CHAPTER 2 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, & AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

***Introductory Note**: As part of the scoping and environmental analysis conducted for the project, the following environmental issues were considered but no adverse impacts were identified. Consequently, there is no further discussion regarding these issues in this document:*

- *Farmlands: There are no farmlands located within or adjacent to the proposed improvements.*
- *Timberlands: There are no timberlands located in the project vicinity.*
- *Community Cohesion: The project will construct improvements to three existing freeway interchanges. The improvements will not divide any community or neighborhood.*
- *Paleontology: There are no known paleontological resources located in the project area.*
- *Coastal Zones: The project site is not within or near areas covered by the Coastal Zone Management Act of 1972.*
- *Wild & Scenic Rivers: There are no waterways designated as Wild & Scenic Rivers in the project area. The closest rivers with this designation are over 100 miles from the project area.*
- *Flooding: According to floodplain maps prepared by the Federal Emergency Management Agency (FEMA), the project impact area is not within or adjacent to any 100-year floodplain. There are no waterways within or adjacent to the project limits.*
- *Natural Communities: Based on the Natural Environment Study (NES) prepared for this project, there are no sensitive habitats located within, or in proximity to, the area to be disturbed by the project. The project is not located in or near a wildlife corridor. There are no waterways located within or adjacent to the project limits.*
- *Wetlands: Based on the NES prepared for this project, there are no wetlands within or adjacent to the project area.*
- *Plant Species: Based on the NES prepared for this project, there are no special-status plant species within or adjacent to the project area.*
- *Threatened & Endangered Species: Based on the NES prepared for this project, there is no suitable habitat for any threatened or endangered species within or adjacent to the project area.*
- *Energy: When balancing energy used during construction and operation against energy saved by relieving congestion and other transportation efficiencies, the project would not have substantial energy impacts.*

HUMAN ENVIRONMENT

2.1 LAND USE

2.1.1 Existing and Future Land Use

The information in this section is based primarily on a technical Community Impact Assessment (August 2010) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

The project is located in an urban area in the westerly part of the City of San Jose. However, the neighborhood bounded by I-880 on the west, I-280 on the south, Bascom Avenue on the east, and Stevens Creek Boulevard on the north is an unincorporated pocket. Although areas within the City of Santa Clara do not abut the freeways within the project limits, Santa Clara's city limits extend to the project vicinity. Specifically, areas on the north side of Stevens Creek Boulevard, west of Redwood Avenue, are within the City of Santa Clara.

The existing land uses along SR-17, I-280, and I-880 within the project limits primarily fall into one of two categories: commercial or residential. The commercial uses are primarily located along Stevens Creek Boulevard and Winchester Boulevard, the two main arterial streets in the area.

The approximately 75-acre area bounded by I-880 on the east, Stevens Creek Boulevard on the south, Winchester Boulevard on the north, and Forest Avenue on the north is the Westfield Valley Fair Shopping Center. Valley Fair is a large regional shopping mall whose retail/commercial uses currently total approximately two million square feet. In 2008, the Cities of San Jose and Santa Clara approved a 650,000 square foot expansion of Valley Fair. Construction of the expansion is anticipated to commence in 2011, with the actual date dependant on economic conditions.

Commercial/office uses are located along the east side of I-880 between Stevens Creek Boulevard on the south and Forest Avenue on the north. These offices are located on the west side of O'Connor Drive. On the east side of O'Connor Drive is a site that contains a church and elementary (K-8) school.

The land use along both the west and east sides of I-880, between Stevens Creek Boulevard on the north and I-280 on the south, is single-family residential.

Along the east side of SR-17, between I-280 on the north, Moorpark Avenue on the south, and MacArthur Avenue on the east, the existing land use is residential. The exception is a commercial use that is located on the northwest corner of the Moorpark Avenue/Pfeffer Lane intersection.

Commercial/office uses are located adjacent to the south side of I-280 between Winchester Boulevard on the west and SR-17 on the east.

Residential land uses are located along the south side of I-280, west of Winchester Boulevard. However, Moorpark Avenue provides a buffer between the freeway and these residences.

On the north side of I-280, west of Winchester Boulevard, the adjacent land use is a residential mobilehome park.

Tisch Way abuts the north side of I-280, east of Winchester Boulevard. Land uses along the north side of Tisch Way consist of several commercial buildings, a 45-unit apartment building complex, a commercial parking lot, and a park. In 2007, an application was filed with the City of San Jose to convert the commercial parking lot and an adjacent area to residential and offices uses. However, that application was subsequently withdrawn in 2008. The park, known as Frank M. Santana Park, is a 4-acre neighborhood park that is owned and operated by the City of San Jose.

Although not adjacent to the freeways within the project limits, there are several notable land uses within the immediate area. These include Santana Row, a large mixed-use (residential/commercial) development located in the southeast quadrant of the Stevens Creek Boulevard/Winchester Boulevard intersection; O'Connor Hospital, located on Forest Avenue east of I-880; the Santa Clara Valley Medical Center, located on Bascom Avenue south of I-280; and the Winchester Mystery House, located on the west side of Winchester Boulevard north of I-280.

2.1.2 Environmental Consequences

2.1.2.1 *Land Use Changes*

Most of the project would be constructed within the Department's existing right-of-way. However, as shown in Table 2, right-of-way acquisition will be necessary at a number of locations:

- The new direct connector ramp from northbound I-280 to northbound I-880 will require the acquisition of three single-family residences located at 501, 517, and 537 Parkmoor Avenue. These three residences are located adjacent to each other at the southerly edge of the neighborhood that is bounded by I-880 on the west, I-280 on the south, Bascom Avenue on the east, and Stevens Creek Boulevard on the north.
- The realignment of Tisch Way to accommodate the new off-ramp from northbound I-280 to Winchester Boulevard will require strips of right-of-way from the southerly edge of a number of properties located on the north side of Tisch Way. As shown in Table 2, the number of properties from which right-of-way would be required would be three under the 5-Legged Intersection Design Option and four under the Hook-Ramp Design Option. In no case, would these acquisitions affect any buildings or the viability of the land use itself.

The owners of any properties acquired for project right-of-way will be compensated for the loss and/or use in accordance with Federal and State right-of-way requirements. The Department's relocation benefits are summarized in Appendix C of this document.

Indirect land use impacts (e.g., noise) are discussed under their own headings in this document.

2.1.2.2 *Consistency with State, Regional, and Local Plans and Programs*

The project is listed in, and therefore consistent with, the Metropolitan Transportation Commission's *Transportation 2035*, which is the regional transportation plan (RTP). It is also included in the adopted 2009 Transportation Improvement Program (TIP) for the San Francisco Bay Area.

The project is listed in, and therefore consistent with, VTA's *Valley Transportation Plan 2035 (VTP 2035)*, which is the transportation plan for Santa Clara County that was adopted in January 2009. *VTP 2035* also lists a future bus rapid transit (BRT) line along Stevens Creek Boulevard between Cupertino and Downtown San Jose, which includes the segment of Stevens Creek Boulevard at I-880. The project is being designed so as to not preclude a future BRT through this area; in fact, the proposed widening of the Stevens Creek Boulevard bridge over I-880 would facilitate BRT.

The project is also consistent with the general plan of the City of San Jose, which identifies SR-17, I-280, and I-880 as major transportation facilities. The *San Jose General Plan* contains a number of transportation policies that are relevant to the proposed project:

Thoroughfare Policy #1: Interneighborhood movement of people and goods should occur on thoroughfares and is discouraged on neighborhood streets. The project is consistent with this policy since it proposes improvements to thoroughfares.

Thoroughfare Policy #2: The City should cooperate with other jurisdictions to develop a thoroughfares system which adequately meets the demand for intra-County trips and minimizes traffic congestion consistent with the provisions of the Santa Clara County Congestion Management Program. The project is consistent with this policy as the City is a co-sponsor of the project and is contributing funds toward its development.

Thoroughfare Policy #6: The City should encourage State participation in funding transportation projects intended to alleviate areas with a high incidence of accidents or major traffic congestion. The project is consistent with this policy as State and Federal monies are among the funding sources being sought for construction.

Thoroughfare Policy #8: Vehicular, bicycle, and pedestrian safety should be an important factor in the design of streets and roadways. The project is consistent with this policy as the proposed improvements to the I-880/Stevens Creek Boulevard interchange will facilitate safety for pedestrians and bicyclists. In addition, the project is rebuilding the Monroe Street pedestrian overcrossing to ADA standards.

2.1.2.3 *Parks and Recreational Facilities*

As described above in Section 2.1.1, the project is adjacent to Frank M. Santana Park, a 4-acre neighborhood park owned and operated by the City of San Jose. The park is located at the intersection of Tisch Way and Monroe Street (see Figure 4). It includes a softball field, a children's play area, restrooms, and several picnic tables. Adjacent to the southeast corner of the park is the northerly end of the existing I-280/Monroe Street pedestrian overcrossing (POC). The POC provides pedestrian and bicycle access over I-280 between the neighborhoods located on either side of the freeway.

Section 4(f) Discussion

Regulatory Setting

"Section 4(f)" refers to Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 303), which pertains to all actions or projects undertaken by agencies within the U.S. Department of Transportation, including the Federal Highway Administration (FHWA). The essence of Section 4(f) requirements is that special efforts are to be made to protect public park and recreation lands, wildlife and waterfowl refuges, and historic sites. The law states that the Secretary of Transportation shall approve a project that requires the use of publicly-owned land from a public park, recreation area, wildlife or waterfowl refuge, or historic site of significance[5] only if 1) there is no feasible and prudent alternative to using that land and 2) the project includes all possible planning to minimize harm to the resource being affected by the use.

In 2005, Congress amended Section 4(f) to allow a project that uses land from a Section 4(f) resource to be approved if it is determined that the use will have a *de minimis* impact on the property. For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f).

Use of Santana Park by the Project

As described in Section 1.3.3, the Build Alternative includes the replacement of the existing POC. Although the new POC will be constructed at the same location, the ramps and landing of the new POC will encroach into Santana Park because their design is required to comply with the standards set forth

[5]These are individually and collectively referred to as "Section 4(f) lands".

FRANK SANTANA PARK

FIGURE 4

in the Americans with Disabilities Act (ADA). ADA compliance requires ramps with a larger footprint in order to provide landings and to minimize their slopes. The encroachment into Santana Park to accommodate the ADA-compliant ramps will be at the southerly edge of the park, adjacent to the existing POC and sidewalk, and will total approximately 3,600 square feet (0.08 acres), as indicated on Figure 4.

Documentation of De Minimis Use

For the following reasons, the Department proposes that the project will have a de minimis impact on Santana Park:

- The encroachment for the ramps will not affect any of the active use areas of the park.
- The ramps have been designed so as to avoid all but four of the 18 trees that provide visual screening between the park and the nearby street and freeway soundwall. The trees to be retained are mature and will maintain the screening.
- None of the existing recreational uses or access would be affected by the project construction. There would be some disruption related to construction activities adjacent to Santana Park; however, these impacts would be temporary in nature and would cease upon project completion. There would also be some temporary noise impacts resulting from the operation of construction equipment and vehicles; however, these impacts would cease upon completion of the proposed project as well. None of the temporary construction-related impacts would adversely affect the activities, features, or attributes of Santana Park. The duration of construction adjacent to Santana Park will be shorter than the duration of construction for the project as a whole.
- The new ADA-compliant POC will improve access to Santana Park for all users, including those with disabilities.

The public is being offered the opportunity to comment on this Section 4(f) *De Minimis* Finding in conjunction with the comment period for this Draft EIR/EA.

The design of the replacement POC has been coordinated with, and reviewed by the staff of the City of San Jose Parks, Recreation, & Neighborhood Services Department, who are the officials having jurisdiction over Santana Park. In an e-mail dated 12/14/09, the City indicated that the conceptual plan for the POC was acceptable and would not result in substantive impacts to Santana Park.[6] Formal concurrence that the project will result in *de minimis* impacts to Santana Park will be provided to the Department by the City and referenced in the final version of this document.

2.1.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

[6]E-Mail from Ray Salvano, City of San Jose Department of Transportation, to John Hesler, David J. Powers & Associates, dated December 14, 2009.

2.2 GROWTH

2.2.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the National Environmental Policy Act of 1969, require evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations, 40 CFR 1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) also requires the analysis of a project's potential to induce growth. CEQA guidelines, Section 15126.2(d), require that environmental documents "…discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment...

2.2.2 Environmental Consequences

The information in this section is based primarily on a technical Community Impact Assessment (August 2010) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

The project is located within an urbanized and mostly-developed area of the City of San Jose. Therefore, while the project's new off-ramp from I-280 to Winchester Boulevard will improve freeway access to the area, its construction will not open additional areas to development. In addition, while the proposed interchange improvements will improve traffic operations, the overall capacity of the I-280, I-880, and SR-17 freeways will not substantially change. The only new thru lane will be the fourth lane on northbound I-280 within the project limits, roughly 0.3 miles in length, which would eliminate a bottleneck. Similarly, the overall capacity of Stevens Creek Boulevard and Winchester Boulevard will not substantially change because the project will not add any new thru lanes to those roadways.

There are no pending or recently-approved projects whose construction is conditioned upon the implementation of the project.

2.3 RELOCATIONS AND REAL PROPERTY ACQUISITION

2.3.1 Regulatory Setting

The Department's Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 Code of

Federal Regulations (CFR) Part 24. The purpose of RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Please see Appendix C for a summary of the RAP.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 U.S.C. 2000d, et seq.). Please see Appendix B for a copy of the Department's Title VI Policy Statement.

2.3.2 Affected Environment

The information in this section is based primarily on a technical Relocation Impact Memorandum (August 2010) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

There are three single-family residences that would be acquired by the project. The three residences are adjacent to each other at 501, 517, and 537 Parkmoor Avenue. The residences are at the edge of a neighborhood that is bounded by I-880 on the west, I-280 on the south, Bascom Avenue on the east, and Stevens Creek Boulevard on the north. The neighborhood is comprised of approximately 410 single-family residences.

The residences were constructed in 1953 as part of a residential subdivision known as the Orchard Dell Tract. The residences are typical 3-bedroom, single-story, Ranch Style homes of approximately 1,500 square feet on 7,000 - 8,000 square foot lots. According to the office of the Santa Clara County Assessor, two of the three residences are owner-occupied.

2.3.3 Environmental Consequences

The Build Alternative will necessitate the relocation of the residents living in the three single-family dwellings located at 501, 517, and 537 Parkmoor Avenue.

2.3.4 Avoidance, Minimization, And/or Mitigation Measures

These three properties will be purchased at fair market value. Residents will receive relocation assistance in accordance with the provision of the Department's RAP. The type of relocation assistance provided will vary on a case-by-case basis, depending on such factors as whether the occupant is an owner or renter, how long the occupant has lived in the home, cost differential between existing and replacement housing, etc. For a summary of the RAP, please see Appendix C of this document.

The type of residences being acquired (i.e., 3-bedroom, single-family dwellings of approximately 1,500 square feet) are common in neighborhoods throughout San Jose and Santa Clara County. Therefore, obtaining replacement housing for both residential owners and tenants should not be problematic.

2.4 ENVIRONMENTAL JUSTICE

2.4.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2008, this was $21,200 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. The Department's commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix B of this document.

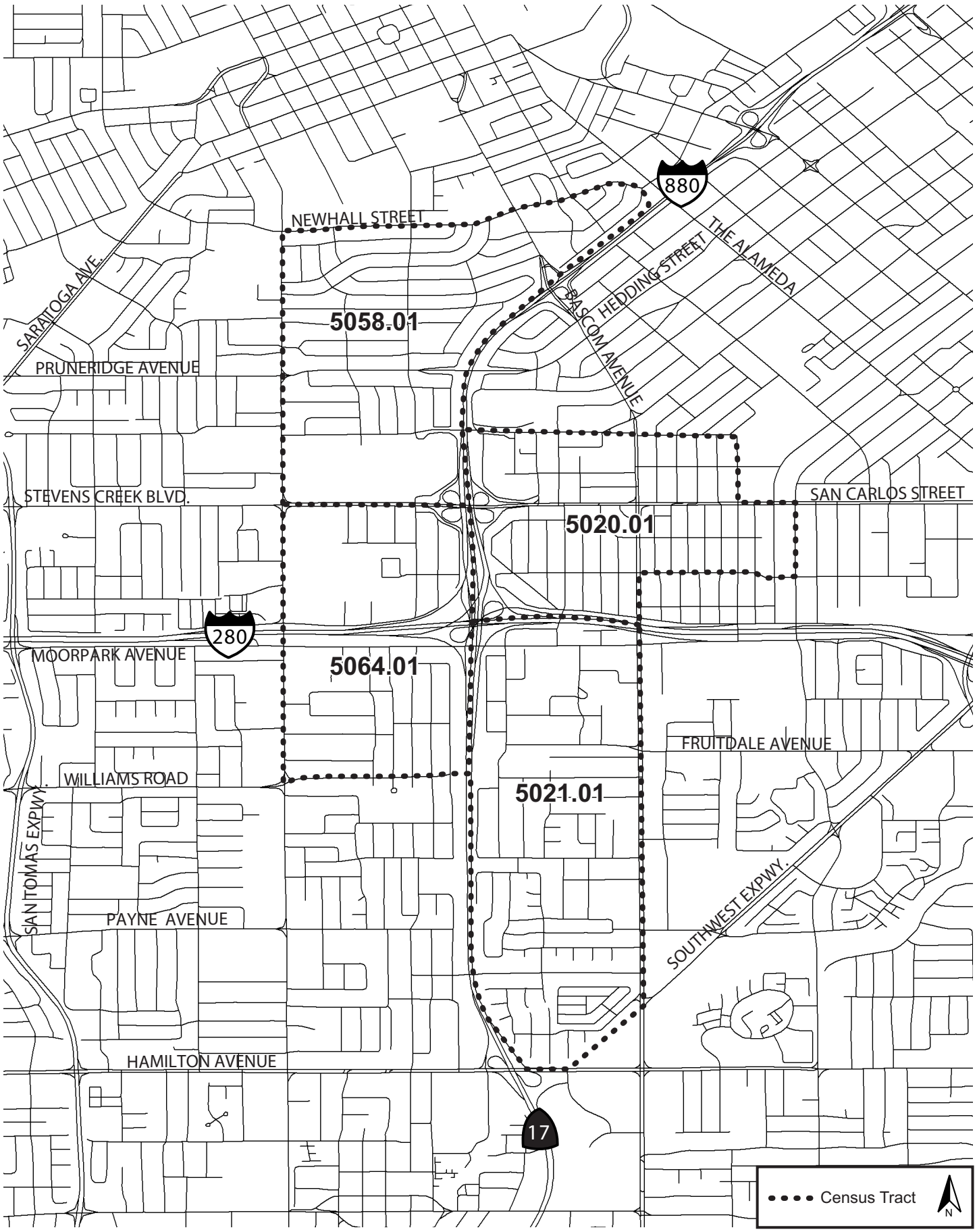
2.4.2 Affected Environment

The information in this section is based primarily on a technical Community Impact Assessment (August 2010) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

Methodology

For the purpose of determining whether the project would result in disproportionate impacts to minority and/or low-income populations, an "environmental justice" study area was defined consisting of the four census tracts that encompass the land uses located adjacent to SR-17, I-280, and I-880 within the project limits, as shown on Figure 5. The demographic characteristics of the population within the study area were also compared to that for the City of San Jose as a whole.

In addition, field surveys of the study area were undertaken to look for factors (e.g., less well-maintained dwelling units) that could indicate the presence of low-income populations.



ENVIRONMENTAL JUSTICE STUDY AREA FIGURE 5

The purpose of this research was to determine if minority and/or low-income populations are present in sufficient numbers such that the project could potentially result in a *disproportionately* high and adverse effect on these populations. In other words, what is needed is to show the comparative effects on these populations in relation to either non-minority or higher income populations, as appropriate.

Results

As shown in Table 6, the majority of the population within the study area are not minorities and are not persons of low-income. The data in Table 6 also show that the percentage of each minority population within the study area is lower than, or the same as, that found throughout the City of San Jose as a whole.

Similarly, the percentage of the population that is defined as low-income is lower within the study area than for the City of San Jose as a whole.

Field surveys of the study area determined that, with few exceptions, the neighborhoods contain homes that are well-maintained and in good condition. Similarly, most of the businesses in the study area are well-maintained. The study area is generally considered to be a thriving and desirable location. The businesses in the area, which include Santana Row and Westfield Valley Fair, are regional destinations.

