Appendix E

Detailed Analysis of Alternative 1: Historic Alignment in Union City

Chapter 1
Introduction

1.1 Project Overview

Alternative 1: Historic Alignment in Union City (Alternative 1) is a truncated or reduced version of the East-West Connector Project (proposed project), the roadway project proposed by the Alameda County Transportation Authority (ACTA) in cooperation with Caltrans and the Cities of Fremont and Union City. The proposed project is the subject of this Environmental Impact Report (EIR) that includes Alternative 1 as one of its project alternatives. This appendix has been prepared to present a thorough, project-level environmental analysis of Alternative 1 in compliance with the California Environmental Quality Act (CEQA), in the event that this alternative is selected by the ACTA decision makers, instead of the proposed project.

Alternative 1 proposes a new 0.6-mile roadway, from Alvarado-Niles Road on the west to Mission Boulevard on the east, located within the boundaries of the City of Union City in Alameda County, California (Figure 1-1). The alignment is located in a primarily disturbed and developed area, but the alignment itself is undeveloped, having been identified as a potential future roadway corridor by Union City. The alignment would extend through two detention basins (New Basin and Basin 2C) and the Line M Channel, and would cross the Union Pacific Railroad (UPRR) tracks, Bay Area Rapid Transit (BART) tracks, Green Street bridge, and the Chesapeake Drive culvert extending over Basin 2C. Surrounding land uses—from west to east—include an existing multi-family development on the north side of the project alignment near Alvarado-Niles Road, existing and planned single-family residential development on both sides of the project alignment, industrial uses (Union City Corporation Yard) on the north side of the road, and a public dog park (Drigon Park) on the north side of the road near the alignment's eastern terminus at Mission Boulevard.

The project objectives and needs, which are the same as those presented for the proposed project in Chapter 1 of the Draft EIR, are presented below. Refer to Chapter 1, Introduction, of the Draft EIR for information on the following.

- Project Background
- Known Areas of Controversy
- CEQA Requirements
- Draft EIR Organization

1.2 Project Objectives and Need

The primary objectives of the proposed project and Alternative 1 are to reduce local traffic congestion and travel time, and to provide a more direct east-west link in the transportation network in Union City.

Supporting objectives that would result from implementation of Alternative 1 and provide benefits to the community would:

- improve air quality by decreasing local traffic congestion,
- implement planned transportation improvements upon which completed and planned developments in Fremont and Union City depend,
- improve access to transit facilities and businesses in the vicinity,
- improve transit operations in the vicinity by reducing congestion along existing and future transit routes,
- promote the use of non-motorized transport, and
- maximize the use of publicly-owned right-of-ways in the Historic Corridor for transportation purposes.

Alternative 1 would improve flood control because it would incorporate a diversion pipeline along the new roadway to supplement the existing Line M Channel, which does not have adequate capacity to handle major storm events.

The proposed project or Alternative 1 is needed because many of the roadways and intersections are failing to meet general plan level of service requirements and are expected to decrease over time. Union City, Fremont, and the general area have experienced substantial population growth and traffic increases in recent years. Within the last decade, completed and planned developments in Fremont and Union City assumed the availability of the planned Route 84 project to carry future traffic demands, because it is in the Alameda County Congestion Management Agency Countywide Traffic Model, as well as the city general plans. Major corridors such as I-880, Decoto Road, Alvarado-Niles Road, and Mission Boulevard have increasing levels of congestion and decreasing levels of service. With the continuing development in both cities and the surrounding areas, it is anticipated that the traffic circulation in the area will continue to deteriorate. The general plans for both cities include construction of a realigned SR 84 (also called the Historic Parkway) as a means of obtaining an acceptable level of service, addressing the lack of an adequate east-west linkage in the area, and providing access to the future major transit hub in Union City.

