a guaranteed ride home program; and/or
  - a parking cash-out program for employees (where non-driving employees receive transportation allowance equivalent to the value of subsidized parking).

Building and Maintenance:

- Require energy efficient building designs that exceed State Title 24 building code requirements.
- Discourage use of gasoline-powered landscape equipment, especially two-stroke engines and motors (which burn and leak oil), for public park maintenance.
- Allow only low-emitting fireplaces for residential uses, such as those that burn only natural gas (standard City requirement for multi-family residences).

Implementation of these measures would assist in reducing identified Project-related and cumulative impacts on long-term regional PM_{10} emission levels by perhaps 10 to 20 percent; however, since a reduction of over 60 percent would be required to bring Project-related regional PM_{10} emission increases to below BAAQMD significance thresholds, the Project and cumulative effects on emission levels would represent a ***significant unavoidable impact***.

Greenhouse Gases Impacts. As indicated in subsection 9.1.4(j) (Greenhouse Gases and Global Climate Change) of this chapter, in 2006 the governor signed Assembly Bill 32 (AB 32) which charges the California Air Resources Board (CARB) to develop regulations on how the state will address global climate change. There are currently no published thresholds of significance for measuring the impact of global climate change on, or from, a project. Regulatory guidance on how to address the potential impacts of global climate change on or from an individual development project does not currently exist. Nevertheless, the State Attorney General's Office is now urging lead agencies to analyze project impacts on global climate change as part of the CEQA process.

The proposed redevelopment program would result in the construction of new residential and commercial uses in the Project Area. Therefore, the proposed Project would contribute to long-term increases in GHGs as a result of traffic increases (mobile sources) and residential and commercial operations associated with heating, electricity use, and solid waste disposal (area sources). Not including anticipated GHG reduction measures incorporated into the proposed Zone 1 development as a LEED-ND project (see below), direct Project emissions of carbon dioxide equivalents (CO_2-eq) (including CO_2, NO_x, and CH_4 emissions) resulting from net new development would include approximately 16,770 tons of CO_2-eq/year from transportation and 15,500 tons of CO_2-eq/year from heating, for a total of about 32,270 tons of CO_2-eq/year of Project-emitted GHGs. The Project would also indirectly result in GHG emissions from off-site electricity generation at power plants (approximately 3,170 tons of CO_2-eq/year) and from anaerobic decomposition of solid waste disposal at landfills, mostly in the form of methane (about 170 tons of CO_2-eq/year), for a direct and indirect GHG emissions total of approximately 35,610 tons of CO_2-eq/year.[1] This represents approximately 0.04 percent of total Bay Area GHGs emitted in 2002.[2]

The Project's incremental increases in GHG emissions associated with traffic increases and residential/commercial heating, electricity use, and solid waste disposal would contribute to regional and global increases in GHG emissions and associated climate change effects. Neither the state, BAAQMD, or City and County of San Francisco have developed guidelines or significance criteria for assessing a project's contribution of GHGs or evaluating its significance. However, no individual development project, such as the proposed Zone 1 development, could by itself generate sufficient emissions of GHGs to result in a significant impact in the context of the cumulative effects of GHG emissions such that it would impair the state's ability to implement AB 32. In recognition of the importance of climate change and its impacts on the environment, the proposed Project has incorporated the following improvement measures to reduce electricity consumption and the Project's overall GHG emissions, beyond regulatory standards:

- Siting buildings to take advantage of passive solar energy;
- Designing buildings to maximize daylighting;
- Generating on-site renewable energy (e.g., solar power, fuel cells);

[1] Jessica Range, San Francisco Planning Department; written communication, May 27, 2008.

[2] The Bay Area Air Quality Management District (BAAQMD) reported regional Bay Area GHG emissions in 2002 at approximately 85 million CO_2-eq tons.

- Insulating new construction;
- Using low heat gain/loss windows;
- Re-using existing structures where feasible and utilizing demolition material on-site, where safe and feasible, where structures are not re-used; and
- Incorporating roof gardens, terraces, and patios to assist in energy efficiency and the reduction of heat island effects.