Based on the above, the impacts of the project would primarily affect non-minority and non-low-income populations since they comprise the majority of persons in the study area. Any impacts associated with the project would not, therefore, result in disproportionately high impacts to minority or low-income populations.

Conclusion

No minority or low-income populations that would be adversely affected by the proposed project have been identified as determined above. Therefore, this project is not subject to the provisions of E. O. 12898.

2.4.3 Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the Build Alternative will not cause disproportionately high and adverse effects on any minority or low-income populations as per E.O. 12898 regarding environmental justice.

T A B L E 6

EXISTING DEMOGRAPHICS IN THE STUDY AREA & CITY OF SAN JOSE

	Study Area	City of San Jose
Total Population	11,175	894,943
Minority Populations (% of total)		
Black	3 %	4 %
Asian American	13 %	27 %
Native American	1 %	1 %
Hispanic	18 %	30 %
% of Population below Poverty Guidelines	7 %	10 %

Notes:

- The U.S. Department of Transportation defines a "minority" as a person who is Black, Asian American (defined as the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands), American Indian/Alaskan Native, or Hispanic (defined as Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race). "Low-Income" is defined as a person whose median household income is at or below the Department of Health & Human Services poverty guidelines. [Department of Transportation Final Order to Address Environmental Justice in Minority and Low-Income Populations, 1997]
- Study area is comprised of the four census tracts that encompass the land uses adjacent to SR-17, I-280, and I-880 within the project limits.

Source: Year 2000 U.S. Census

2.5 UTILITIES/EMERGENCY SERVICES

2.5.1 Affected Environment

The information in this section is based primarily on a technical Community Impact Assessment (August 2010) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

Various utility lines (e.g., gas, electric, water, communications, sanitary sewer, stormwater, etc.) cross SR-17, I-280, and I-880 and are located along/within the local streets that cross or parallel the freeways.

San Jose Fire Station #10 is located in the project area at 511 S. Monroe Street, near the intersection of Monroe Street/Tisch Way. The station houses an engine company and a battalion chief. Station 10's service area encompasses locations on both the north and south sides of I-280. Depending on the location of the emergency, either westbound Tisch Way or northbound Monroe Street is used as the emergency response route from Station 10.

2.5.2 Environmental Consequences

Where necessary to construct the project, some existing utility lines will be relocated, as is commonplace for projects of this nature. Such utility work will not result in disruption of utility services in the project area because existing lines will not be disconnected prior to the relocated lines being in place.

Emergency services would indirectly benefit from the proposed project in that, by reducing peak commute period congestion, emergency vehicle response times will be reduced.

For the following reasons, the project will not sever or alter any emergency response routes from San Jose Fire Station 10:

- No changes to Monroe Street are proposed by the project.
- With the Hook-Ramp Design Option, Tisch Way will remain a 2-way street for its entire length.
- With the 5-Legged Intersection Design Option, the westerly end of Tisch Way will be converted to 1-way traffic westbound. Since westbound is the direction of travel for emergency vehicles responding to a call from Station 10, the response route will be unaffected.

Under the 5-Legged Intersection Design Option, equipment returning to Station 10 from an emergency call in the area south of I-280 would not be able to turn right onto Tisch Way from northbound Winchester Boulevard. Instead, the equipment would continue north on Winchester Boulevard, then east on Stevens Creek Boulevard, then south on Monroe Street to the station. Although this route would be 0.7 miles longer than the current route, it would not impact emergency services as only the return route to the firehouse would change, while the exit route would remain the same.

2.5.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.6 TRAFFIC AND TRANSPORTATION/ PEDESTRIAN AND BICYCLE FACILITIES

2.6.1 Regulatory Setting

The Department, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

The Department is committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

2.6.2 Affected Environment

The information in this section is based primarily on a technical Traffic Operations Analysis Report (June 2010) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

The study area for the traffic and transportation analysis was defined to include the project limits and the adjacent areas that will (or could) be affected by the proposed improvements. The study area includes segments of SR-17, I-280, and I-880 in the project vicinity, as well as nearby local streets and intersections. Please see Figure 6 for the locations of the study intersections.

2.6.2.1 *Existing Roadway Network*

I-880 is a north-south freeway that extends from I-280 in San Jose on the south to I-80 in Oakland on the north. Within the project limits, I-880 is three lanes in each direction and interchanges are located at Stevens Creek Boulevard and I-280. South of I-280, the freeway becomes SR-17.

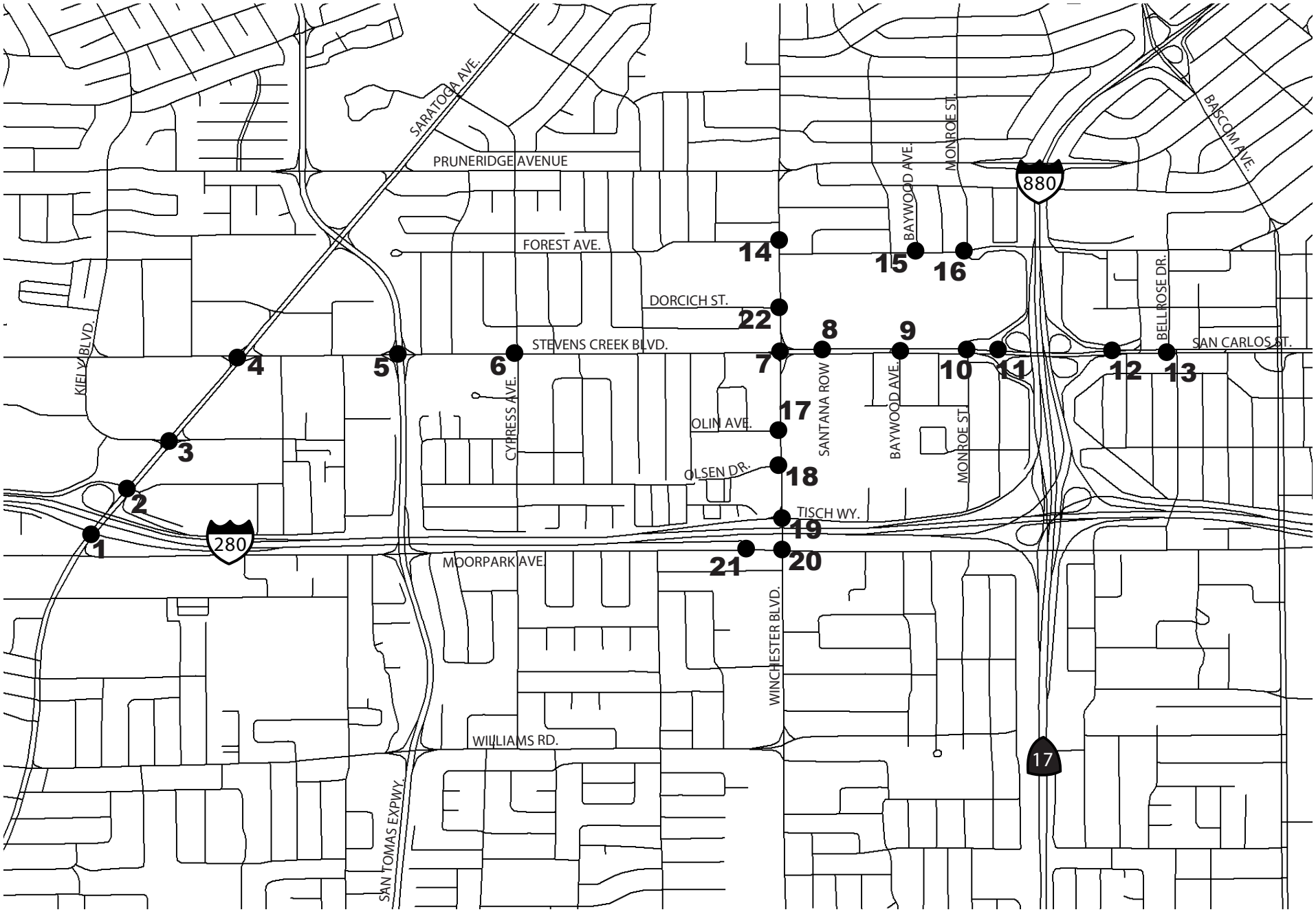
SR-17 is a north-south freeway that extends from SR-1 in Santa Cruz on the south to I-280 in San Jose on the north. Within the project limits, SR-17 is three lanes in each direction. North of I-280, the freeway becomes I-880.

I-280 is a north-south freeway that extends from U.S. 101 in San Jose on the south to I-80 in San Francisco on the north. Within the project limits, I-280 is three mixed-flow lanes and one high occupancy vehicle (HOV) lane in each direction. A partial access interchange is located at Winchester Boulevard and a full-access interchange is located at I-880/SR-17.

Stevens Creek Boulevard is a major east-west arterial that begins in the west in the City of Cupertino and extends easterly through the Cities of Santa Clara and San Jose. Within the project limits, there is an interchange on Stevens Creek Boulevard with I-880, with ramp connections to southbound SR-17 and southbound I-280. East of Bascom Avenue, Stevens Creek Boulevard becomes San Carlos Street.

Winchester Boulevard is a major north-south arterial that begins in the south in the Town of Los Gatos and extends northerly through the Cities of Campbell, San Jose, and Santa Clara. Within the project limits, there is a partial interchange on Winchester Boulevard with I-280.

Other designated arterial streets within the project area are Moorpark Avenue, Forest Avenue, and North Monroe Street.



STUDY INTERSECTIONS

FIGURE 6

2.6.2.2 *Existing Public Transit*

Bus service in the project area and throughout Santa Clara County is provided by the Santa Clara Valley Transportation Authority (VTA). Within the project limits, Express Routes 103 and 182 utilize I-280 and the Highway 17 Express utilizes SR-17. VTA's Valley Fair Transit Center, which is located on the north side of Valley Fair on Forest Avenue, is served by Bus Routes 23 and 60.

There is presently no bus service on Stevens Creek Boulevard within the project limits. However, VTA's *Valley Transportation Plan 2035* (VTP 2035) lists a future bus rapid transit (BRT) line along Stevens Creek Boulevard between Cupertino and Downtown San Jose, which includes the segment of Stevens Creek Boulevard at I-880.

2.6.2.3 *Existing Bicycle and Pedestrian Facilities*

According to bikeways maps published by VTA and the City of San Jose, there are no bike lanes on any of the local streets in the project area. Sidewalks are present along both sides of local streets.

There is an existing pedestrian/bicycle overcrossing over I-280 within the project limits. The northerly terminus of this overcrossing is adjacent to Santana Park, at the corner of Monroe Street and Tisch Way. The southerly terminus of this overcrossing is near the intersection of Moorpark Avenue and South Monroe Street.

2.6.2.4 *Existing Traffic Conditions*

Section 1.2.2, *Need for the Project*, provides an overview of existing congestion in the project area. Congestion occurs during the weekday morning and afternoon peak commute periods, as well as during peak shopping periods (e.g., Saturdays and Christmas).

Table 7 shows the existing traffic volumes on local streets in the project area during the weekday AM peak-hour (8-9 AM), weekday PM peak-hour (5-6 PM), and Saturday peak (2-3 PM).

The time it takes to drive between two points, commonly referred to as "travel time" data, is a useful measure of how a roadway facility is operating under specified conditions. Table 8 shows the existing travel time data for project-area segments of I-280, I-880, Stevens Creek Boulevard, and Winchester Boulevard under existing peak-period conditions. The data illustrate several of the existing problems in the project area:

- Congestion on northbound I-280, which in large part is due to 1) the lane drop between the northbound I-880/Stevens Creek Boulevard collector off-ramp and the northbound SR-17 on-ramp, and 2) the merge from the southbound I-880 to northbound I-280 on-ramp.

- Congestion on Stevens Creek Boulevard, especially during the peak Saturday shopping period.

T A B L E 7

EXISTING TWO-WAY TRAFFIC DEMAND VOLUMES ON LOCAL STREETS

Street Segment	Weekday AM Peak	Weekday PM Peak	Saturday Peak
Winchester Boulevard			
N of Stevens Creek	1,350	2,100	2,450
Stevens Creek - Olin	1,450	2,750	2,800
Olin - Olsen	1,500	2,650	2,750
Olsen - Tisch	1,600	3,000	3,050
Tisch - Moorpark	2,100	3,200	2,900
S of Moorpark	1,950	2,900	2,250
Stevens Creek Boulevard			
W of Winchester	1,850	2,750	3,300
Winchester - Santana Row	2,050	3,550	3,500
Santana Row - Baywood	2,200	4,000	4,050
Baywood - Monroe	2,350	4,250	4,500
E of NB 880 Ramps	2,100	2,400	2,350
Moorpark Avenue			
W of I-280 Offramp	1,450	1,950	2,150
I-280 Offramp - Winchester	1,450	2,150	1,800
E of Winchester	1,900	2,300	1,400
Tisch Way			
E of Winchester	200	600	350
Monroe Street			
N of Stevens Creek	250	1,150	2,050
S of Stevens Creek	500	600	400
Olsen Drive			
W of Winchester	100	200	300

Volumes are rounded to the nearest 50.
The weekday AM peak-hour is 8:00 AM - 9:00 AM.
The weekday PM peak-hour is 5:00 PM - 6:00 PM.
The Saturday peak-hour is 2:00 - 3:00 PM.

Source: Traffic Operations Analysis Report for SR-17/I-280/I-880 Interchange, I-280/Winchester Boulevard Interchange, and I-880/Stevens Creek Boulevard Interchange Improvements Project, 2010.

T A B L E 8

EXISTING PEAK-HOUR TRAVEL TIMES

Roadway Segment	Peak Period	Travel Time [Minutes]
Southbound I-880 (Bascom to I-280)	AM PM Saturday	2.8 3.0 2.9
Northbound I-880 (I-280 to Bascom)	AM PM Saturday	3.9 3.4 3.5
Southbound I-280 (Saratoga to Moorpark)	AM PM Saturday	3.1 3.3 2.9
Northbound I-280 (Meridian to Saratoga)	AM PM Saturday	12.6 4.4 4.6
Westbound Stevens Creek Blvd. (Bellrose to Winchester)	AM PM Saturday	3.2 4.1 5.0
Eastbound Stevens Creek Blvd. (Winchester to Bellrose)	AM PM Saturday	3.3 4.8 4.6
Southbound Winchester Blvd. (Forest to Moorpark)	AM PM Saturday	3.0 3.8 3.3
Northbound Winchester Blvd. (Moorpark to Forest)	AM PM Saturday	2.7 3.2 3.4

Source: Traffic Operations Analysis Report for SR-17/I-280/I-880 Interchange, I-280/Winchester Boulevard Interchange, and I-880/Stevens Creek Boulevard Interchange Improvements Project, 2010.

Intersection Levels of Service

Local street performance is measured using the "level of service" (LOS) concept, whereby traffic demand is evaluated in the context of capacity. Since intersections are a key factor in determining the capacity of local streets, the adopted procedures of VTA and the City of San Jose focus on peak-hour operations at intersections. The methodology computes a level of service taking into account factors such as the demand for each traffic movement (i.e., left turns, straight, right turns), the number of lanes, and (where applicable) signal timing. Based on these factors, the methodology computes the average delay per vehicle at the intersection using software known as Synchro, to which a corresponding level of service is assigned. As summarized in Table 9, level of service can range from "LOS A", representing free-flow conditions, to "LOS F", representing jammed/over-saturated conditions.

T A B L E 9

LEVEL OF SERVICE DEFINITIONS FOR SIGNALIZED INTERSECTIONS

Level of Service	Description of Operations	Average Control Delay[a] (seconds/vehicle)
A	Insignificant Delays: No approach phase is fully utilized and no vehicle waits longer than one red indication.	≤ 10
B	Minimal Delays: An occasional approach phase is fully utilized. Drivers begin to feel restricted.	> 10 to 20
C	Acceptable Delays: Major approach phase may become fully utilized. 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

[a] Average Control Delay includes the time for initial deceleration delay, queue move-up time, stopped delay, and final acceleration.

Source: Transportation Research Board, 2000 Highway Capacity Manual.

The City of San Jose's minimum acceptable LOS for peak-hour operations at local intersections is LOS D. In addition to local intersections, various intersections in Santa Clara County are designated as "Congestion Management Program (CMP) facilities" because they function as key elements in the Santa Clara County highway network. The minimum acceptable LOS for CMP-designated intersections is LOS E.[7]

The traffic analysis prepared for this project evaluated the peak-hour operations at 22 intersections in the project area. The study intersections were chosen based on their proximity to the proposed improvements. These intersections are listed in Table 10, as well as shown on Figure 6. An asterisk (*) indicates that the intersection is designated as part of the CMP network.

Table 10 shows the existing peak-hour levels of service at each of the study intersections, which are based on observed peak-hour traffic flow volumes. The levels of service were calculated using the above-described methodology. As shown in Table 10, there are two intersections, Winchester Boulevard at Moorpark Avenue and Stevens Creek Boulevard at Santana Row, which are operating below acceptable levels of service under existing conditions.

2.6.2.5 *Future "No Build" Traffic Conditions*

VTA's Countywide travel demand model was used to forecast future traffic volumes in the project area. Consistent with standard practice, the year 2035 was chosen for the long-term horizon year as it is 20 years beyond the estimated 2015 project completion date.

The benefit of the travel demand model is that it provides projections of future traffic volumes, taking into account traffic from future development planned for in the approved general plans of the cities in Santa Clara County. The model also accounts for planned growth in the region, as well as planned improvements to the transportation network.

When compared to existing conditions, key findings as to future (2035) travel demand in the project area are as follows:

- During the weekday AM peak period, the growth projected for 2035 will greatly increase the severity of congestion on the freeways in the study area due to existing bottlenecks on northbound I-880 and northbound I-280. In the case of northbound I-280, queues from bottlenecks within the study area are projected to extend well upstream of the analysis network limit. The segments of southbound I-880 and southbound I-280 within the study area are expected to experience only minor mainline slowing during the AM peak period. Conditions

[7]VTA is the Congestion Management Agency for Santa Clara County and is responsible for the County Congestion Management Plan (CMP). Under Proposition 111, which was approved by voters in 1990, urbanized counties in California are required to prepare CMPs to maintain eligibility for gas tax subventions.

T A B L E 1 0

EXISTING INTERSECTION LEVELS OF SERVICE

Intersection		AM Peak-Hour		PM Peak-Hour		Sat. Peak-Hour	
#	Name	Delay	LOS	Delay	LOS	Delay	LOS
1	Saratoga Ave. at SB I-280 Ramps*	21.1	C	28.6	C	50.2	D
2	Saratoga Ave. at NB I-280 Ramps*	19.4	B	21.2	C	11.6	B
3	Saratoga Ave. at Kiely Blvd.*	43.9	D	69.5	E	37.5	D
4	Stevens Creek Blvd. at Saratoga Ave.*	38.0	D	48.6	D	50.7	D
5	Stevens Creek Blvd. at San Tomas Expwy.*	58.2	E	69.1	E	45.6	D
6	Stevens Creek Blvd. at Cypress Ave.	11.2	B	14.1	B	13.0	B
7	Stevens Creek Blvd. at Winchester Blvd.*	26.4	C	77.7	E	70.5	E
8	Stevens Creek Blvd. at Santana Row	12.1	B	27.7	C	58.4	E
9	Stevens Creek Blvd. at Baywood Ave.	3.6	A	14.0	B	18.5	B
10	Stevens Creek Blvd. at Monroe St.	16.9	B	33.3	C	50.9	D
11	Stevens Creek Blvd. at SB I-880 Ramps*	18.9	B	16.3	B	34.7	C
12	Stevens Creek Blvd. at NB I-880 Ramps	Intersection does not presently exist					
13	Stevens Creek Blvd. at Bellerose Dr.	25.7	C	25.2	C	24.3	C
14	Forest Ave. at Winchester Blvd.	20.6	C	17.5	B	14.1	B
15	Forest Ave. at Baywood Ave.	7.9	A	24.5	C	16.0	B
16	Forest Ave. at Monroe St.	13.6	B	18.0	B	17.3	B
17	Winchester Blvd. at Olin Ave.	12.8	B	18.9	B	17.0	B
18	Winchester Blvd. at Olsen Dr.	10.7	B	15.7	B	24.0	C
19	Winchester Blvd. at Tisch Way	16.9	B	38.7	D	14.9	B
20	Winchester Blvd. at Moorpark Ave.	40.0	D	57.8	E	60.7	E
21	Moorpark Ave. at SB I-280 Off-Ramp	11.2	B	15.0	B	29.2	C
22	Winchester Blvd. at Dorcich St.	6.8	A	20.2	C	20.8	C

Notes 1. Intersection locations are shown on Figure 6.
2. * denotes a CMP intersection.