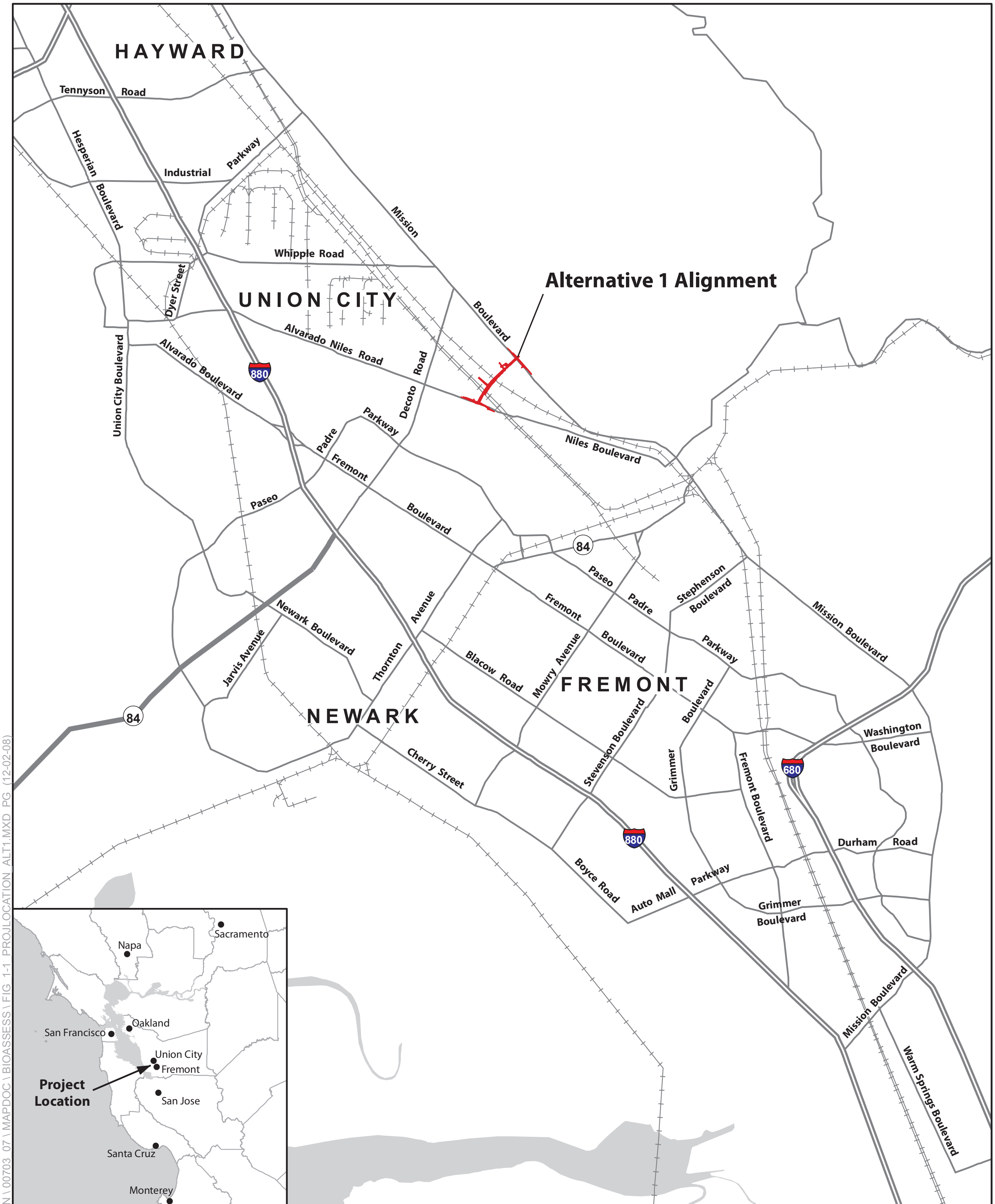

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Figure 5-1
Project Location
ACTA East-West
Connector Project,
Alternative 1

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Chapter 2
Project Description

2.1 Project Location and Setting

Alternative 1: Historic Alignment in Union City (Alternative 1) is a truncated or reduced version of the East-West Connector Project (proposed project). The 0.6-mile Alternative 1 alignment extends from Alvarado-Niles Road on the west to Mission Boulevard on the east and is located entirely in Union City, California (Figures 1-1 and 2-1). Upon completion, Alternative 1 would become part of Union City's street network, except at the east end, where Caltrans would retain jurisdiction for the improvements constructed within the Mission Boulevard right-of-way.