All new construction in Redevelopment Zone 1 would be designed to the highest level of current green building standards, and would meet or exceed the recommended levels developed by the Mayor's Task Force on Green Buildings.

Additionally, as described in section 3.9.5 (Design for Development "Green" Strategies) of this EIR, the proposed 2002 Schlage Lock Concept Plan, and the associated 2008 Design for Development-based development control program (which incorporates and builds upon the 2002 Concept Plan), have been accepted into the LEED-Neighborhood Developments (LEED-ND) Pilot Program, which is an inter-agency "green building" effort administered locally by SF Environment (the City's Department of the Environment). The LEED-ND Pilot Program has also been adopted by the Redevelopment Agency, Planning Department, Public Utilities Commission, and Municipal Transportation Agency (MUNI), as well as Pacific Gas & Electric and other entities.

LEED ("Leadership in Energy and Environmental Design") is a certification program established by the United State Green Building Energy Council (USGBEC) that has become the nationally accepted benchmark system for the design, construction, and operation of "green" buildings. LEED promotes a whole-systems approach to sustainability by recognizing performance in five key areas: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. The following LEED-ND Pilot Program information has been provided by SF Environment for this EIR.[1]

The goal of the LEED-ND Pilot Program is to ensure that the LEED rating system is used as a practical application and effective tool for introducing smart growth, new urbanist, and green building practices to local planners and developers. The LEED certification scoring targets range from 40 points ("Certified") to 106 points ("Platinum"). Based on a preliminary LEED-ND (Neighborhood Developments) analysis, the Redevelopment Zone 1 development program as described in the 2002 Concept Plan and 2008 Design for Development (which incorporates and expands upon the 2002 Concept Plan) would score approximately 58 points (out of a possible 106), achieving a high LEED Silver "pre-review" certification. If the currently proposed sustainability strategies for Zone 1 are implemented, and associated green building standards and energy efficient systems are substantially deployed in the future Zone 1 built environment, there is a high likelihood that the future Zone 1 built environment could achieve LEED Gold or Platinum certifications (the highest levels).

In recognition of the importance of climate change and its impacts on the environment, the State of California Attorney General's office has compiled a list of GHG reduction measures that could

[1]Rich Chien, Residential Green Building Coordinator, SF Environment; written communication, July 26, 2007.

be applied to a diverse range of projects.[1] The proposed Project would meet the intent of many of the GHG reduction measures identified by the Attorney General's office: (1) As infill development, the Project would be constructed in an urban area with good transit access, reducing vehicle trips and vehicle miles traveled, and therefore the Project's transportation-related GHG emissions would tend to be less relative to the same amount of population and employment growth elsewhere in the Bay Area, where transit service is generally less available than in the central city of San Francisco;[2] (2) As new construction, the proposed Project would be required to meet California Energy Efficiency Standards for Residential and Nonresidential Buildings, helping to reduce future energy demand as well as reduce the Project's contribution to cumulative regional GHG emissions; (3) the proposed Project would also be required to comply with the Construction Demolition and Debris Recovery Ordinance (Ordinance No. 27-06), requiring at least 65 percent of all construction and demolition material to be diverted from landfills; and (4) the proposed Project would preserve existing street trees and plant approximately an additional 360 street trees, helping to regulate outdoor temperatures and aiding in carbon sequestration.[3]

In light of the above and state and local efforts to reduce GHG emissions, the proposed Project would not emit a substantial amount of greenhouse gases nor contribute significantly to global climate change. Therefore, the Project's impact on GHG emissions is considered ***less-than-significant***.

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[1]State of California, Department of Justice, "The California Environmental Quality Act: Addressing Global Warming Impacts at the Local Agency Level." Updated 3/11/08. Available at: http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf. Accessed 04/11/2008.

[2]The California Air Pollution Control Officer's *CEQA and Climate Change* (January 2008) white paper identifies infill development as yielding a "high" emissions reduction score (between 3-30%). This paper is available online at: http://www.capcoa.org/ceqa/CAPCOA%20White%20Paper%20-%20CEQA%20and%20Climate%20Change.pdf. Accessed April 15, 2008.

[3]Carbon sequestration is the capture and long-term storage of carbon dioxide before it is emitted into the atmosphere.