Source: Traffic Operations Analysis Report for SR-17/I-280/I-880 Interchange, I-280/Winchester Boulevard Interchange, and I-880/Stevens Creek Boulevard Interchange Improvements Project, 2010.

on the currently congested connectors from southbound I-880 to northbound I-280 and southbound I-280 to northbound I-880 are expected to worsen, while all other ramps are expected to operate at acceptable levels of service.

- During the weekday PM peak period, only modest increases in congestion are projected for most facilities within the study area. The primary exception is northbound I-280 where the growth projected for 2035 will greatly increase the severity of congestion due to existing bottlenecks within the study area. Queues on northbound I-280 are projected to extend upstream well beyond the analysis network limit. Although traffic on southbound I-880 is expected to be metered by bottlenecks located to the north outside the study area, slowdowns are also expected at various locations within the study segment in 2035. On southbound I-280, high demands at the boundary to the study are forecast to result in congestion north of Saratoga Avenue. No significant congestion is expected on northbound I-880 during the PM peak period in 2035.

- During the Saturday mid-day peak, no significant mainline congestion is projected for the segments of southbound I-880, northbound I-880 and southbound I-280 in the study area under No Build conditions. However, it is anticipated that future traffic growth will exacerbate existing traffic deficiencies in this area, and result in further impacts to westbound Stevens Creek Blvd, the northbound I-880/Stevens Creek Boulevard collector road, and northbound I-280. Queues from Stevens Creek and the collector road are expected to spill back onto northbound I-280 starting shortly after noon. The high demands in the section between the Menker Avenue on-ramp and the off-ramp to the northbound I-880/Stevens Creek collector, combined with a high number of ramps, associated weave or merge conflicts and right-lane overloading, are also expected to create congestion on northbound I-280 throughout the period. As a result of these constraints, the queue on northbound I-280 is projected to extend well beyond Meridian Avenue for almost the entire analysis period.

The above findings are illustrated by projected "no build" travel times on project-area freeways and local streets. Specifically, when compared to existing conditions, the data in Table 11 show substantial increases in travel time on northbound I-880, northbound I-280, Stevens Creek Boulevard, and Winchester Boulevard.

Projected "no build" traffic volumes for the local streets in the project area are shown in Tables 12 - 14. The data indicate that future traffic volumes will - at most locations - be higher than existing volumes, which accounts for planned development in the region.

Table 15 shows projected "no build" levels of service for the study intersections for the weekday AM and PM peak-hours, as well as the Saturday peak-hour. The levels of service are based on projected "constrained" traffic volumes, which are the 2035 demand volumes adjusted to reflect the impacts of bottlenecks and other constraints throughout the network. The purpose of adjusting the demand volumes to account for factors such as bottlenecks is to provide a picture of what would be observed in the field if the forecasted conditions were realized.

TABLE 11

COMPARISON OF FUTURE (YEAR 2035) PEAK-HOUR TRAVEL TIMES
[Expressed in Minutes]

Roadway Segment	Peak Period	No Build Alt.	Project without New Off-Ramp at Winchester	Full Project with 5-Legged Intersection Design Option	Full Project with Hook-Ramp Design Option
Southbound I-880 (Bascom to I-280)	AM	3.5	3.2	13.6	13.6
	PM	3.3	3.3	3.2	3.2
	Sat	2.9	3.2	2.9	2.9
Northbound I-880 (I-280 to Bascom)	AM	16.9	16.1	18.1	18.1
	PM	4.9	4.9	4.9	4.9
	Sat	3.6	3.8	3.6	3.6
Southbound I-280 (Saratoga to Moorpark)	AM	4.4	4.3	4.3	4.3
	PM	4.4	4.4	4.4	4.4
	Sat	3.2	3.2	3.2	3.2
Northbound I-280 (Meridian to Saratoga)	AM	21.7	22.0	16.1	16.1
	PM	16.4	15.9	4.8	4.8
	Sat	17.3	11.6	6.1	6.1
Westbound Stevens Creek Blvd. (Bellrose to Winchester)	AM	4.1	4.7	4.1	4.1
	PM	8.3	8.1	6.0	6.0
	Sat	6.6	8.5	6.4	6.1
Eastbound Stevens Creek Blvd. (Winchester to Bellrose)	AM	3.8	4.2	4.4	4.5
	PM	7.0	9.3	6.2	6.1
	Sat	9.4	10.4	10.4	10.4
Southbound Winchester Blvd. (Forest to Moorpark)	AM	3.6	3.7	3.7	3.5
	PM	5.0	4.9	5.3	5.1
	Sat	3.9	3.9	5.9	5.6
Northbound Winchester Blvd. (Moorpark to Forest)	AM	3.0	3.0	3.5	3.9
	PM	5.3	4.9	4.8	5.0
	Sat	4.8	4.7	10.3	8.8

For illustration purposes, entries shaded in orange illustrate where the project will increase travel times by one minute or more, as compared to the No Build Alternative. Entries shaded in green illustrate where the project will decrease travel times by one minute or more, as compared to the No Build Alternative.

Analysis performed as part of this effort showed that the design options for the Winchester off-ramp terminus (5-legged or hook) produced insignificant differences in freeway operations/travel times. Thus, freeway travel times for the Hook Ramp Design Option are assumed to be consistent with those for the 5-Legged Intersection Design Option.

Source: Traffic Operations Analysis Report for SR-17/I-280/I-880 Interchange, I-280/Winchester Boulevard Interchange, and I-880/Stevens Creek Boulevard Interchange Improvements Project, 2010.

TABLE 12

FUTURE (YEAR 2035) TWO-WAY TRAFFIC DEMAND VOLUMES DURING THE AM PEAK-HOUR ON LOCAL STREETS

Street Segment	No Build Alt.	Project without New Off-Ramp at Winchester	Full Project with 5-Legged Intersection Design Option	Full Project with Hook-Ramp Design Option
Winchester Boulevard				
N of Stevens Creek	1,750	1,750	2,000	2,000
Stevens Creek - Olin	1,650	1,650	2,500	2,500
Olin - Olsen	1,900	1,900	2,900	2,900
Olsen - Tisch	1,950	1,950	2,750	2,800
Tisch - Moorpark	2,500	2,500	2,900	2,900
S of Moorpark	2,250	2,250	2,800	2,800
Stevens Creek Boulevard				
W of Winchester	3,850	3,850	3,800	3,800
Winchester - Santana Row	4,200	4,200	4,250	4,150
Santana Row - Baywood	4,400	4,400	4,300	4,200
Baywood - Monroe	4,700	4,700	4,400	4,300
E of NB 880 Ramps	3,500	3,500	3,350	3,300
Moorpark Avenue				
W of I-280 Offramp	1,750	1,750	2,150	2,150
I-280 Offramp - Winchester	1,800	1,800	2,200	2,200
E of Winchester	2,750	2,750	2,700	2,700
Tisch Way				
E of Winchester	200	200	130	1,400
Monroe Street				
N of Stevens Creek	250	250	250	250
S of Stevens Creek	500	500	600	500
Olsen Drive				
W of Winchester	150	150	150	150

The weekday AM peak-hour is 8:00 AM - 9:00 AM. Volumes are rounded to the nearest 50.

For illustration purposes, entries shaded in orange depict where the project will increase volumes, as compared to No Build conditions. Entries shaded in green depict where the project will decrease volumes, as compared to No Build conditions.

Source: Traffic Operations Analysis Report for SR-17/I-280/I-880 Interchange, I-280/Winchester Boulevard Interchange, and I-880/Stevens Creek Boulevard Interchange Improvements Project, 2010.

TABLE 13

FUTURE (YEAR 2035) TWO-WAY TRAFFIC DEMAND VOLUMES DURING THE PM PEAK-HOUR ON LOCAL STREETS

Street Segment	No Build Alt.	Project without New Off-Ramp at Winchester	Full Project with 5-Legged Intersection Design Option	Full Project with Hook-Ramp Design Option
Winchester Boulevard				
N of Stevens Creek	3,800	3,800	4,100	4,100
Stevens Creek - Olin	3,800	3,800	4,200	4,050
Olin - Olsen	3,750	3,750	4,150	4,000
Olsen - Tisch	4,200	4,200	4,650	4,500
Tisch - Moorpark	4,650	4,650	5,050	5,050
S of Moorpark	4,000	4,000	4,500	4,500
Stevens Creek Boulevard				
W of Winchester	4,450	4,450	4,700	4,700
Winchester - Santana Row	5,450	5,450	5,900	5,650
Santana Row - Baywood	5,650	5,650	5,900	5,650
Baywood - Monroe	5,600	5,600	6,100	5,850
E of NB 880 Ramps	3,750	3,750	4,000	3,900
Moorpark Avenue				
W of I-280 Offramp	2,700	2,700	2,700	2,700
I-280 Offramp - Winchester	2,700	2,700	2,850	2,850
E of Winchester	3,550	3,550	3,100	3,100
Tisch Way				
E of Winchester	750	750	400	1,550
Monroe Street				
N of Stevens Creek	1,100	1,100	1,150	1,150
S of Stevens Creek	700	700	900	700
Olsen Drive				
W of Winchester	200	200	200	200

The weekday PM peak-hour is 5:00 PM - 6:00 PM. Volumes are rounded to the nearest 50.

For illustration purposes, entries shaded in orange depict where the project will increase volumes, as compared to No Build conditions. Entries shaded in green depict where the project will decrease volumes, as compared to No Build conditions.

Source: Traffic Operations Analysis Report for SR-17/I-280/I-880 Interchange, I-280/Winchester Boulevard Interchange, and I-880/Stevens Creek Boulevard Interchange Improvements Project, 2010.

T A B L E 1 4

FUTURE (YEAR 2035) TWO-WAY TRAFFIC DEMAND VOLUMES DURING THE SATURDAY PEAK-HOUR ON LOCAL STREETS

Street Segment	No Build Alt.	Project without New Off-Ramp at Winchester	Full Project with 5-Legged Intersection Design Option	Full Project with Hook-Ramp Design Option
Winchester Boulevard				
N of Stevens Creek	2,900	2,900	3,100	3,100
Stevens Creek - Olin	3,200	3,200	3,000	3,050
Olin - Olsen	3,250	3,250	3,700	3,700
Olsen - Tisch	3,500	3,500	4,450	4,450
Tisch - Moorpark	3,450	3,450	3,950	3.950
S of Moorpark	3,100	3,100	3,100	3,100
Stevens Creek Boulevard				
W of Winchester	5,100	5,100	5,300	5,300
Winchester - Santana Row	4,800	4,800	4,500	4,350
Santana Row - Baywood	5,500	5,500	4,850	4,700
Baywood - Monroe	6,100	6,100	5,300	5,200
E of NB 880 Ramps	2,800	2,800	2,000	2,000
Moorpark Avenue				
W of I-280 Offramp	2,250	2,250	2,400	2,400
I-280 Offramp - Winchester	2,500	2,500	2,700	2,700
E of Winchester	1,950	1,950	1,550	1,550
Tisch Way				
E of Winchester	500	500	200	1,650
Monroe Street				
N of Stevens Creek	2,100	2,100	1,900	1,900
S of Stevens Creek	750	750	700	650
Olsen Drive				
W of Winchester	350	350	350	350

The Saturday peak-hour is 2:00 PM - 3:00 PM. Volumes are rounded to the nearest 50.

For illustration purposes, entries shaded in orange depict where the project will increase volumes, as compared to No Build conditions. Entries shaded in green depict where the project will decrease volumes, as compared to No Build conditions.

Source: Traffic Operations Analysis Report for SR-17/I-280/I-880 Interchange, I-280/Winchester Boulevard Interchange, and I-880/Stevens Creek Boulevard Interchange Improvements Project, 2010.

TABLE 15

COMPARISON OF PEAK-HOUR INTERSECTION LEVELS OF SERVICE

Intersection		Peak Period	Year 2035							
			No Build Alternative		Project without New Off-Ramp at Winchester		Full Project with 5-Legged Intersection Design Option		Full Project with Hook-Ramp Design Option	
#	Name		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Saratoga Avenue at SB I-280 Ramps*	AM	23.8	C	23.6	C	24.2	C	24.2	C
		PM	18.2	B	17.5	B	18.9	B	18.9	B
		Sat	60.7	E	61.1	E	61.2	E	61.2	E
2	Saratoga Avenue at NB I-280 Ramps*	AM	10.3	B	10.8	B	11.4	B	11.4	B
		PM	14.8	B	9.9	A	9.9	A	9.9	A
		Sat	7.9	A	8.5	A	5.0	A	5.0	A
3	Saratoga Avenue at Kiely Boulevard*	AM	37.3	D	38.4	D	42.3	D	42.3	D
		PM	57.7	E	48.5	D	47.6	D	47.6	D
		Sat	50.6	D	49.3	D	35.1	D	35.1	D
4	Stevens Creek Blvd. at Saratoga Avenue*	AM	31.6	C	31.5	C	33.5	C	33.5	C
		PM	46.6	D	41.6	D	54.1	D	54.1	D
		Sat	164.9	F	170.6	F	171.1	F	171.1	F
5	Stevens Creek Blvd. at San Tomas Expwy.*	AM	130.7	F	134.8	F	127.1	F	127.1	F
		PM	80.1	F	84.3	F	91.2	F	91.2	F
		Sat	73.7	E	71.4	E	**120.6**	**F**	**120.6**	**F**
6	Stevens Creek Blvd. at Cypress Avenue	AM	67.5	E	68.9	E	65.0	E	65.0	E
		PM	17.9	B	17.7	B	18.7	B	18.7	B
		Sat	23.3	C	24.5	C	42.4	D	42.4	D
7	Stevens Creek Blvd. at Winchester Blvd.*	AM	27.5	C	29.5	C	38.1	D	48.2	D
		PM	68.9	E	75.8	E	63.6	E	61.7	E
		Sat	126.0	F	127.4	F	134.9	F	130.3	F
8	Stevens Creek Blvd. at Santana Row	AM	17.7	B	20.3	C	18.9	B	19.4	B
		PM	40.8	D	40.1	D	39.0	D	38.6	D
		Sat	50.9	D	52.4	D	42.5	D	41.5	D
9	Stevens Creek Blvd. at Baywood Avenue	AM	5.4	A	6.0	A	13.9	B	14.1	B
		PM	40.5	D	42.2	D	18.9	B	18.6	B
		Sat	20.6	C	24.7	C	19.9	B	19.2	B

T A B L E 1 5 (continued)

COMPARISON OF PEAK-HOUR INTERSECTION LEVELS OF SERVICE

Intersection		Peak	Year 2035							
			No Build Alternative		Project without New Off-Ramp at Winchester		Full Project with 5-Legged Intersection Design Option		Full Project with Hook-Ramp Design Option	
#	Name	Period	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
10	Stevens Creek Blvd. at Monroe Street	AM	14.4	B	13.8	B	12.4	B	12.6	B
		PM	30.5	C	33.9	C	23.1	C	22.2	C
		Sat	59.8	E	55.2	E	47.9	D	47.9	D
11	Stevens Creek Blvd. at I-880 SB Ramps*	AM	21.0	C	15.1	B	11.5	B	11.5	B
		PM	28.0	C	29.0	C	19.5	B	19.6	B
		Sat	45.2	D	58.9	E	21.7	C	22.0	C
12	Stevens Creek Blvd. at I-880 NB Ramps	AM	-	-	25.0	C	21.1	C	21.1	C
		PM	-	-	46.9	D	29.1	C	29.1	C
		Sat	-	-	155.3	F	24.0	C	24.0	C
13	Stevens Creek Blvd. at Bellerose Drive	AM	44.0	D	30.9	C	23.5	C	23.5	C
		PM	39.8	D	48.9	D	29.5	C	29.5	C
		Sat	22.8	C	25.7	C	21.8	C	21.8	C
14	Forest Ave. at Winchester Blvd.	AM	11.4	B	11.6	B	13.7	B	13.7	B
		PM	33.0	C	38.3	D	28.1	C	28.1	C
		Sat	20.6	C	20.8	C	21.7	C	21.7	C
15	Forest Ave. at Baywood Ave.	AM	4.9	A	5.2	A	5.2	A	5.2	A
		PM	20.3	C	20.3	C	20.2	C	20.2	B
		Sat	19.4	B	20.2	C	12.7	B	12.7	B
16	Forest Ave. at Monroe St.	AM	13.7	B	14.3	B	13.9	B	13.9	B
		PM	19.0	B	19.0	B	19.0	B	19.0	B
		Sat	23.3	C	22.5	C	17.5	B	17.5	B
17	Winchester Blvd. at Olin Avenue	AM	11.0	B	10.9	B	11.6	B	21.9	C
		PM	20.6	C	18.7	B	18.1	B	19.9	B
		Sat	17.4	B	17.6	B	35.7	D	20.7	C
18	Winchester Blvd. at Olsen Drive	AM	11.6	B	11.6	B	15.5	B	21.1	C
		PM	16.5	B	14.3	B	16.5	B	14.7	B
		Sat	16.8	B	17.0	B	49.0	D	30.8	C

T A B L E 1 5 (continued)

COMPARISON OF PEAK-HOUR INTERSECTION LEVELS OF SERVICE

Intersection		Peak Period	Year 2035							
			No Build Alternative		Project without New Off-Ramp at Winchester		Full Project with 5-Legged Intersection Design Option		Full Project with Hook-Ramp Design Option	
#	Name		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
19	Winchester Blvd. at Tisch Way	AM	14.6	B	14.5	B	22.5	C	20.8	C
		PM	62.2	E	56.6	E	57.4	E	51.6	D
		Sat	13.0	B	13.3	B	**67.2**	**E**	47.4	D
20	Winchester Blvd. at Moorpark Ave.	AM	27.9	C	27.8	C	31.7	C	32.3	C
		PM	95.8	F	94.7	F	104.2	F	102.2	F
		Sat	41.4	D	43.0	D	**68.6**	**E**	**65.6**	**E**
21	Moorpark Avenue at SB I-280 Off-ramp	AM	34.7	C	34.9	C	17.1	B	17.2	B
		PM	63.4	E	57.0	E	52.2	D	45.3	D
		Sat	18.0	B	19.0	B	36.1	D	30.9	C
22	Winchester Blvd. at Dorcich Street	AM	6.5	A	6.8	A	7.4	A	7.4	A
		PM	36.7	D	37.3	D	30.9	C	30.9	C
		Sat	20.2	C	20.0	C	20.4	C	20.4	C
	Tisch Way at NB I-280 Off-ramp	AM	-	-	-	-	-	-	10.4	B
		PM	-	-	-	-	-	-	**81.1**	**F**
		Sat	-	-	-	-	-	-	11.2	B

Notes

1. Intersection locations are shown on Figure 6.
2. * denotes a CMP intersection.
3. Entries that are highlighted in orange and in bold type indicate a substantial adverse impact.
4. Weekday AM peak-hour is 8-9 AM.
5. Weekday PM peak-hour is 5-6 PM.
6. Saturday peak-hour is 2-3 PM.
7. Analysis performed as part of this effort showed that the design options for the Winchester off-ramp terminus (5-legged or hook) produced insignificant differences in the operation of Intersections #'s 1-6, 12-16, and 22. Thus, intersection delay and LOS at these locations for the Hook Ramp Design Option are assumed to be consistent with those for the 5-Legged Intersection Design Option.

Source: Traffic Operations Analysis Report for SR-17/I-280/I-880 Interchange, I-280/Winchester Boulevard Interchange, and I-880/Stevens Creek Boulevard Interchange Improvements Project, 2010.

By 2035, the following intersections are projected to operate at unacceptable levels of service under peak-hour "no build" conditions:

- Stevens Creek Boulevard at Saratoga Avenue (Saturday)
- Stevens Creek Boulevard at San Tomas Expressway (AM and PM)
- Stevens Creek Boulevard at Cypress Avenue (AM)
- Stevens Creek Boulevard at Winchester Boulevard (Saturday)
- Stevens Creek Boulevard at Monroe Street (Saturday)
- Winchester Boulevard at Tisch Way (PM)
- Winchester Boulevard at Moorpark Avenue (PM)
- Moorpark Avenue at Southbound I-280 Off-Ramp (PM)

2.6.3 Environmental Consequences

This section describes the effects of the project on traffic, transit, and pedestrian/bicycles facilities. Data are presented for the project as a whole, as well as for a potential first phase of the project, defined as the improvements to the I-880/Stevens Creek Boulevard interchange and the construction of the direct connector ramp from northbound I-280 to northbound I-880. In other words, the first phase would not include the new off-ramp from northbound I-280 to Winchester Boulevard and its associated improvements.