The Alternative 1 alignment is located in a primarily disturbed and developed area, but the alignment itself is undeveloped, having been identified as a potential future roadway corridor by Union City. The alignment would extend through two detention basins (New Basin and Basin 2C) and the Line M Channel. The Line M Channel is an engineered flood control facility owned and maintained by the Alameda County Flood Control and Water Conservation District (ACFCWCD). Line M Channel is undersized and, as a result, the area experiences overflow conditions during heavy storm events, and some overflow goes to Basin 2C and New Basin. The Alternative 1 alignment would also cross the UPRR tracks, BART tracks, Green Street bridge, and the Chesapeake Drive culvert extending over Basin 2C. Surrounding land uses—from west to east— include a multifamily development on the north side of the alignment near Alvarado-Niles Road, existing and planned single-family residential development on both sides of the alignment, industrial uses (Union City Corporation Yard) on the north side, and a public dog park (Drigon Park) on the north side. There are existing concrete or masonry walls along the existing and planned residential development.

2.2 Project Components

Alternative 1 includes a new roadway, new or improved intersections, and other infrastructure improvements. Table 2-1 lists the major project components or features for Alternative 1.

Table 2-1. Summary of Project Components of Alternative 1: Historic Alignment in Union City

New Roadway	Construct 0.6 mile of new four-lane roadway from Alvarado-Niles Road to Mission Boulevard.
New or Improved Intersections	
Alvarado-Niles Road/ New Roadway	New intersection modification. Turn pockets and signals to be provided.
Alvarado-Niles Road/ Olsen Way	Signal modification at existing intersection. Signal adjusted/re-timed.
11th Street/ New Roadway	New intersection. Turn pockets and signals to be provided.
7th Street/ New Roadway	New intersection with realigned 7th Street/Chesapeake Drive. Turn pockets and signals to be added.
Mission Boulevard/ New Roadway	Intersection modification at Mission Boulevard and Appian Way. New turn pockets added. Signal adjusted/re-timed.
Other Project Features	
Silva Farmhouse Demolition	Demolition of existing single-family residence and barn southwest of proposed alignment and intersection of Alvarado-Niles Road
Rail and Road Grade Separation	Addition of three grade separation structures for new roadway alignment extending beneath BART, UPRR Oakland Subdivision, and UPRR Niles Subdivision
Removal of Detention Basins	Removal of two detention basins (New Basin and Basin 2C) between Alvarado-Niles Road and Mission Boulevard
Line M Channel and Diversion Pipeline	Installation of drainage bifurcation facilities at Chesapeake Drive and of new 84-inch buried pipeline extending to Old Alameda Creek on south side of new road
Modifications to 7th St and Union City Corporation Yard	Realignment of 7th Street and reconfiguration of compressed natural gas refueling island and replacement parking for Union City Corporation Yard and Drigon Park
Wetlands Mitigation Site	Creation of a wetlands mitigation site along Old Alameda Creek to compensate for loss of wetlands and riparian vegetation
Replacement of Old Alameda Creek Outlets	Possible replacement of drainage gates that keep water from Alameda Creek Flood Control Channel from backing up into Old Alameda Creek
Trail System Upgrades and Maintenance	Construction of a multi-use path on north side of new roadway
Utility Relocation and Construction	Possible relocation of existing utility poles and lines; existing storm drains and drainage inlets may be relocated or modified

* Stormwater detention basins, shown in detail in Figure 2-4

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Figure 2-1
Project Alignment
ACTA East-West Connector Project, Alternative 1

2.2.1 New Roadway

The new four-lane roadway would 0.6 mile, extending from Alvarado-Niles Road on the west to Mission Boulevard on the east (Figure 2-1). The new roadway would meet the local design standards of Union City and would not be designed as a freeway or expressway.

The four-lane roadway would be approximately 84 feet wide and consist of a 13-foot and a 12-foot vehicle lane in each direction, 8-foot bike lane or outside shoulders in each direction, and a landscaped median between the eastbound and westbound lanes. Additionally, there would be a Class I bike and pedestrian trail on the north side of the road that would be physically separated from the roadway by a landscaped buffer or other barrier and would connect with existing trails in the area. A typical cross section of the new roadway is shown in Figure 2-2.