All of the improvements that will be constructed by the project will comply with the applicable provisions of the ADA.

2.6.3.1 *Impacts on Freeways*

Key findings with regard to the effect of the project on nearby freeway segments are as follows:

- The first phase of the project will improve travel times on northbound I-280, although the improvement would not be substantial. However, the full project, which includes the Winchester off-ramp, extension of the 4th through lane on northbound I-280 through the entire project area, and reconfiguration of the connections from northbound SR-17 and southbound I-880, will significantly reduce congestion on northbound I-280 (see Table 16).

- With or without the project, severe congestion is projected in 2035 during the AM peak-hour on northbound I-880 due to a downstream bottleneck between Coleman Avenue and North First Street. The first phase of the project will result in a slight improvement at this location due to improvements in the merge condition near Stevens Creek Boulevard. However, this benefit will be offset under the full project due to the higher demands forecast at the primary downstream bottleneck, resulting in a worsening of conditions.

T A B L E 1 6

EFFECT OF PROJECT ON YEAR 2035 PEAK-PERIOD FREEWAY CONGESTION
[Expressed as Vehicle Hours of Delay]

	No Build Alternative	Build Alternative without New Off-Ramp at Winchester	Full Project 5-Legged Design Option	Full Project Hook-Ramp Design Option
Southbound I-880				
AM	200	160 (-20%)	4,230 (2,015%)	4,230 (2,015%)
PM	390	270 (-31%)	290 (-26%)	290 (-26%)
Sat	130	350 (169%)	120 (-8%)	120 (-8%)
Northbound I-880				
AM	3,000	2,880 (-4%)	3,470 (16%)	3,470 (16%)
PM	160	150 (-6%)	140 (-13%)	140 (-13%)
Sat	110	170 (55%)	110 (0%)	110 (0%)
Southbound I-280				
AM	370	360 (-3%)	360 (-3%)	360 (-3%)
PM	700	700 (0%)	700 (0%)	700 (0%)
Sat	100	100 (0%)	110 (10%)	110 (10%)
Northbound I-280				
AM	18,070	17,740 (-2%)	6,990 (-61%)	6,990 (-61%)
PM	11,330	9,560 (-16%)	710 (-94%)	710 (-94%)
Sat	27,140	17,080 (-37%)	8,730 (-68%)	8,730 (-68%)
Total				
AM	21,640	21,140 (-2%)	15,050 (-30%)	15,050 (-30%)
PM	12,580	10,680 (-15%)	1,840 (-85%)	1,840 (-85%)
Sat	27,480	17,700 (-36%)	9,070 (-67%)	9,070 (-67%)

Numbers in ( ) represent the percentage change, as compared to the No Build Alternative.

Analysis performed as part of this effort showed that the design options for the Winchester off-ramp terminus (5-legged or hook) produced insignificant differences in freeway operations. Thus, freeway levels of congestion for the Hook Ramp Design Option are assumed to be consistent with those for the 5-Legged Intersection Design Option.

Source: Traffic Operations Analysis Report for SR-17/I-280/I-880 Interchange, I-280/Winchester Boulevard Interchange, and I-880/Stevens Creek Boulevard Interchange Improvements Project, 2010.

- During the AM peak period, the full project is projected to adversely affect operations on southbound I-880 in the project area due to the degraded operation on the southbound I-880 to northbound I-280 connector ramp. During the PM and Saturday peaks, neither the first phase nor the full project is projected to substantially affect operations on southbound I-880 in the project area.

- Neither the first phase of the project nor the full project is projected to substantially affect operations on southbound I-280 in the project area.

2.6.3.2 *Impacts on Freeway Ramps*

Key findings with regard to the effect of the proposed improvements on project-area freeway ramps are as follows:

- The new direct connector ramp from northbound I-280 to northbound I-880 will substantially reduce travel time for vehicles making that movement.

- During the AM peak-hour, the first phase of the project and the full project will reduce travel times for vehicles traveling from southbound I-280 to northbound I-880 by improving the merge onto I-880.

- The first phase of the project will not substantially affect operations on the connector ramp from southbound I-880 to northbound I-280. The full project will improve operations on this ramp during the PM peak-hour and Saturday peak-hour but will result in longer queues during the AM peak-hour.

- The first phase of the project will result in a reduction in queuing on the off-ramp from southbound I-880 to Stevens Creek Boulevard during the PM peak-hour and Saturday peak-hour. The full project will eliminate queuing on this off-ramp during the PM peak-hour and Saturday peak-hour.

- Under the full project, improvements in traffic flow on northbound I-280 will reduce queuing on the Parkmoor Avenue and Meridian Avenue on-ramps during the AM peak-hour and Saturday peak-hour. The full project will also eliminate the queue on the Parkmoor Avenue on-ramp during the PM peak-hour.

- Under the full project, the addition of the off-ramp from I-280 to Winchester Boulevard helps alleviate the demand on westbound Stevens Creek Boulevard and on the northbound I-880 collector-distributor road, eliminating congestion on these facilities.

2.6.3.3 *Impacts on Local Streets*

Key findings with regard to the effect of the proposed improvements on local streets are as follows:

- The first phase of the project will not result in a change in traffic demand on any local streets. This result is expected since the first phase does not add or delete any access points between the freeways and the local streets, nor does it change local circulation patterns.

- The full project, which includes the new off-ramp from northbound I-280 at Winchester Boulevard, will cause a shift in some traffic demand away from I-880/Stevens Creek and onto Winchester Boulevard in the vicinity of the new off-ramp, as shown in Tables 12 - 14.

- Changes in traffic volumes between the two design options for the Winchester off-ramp will be minor. Under the 5-Legged Intersection Design Option, wherein the westerly portion of Tisch Way would become 1-way westbound, traffic that would otherwise travel eastbound on Tisch Way would utilize alternate routes. For example, vehicles traveling north on Winchester that would normally turn right on Tisch Way, would instead continue north on Winchester, turn east onto Stevens Creek, and turn south onto Monroe Street. However, the volume of vehicles affected would be in the range of 100-200 in each peak-hour, which would not be substantial. This shift in traffic patterns would not occur under the Hook-Ramp Design Option as Tisch Way would remain a 2-way street.

- Improvements at the I-880/Stevens Creek Boulevard interchange will improve traffic flow on Stevens Creek Boulevard through the interchange area. However, decreases in congestion on Stevens Creek, particularly during the Saturday peak, will be limited. This is in part due to changes in the signal timing at Winchester Boulevard to provide additional green time for the increased northbound traffic.

2.6.3.4 *Intersection Impacts*

Table 15 shows the effect of the project on peak-hour operations at each of the 22 study intersections. Data are presented for the first phase of the project (i.e., excluding a new off-ramp from northbound I-280 to Winchester Boulevard), as well as for the full project under both the 5-Legged Intersection and Hook-Ramp Design Options for the new Winchester Boulevard off-ramp.

The data in Table 15 show that, when compared to "no build" conditions, the first phase of the project will have only a minimal effect on peak-hour delay at most of the study intersections. This result is not unexpected since the first phase of the project will not change traffic circulation patterns or demand volumes. The primary effects of the first phase will be focused on those locations where changes to the geometry of the intersection are proposed as part of the project, such as at Stevens Creek

Boulevard/Monroe Street, Stevens Creek Boulevard/I-880 Ramps, and Stevens Creek Boulevard/Bellerose Drive.

When compared to "no build" conditions, the full project will have a greater effect on intersection operations since traffic patterns will change as a result of the construction of the new off-ramp from northbound I-280 to Winchester Boulevard. Also, by alleviating the bottleneck around the I-880/Stevens Creek Boulevard interchange, more traffic is able to exit the freeways onto the arterial network. As shown in Table 15, for the majority of the 22 study intersections, the increase or decrease in average vehicle delay due to the project will be minimal. However, there are a number of intersections where the effect of the full project will be more pronounced:

- The full project will reduce average vehicle delay at the following intersections:
  - Saratoga Avenue at Kiely Boulevard [PM and Saturday]
  - Stevens Creek Boulevard at Santana Row [Saturday]
  - Stevens Creek Boulevard at Baywood Avenue [PM]
  - Stevens Creek Boulevard at Monroe Street [PM and Saturday]
  - Stevens Creek Boulevard at Southbound I-880 Ramps [AM, PM, and Saturday]
  - Stevens Creek Boulevard at Bellerose Drive [AM and PM]
  - Moorpark Avenue at Southbound I-280 Ramp [AM and PM]

- The full project will increase average vehicle delay at the following intersections:
  - Stevens Creek Boulevard at San Tomas Expressway [PM and Saturday]
  - Stevens Creek Boulevard at Cypress Avenue [Saturday]
  - Stevens Creek Boulevard at Winchester Boulevard [AM and Saturday]
  - Winchester Boulevard at Olin Avenue [Hook-Ramp Design Option in the AM and 5-Legged Intersection Design Option on Saturday]
  - Winchester Boulevard at Olsen Drive [Hook-Ramp Design Option in the AM and both design options on Saturday]
  - Winchester Boulevard at Tisch Way [Saturday]
  - Winchester Boulevard at Moorpark Avenue [Saturday]
  - Moorpark Avenue at Southbound I-280 Ramp [Saturday]

- Of the intersections listed in the previous paragraph, the project-caused increase in delay will be substantial at:
  - Stevens Creek Boulevard/San Tomas Expressway [both design options on Saturday]
  - Winchester Boulevard/Tisch Way [5-Legged Intersection Design Option on Saturday]
  - Winchester Boulevard/Moorpark Avenue [both design options on Saturday]

- With one exception, the effects of the two design options at the 22 study intersections will be comparable. The exception is at the Winchester Boulevard/Tisch Way intersection, where the effect of the 5-Legged Intersection Design Option will be substantially greater than the effect of the Hook-Ramp Design Option during the Saturday peak.

- Under the Hook Ramp Design Option, a new intersection will be formed where the new off-ramp from northbound I-280 will intersect Tisch Way. This intersection will operate poorly (i.e., LOS "F") during the PM peak-hour.

2.6.3.5 *Safety Impacts*

As described above, the Build Alternative will result in substantial improvements to traffic operations, which is one of the purposes of the project. These benefits to traffic operations will result from a combination of increased capacity (e.g., both new and wider ramps) and new roadway geometry that improves efficiency by reducing merging conflicts. These improvements will also enhance safety for both motorized and non-motorized traffic. As examples, the elimination of the queuing that backs up onto the freeways will reduce the potential for rear-end collisions, reduced merging lowers the potential for accidents related to lane-changing, and the increased capacity on northbound I-280 will eliminate a bottleneck. Similarly, the reconfiguration of the I-880/Stevens Creek Boulevard interchange will improve safety for pedestrians and bicyclists traversing that area.

2.6.4 Avoidance, Minimization, and/or Mitigation Measures

As described above, the full project would result in a substantial adverse impact to traffic operations during the Saturday mid-day, peak-hour at the following three intersections:

- Stevens Creek Boulevard/San Tomas Expressway
- Winchester Boulevard/Tisch Way (5-Legged Intersection Design Option only)
- Winchester Boulevard/Moorpark Avenue.

The feasibility of mitigating these impacts was assessed and the results are summarized below.

Mitigation at Stevens Creek Boulevard/San Tomas Expressway Intersection

At the Stevens Creek Boulevard/San Tomas Expressway intersection, the impact of the full project is largely attributed to the spillback of the westbound queue from the downstream intersection at Stevens Creek Boulevard/Saratoga Avenue. One consequence of the project is that traffic destined for westbound Stevens Creek Boulevard is no longer constrained or "metered" by upstream bottlenecks associated with the Steven Creek/Monroe intersection and the I-880/Stevens Creek interchange. As a result, higher traffic flow volumes for westbound Stevens Creek are achieved under the full project. These higher flows feed the downstream bottleneck at the Stevens Creek/Saratoga intersection, leading to earlier and more severe queue spillback into and through the Stevens Creek/San Tomas intersection.

This impact could be mitigated by widening Stevens Creek Boulevard at Saratoga Avenue to include an exclusive westbound right-turn lane, and a second left-turn lane in both the westbound and eastbound

directions. These improvements would add capacity at this intersection and reduce queuing in the westbound direction. This, in turn, would reduce the potential for spillback to the Stevens Creek/San Tomas intersection, thereby mitigating impacts at that location. Extension of the left-turn lanes in both directions of San Tomas Expressway at Stevens Creek Boulevard would also reduce delays at that intersection, but such extensions by themselves would not adequately mitigate the impact.

The above-described widening of Stevens Creek at Saratoga Avenue cannot be built within the existing right-of-way. The largest impact would be along westbound Stevens Creek Boulevard at the northeast corner of the intersection where the addition of one exclusive right-turn lane and one left-turn lane in the westbound direction would require a minimum of 24-foot-wide right-of-way acquisition. The right-of-way needed to accommodate the improvement would require the acquisition of six commercial properties located on the north side of Stevens Creek Boulevard between Breech Avenue and Buckingham Drive. In the eastbound direction, a minimum of two properties would be impacted. Additionally, the extension of the left turn lanes on Saratoga Avenue will require closure of one left-turn pocket to the Garden City Casino's driveway on the south and significantly reduce the northbound left-turn lane capacity into Keystones.

Due to the substantial impacts associated with implementing the above-described mitigation measure, the measure is considered not feasible and, therefore, is not proposed as part of the project.

Mitigation at Winchester Boulevard/Tisch Way Intersection

At the Winchester Boulevard/Tisch Way intersection, the project's substantial impact under the 5-Legged Intersection Design Option could be mitigated by constructing all of the following improvements:

- construct a second left-turn lane from northbound Winchester Boulevard to the northbound I-280 on-ramp, and
- construct an exclusive right-turn lane from southbound Winchester Boulevard to the northbound I-280 on-ramp, and
- widen the Tisch Way approach to Winchester Boulevard to two lanes, and
- build the new off-ramp from northbound I-280 so that it would include two left-turn and two right-turn lanes at Tisch Way.

These improvements would require the widening of the existing Winchester Boulevard bridge over I-280, as well as a realignment and widening of Winchester Boulevard and Tisch Way in the vicinity. These improvements could not be built within the existing right-of-way. Additional right-of-way needed would consist of approximately 1,000 ft^2 of land from the Winchester Mystery House, approximately 4,600 ft^2 of land from the Winchester Ranch Mobile Home Park, approximately 1,600 ft^2 of land from the service station located at the southwest corner of the Winchester/Moorpark Avenue intersection, and the loss of approximately 16 parking spaces from the commercial property located on the northeast corner of the Winchester/Tisch Way intersection. The Winchester Mystery House is a historic resource

that is on the National Register of Historic Places, is a California Historical Landmark, and is a City of San Jose Landmark.

Due to the substantial impacts associated with implementing the above-described mitigation measure, the measure is considered not feasible and, therefore, is not proposed as part of the project.

Mitigation at Tisch Way/Northbound I-280 Off-Ramp Intersection

At the Tisch Way/Northbound I-280 Off-Ramp intersection, the impact of the full project under the Hook Ramp Design Option during the PM peak-hour would be caused by congestion at the adjacent Winchester/Tisch intersection. Therefore, implementing the above-described mitigation for the Winchester/Tisch intersection would also serve to mitigate the impacts at the Tisch/Northbound I-280 Off-Ramp intersection. However, as noted above, such mitigation is considered not feasible and, therefore, is not proposed as part of the project.

Mitigation at Winchester Boulevard/Moorpark Avenue Intersection

At the Winchester Boulevard/Moorpark Avenue intersection, the impact of the full project could be mitigated by constructing all of the following improvements:

- construct second left-turn lanes for both southbound and northbound Winchester Boulevard to Moorpark Avenue, and
- construct an exclusive right-turn lane from southbound Winchester Boulevard to westbound Moorpark Avenue, and
- construct an exclusive right-turn lane from northbound Winchester Boulevard to eastbound Moorpark Avenue.

These improvements would require the widening of the existing I-280/Winchester Boulevard overcrossing by a minimum of 24 feet, as well as a realignment and widening of Winchester Boulevard in the vicinity. These improvements could not be built within the existing right-of-way. In the southbound direction, additional right-of-way needed would consist of approximately 1,000 ft^2 of land from the Winchester Mystery House, approximately 4,600 ft^2 of land from the Winchester Ranch Mobile Home Park, approximately 1,600 ft^2 of land from the service station located at the southwest corner of the Winchester/Moorpark Avenue intersection, and the loss of approximately 16 parking spaces from the commercial property located on the northeast corner of the Winchester/Tisch Way intersection. In the northbound direction, the addition of an exclusive right-turn lane to eastbound Moorpark Avenue and a second left-turn lane to westbound Moorpark Avenue will require a minimum of 12' right-of-way acquisition, impacting at least two commercial properties.

Due to the substantial impacts associated with implementing the above-described mitigation measures, these measures are considered not feasible and, therefore, are not proposed as part of the project.

2.7 VISUAL/AESTHETICS

2.7.1 Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically (emphasis added) and culturally pleasing surroundings (42 U.S.C. 4331[b][2]). To further emphasize this point, the Federal Highway administration in its implementation of NEPA (23 U.S.C. 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, the California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of aesthetic, natural, scenic and historic environmental qualities." (CA Public Resources Code Section 21001[b])

2.7.2 Affected Environment

The information in this section is based primarily on a technical Visual Impact Assessment (February 2010) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

Methodology

The visual study for the project was determined by a visual inspection of the location of the proposed features. The existing ramps, travel lanes, shoulders and barriers; soundwalls; ramp widths; pedestrian overcrossing; and existing trees and other vegetation were used to calibrate the distances from which the proposed project could be seen from a quarter mile radius, a distance where project features would impact the viewing public to the greatest extent. Two groups of sensitive viewers are present in the area: nearby residents and persons using Santana Park, which is located at the northwest corner of Tisch Way and Monroe Street. Motorists have time-limited exposure to visual features and, therefore, are a group with a lower visual sensitivity than the residents.

The quality of the existing visual environment was determined using a combination of three criteria:

- ***Vividness***: "...the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns..."
- ***Intactness***: "...the visual integrity of the natural and man-built landscape and its freedom from encroaching elements..."
- ***Unity:*** "...the visual coherence and compositional harmony of the landscape concerned as a whole..."

Existing Visual Environment

The project limits within SR-17, I-280 and I-880 are located in generally flat terrain to the south of the San Francisco Bay in the City of San Jose. The natural gradient of I-880 highway slopes downward from north to south approximately 30 feet. I-280 slopes downward from east to west approximately 20 feet.

The visual setting of the project site is dominated by urban features. In the north-south and east-west directions, urban features are highway related and consist of at-grade highway pavement, elevated ramp structures, on- and off-ramps, soundwalls, highway signs and lights, concrete median barriers, vehicles and utility lines and poles. I-280 includes eight to ten travel lanes, I-880 includes six lanes and SR-17 includes eight lanes of travel. The I-280/I-880/SR-17 interchange is visible at the center of the project, the Stevens Creek Boulevard interchange is visible to the north and the MacArthur Avenue overpass is visible to the east. Soundwalls are visible at the edges of the highway at I-280, SR-17 and I-880. Multi-story buildings are visible from I-280 to the northwest of I-880 and two-story buildings to the southwest. From I-880, views to the northeast and west of I-280 include the roof tops of single-family residences above soundwalls. From SR-17, some rooftops of residences are visible above soundwalls.

The natural landscape has been altered over time in all areas within and adjacent to the project limits with the addition of buildings and highway structures. Undisturbed natural features included in views from the project area are the Diablo Range of mountains visible to the east and the Santa Cruz Mountains to the west and south. Existing vegetation within the three highway corridors and the adjacent neighborhoods consist of introduced species of trees, shrubs and ground covers. The landscaping is mature. Trees and shrubs are dense at the edges of the highway and in the interchanges.

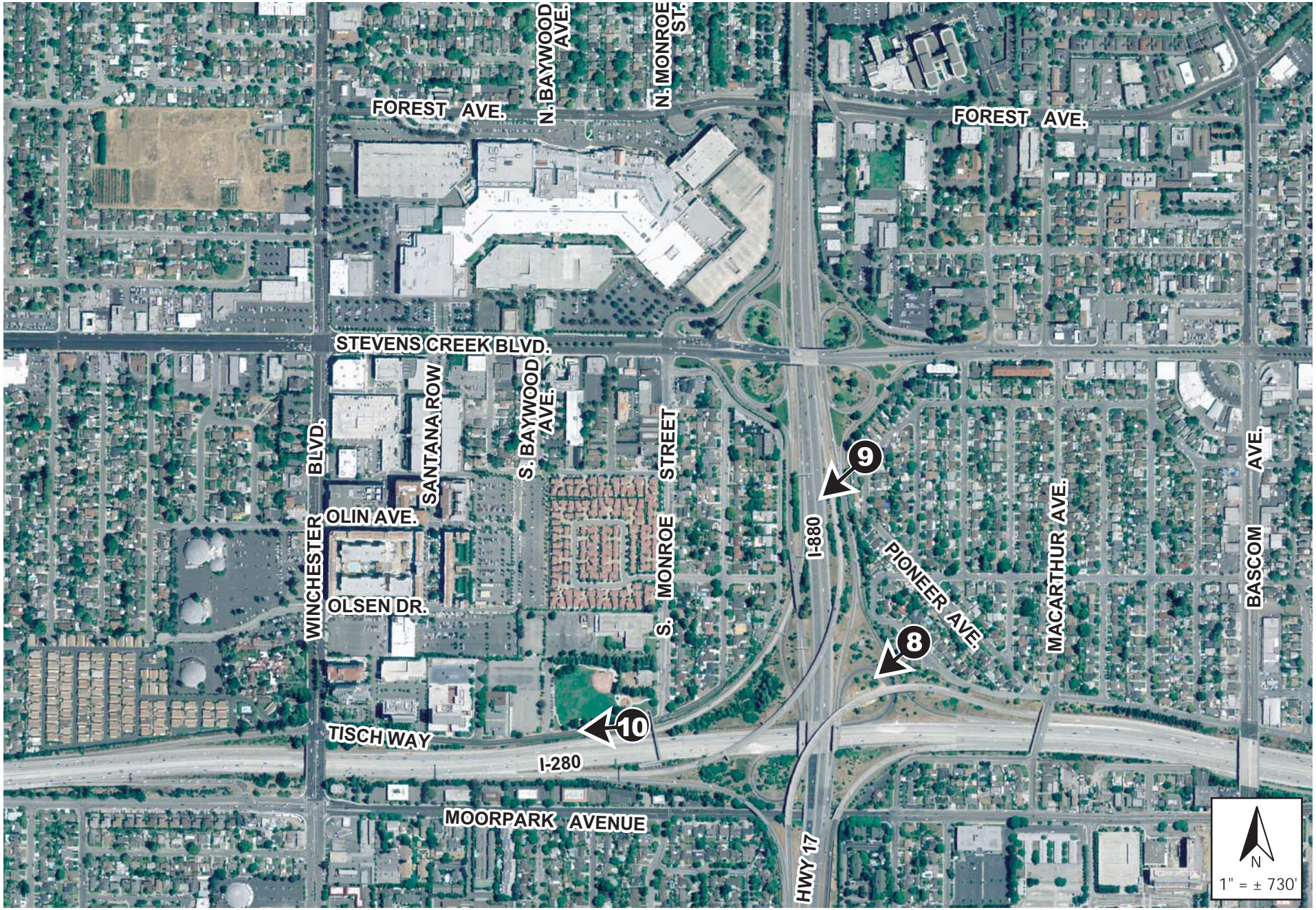
The portions of SR-17, I-280, and I-880 within the project limits are all designated as Landscape Freeways, a designation that sets limits on locations of large advertising signs next to the highway. In addition, the segment of I-280 within the project limits that is west of SR-17/I-880 is eligible for scenic highway status, but is not officially designated as a state scenic highway.

2.7.3 Environmental Consequences

The project will result in changes to the visual environment from a variety of locations in the immediate vicinity, some of which will be substantial. The changes will result from the removal of existing vegetation, the widening/realignment of ramps, the construction of new ramps (some of which will be elevated), and the realignment of Tisch Way.

The following paragraphs describe visual impacts at a number of key locations, which are shown on Figure 7:

- On Parkmoor Avenue, residents to the east of the three single-family residences that will be acquired to accommodate the NB I-280 to NB I-880 connector will experience substantial visual



VIEWPOINT LOCATIONS

FIGURE 7

EXISTING

PROPOSED

PHOTO SIMULATION - VIEW FROM PARKMOOR AVENUE FIGURE 8

EXISTING

PROPOSED

PHOTO SIMULATION - VIEW FROM PIONEER/HODGES AVENUES FIGURE 9

EXISTING

PROPOSED

PHOTO SIMULATION - VIEW FROM TISCH WAY/MONROE STREET FIGURE 10

impacts as highway screening vegetation within the three properties is removed and views of the highway features are fully afforded. Existing views to the southwest include residential structures, trees and shrubs that are part of the neighborhood cluster of homes. They screen highway features and provide a sense of separation from the highway environment to the south and west. This view is represented by Figure 8. The existing NB I-280 to SB SR-17 connector is visible between the columnar Cypress trees and the chimney.

With the project the residence, cypress trees, foreground trees and shrubs will not be included in the view. Viewers will see masonry 12-14' high soundwalls and an approximately 23' high NB I-280 to NB I-880 elevated ramp, approximately 103' closer to the vantage point than the existing approximately 27' high ramp that will remain. The existing and project highway connector ramps will encroach on the views from Parkmoor Avenue substantially, diminishing the element of intactness in the view. The compositional harmony of the view will be diminished as residences across the street from one another are removed. The vividness and memorability of the neighborhood will be diminished as residential scale structures and diverse landscaping are replaced with views of large scale highway structures that are singular in line, form, color and texture. A 6'-12' high soundwall will be added to the east edge of the connector ramp. The tops of trucks will be visible but not smaller passenger vehicles. Soundwalls, up to approximately 14' high, will be added at the ground level to screen views of the highway.

- On Pioneer Avenue near Hodges Avenue, views to the west of this single-family neighborhood will substantially change. As represented by Figure 9, the existing view from residences looks west at the existing mature trees and shrubs that screen views of the NB I-880 to EB Stevens Creek off ramp. With project removal of the trees and shrubs, adverse visual impacts will occur. The project will alter the character of the existing neighborhood substantially. The mature trees and shrubs provide a sense of enclosure for the neighborhood, are an integral part of the urban forest character of the neighborhood and they separate the residential neighborhood from the highway environment. The project will add a 14' high soundwall at the edge of the ramp that will block views of the highway. The masonry wall with its inherent structural uniformity will contrast with the existing views of naturally diverse trees and shrubs.

- The project will affect views along Tisch Way in the vicinity of Santana Park, as represented by Figure 10. The project will shift Tisch Way approximately 6' to the north at Baywood Avenue, maintain the existing north face of curb near the vantage point, replace the existing 7' with a 5' wide sidewalk, add an elevated Winchester Boulevard off-ramp at the north edge of NB I-280, and will replace the existing pedestrian ramp with an approximately 156' long pedestrian overcrossing access ramp in the southeasterly corner of Santana Park. The replacement pedestrian ramp will require the removal of four of the existing eighteen trees in the park between Tisch Way and the children's play area.

- The project will substantially affect the views of residents living in the apartments located at the corner of Tisch Way and Dudley Avenue. Under the 5-Legged Intersection Design Option,

residents will see a concrete ramp 28' from their windows in their views to the south. The second story windows are approximately 13' above Tisch Way. The ramp travel lanes will be approximately 27' above (and cantilever over) Tisch Way. Viewers will see a substantial horizontal concrete structure across their view. The contrast between existing views of sky and distant vistas and the large forms of the project connector ramp will be substantial. In addition to the ramp in the view, existing utility poles and lines will be shifted approximately 9' toward the face of the apartment building with the shift of Tisch Way. Finally, approximately 50% of the landscaping in front of the building will be removed.

Under the Hook-Ramp Design Option, residents will see a similar ramp approximately 46' to the south of the apartment building (instead of 28' under the 5-Legged Intersection Design Option) and elevated approximately 27' above ground.

- The Hook-Ramp Design Option will result in the removal of eight redwood and five palm trees from the property located at the northeast corner of Winchester Boulevard and Tisch Way. The redwood trees screen workers' views of I-280 from elevated vantage points within the commercial building and the palm trees accent the south entrance to the building. However, there are additional tall parking lot trees, palm trees and intersection trees that will remain.

- Residents on South Daniel Way will experience the removal of approximately five palm trees, two redwood trees and additional shrubs that provide much natural diversity in the views from this single-family residential neighborhood. The existing vegetation partially screens views of the SB I-880 to SB I-280 connector ramp to the east. The project will replace views of vegetation with a 14' high soundwall on South Daniel Way resulting in adverse, but not substantial, visual impacts for residents. While the soundwall will block views of the ramp, the character and quality of the views on the east edge of the road will change from natural diversity to a uniform structure.

In addition to the above, visual impacts will occur from the motorists' perspective with the project features where they require removal of trees and screening shrubs at the edges of the highway, within the interchanges, and where there is insufficient space to restore the original character of the vegetation. In terms of overall magnitude, roughly 5 acres of landscaping will be removed within the I-280 corridor and roughly 12 acres of landscaping will be removed within the I-880 corridor.

Existing vegetation screens views of structures within adjacent land uses from the perspective of motorists on NB I-880 between Stevens Creek Boulevard and the north project limits. Existing trees and shrubs partially screen views of highway interchange ramps and abutments within the Stevens Creek Boulevard Interchange and within the SR17/I-880/I-280 interchange. Trees and large shrubs screen views of residences at the NB I-880 Stevens Creek off-ramp. Trees and large shrubs screen views of the wall at the SB I-880 to NB I-280 connector ramp, which will be lowered to go under the project Winchester Boulevard connector. Finally, large shrubs and trees at the north edge of I-280 partially screen views of commercial buildings on Tisch Way east of Winchester Boulevard. Views of structures

will encroach on motorist's views and will diminish the quality of their visual experience while traveling on the highway. These impacts to motorists will, however, not be substantial.

The Landscaped Freeway status of I-280 and I-880 within the project limits may be compromised by the removal of trees and other vegetation. Loss of a Landscaped Freeway status may allow large advertising signs to be placed adjacent to the highway and would diminish the element of intactness of views from the highway from the motorist's perspective. Billboards would also affect the visual quality of the surrounding neighborhoods.

The project will not substantially affect motorists' views of prominent hills and ridgelines that are visible from vantage points within I-280. Therefore, the project's impacts would not be of sufficient magnitude to preclude I-280 being designated a State Scenic Highway in the future.

Lighting on the new ramps, particularly those that are elevated, will be visible from adjacent locations. Lighting for overhead directional signs will also be visible. This impact will, however, not be substantial as the current designs for these types of lighting fixtures serve to focus light on their intended target and minimize spillover into adjacent areas.

During construction, residents and motorists will experience visual impacts associated with the following: 1) removal of buildings; 2) removal of streets, power poles and lines and street lights; 3) removal of existing vegetation; 4) construction of soundwalls and retaining walls; 5) grading to form new contours; 6) large pieces of equipment used for moving earth, trenching ditches, lifting steel beams and columns, hauling cement, laying and compacting pavement, water trucks spraying water to control dust, and assorted pickup trucks and autos; and 7) construction signs and lights.

2.7.4 Avoidance, Minimization, and/or Mitigation Measures

In order to reduce visual impacts, the project will implement the following measures:

- A metal beam guardrail (or similar barrier) will be installed along the easterly edge of the ramp and collector-distributor road adjacent to the Pioneer Avenue/Hodges Avenue neighborhood. Trees will be retained between the guardrail and the right-of-way line where feasible. This will preserve some of the urban forest character to the neighborhood.

- At the location where the three single-family homes will be removed, a dense grove of fast growing evergreen trees such as redwood trees will be planted between the edge of Parkmoor Avenue and the soundwall and between the soundwall and the ramps to provide a dense visual screen. With maturity, the trees will screen both the soundwalls at the ground level with their broad lower branches and screen the ramps with their tall growth characteristics.

- Fast growing vines will be planted at the bases of the new soundwalls to grow up and cover the uniform surfaces of the walls to soften their appearance.

- Metal beam guardrails (or similar barrier) will be installed, where feasible, to preserve desirable trees and vegetation located within 30 feet of the edge of the outside traffic lanes of the freeways, such vegetation that would otherwise need to be removed to comply with requirements for an object free safety/recovery zone.

- Per the Department's policy, the highway planting that has been damaged or removed due to a transportation project shall be replaced at a level equal to the current allowable maximum cost per acre. Replacement planting shall be provided within the project limits wherever feasible. If infeasible, replacement planting may be located 1) outside the limits of the parent highway project, 2) located outside the State operational right-of-way in a public space within the community, 3) as directed by the Department's District Landscape Architect.

- All new structures and walls will be treated with texture and/or color to reduce visual impacts.

2.8 CULTURAL RESOURCES

2.8.1 Regulatory Setting

"Cultural resources" as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 327) (July 1, 2007).

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties. See Appendix E for specific information regarding Section 4(f).

Historical resources are considered under the California Environmental Quality Act (CEQA), as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires the Department to inventory state-owned structures in its rights-of-way.

2.8.2 Affected Environment

The information in this section is based primarily on a technical Historic Property Survey Report, Archaeological Survey Report, and Historic Resources Evaluation Report that were prepared in May 2009 for the project. These reports also document the results of subsurface testing for archaeological resources. These studies are incorporated into this EIR/EA by reference. These studies are available for review at the locations listed inside the front cover of this document.

A prehistoric and historic site record and literature search by the California Historical Resources Information System, Northwest Information Center at Sonoma State University was undertaken to determine if known resources are present within the project's area of potential effects (APE). The APE consists of the area within the footprint of the project, as well as those areas directly adjacent to the project where indirect impacts could occur. A field reconnaissance was also undertaken, the results of which are described in the Archaeological Survey Report and Historic Resources Evaluation Report.

There are no recorded archaeological sites within or adjacent to the APE. Nonetheless, due to the fact that the project will require substantial excavation and the fact that the area is considered archaeologically-sensitive, subsurface geoarchaeological explorations were undertaken as a good-faith effort to identify obscured or buried archaeological resources that could be impacted by project construction. The subsurface explorations identified one isolated prehistoric fire feature and an isolated deposit of bricks associated with scant historic materials. No cultural resources of significance were found during the subsurface testing.

None of the structures or buildings that are located on the parcels from which right-of-way will be required (see Table 2) are historically significant. None of the bridges or other transportation structures located within the APE are historically significant.

Residences that are adjacent to a soundwall that will be constructed by the project were evaluated to determine their historic significance. The residences, which are located along portions of Los Coches Avenue, Hodges Avenue, Pioneer Avenue and Scott Street, were determined to not be historically significant.

As required by the Section 106 PA, Native American consultation was undertaken during the studies conducted for this project. No concerns or issues were identified during that consultation process.

2.8.3 Environmental Consequences

Based upon the research, technical studies, and field testing described above, there is no indication of prehistoric or historic archaeological or historic architectural resources within the project impact area. Therefore, construction of the proposed project is not expected to result in effects on cultural resources, regardless of which design option is selected.

2.8.4 Avoidance, Minimization, and/or Mitigation Measures

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the Department's District 4 Environmental Branch so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

PHYSICAL ENVIRONMENT

2.9 WATER QUALITY AND STORMWATER RUNOFF

2.9.1 Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, the Federal Water Pollution Control Act was amended, making the discharge of pollutants to the waters of the United States from any point source unlawful, unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The Federal Water Pollution

Control Act was subsequently amended in 1977, and was renamed the Clean Water Act (CWA). The CWA, as amended in 1987, directed that storm water discharges are point source discharges. The 1987 CWA amendment established a framework for regulating municipal and industrial storm water discharges under the NDPES program. Important CWA sections are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal project that proposes an activity, which may result in a discharge to waters of the United States to obtain certification from the State that the discharge will comply with other provisions of the act.
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) into waters of the United States. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) establishes addresses storm water and non-storm water discharges.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers (ACOE).

The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

State Requirements: Porter-Cologne Water Quality Control Act (California Water Code)

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives) required by the CWA, and regulating discharges to ensure that the objectives are met. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. States designate beneficial uses for all water body segments, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, each state identifies waters failing to meet standards for specific pollutants, which are state listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source controls, the CWA requires establishing Total Maximum Daily Loads (TMDLs). TMDLs establish allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

- **NPDES Program**

  The SWRCB adopted Caltrans Statewide NPDES Permit (Order No. 99-06-DWQ) on July 15, 1999. This permit covers all Department rights-of-way, properties, facilities, and activities in the State. NPDES permits establish a 5-year permitting time frame. NPDES permit requirements remain active until a new permit has been adopted.

  In compliance with the permit, the Department developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP describes the minimum procedures and practices the Department uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of Best Management Practices (BMPs). The proposed Project will be programmed to follow the guidelines and procedures outlined in the 2003 SWMP to address storm water runoff or any subsequent SWMP version draft and approved.

- **Municipal Separate Storm Sewer System Program**

  The U.S. EPA defines a Municipal Separate Storm Sewer System (MS4) as any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, country, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying storm water. As part of the NPDES program, U.S. EPA initiated a program requiring that entities having MS4s apply to their local RWQCBs for storm water discharge permits. The program proceeded through two phases. Under Phase I, the program initiated permit requirements for designated municipalities with populations of 100,000 or greater. Phase II expanded the program to municipalities with populations less than 100,000.

- **Construction Activity Permitting**

  Section H.2, Construction Program Management of the Department's NPDES permit states: "The Construction Management Program shall be in compliance with requirement of the NPDES General Permit for Construction Activities (Construction General Permit)". Construction General Permit (Order No. 2009-009-DWQ, adopted on September 2, 2009, became effective on July 1, 2010. The permit will regulate storm water discharges from construction sites that

result in a disturbed soil area (DSA) of 1 acre or greater, and/or are part of a common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre must comply with the provisions of the General Construction Permit.

The newly adopted permit separates projects into Risk Levels 1 - 3. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring. Risk levels are determined during the design phase and are based on potential erosion and transport to receiving waters. Applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPP).

Caltrans Statewide NPDES Permit requires the Department to submit a Notice of Construction (NOC) to the RWQCB to obtain coverage under the Construction General Permit. Upon project completion, a Notice of Completion of Construction (NOCC) is required to suspend coverage. This process will continue to apply to Department projects until a new Caltrans Statewide NPDES Permit is adopted by the SWRCB. An NOC or equivalent form will be submitted to the RWQCB at least 30 days prior to construction if the associated DSA is 1 acre or more. In accordance with the Department's Standard Specifications, a Water Pollution Control Plan (WPCP) is used for projects with DSA less than 1-acre.

During the construction phase, compliance with the permit and the Department's Standard Special Conditions requires appropriate selection and deployment of both structural and non-structural BMPs. These BMPs must achieve performance standards of Best Available Technology economically achievable/Best Conventional Pollutant Control Technology (BAT/BCT) to reduce or eliminate storm water pollution.

2.9.2 Affected Environment

The information in this section is based primarily on technical Water Quality and Stormwater Data Reports that were prepared in April 2010 for the project. These studies are available for review at the locations listed inside the front cover of this document.

Stormwater runoff from the project area discharges into storm drainage systems that are owned and maintained by the City of San Jose and the Department, the latter handling much of the runoff from local freeways. These systems discharge to local creeks or the Guadalupe River. The water quality in the creeks depends upon the volume of water at a given time of the year. Water quality is also dependent upon the concentration of contaminants, which flow into the creeks as a component of urban runoff via storm drains. These contaminants include such items as oil and grease, fuel residues, tire particles, plant and animal debris (e.g., leaves, dust, animal feces, etc.) litter, and heavy metals. In sufficient

concentrations, these pollutants have been found to adversely affect the aquatic habitat of these streams and San Francisco Bay, into which the streams flow.

Section 303(d) of the CWA requires that states develop a list of water bodies that do not meet water quality standards. According to the latest list developed by the San Francisco Bay RWQCB in 2006, the Guadalupe River is listed as an impaired water body for Diazinon due to urban runoff/storm sewers and for mercury due to mine tailings. A listing of the Guadalupe River as impaired due to trash from illegal dumping is currently proposed by the RWQCB.