The new roadway would include street lights and landscaping in the median and on the outside of the roadway. This would include a combination of trees, shrubs, ~~and~~ hardscape features, and appropriate irrigation. The vegetation selected would be native, drought-resistant species. A landscape plan would be prepared as part of Alternative 1 in coordination with the local jurisdictions, which would enable the incorporation of specific landscaping or gateway requirements, and with Alameda County Water District (ACWD) to determine appropriate irrigation facilities.

Stormwater runoff from the new roadway would be collected and conveyed through the use of underground conduits to an infiltration basin near Old Alameda Creek, which would drain into the creek via an outfall structure, thereby providing primary treatment for the stormwater before it enters Old Alameda Creek. The infiltration basins would be located on existing nonnative grassland areas adjacent to Old Alameda Creek, west of Alvarado-Niles Road.

2.2.2 New or Improved Intersections

Based on the traffic analysis, the intersections would have the following characteristics (listed from west to east along the Alternative 1 alignment). Figure 2-3 depicts the proposed intersection geometries for all project-related intersections. Changes to the major intersections along the project alignment are described below.

Alvarado-Niles Road

Turn pockets would be provided, and the intersection would be signalized. The intersection itself would be at-grade, but the grade of the new roadway would descend on the east side of the intersection as the roadway extends beneath the existing UPRR and BART tracks via a grade separation. No additional right-of-way acquisition is anticipated adjacent to Alvarado-Niles Road.

11th Street

A new intersection would be created to accommodate the future extension of 11th Street north of the project alignment, between the UPRR Oakland Subdivision/BART tracks alignment and the UPRR Niles Subdivision/Green Street alignment. As designed, 11th Street would not extend south of the new roadway. A double left turn pocket from eastbound new road to 11th Street would be provided at the new intersection, and the intersection would be signalized.

7th Street

As described below, Alternative 1 would reconstruct 7th Street in the vicinity of its Chesapeake Drive intersection, creating a straight alignment for 7th Street that would intersect the project alignment and continue south as the existing Chesapeake Drive. The intersection would be widened, turn pockets would be provided, and the intersection would be signalized. Crosswalks would be provided on both sides of the new roadway and the west side of 7th Street/Chesapeake Street.

Mission Boulevard

The existing intersection at this location (Mission Boulevard/Appian Way) would be improved in all directions. New turn left and right turn pockets would be provided on Mission Boulevard, and the signal would be adjusted and retimed to account for the new lanes and project improvements. No additional right-of-way is anticipated to be required along Mission Boulevard.

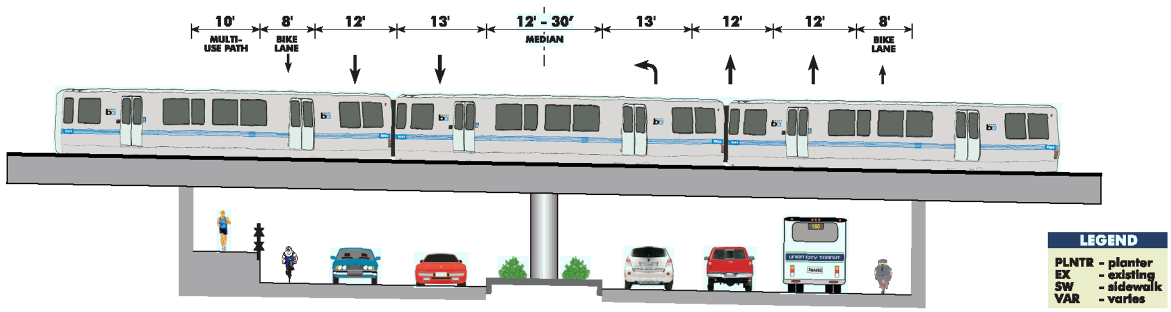
2.2.3 Other Project Features

Rail and Road Grade Separation

The new roadway alignment would be depressed below (from west to east) the existing BART track, UPRR Oakland Subdivision tracks, Green Street bridge, and UPRR Niles Subdivision track, resulting in three new grade separation structures at the locations shown on Figure 2-1. The existing Green Street bridge is located just west of the UPRR Niles Subdivision tracks, and the proposed roadway alignment would extend below this existing bridge.