2.9.3 Environmental Consequences

The proposed project may affect water quality during the short-term (i.e., construction phase) and during the long-term (i.e., operational phase). The short-term effects are described in Section 2.20. The long-term effects are described below; such effects are the same regardless of which design option is selected.

The project will create approximately six acres of new impervious surfaces within the Guadalupe watershed area that encompasses 170 square miles. This is a relatively minor increase in impervious surfaces, especially in view of the fact that most of the project site is already covered by existing impervious surfaces (i.e., the existing freeway). Therefore, the increase in pollutant-containing runoff will not be substantial.

The additional impervious area to be added by the project is small in relation to the size of the groundwater basin located within the project limits; therefore, groundwater recharge impacts will be insignificant.

2.9.4 Avoidance, Minimization, and/or Mitigation Measures

Although long-term water quality effects will not be substantial, the design of the project includes Best Management Practices (BMPs) to reduce the pollutant component of stormwater runoff, as required by the Department's NPDES permit (see above discussion). In addition to the requirements of the NPDES permit, compliance with the requirements of the Department's Stormwater Management Plan (SWMP) is also required. The SWMP describes the programs to reduce the discharge of pollutants associated with the stormwater drainage systems, and describes how the Department will comply with the provisions of the NPDES permit.

To mitigate post-construction water quality effects, post-construction treatment BMPs have been considered for incorporation into the project. Those considered include infiltration devices, biofiltration strips and swales, wet basins, media filters, detention devices, and multichamber treatment devices (often referred to as "treatment trains"). Biofiltration strips or swales have been identified as the most

feasible BMPs for this project. Areas within the project limits that are suitable for the creation of biofiltration strips or swales within the project limits are located within the footprints of the existing interchanges. Infiltration devices will also be considered.

In addition, the project will implement permanent design pollution control BMPs to improve stormwater quality by reducing erosion, stabilizing disturbed soil areas, and maximizing vegetated surfaces. These measures could include a combination of source and sediment control measures to prevent and minimize erosion from disturbed soil areas. Source controls will utilize erosion control netting in combination with hydroseeding. Outlet protection and velocity dissipation devices will also be considered.

2.10 GEOLOGY/SOILS/SEISMIC/TOPOGRAPHY

2.10.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under the California Environmental Quality Act.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Department's Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE), from young faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

2.10.2 Affected Environment

The information in this section is based primarily on a Preliminary Geotechnical Report (February 2010) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

The project is located in the southern portion of the San Francisco Bay Area in the Coast Range area of California. The Coast Range forms a nearly continuous topographic barrier between the California coastline and the San Joaquin Valley. In general, the Coast Range in this region is double-chain of mountains running north-northwest. Between the two chains of mountains lies the basin of San Francisco Bay, including the valleys at each the end of the Bay, Petaluma Valley on the north and Santa Clara Valley on the south. Three prominent geologic blocks dominate the San Francisco Bay Area: the

Santa Cruz Mountains (western block), San Francisco Bay (central block), and the East Bay Hills/Diablo Range (eastern block).

The project area is relatively flat. Ground elevations in the area range from approximately 150 feet above sea level at the northerly project limits to approximately 120 feet above sea level at the southerly project limits.

The project site is underlain by alluvial fan sediments that are primarily sandy silt/clay and sand/gravel. The historically highest groundwater level at this location is approximately 35 to 50 feet below the ground surface. A review of soil boring data associated with the existing freeway facilities determined that groundwater was not encountered in any of the borings. Based on this information, the potential for liquefaction to occur at this location is considered low to moderate.[8]

No active faults cross under the project area.[9] However, the project is located in a seismically active part of Northern California. Many faults capable of producing earthquakes exist in the San Francisco Bay Area, which may cause strong ground shaking in the vicinity of the project area. The closest active faults to the project site are the Monte Vista, Hayward, and San Andreas faults, approximately two miles to the east, approximately eight miles to the east, and nine miles to the west, respectively.

The Monte Vista, Hayward, and San Andreas Faults are designated with MCE magnitudes of 6.5, 7.5, and 8.0, respectively, on the California Seismic Hazard Map. The MCE, therefore, is the earthquake on the San Andreas Fault since it potentially releases the highest energy (M=8.0) and results in the strongest shaking at the site.

2.10.3 Environmental Consequences

The proposed project will involve typical highway excavation and grading practices necessary to construct the additional lanes and ramp modifications, and new ramps. There are no geologic features on the site that would pose special or unique hazards to users of the proposed improvements. The project will implement standard engineering practices to ensure that geotechnical and soil hazards do not result from its construction.

[8]Liquefaction is a process that occurs under certain conditions, when saturated, granular soils are subjected to prolonged shaking during an earthquake. The material experiences a rapid loss of shear strength, resulting in fluid-like behavior. Loose, clean, fine sands and silts that are relatively free of clay most commonly experience liquefaction. Liquefaction can result in catastrophic ground failure, as soils lose all weight-bearing capacity.

[9]An "active" fault is defined as a fault that has had surface displacement within Holocene time (approximately the last 10,000 years).

The site is within the seismically active San Francisco Bay Area and severe ground shaking is probable during the anticipated life of the project. Users of the freeways and interchanges would be exposed to hazards associated with such severe ground shaking during a major earthquake on one of the region's active faults. This hazard is not unique to the project, because it applies to all locations throughout the greater Bay Area. The proposed project will not increase the existing exposure to hazards associated with earthquakes; the hazards in the area will be the same with or without the project.

The project, including the new ramp and bridge structures, will be designed and constructed in accordance with the Department's Design guidelines for Seismic Zone 4 to avoid or minimize potential damage from seismic shaking on the site. Potential seismic effects will be minimized by the use of standard engineering techniques mandated by the Uniform Building Code and the Department's Design Standards.

2.10.4 Avoidance, Minimization, and/or Mitigation Measures

Some of the measures that will minimize or avoid impacts to water quality will also serve to minimize or avoid impacts associated with erosion. For a list of these measures, please see Section 2.9.4.

2.11 HAZARDOUS WASTE/MATERIALS

2.11.1 Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health and land use.

The primary federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The purpose of CERCLA, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. RCRA provides for "cradle to grave" regulation of hazardous wastes. Other federal laws include:

- Community Environmental Response Facilitation Act of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

In addition to the acts listed above, Executive Order 12088, *Federal Compliance with Pollution Control*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976, and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

2.11.2 Affected Environment

The information in this section is based primarily on a technical Initial Site Assessment (ISA) (June 2007) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

The ISA determined that there are numerous sites within a 1-mile radius of the project area where hazardous materials are generated, used, or stored and/or where some type of spill/leakage/contamination has occurred. For most locations where soil or groundwater contamination has been found, the source of the contamination was leaking storage tanks. In virtually all of these cases, the leaking tanks have been removed and remediation has occurred (or is occurring) under the supervision of various governmental entities. Many of the listed sites are either down/cross gradient or too far up gradient to impact the subject area.

The ISA focused on sites where hazardous materials contamination has been reported that are 1) under active regulatory oversight, and 2) within one-eighth mile of the existing and proposed freeway right-of-way within the project area. There are six sites that meet this criteria, conditions at which are summarized below:

Site #1 - Intersection of I-280/I-880: A spill of 25 gallons of paint hardener occurred at this location in 1987. Based on the subsequent cleanup, this site should not pose an adverse impact to the project.

Site #2 - 3032 Tish Way: A spill of five gallons of mineral oil containing PCBs occurred at this location in 1999. The spill was cleaned up and a 6' x 6' area of soil was removed to ensure complete remediation. Therefore, this site should not pose an adverse impact to the project.

Site #3 - Fire Station 10 at 511 South Monroe Street: Diesel fuel from a leaking underground storage tank resulted in contamination at this location. Cleanup occurred and the regulatory oversight case was closed in the mid-1990s. Therefore, this site should not pose an adverse impact to the project.

Site #4 - Texaco Station at 2812 Stevens Creek Boulevard: Petroleum hydrocarbons from a leaking underground storage tank resulted in soil and groundwater contamination at this location. Remediation occurred and the regulatory oversight case was closed. Therefore, this site should not pose an adverse impact to the project.

Site #5 - Arco/Valero/BP Station at 602 South Winchester Boulevard: Petroleum hydrocarbons from a leaking underground storage tank resulted in soil and groundwater contamination at this location, which is on the southeast corner of Winchester Boulevard and Moorpark Avenue. The extent of the groundwater (approximately 60 feet below the ground surface) contamination has not been fully delineated in the downgradient direction (i.e., toward I-280). Therefore, this site could affect this project, as described below in Section 2.11.3.

Site #6 - Arco/Regal Station at 625 South Winchester Boulevard: Petroleum hydrocarbons from a leaking underground storage tank resulted in soil and groundwater contamination at this location, which is on the southwest corner of Winchester Boulevard and Moorpark Avenue. The extent of the groundwater (approximately 50-60 feet below the ground surface) contamination has not been fully delineated in the downgradient direction (i.e., toward I-280). Therefore, this site could affect this project, as described below in Section 2.11.3.

Aerially-Deposited Lead (ADL)

Until recently, lead was commonly added to gasoline.[10] As a result, lead was emitted as a component of motor vehicle exhaust. Soil sampling along many roadways has found that concentrations of lead exceed applicable thresholds for classification as a hazardous material. This phenomenon known as "aerially-deposited lead" is widespread. Because the freeways in the project area were built prior to the phaseout of lead as a gasoline additive, elevated concentrations of lead are likely to be present in the soil along the freeway.

[10]Lead is a heavy metal that is found in many products. Lead is poisonous to humans. It is especially toxic to the nervous system, although it can adversely effect many systems and organs. In recent years, lead has been removed from certain products such as paint and gasoline in order to reduce the potential for chronic exposure.

Asbestos-Containing Materials and Lead-Based Paint

Due to the age of the structures located within the project limits, there is a potential for the presence of asbestos-containing materials[11] and/or lead-based paint.

2.11.3 Environmental Consequences

It is unknown whether groundwater contamination associated with the gas stations located on the corner of Winchester Boulevard and Moorpark Avenue extends to the project impact area on the north side of I-280. If contamination does extend to that area, and if pile driving or the drilling of piles extends to where groundwater is encountered (i.e., more than 50 feet below the ground surface), construction workers could be exposed. Such exposure will be avoided by implementing the measure described below in Section 2.11.4.

During construction, workers could be exposed to ADL, asbestos-containing materials, and/or lead-based paint. Such exposure will be avoided by implementing the measures described below in Section 2.11.4.

2.11.4 Avoidance, Minimization, and/or Mitigation Measures

The project will implement the following measures during final design and construction to avoid impacts associated with exposing construction workers to unsafe levels of hazardous substances:

- If work in the vicinity of Winchester Boulevard will involve drilling to groundwater and extraction of groundwater, the groundwater will be tested to determine if contamination is present in levels that exceed regulatory thresholds. If elevated levels of contamination are determined to be present and dewatering or extraction is anticipated, the investigation report will provide recommendations regarding proper treatment, if necessary, and disposal or reuse of affected groundwater.

- As part of project development, a soil investigation will be conducted to determine whether ADL has affected soils that will be excavated as part of the proposed project. The investigation for ADL will be performed in accordance with the Department's Lead Testing Guidance Procedure. The analytical results will be compared against applicable hazardous waste criteria. Based on analytical results, the investigation will provide recommendations regarding management and disposal of affected soils in the project area including the reuse potential of ADL-affected soil during project development. The provisions of a variance granted to the

[11] Asbestos is a mineral that is found in many products because of its resistance to damage from chemicals and heat, as well as its noise absorption properties. However, asbestos is toxic, especially when inhaled. It can cause diseases such as lung cancer, mesothelioma, and asbestosis.

Department by the California Department of Toxic Substances Control (DTSC) on September 22, 2000 (or any subsequent variance in effect when the project is constructed) regarding aerially-deposited lead will be followed.

- Testing for the presence of lead-based paint on the existing structures will occur. If this substance is found to be present, applicable regulations pertaining to its removal and disposal will be followed.

- Testing for the presence of asbestos on the existing structures will occur. If this substance is found to be present, applicable regulations pertaining to its removal and disposal will be followed.

The costs for sampling, testing, special handling, and disposal of potentially hazardous materials are unknown at this stage of preliminary design and environmental review. It is estimated that costs could range from $75,000 to $100,000 or more depending on the number of samples collected, the laboratory analyses used, and quantity of material that requires special disposal. The costs for special handling, if required, of contaminated building materials from structures that have to be removed would be estimated during final design.

2.12 AIR QUALITY

2.12.1 Regulatory Setting

The Clean Air Act as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), lead (Pb), and sulfur dioxide (SO_2).

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels-first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity in California is concerned with how well the region is meeting the standards set for CO, NO_2, O_3, and PM. California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTP) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the

RTP, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as the Metropolitan Transportation Commission (MTC) for the San Francisco Bay Area and the appropriate federal agencies, such as the Federal Highway Administration (FHWA), make the determination that the RTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires "hot spot" analysis if an area is "nonattainment" or "maintenance" for CO and/or PM. A region is a "nonattainment" area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called "maintenance" areas. "Hot spot" analysis is essentially the same, for technical purposes, as CO or PM analysis performed for NEPA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in "nonattainment" areas the project must not cause any increase in the number and severity of violations. If a known CO or PM violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

2.12.2 Affected Environment

The information in this section is based primarily on an Air Quality Report and a Mobile Source Air Toxics Emissions Report that were prepared in September 2009 for the project. These studies are incorporated into this EIR/EA by reference. Copies of these studies are available for review at the locations listed inside the front cover of this document.

The project is located in the City of San Jose, in Santa Clara County. The climate is affected by its proximity to both the Pacific Ocean and the San Francisco Bay, which has a moderating influence. The Bay cools the air with which it comes in contact during warm weather and warms the air during cold weather. During the afternoon and early evening, a north-northwesterly sea breeze often flows from the Bay through the Santa Clara valley, and a light south-southeasterly drainage flow often occurs during the late evening and early morning hours.

The San Francisco Bay Area is considered to be one of the cleanest metropolitan areas in the country with respect to air quality. However, the Bay Area as a whole does not meet State or Federal ambient air quality standards for ground level O_3 and State standards for PM_{10} and $PM_{2.5}$. For all other pollutants, the area complies with Federal and State air quality standards.

The Bay Area Air Quality Management District (BAAQMD) monitors air quality conditions at over 30 locations throughout the Bay Area. The monitoring station closest to the project site is in San Jose.

Ozone is the air pollutant of greatest concern in summer. Prevailing summertime wind conditions tend to cause a build up of ozone in Santa Clara County. Ozone levels measured in San Jose exceeded the state one-hour standard from 0 to 5 times in 2003-2007. Exceedances of the national 8-hour standard occurred once in 2006. More frequent exceedances occurred at stations throughout the Bay Area. The new state 8-hour standard was exceeded 5 times in 2006 and 2007.

The combination of vehicle exhaust and wood smoke under stagnant air quality conditions leads to a build up of particulates in late fall and winter. Particulate matter is another pollutant of concern in the project area. Measured exceedances of the State PM_{10} standards occurred on 12 separate sampling days over the last five years in San Jose (2 to 3 times per year). Statistics for $PM_{2.5}$ have only been kept since 2006; 15 exceedances have occurred in San Jose since then (2006 - 2007).

Mobile Source Air Toxics

Mobile source air toxics (MSATs) are emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as by-products. Metal air toxics result from engine wear or from impurities in oil or gasoline.

The U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB) have identified six priority MSATs. These are 1) benzene, 2) formaldehyde, 3) acetaldehyde, 4) diesel particulate matter/diesel exhaust organic gases, 5) acrolein, and 6) 1,3-butadiene. CARB has found that diesel PM contributes over 70 percent of the known risk from air toxics and poses the greatest cancer risks among all identified air toxics. Diesel trucks contribute more than half of the total diesel combustion sources. However, the CARB has adopted a Diesel Risk Reduction Plan with control measures that would reduce the overall diesel PM emissions by about 85% from 2000 to 2020.

2.12.3 Environmental Consequences

The short-term (i.e., construction phase) air quality effects of the proposed project are described in Section 2.16. The project's long-term (i.e., operational phase) effects are described below; such effects are the same regardless of which design option is selected.

Clean Air Act Conformity

The proposed project is in the San Francisco Bay Area 2035 Regional Transportation Plan which was found to conform by MTC on April 22, 2009, and FHWA and FTA adopted the air quality conformity finding on May 29, 2009. The project is also included in MTC's financially constrained 2009 Regional

Transportation Improvement Program, page 352. The MTC 2009 Regional Transportation Improvement Program was found to conform by FHWA and FTA in November 2008. The design concept and scope of the proposed project is consistent with the project description in the 2035 RTP, the 2009 RTIP and the assumptions in the MTC's regional emissions analysis.

Project-level conformity analysis shows that the project will conform with the State Implementation Plan, including localized impact analysis for carbon monoxide (CO) and particulate matter (PM2.5) required by 40 CFR 93.116 and 93.123. This project is not considered a Project of Air Quality Concern regarding particulate matter (PM2.5) as defined in 40 CFR 93.123(b) (1). A detailed PM2.5 hot-spot analysis was not completed because the Clean Air Act and 40 CFR 93.116 requirements are met without an explicit hot-spot analysis. Comment is requested regarding the project-level conformity analysis.

Under 40 CFR 93.105, MTC must be involved in the establishment of interagency consultation procedures for project-level conformity determinations, and these procedures must be used in making project-level conformity determinations. The MTC implements interagency consultation for PM2.5 hot-spot analyses through the Air Quality Conformity Task Force. The Conformity Task Force is open to all interested agencies, but will include staff from EPA, FHWA, FTA, Caltrans, CARB, the Association of Bay Area Governments, BAAQMD, congestion management agencies, and transit operators. The determination that the project is not a Project of Air Quality Concern, as defined in 40 CFR 93.123(b) (1), is currently under review by the Task Force and the results of the review will be released for public comment at a later date.

Traffic-Related Carbon Monoxide (CO) Impacts

Project impacts from local traffic were evaluated by the quantitative method, which is modeling roadside CO concentrations associated with the project and comparing them to Federal and State CO Standards. A total of 12 locations along the I-880, I-280, Stevens Creek Boulevard, and Winchester Boulevard corridors, where there would be a combination of the 1) highest traffic volumes, 2) greatest project traffic contribution, and 3) highest level of congestion, were modeled. This is because high volume freeways, such as I-280/I-880 and congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of CO.

Predicted CO concentrations, which include background levels, are shown in Table 17. This assessment was conducted for future No-Build and Build conditions in 2015 and 2035. The results indicate that future CO levels with or without the project would remain below both federal and state standards. At most locations, CO concentrations would be the same under No-Build and Build conditions. At two locations, CO concentrations under the Build condition would be slightly lower than under No-Build conditions.

The predicted decrease in future concentrations is due to vehicle fleet turnover, with newer (less polluting) vehicles replacing older vehicles. As a result, the project would not cause or contribute to any localized CO violations.