For the grade separation structures, the roadway grade would be lowered from the east side of Alvarado-Niles Road to the west side of 7th Street and would provide a minimum vertical clearance of 17 feet 16 inches below the UPRR track structures. The grade separation structures would be supported on pile foundations. Figure 2-2 shows a conceptual drawing of the grade separation structure for BART. The UPRR grade separation structures would be similar.

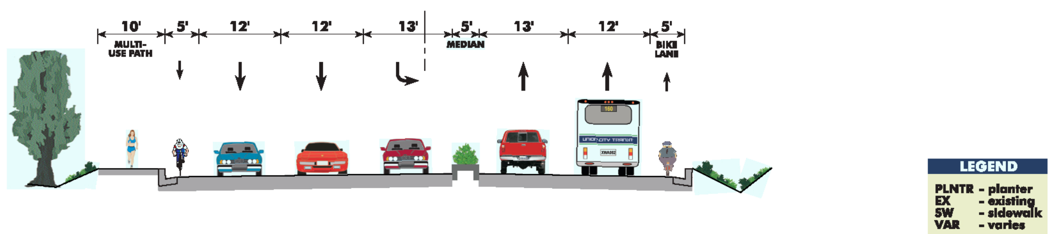
The traffic lane widths would generally remain constant in the grade-separated segment. Bike lanes and shoulders are generally 8 feet wide but may be reduced to 5 feet to minimize right-of-way impacts. At turn pockets, where the median is the narrowest, the minimum width of the median is 6 feet except where it would



NEW ROAD (ALVARADO-NILES ROAD to 7TH STREET)

No scale

Section shown is typical and will vary at different locations. Dimensions and lane widths shown are nominal and will vary.



NEW ROAD (7TH STREET to MISSION BOULEVARD)

No scale

Section shown is typical and will vary at different locations. Dimensions and lane widths shown are nominal and will vary.

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Figure 2-2
Typical Cross Sections of New Roadway
ACTA East-West Connector Project, Alternative 1

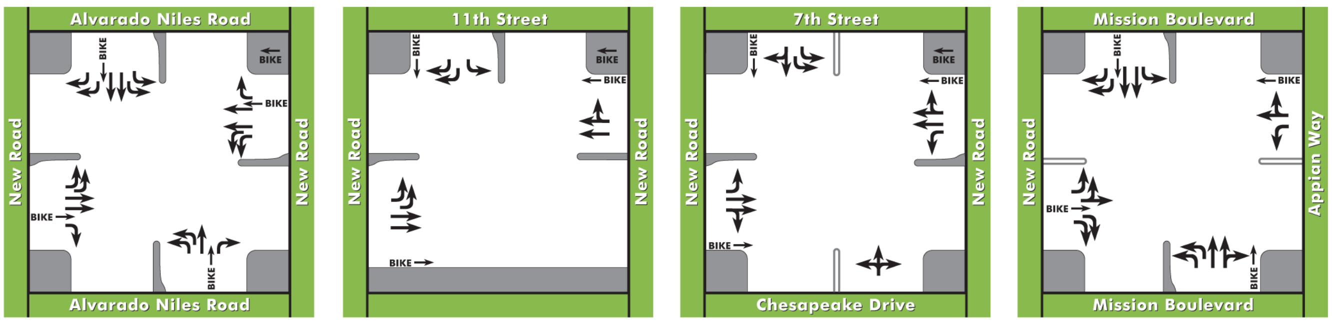

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Figure 2-3
Proposed Intersection Geometrics
ACTA East-West Connector Project, Alternative 1

be reduced to 4 feet near the Union City Corporation Yard to avoid right-of-way impacts. The proposed Class I bicycle and pedestrian path on the north side of the roadway would be constructed at a higher elevation than the roadway in the vicinity of the BART and UPRR Oakland Subdivision grade separation structures.

In order to construct the grade separations, the railroad and BART tracks would be shifted onto a temporary alignment called a shoofly. The shoofly would be constructed adjacent to the existing tracks within the existing BART and UPRR right-of-way and have minimal impact and disruption to train operations. The minimum distance from the centerline of the UPRR shoofly track to an existing residential soundwall would be 15 feet. Additional information about the grade separation construction is included in Section 2.3.2, ~~Project Construction Activities,~~ Construction Methodology~~Phase 3~~.