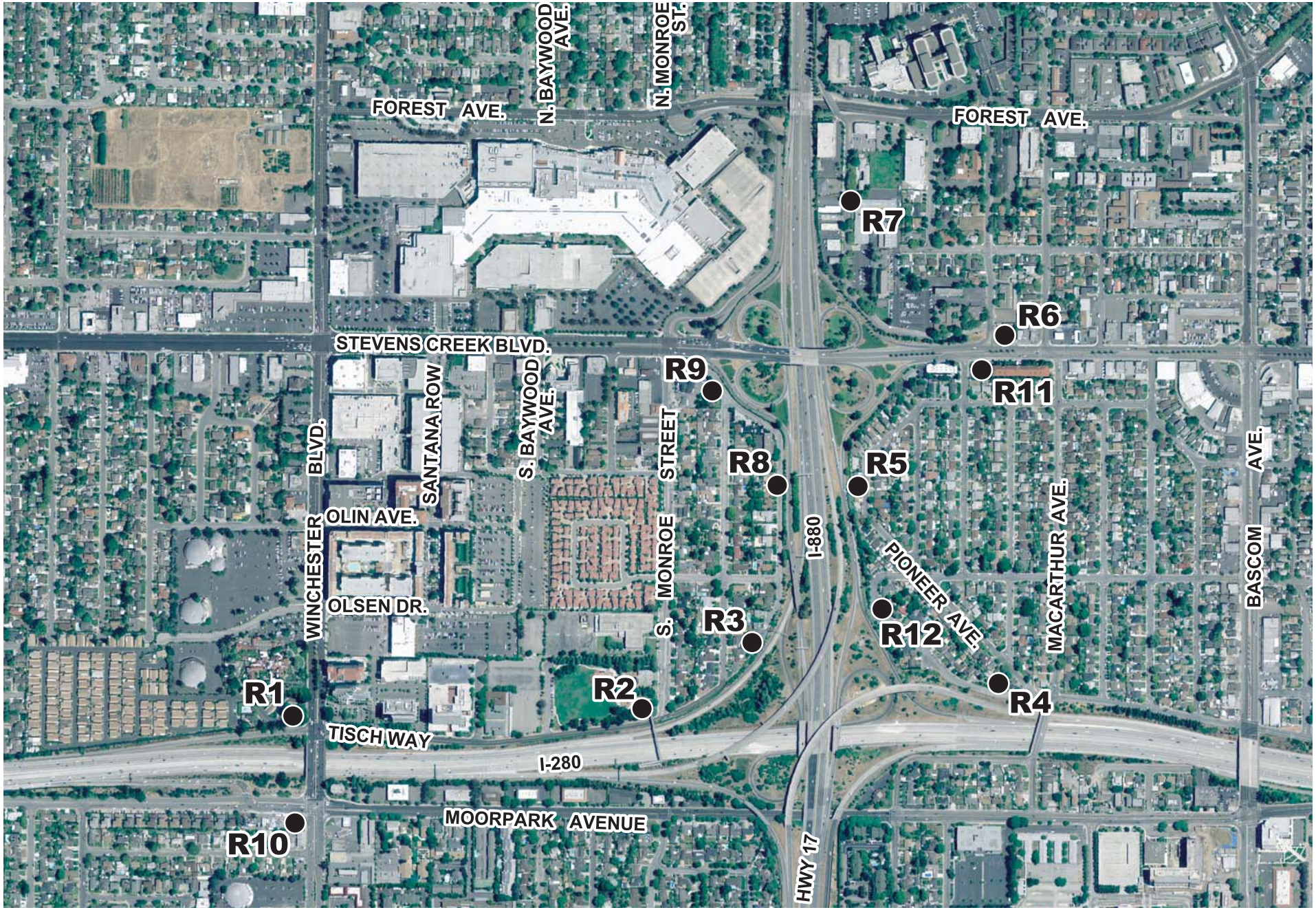
T A B L E 1 7

PROJECTED WORST-CASE CARBON MONOXIDE CONCENTRATIONS
[Expressed in parts-per-million]

Receptor I.D. (See Figure 11)	Existing		Year 2015				Year 2035			
			No Build		Build		No Build		Build	
	1-hr.	8-hr.	1-hr.	8-hr.	1-hr.	8-hr.	1-hr.	8-hr.	1-hr.	8-hr.
1	6.7	4.7	5.3	3.7	5.3	3.7	4.6	3.2	4.6	3.2
2	6.7	4.7	5.3	3.7	5.3	3.7	4.7	3.3	4.7	3.3
3	6.7	4.7	5.3	3.7	5.3	3.7	4.7	3.3	4.7	3.3
4	6.9	4.8	5.5	3.9	5.4	3.8	4.7	3.3	4.7	3.3
5	7.2	5.0	5.3	3.7	5.3	3.7	4.7	3.3	4.6	3.2
6	6.5	4.6	5.3	3.7	5.3	3.7	4.6	3.2	4.6	3.2
7	8.8	6.2	5.9	4.1	5.9	4.1	4.9	3.4	4.9	3.4
8	7.0	4.9	5.5	3.9	5.5	3.9	4.7	3.3	4.7	3.3
9	6.8	4.8	5.3	3.7	5.3	3.7	4.7	3.3	4.7	3.3
10	6.6	4.6	5.4	3.8	5.3	3.7	4.6	3.2	4.6	3.2
11	6.6	4.6	5.5	3.9	5.5	3.9	4.7	3.3	4.7	3.3
12	6.8	4.8	5.3	3.7	5.3	3.7	4.6	3.2	4.6	3.2

The 1-hour state standard is 20 parts-per-million. The 1-hour federal standard is 35 parts-per-million. Both the state and federal 8-hour standards are 9 parts-per-million

Source: Modifications to I-880/Stevens Creek Boulevard, I-280/I-880/SR-17, & I-280/Winchester Boulevard Interchanges Air Quality Study, 2009.



CO MODELING SITES

FIGURE 11

Mobile Source Air Toxics Impacts

While there are existing uncertainties that do not allow quantitative estimates of health effects from MSAT emissions in the project area, one can examine MSAT emissions in the project area and estimate the relative impacts of MSAT emissions under different scenarios. UC Davis, under contract to the Department, developed a project-level MSAT analysis spreadsheet tool. This tool was developed with cooperation of the Department, CARB and FHWA. This analysis predicts emissions of the six priority MSATs, using project-specific traffic information and vehicle emissions factors.

Table 18 presents the results of the MSAT analysis. With or without the project, emissions for all six MSATs are projected to decrease considerably over existing conditions. Diesel PM is projected to experience a decrease of 78% from 2007 to 2035, while the other MSATs are projected to decrease by between 76% and 78%.

T A B L E 1 8

COMPARISON OF MOBILE SOURCE AIR TOXICS EMISSIONS
[Expressed in Pounds per Day]

	Diesel PM	Benzene	1,3-Butadiene	Acetaldehyde	Acrolein	Formaldehyde
Base Year (2007)	58.90	24.88	4.87	10.90	1.08	29.18
2035 - No Project	12.97	5.88	1.06	2.53	0.24	6.67
2035 - With Project	12.76	5.90	1.05	2.57	0.23	6.74

Source: Modifications to I-880/Stevens Creek Boulevard, I-280/I-880/SR-17, & I-280/Winchester Boulevard Interchanges Mobile Source Air Toxics Report, 2009.

Emissions of diesel PM are projected to be 1.6% lower with the Build condition compared to the No Build conditions in 2035. This represents a decrease of about 0.20 pounds per day over the entire project length. The slight decrease in diesel PM emissions is due to an increase in speeds with the Build scenario over the No-Build scenario. The other MSATs are projected to be between 1.8% lower to 1.2 % higher with the Build scenario over the No-Build for the year 2035.

2.12.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.13 NOISE

2.13.1 Introduction

Noise is measured in "decibels" (dB), which is a numerical expression of sound levels on a logarithmic scale. A noise level that is ten dB higher than another noise level has ten times as much sound energy and is perceived as being twice as loud. A sound change of less than 3 dB is just barely perceptible, and then only in the absence of other sounds. Intense sounds of 140 dB are so loud that they are painful and can cause damage with only brief exposure. These extremes are not commonplace in our normal working and living environments. An "A-weighted decibel" (dBA) approximates the frequency response of the average young ear when listening to most ordinary everyday sounds. Thus, traffic noise impact analyses commonly use the dBA.

With regard to traffic-generated noise, noise levels rise as vehicle speeds, overall volumes, and truck volumes increase. In general, a doubling of traffic results in a 3 dBA increase in noise at a nearby receptor, assuming a relatively homogeneous traffic composition (i.e., mainly passenger cars). The peak noise hour is typically not the peak commute hour due to lower operating speeds during the latter. The combination of volumes and speeds that produces the peak noise hour is that which is associated with level of service C/D.

2.13.2 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the NEPA-23 CFR 772 noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and the Department, as assigned) involvement, the federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts

in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). The following table lists the noise abatement criteria for use in the NEPA-23 CFR 772 analysis.

T A B L E 1 9

NOISE ABATEMENT CRITERIA OF THE FEDERAL HIGHWAY ADMINISTRATION
[Expressed in dBA]

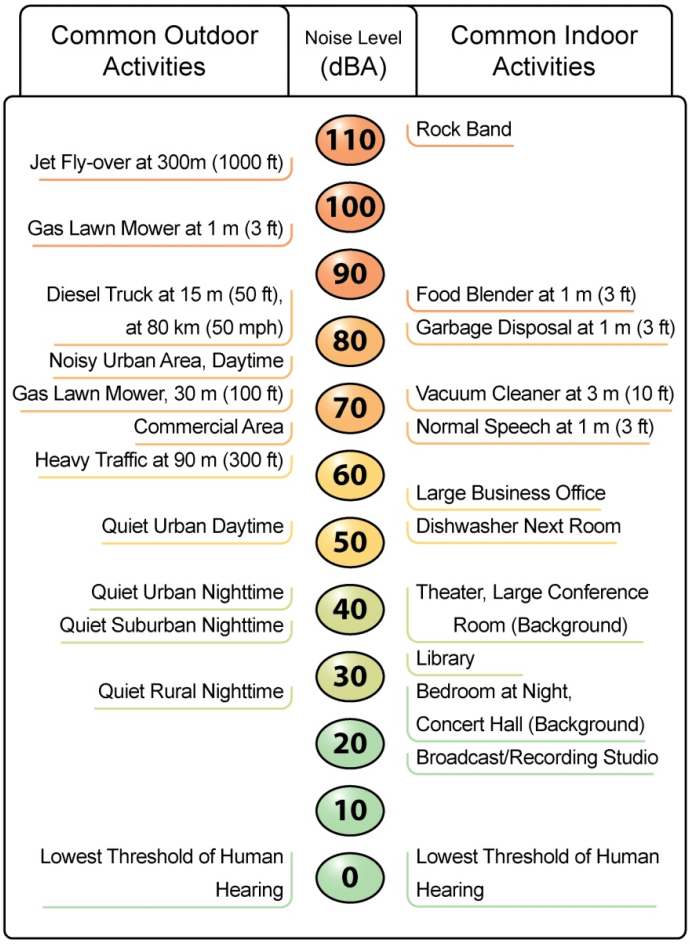
Activity Category	Peak-Hour Leq(h)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	---	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Table 20 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise-levels discussed in this section with common activities.

In accordance with the Department's Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, August 2006, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

T A B L E 2 0

NOISE LEVELS ASSOCIATED WITH COMMON ACTIVITIES



If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

The Department's Traffic Noise Analysis Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5 dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other

noise sources and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies input, newly constructed development versus development pre-dating 1978 and the cost per benefitted residence.

2.13.3 Affected Environment

The information in this section is based primarily on a technical Noise Report (September 2009) that was prepared for the project. This study is incorporated into this EIR/EA by reference. This study is available for review at the locations listed inside the front cover of this document.

The project area is exposed to a relatively high level of noise from vehicular traffic. Vehicles traveling on the freeways and local streets such as Stevens Creek Boulevard, Winchester Boulevard, Moorpark Avenue and Forest Avenue produce Leq(h) noise levels that exceed FHWA's noise abatement criteria at various land uses that are located adjacent to these roadways.

Existing peak-hour noise levels were quantified along I-280, I-880, and SR-17 within the project limits where there are existing or proposed residences, as well as at Santana Park and a nearby church and school. These locations are shown on Figure 12. Existing noise levels range from 45 dBA Leq(h) at the school to 74 dBA Leq(h) at a residence on Hodges Avenue, as shown in Table 21. The existing noise levels shown in Table 21 take into account the four existing soundwalls along the freeways, which range in height from approximately 12 feet to 16 feet.

Table 21 also includes projected noise levels under future (year 2035) "No Build" conditions. At many locations, the future noise levels will be one decibel higher than existing levels, reflecting increases in traffic that will occur as a result of planned growth in the area.

2.13.4 Environmental Consequences

The short-term (i.e., construction phase) noise effects of the proposed project are described in Section 2.16. The project's long-term (i.e., operational phase) effects are described below.

Future traffic-related noise levels at land uses adjacent to SR-17, I-280, and I-880 within the project limits were quantified in accordance with FHWA and the Department's procedures. Projected noise levels were then compared to FHWA's noise abatement criteria shown in Table 19 to determine whether the consideration of noise abatement measures was warranted. Projected noise levels were also compared with existing noise levels to determine whether the increase (if any) would be substantial.

NOISE RECEPTOR LOCATIONS

FIGURE 12

T A B L E 2 1

COMPARISON OF EXISTING AND FUTURE NOISE LEVELS
[Expressed in Loudest Hour Noise Levels, Leq(h), dBA]

Recep-tor #	Land Use	Existing Sound-wall in place?	Existing Noise Level	Year 2035			
				No Build Noise Level	5-Legged Design Option: Change in Noise Compared to No Build	Hook-Ramp Design Option: Change in Noise Compared to No Build	Noise Level Approach or Exceed NAC?
1	Single-family	No	57	58	0	0	No
2	Single-family	No	64	65	0	0	No
3	Single-family	No	50	51	-1	-1	No
4	Multi-family	No	56	57	0	0	No
5	Multi-family	No	52	53	0	0	No
6	Single-family	No	54	55	0	0	No
7	Single-family	No	56	57	0	0	No
8	Single-family	No	59	60	0	0	No
9	Single-family	No	63	64	0	0	No
10	Single-family	No	64	64	0	0	No
11	Multi-family	No	57	58	0	0	No
12	Multi-family	No	55	56	0	0	No
13	Single-family	Yes	57	58	0	0	No
14	Multi-family	Yes	62	63	-1	-1	No
15	Single-family	Yes	63	64	-1	-1	No
16	Single-family	No	69	70	0	0	Yes
17	Single-family	No	67	68	-4	-4	No
18	Single-family	No	61	61	+1	+1	No
19	Single-family	No	59	60	0	0	No
20	Single-family	No	60	60	0	0	No
21	Single-family	No	68	68	+1	+1	Yes
22	Single-family	No	58	59	-1	-1	No
23	Single-family	No	57	59	0	0	No
24	Single-family	No	74	74	+1	+1	Yes

T A B L E 2 1 [continued]

Recep-tor #	Land Use	Existing Sound-wall in place?	Existing Noise Level	Year 2035			
				No Build Noise Level	5-Legged Design Option: Change in Noise Compared to No Build	Hook-Ramp Design Option: Change in Noise Compared to No Build	Noise Level Approach or Exceed NAC?
25	Single-family	No	71	71	+2	+2	Yes
26	Single-family	No	67	69	-1	-1	Yes
27	Single-family	No	61	63	-2	-2	No
28	Church	No	46	47	0	0	No
29	School	No	45	46	-1	-1	No
30	Multi-family	Yes	68	68	0	0	Yes
31	Multi-family	Yes	58	58	0	0	No
32	Multi-family	Yes	69	70	-1	-1	Yes
33	Multi-family	Yes	57	57	+1	+1	No
34	Single-family	No	61	64	-2	-2	No
35	Single-family	No	57	59	-1	-1	No
36	Single-family	No	73	73	0	0	Yes
37	Single-family	No	70	70	0	0	Yes
38	Single-family	No	58	58	0	0	No
39	Single-family	No	61	62	0	0	No
40	Single-family	No	73	73	0	0	Yes
41	Single-family	Yes	59	59	+1	+1	No
42	Single-family	Yes	58	58	+1	+1	No
43	Park	Yes	61	61	+2	+1	No
44	Multi-family	Yes	60	60	+5	+3	No
45	Single-family	Yes	62	62	+2	+2	No
46	Single-family	Yes	58	58	+1	+1	No

NAC = noise abatement criteria of FHWA Receptors are shown on Figure 12.

Source: Modifications to I-880/Stevens Creek Boulevard, I-280/I-880/SR-17, & I-280/Winchester Boulevard Interchanges Noise Study Report, 2009.

As shown in Table 21, the effect of the project on noise levels will vary by location. The location that would experience the largest increase in noise is at the apartments located on the corner of Tisch Way and Dudley Avenue. At that location, the noise increase due to the project would be 5 dBA under the 5-Legged Intersection Design Option and 3 dBA under the Hook-Ramp Design Option. At most other locations, the change in noise levels due to the project would range from a decrease of 2 dBA to an increase of 2 dBA. At Receptor #17, a residence on Parkmoor Avenue, the project would decrease noise by 4 dBA due to the fact that the fill for the new connector ramp will block sound from traffic on existing ramps.

In all cases, projected increases in noise levels would not be substantial because the increase would be less than the 12-dBA threshold described in Section 2.13.2.

2.13.5 Avoidance, Minimization, and/or Mitigation Measures

Although the project would not result in a substantial increase in traffic-related noise, projected noise levels will, however, exceed FHWA's noise abatement criteria at many locations, as they do under existing conditions. As a result, the feasibility and reasonableness allowances of noise abatement measures were considered. This process involved two situations:

- At each location where no soundwall exists, the feasibility and reasonableness allowance for constructing a new soundwall was evaluated.

- At locations that are already shielded by soundwalls, this effort focused on whether it would be feasible to achieve a further noise reduction of at least five decibels by raising the heights of the soundwalls. Soundwall heights in excess of 16 feet were not considered, per the Department's TNAP.

The feasibility of soundwalls was determined by the 5-dBA minimum reduction in noise level as well as overall constructability. The reasonableness allowances for the soundwalls were determined using criteria contained in the TNAP.

Based on the studies, the Department has determined that it would not be feasible to raise any of the existing soundwalls because an additional noise reduction of at least 5 decibels cannot be achieved. However, the construction of two new soundwalls, as shown in Table 22 and on Figure 13, would be feasible (i.e., they would meet the minimum 5-dBA noise reduction criterion). These two soundwalls are described in the following paragraphs.

PROPOSED SOUNDWALLS

FIGURE 13

T A B L E 2 2

EVALUATION OF NOISE ABATEMENT SOUNDWALLS

Soundwall Number and Location	Approximate Soundwall Height	Amount of Reduction in Noise (dBA)	# of Residences Benefitting by ≥5 dBA	Reason-able Allowance	Preliminary Cost Estimate
#1: Westside of I-880, S of Stevens Creek	8 feet	6	7	$364,000	$518,400
	10 feet	5 to 9	11	$568,000	$648,000
	12 feet	6 to 10	13	$690,000	$777,600
	14 feet*	7 to 12	13	$694,000	$907,200
	16 feet	8 to 13	13	$698,000	$1,036,800
#2: Eastside of I-880, S of Stevens Creek	8 feet	3 to 11	27	$1,348,000	$1,310,000
	10 feet	5 to 13	31	$1,568,000	$1,590,000
	12 feet	6 to 15	31	$1,602,000	$1,880,000
	14 feet	6 to 16	31	$1,602,000	$2,160,000
	16 feet	7 to 17	31	$1,602,000	$2,440,000
	12 feet/14 feet*	6 to 16	31	$1,602,000	$2,100,000

- All of the above soundwalls are feasible, meaning they provide a minimum of five decibels of noise reduction at one or more receptors.

* recommended height per noise study report.

Source: Modifications to I-880/Stevens Creek Boulevard, I-280/I-880/SR-17, & I-280/Winchester Boulevard Interchanges Noise Study Report, 2009.

Soundwall #1

Soundwall #1would be constructed along the right-of-way between I-880 and South Daniel Way. As shown on Figure 13, it would extend from south of Stevens Creek Boulevard to the existing soundwall located near I-280. The length of the soundwall would be approximately 1,200 feet.

An 8-foot soundwall height would feasibly abate traffic noise for seven residences represented by Receptors #36 and #40 (see Figure 12). A 10-foot soundwall height would lower traffic noise by 5 - 9 dBA for 11 residences represented by Receptors #36, #37, and #40 (see Figure 12). Twelve-foot to 16-foot soundwall heights would feasibly abate traffic noise for all 13 single-family residences represented by Receptors #36, #37, and #40 (see Figure 12).

Although all of the heights for Soundwall #1 that are listed in Table 22 are feasible, a 14-foot height is recommended. A 14-foot soundwall would provide 7 to 12 dBA of noise reduction at the outdoor activity areas of the residences located west of South Daniel Way and would be of sufficient height to intercept the line of sight between a truck exhaust stack and a 5-foot high receiver.[12] The 14-foot height would also match the height of the existing soundwall at the south end of South Daniel Way.

Soundwall #2

Soundwall #2 is a combination of soundwalls that would be constructed along the easterly edge of I-880 extending between I-280 on the south and Stevens Creek Boulevard on the north. The first soundwall, labeled SW2A on Figure 13, would be roughly 1,100 feet in length and would be located adjacent to and along the elevated direct connector ramp from northbound I-280 to northbound I-880 to provide shielding of traffic that would otherwise be visible above ground-level noise barriers. It would begin along the Parkmoor Avenue right-of-way near MacArthur Avenue at a recommended height of 12 feet. The 12-foot barrier would transition to the edge of the northbound I-280 to northbound I-880 elevated direct connector ramp. From this point the 12-foot barrier would gradually transition in height to a minimum of 6-feet above the pavement and would maintain this height to its northerly terminus.

The second soundwall, labeled SW2B on Figure 13, would shield receivers from ramp and mainline traffic noise as well as ramp traffic noise where the ramps begin to conform back to mainline elevations. The total length of SW2B would be approximately 2,070 feet. SW2B, would begin along Parkmoor Avenue and would follow the proposed right-of-way. It would continue north along the Hodges Street right-of-way and extend northward along the off-ramp ending near Stevens Creek Boulevard. A 14-foot soundwall height would provide about 8 dBA of noise reduction at Receptor #21 (see Figure 12). Ten-foot to 12-foot heights would provide 6 to 15 dBA of noise reduction at Receptors #24, #25, and #26 (see Figure 12). At some locations with smaller backyards, the lower wall heights may be desired because of the reduced visual/aesthetic impact.

For the northerly portion of SW2A, a 6-foot height would be sufficient to intercept the line of sight between a truck exhaust stack and an adjacent receptor. For SW2B, a minimum height of 10 feet is needed to intercept the line of sight between a truck exhaust stack and adjacent receptors.

Final Decision on Soundwalls

Based on the studies completed to date, the Department intends to incorporate noise abatement in the form of barriers at I-880, with respective lengths and average heights of 1,200 feet/14 feet for Soundwall #1, 1,100 feet/6-12 feet for Soundwall #2A, and 2,070 feet/6-14 feet for Soundwall #2B. Calculations

[12]Truck exhaust stacks are a notable source of noise. Therefore, breaking the line of sight between the top of an exhaust stack and an adjacent receptor is typically desired as it serves to reduce this noise source.

based on preliminary design data indicate that the barriers will reduce noise levels by 6 to 16 dBA for 44 residences at a cost of $3.0 million. The final decision of the noise abatement will be made upon completion of the public involvement process and will be reported in the Final EIR/FONSI.

BIOLOGICAL ENVIRONMENT

2.14 ANIMAL SPECIES

2.14.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The USFWS, National Oceanic & Atmospheric Administration (NOAA) Fisheries and the CDFG are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under the state or federal Endangered Species Acts. Species listed or proposed for listing as threatened or endangered are not discussed as none of these species occur within the project's biological study area (BSA) due to lack of suitable habitat or because the BSA is outside of the known range of the species.. All other special-status animal species are also discussed here, including CDFG fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations pertaining to wildlife include the following:
- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:
- California Environmental Quality Act
- Sections 1600 - 1603 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

2.14.2 Affected Environment

The information in this section is based primarily on a technical Natural Environment Study (June 2009) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

The list of special-status animal species occurring in the region was evaluated for their potential to occur within the BSA, which consists of the footprint of the project as well as all areas that may be affected directly or indirectly by the construction activity (action). Most of the regional special-status species were rejected for occurrence in the BSA because the project area lacks suitable habitat and/or is outside of the range of the species. Several special-status species that occur in the region may occur in the BSA but only as uncommon to rare visitors, migrants, or transients, and are not expected to reside or breed on the site.

Special-status wildlife species listed in the California Natural Diversity Data Base (CNDDB) as presently or historically occurring within five miles of the BSA are the California tiger salamander, western pond turtle, burrowing owl, American peregrine falcon, Cooper's hawk, hoary bat, and pallid bat. None of these species are expected to occur within the BSA. No suitable habitat is present for the California tiger salamander or the western pond turtle as no aquatic habitat is present within the BSA.

Similarly, although ground squirrel burrows are present within ruderal grassland habitat within the BSA, these areas do not constitute suitable habitat for burrowing owls due to their isolation (the nearest sizeable area of grassland habitat is more than 1.5 miles away), the very limited extent of potential foraging habitat (probably not enough to support a pair of owls), and the very heavy traffic use of the interchange (which would likely result in mortality of owls fairly quickly). In addition, no burrowing owls are known to occur in such urbanized, high-traffic area in the San Jose area. Burrowing owls are not expected to occur away from other populations of burrowing owls nor are they expected to occur in such sub-optimal habitat. Burrowing owls prefer relatively flat grassland habitat as opposed to the steep slopes within ruderal grassland habitat that occur on the Project site.

Lastly, the BSA is located in a highly urbanized area where large, predatory birds and special-status bat species would not nest, roost, or reside. No suitable nesting or roosting habitat is present in the BSA for large, predatory birds or special-status bat species. Large predatory birds and the special-status bat species that could occur here prefer habitat that is isolated from urban disturbance and/or riparian habitat that does not exist within the BSA. Therefore, no special-status wildlife species occur on the site.

Nesting Birds

The Migratory Bird Treaty Act and California Fish and Game Code protect migratory birds, including their eggs, nests, and young. The killing or harassment of such birds, including activities that may result in the abandonment of active nests during the nesting season (generally, February 1st through October 31st), is prohibited. Several species of birds protected by these laws may nest within the project area, although none were present during field surveys. Further, the number of available nesting sites for native migratory birds within the BSA is small due to a lack of tall trees and natural habitat. Therefore, it is unlikely that more than one or two pairs of birds could nest within the BSA.

2.14.3 Environmental Consequences

Since no special-status animal species are present within the project impact area, the project will not impact any special-status animal species.

There is a potential that construction activities could impact nesting migratory birds that are protected under the Migratory Bird Treaty Act and California Fish & Game Code.

2.14.4 Avoidance, Minimization, and/or Mitigation Measures

The following measure, which is included in the project, will avoid impacts to nesting birds during the construction phase:

Vegetation that will be impacted by the project will be removed during the nonbreeding season (i.e., November 1st to January 31st), if feasible, to help preclude nesting. If it is not feasible to schedule vegetation removal during the nonbreeding season, then pre-construction surveys for nesting birds will be conducted by a qualified ornithologist to ensure that no nests will be disturbed during project implementation. This survey will be conducted no more than seven days prior to the initiation of construction activities. During this survey, the ornithologist will inspect all trees, shrubs, and other potential nesting habitats in and immediately adjacent to the impact areas for nests. If an active nest is found sufficiently close to work areas to be disturbed by these activities, the ornithologist, in consultation with CDFG, will determine the extent of a buffer zone to be established around the nest, typically 250 feet for raptors and 50-100 feet for other birds.

2.15 INVASIVE SPECIES

2.15.1 Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration guidance issued August 10, 1999 directs the use of the state's noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

2.15.2 Affected Environment

The information in this section is based primarily on a technical Natural Environment Study (June 2009) that was prepared for the project. This study is incorporated into this EIR/EA by reference. A copy of this study is available for review at the locations listed inside the front cover of this document.

Several non-native, invasive plant species are present within or adjacent to the project impact area, as listed in Table 23. These species dominate the embankments along the I-280 and I-880 roadsides, many areas of the ruderal grassland habitat, and most areas adjacent to development. All of these species are very difficult to eradicate. The removal of all parts of the plant before viable seed can develop, including roots and rhizomes, can help control infestations, although the removal of all plant material from the site is necessary to reduce the incidence of regrowth from rhizome, stolon, or stem fragments. In addition, follow-up removal of re-sprouts is essential to prevent re-infestation. The majority of non-native, invasive plant species produce seeds that germinate readily following disturbance.

T A B L E 2 3

INVASIVE PLANT SPECIES PRESENT WITHIN THE PROJECT AREA

Common Name	Scientific Name	Location Where Plant Observed	Ecological Impact*	Invasive Potential*
English Ivy	*Hedera helix*	Ornamental/ruderal grassland	A	A
Iceplant	*Carpobrotus edulis*	Ornamental/ruderal grassland	A	B
Ripgut brome	*Bromus diandrus*	Ruderal grassland	B	B
Tree-of-Heaven	*Ailanthus altissima*	Ornamental/ruderal grassland	B	B
Wild oats	*Avena fatua*	Ruderal grassland	B	B

*A = severe and B = moderate, as derived from the California Invasive Plant Council.

Source: Modifications to I-880/Stevens Creek Boulevard, I-280/I-880/SR-17, & I-280/Winchester Boulevard Interchanges Natural Environment Study, 2009.

2.15.3 Environmental Consequences

Non-invasive species will be utilized for landscaping and the project is not anticipated to introduce any new infestations of invasive species. However, care must be taken to avoid increasing the existing

infestations by dispersing seed or viable plant material through construction equipment use when grading, particularly when removing embankment material. These measures are described in the following section.

2.15.4 Avoidance, Minimization, and/or Mitigation Measures

For the purpose of reducing existing infestations and minimizing future infestations, the project will implement the following measures during construction:

- Prior to grading, infested areas will be cleared of vegetation and all vegetative material will be incinerated off-site or disposed of in a landfill, taking care to prevent any seed dispersal during the process.

- Native seed from a local source (within the same watershed if practicable) will be planted on all disturbed ground via hydroseed and native species will be used in landscaping.

- The soil substrate that was disturbed during construction will be stabilized by native hydroseed, preventing the majority of non-native, invasive plant species' seeds from germinating.

2.16 CONSTRUCTION IMPACTS

2.16.1 Traffic Effects/Street Closures During Construction

Except for temporary off-peak lane closures, the same number of traffic lanes will be maintained on the freeways and local streets during the construction period. Narrowed lanes on the freeways through the construction zone will be likely.

Prior to construction, a Transportation Management Plan (TMP) will be prepared. The TMP will address all traffic-related aspects of construction including, but not limited to, the following: traffic handling in each stage of construction, pedestrian safety/access, and bicycle safety/access. A component of the TMP will involve public dissemination of construction-related information through notices to the neighborhoods, press releases, and the use of changeable message signs.

2.16.2 Effects on Businesses during Construction

No roadway or driveway access to businesses is expected to be severed during the construction of the project.

2.16.3 Effects on Utilities during Construction

The project will require the relocation of a number of overhead and underground utility lines (e.g., electric poles, telephone poles, anchor poles, gas pipelines, water lines, fiber-optic cables, etc.) that are located within the footprint of the project. However, no disruption of any utility service(s) for an extended period of time (i.e., more than 24 hours) is expected to be necessary.

2.16.4 Air Quality Effects during Construction

Construction-related emissions are generally short-term in duration but may still cause adverse air quality impacts unless proper emission control measures are implemented.

Construction activities such as earthmoving, excavation and grading operations, construction vehicle traffic and wind blowing over exposed earth will generate exhaust emissions and fugitive particulate matter emissions that would affect local and regional air quality. Construction activities are also a source of organic gas emissions. Asphalt used in paving is a source of organic gases for a short time after its application. Solvents in adhesives, non-waterbase paints, and thinners would also evaporate into the atmosphere and would participate in the photochemical reaction that creates urban ozone. Many types of construction equipment emit diesel exhaust, which is known to result in adverse health effects.

Construction dust could affect local air quality at various times during construction of the project. The dry, windy climate of the area during the summer months creates a high potential for dust generation when and if underlying soils are exposed to the atmosphere.

The effects of construction activities would be increased dustfall and locally elevated levels of PM10 downwind of construction activity. Construction dust has the potential for creating a nuisance at nearby properties, and may constitute a health effect for children or persons with chronic health problems.

The Department's standard construction management practices are adequate to assure that associated air quality impacts will be minimal. These include requiring emission controls on construction equipment and spraying water on exposed surfaces to minimize dust.

The following measures will be implemented by the project for the purpose of avoiding/minimizing air quality effects during construction:

- During construction, the project will follow the Department's Standard Specification 14-9.02, Standard Specification 10, and Standard Specification 18, which address the requirements of BAAQMD and dust control and dust palliative application, respectively.

- The project will implement all feasible PM10 construction emissions control measures required by the BAAQMD, as indicated in Table 24.

T A B L E 2 4

FEASIBLE CONTROL MEASURES FOR CONSTRUCTION EMISSIONS OF PM10

Basic Control Measures. The following controls will be implemented at all construction sites.

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.
- Pave, apply water three times daily, or apply (nontoxic) 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.

Enhanced Control Measures. The following measures will be implemented at construction sites greater than four acres in area.

- Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (i.e., previously graded areas inactive for 10 days or more).
- Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (e.g., dirt and sand).
- Limit traffic speeds on unpaved roads to 24.1 kilometers per hour (15 miles per hour). Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.

Optional Control Measures. The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or for any other reason may warrant additional emissions reductions, but the project applicant is not required to implement.

- Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.
- Install windbreaks or plant trees or vegetative wind breaks at windward side(s) of construction areas.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
- Limit the area subject to excavation, grading, and other construction activity at any one time.

Source: Assessing the Air Quality Impacts of Projects, BAAQMD, December 1999.

2.16.5 Noise and Vibration Effects during Construction

Construction phases anticipated with the project would include demolition, clearing and grubbing, earthwork, construction of ramps (including pile driving), bridge widening, construction of noise barriers, and paving. Each construction phase would require a different combination of construction equipment necessary to complete the task and differing usage factors for such equipment.

Project construction activities will primarily be concentrated in the vicinity of the I-880/Stevens Creek Boulevard interchange, northwest and northeast of the I-880/I-280/SR-17 interchange, and along northbound I-280 between Winchester Boulevard and I-880. At times, construction activities could occur within 50 feet of adjacent residences located at or near the existing right-of way. Residences located adjacent to I-880, near the interchanges with Stevens Creek Boulevard and I-280/SR-17, are not currently shielded from the highway and ramps, whereas the majority of residences located north of I-280 are afforded shielding by 12-16-foot soundwalls.

Project-generated construction noise would primarily result from the operation of vehicles and equipment. The highest noise levels would result from impulsive construction techniques such as pile driving and demolition activities including the use of large hydraulic concrete breakers known as hoe rams. FHWA's Roadway Construction Noise Model was used to calculate the maximum and average noise levels anticipated during each phase of construction at a distance of 50 feet. Table 25 presents the construction noise levels calculated for each major phase of the project. Noise generated by construction equipment drops off at a rate of 6 dB per doubling of distance. Shielding by terrain or existing noise barriers could provide an additional 5-10 dBA of noise reduction.

T A B L E 2 5

CONSTRUCTION EQUIPMENT NOISE LEVELS AT 50 FEET

Construction Phase	Maximum Noise Level (Lmax dBA)	Hourly Average Noise Level (Leq dBA)
Demolition	90	84
Clear and Grub	81	79
Earthwork	82	84
Paving	85	85
Structures (with pile driving)	101	95
Structures (without pile driving)	83	84

Source: Modifications to I-880/Stevens Creek Boulevard, I-280/I-880/SR-17, & I-280/Winchester Boulevard Interchanges Noise Study Report, 2009.

The following measures will be implemented by the project for the purpose of avoiding/minimizing noise and vibration effects during construction:

- All internal combustion engine driven equipment will be equipped with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

- Unnecessary idling of internal combustion engines within 100 feet of residences will be strictly prohibited.

- Staging of construction equipment within 200 feet of residences will be avoided. All stationary noise-generating construction equipment, such as air compressors and portable power generators, will be located as far as practical from residences.

- All construction equipment will be required to conform to Section 14-8.02 - Sound Control Requirements of the Department's latest Standard Specifications

- Demolition and pile driving activities should be limited to daytime hours only. If nighttime, impulsive work is required, a construction noise monitoring program will be implemented to provide additional mitigation as necessary (in the form of noise control blankets or other temporary noise barriers, etc.) for affected receivers.

2.16.6 Water Quality Effects during Construction

The project will involve excavation and grading activities for the purpose of constructing the interchange improvements. These activities have the potential to degrade water quality in the form of sedimentation, erosion, and leaking fuels/lubricants from equipment. At this location, the water quality of various creeks could be affected by construction activities because most of the storm drains discharge into the creeks. Since these creeks support numerous wildlife and plant species, a short-term degradation of water quality could adversely affect such species.

In order to avoid/minimize the potential for water quality impacts to occur, the project will implement the following measures:

- Active paved construction areas will be swept and washed as needed.

- Silt fencing or straw wattles will be used to retain sediment on the project site.

- Temporary cover of disturbed surfaces or temporary slope protection measures will be provided per regulatory requirements and the Department's guidelines to help control erosion. Permanent cover/revegetation will be provided to stabilize the disturbed surfaces after construction has been completed.

- No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products, or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into any waterways.

- Best Management Practices (BMPs) will be utilized by the contractor(s) during construction. The BMPs will be incorporated into a Stormwater Pollution Prevention Plan for the project, as required by the Department's NPDES permit.

2.17 CUMULATIVE IMPACTS

2.17.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts, under NEPA, can be found in 40 CFR, Section 1508.7 of the CEQ Regulations.

2.17.2 Impacts

In a cumulative impacts analysis, the identification of "past, present, and reasonably foreseeable future actions" can utilize either the "list approach" or the "adopted plan" approach. The list approach identifies specific projects in the vicinity, typically provided by a local planning department. The adopted plan approach relies on a general plan or transportation plan or other planning document, which by definition accounts for cumulative growth in a defined area.

For this analysis, the adopted plan approach is utilized as it is compatible with the nature of the proposed infrastructure project, which is to accommodate projected transportation demand over the long term. As examples, the traffic model that was utilized to project future build and no build conditions is based on the planned growth of the area, as contained in the adopted general plans of San Jose and Santa Clara and the surrounding cities. The traffic projections from cumulative growth were also used in the quantification of noise, air quality, and climate change impacts.

The discussion, below, addresses resource areas where the project will result in an impact and, therefore, there is a potential for a cumulative impact. Resources areas not affected by the project are not discussed because, by definition, no cumulative impact could occur. Examples of the latter include biology, cultural resources, geology, floodplains, energy, and farmlands.

Traffic

For traffic, the Resource Study Area (RSA) was defined as the area within the project limits, as well as the surrounding area where the project will result in measurable changes in traffic patterns. Thus, the RSA includes the freeway segments, arterial streets, and intersections identified in the tables shown in Section 2.6.

Cumulative development has resulted in a significant increase in traffic on SR-17, I-280, and I-880 and in the project area as a whole, and future increases are projected to occur. The improvements that would be constructed under the Build Alternative would not contribute toward this increase in traffic volumes; rather, it would improve traffic operations for these vehicle trips, as described in Section 2.6. Therefore, the project would not result in a cumulative traffic impact.

Noise

For noise, the RSA was defined as the land uses adjacent to the freeway segments within the project limits. These land uses are those where project-related changes, coupled with increased traffic from ongoing growth, could result in cumulatively substantial increases in noise.

Cumulative development has resulted in a substantial increase in ambient noise levels in the project area. Ground traffic is the single largest source of noise, especially in the vicinity of the freeways. Noise typically associated with residential and urban environments is present, which also contributes to the cumulative ambient noise levels. The project would incrementally contribute to overall noise levels, as described in Section 2.13. The analysis in Section 2.13 indicates, however, that future increases in noise - taking into account both the project and planned growth - will not be substantial. Therefore, the cumulative noise impact would not be substantial.

Air Quality

For air quality, the RSA was defined as the land uses adjacent to the freeway segments within the project limits. These land uses are those where project-related changes, coupled with increased traffic from ongoing growth, could result in cumulatively substantial increases in emissions of air pollutants.

Cumulative development has resulted in a substantial degradation in ambient air quality in the greater San Francisco Bay Area. However, due to emissions control technology, overall air quality has been improving in recent years. Although most present and future development will likely increase emissions, improvements in technology are largely expected to offset such increases. The project will not contribute to the region's emissions because it will not generate additional vehicle trips or lead to unplanned growth. Rather, the project is expected to reduce area-wide emissions by decreasing congestion and vehicle delay, as described in Section 2.12, *Air Quality*. Therefore, the cumulative air quality impact would not be substantial.

Visual

The RSA for visual impacts was defined as the freeways within the project limits, as well as those adjacent areas where new/modified freeway overcrossings will be visible from various public vantage points.

As discussed in Section 2.7, *Visual/Aesthetics*, the project will construct an elevated direct connector ramp from northbound I-280 to northbound I-880. This new connector will be visible from many locations in the adjacent single-family neighborhood to the east. New soundwalls and removal of some of the existing trees along the freeway right-of-way will add to this visual change.

As is also discussed in Section 2.7, by constructing an elevated concrete ramp adjacent to Tisch Way, the project will substantially affect the view from apartments located on the corner of Tisch Way/Dudley Avenue. The impact will be heightened by the removal of approximately 50% of the existing landscaping located in front of the apartment building.

Although the above-described visual impacts of the project will be substantial, there will be no cumulative visual effects at these locations because there are no other recently-constructed, approved, and/or pending projects that would contribute to this impact.