Removal of Detention Basins

Between Alvarado-Niles Road and Mission Boulevard, the project alignment extends across two existing detention basins, commonly called and hereinafter referenced as New Basin and Basin 2C (Figure 2-4).

New Basin is approximately 123,897 square feet and is located between the UPRR Niles/Green Street and BART/UPRR Oakland alignments. New Basin was constructed in 2006 to manage increased runoff generated by the new development. During heavy storm events, some of the water from the Line M Channel is diverted into the basin. When the water elevation in the Line M Channel recedes, water is pumped out of the basin back into the Line M Channel.

Basin 2C is approximately 94,362 square feet and is located between the UPRR Niles alignment and Chesapeake Drive. Basin 2C was created in October 1999 to provide stormwater detention for nearby residential development and to serve as a wetland mitigation site for new residential development. Because wetlands would be removed by the new roadway, a wetland mitigation site on Old Alameda Creek is proposed. Refer to Wetlands Mitigation Site below.

Both New Basin and Basin 2C receive overflow stormwater from the adjacent Line M Channel; therefore, Alternative 1 includes diverting water from the Line M Channel. Refer to Line M Channel and Diversion Pipeline below. The stormwater flow that is detained in these basins under existing conditions would be adequately accommodated by Line M Channel and the proposed diversion pipeline.

Line M Channel and Diversion Pipeline

The Line M Channel is an existing engineered, channelized drainage feature that starts in the hills east of the project alignment, continues through Union City in a mix of open channel and pipelines, and discharges into the Alameda Creek Flood

Control Channel approximately 0.25 mile downstream (north) of the Decoto Road bridge crossing.[1] The alignment of the Line M Channel relative to the Alternative 1 alignment is shown in Figure 2-4. The new roadway alignment extends over the Line M Channel 250 feet east of Chesapeake Drive and westward between Chesapeake Drive and UPRR Niles Subdivision. The Line M Channel is undersized; as a result, the area near Chesapeake Drive experiences overflow conditions during heavy storm events. Some overflow goes to the two detention basins (Basin 2C and New Basin), which would be displaced by the new roadway. Alternative 1 includes modifying the Line M Channel in this area to accommodate the new roadway and to provide the additional capacity needed for flood control.

The Line M Channel modification under Alternative 1 would be similar to the modification under the proposed project, as shown in Figure 2-10 in Chapter 2 of the EIR for the proposed project. East of Chesapeake Drive, a drainage bifurcation[2] structure would be installed to split the Line M Channel flow so that 50% continues to the downstream segment of the Line M Channel and 50% is diverted to a new 84-inch pipeline. Near the bifurcation structure, an in-line mechanical filtration vault would be installed to provide treatment to stormwater from the adjacent residential development prior to it entering the Line M Channel diversion pipeline.

The existing Line M Channel, between Chesapeake Drive and UPRR Niles Subdivision just west of the Union City Corporation Yard, would be filled in and replaced by two ~~8~~10-foot by 5-foot box culverts along the north side of the new roadway, just south of the Union City Corporation Yard. The new diversion pipeline would be an 84-inch buried pipeline extending along the south side of the new roadway to Alvarado-Niles Road, at which point the pipeline would continue beneath the surface of the grass fields before emptying into an infiltration basin draining into Old Alameda Creek. The pipeline would be buried approximately 10 feet deep (measured from the flow line to the finished grade) at the diversion point and would drop to 28~~30~~ feet deep by the time it reaches Old Alameda Creek. ~~The outfall structure in Old Alameda Creek would be likely comprised of a 36-inch outfall pipe and 110 square foot rock slope protection area.~~ The outfall structure for the pipe would likely be a concrete trough (three-sided box) and rock slope protection area in a new open channel in the wetlands mitigation site along Old Alameda Creek.

As described previously, a separate roadway drainage system would be constructed on the south side of the new depressed roadway between Chesapeake Drive and Alvarado-Niles Road. Stormwater runoff from the new roadway would be collected, lifted by a pump station, and conveyed through underground conduits along the roadway to an infiltration basin for treatment before entering Old Alameda Creek.

[1] Alameda Creek Flood Control Channel is an engineered, improved flood control channel owned and maintained by the Alameda County Flood Control and Water Conservation District (ACFCWCD). In the project vicinity, the channel extends along the northeast side of Paseo Padre Parkway, approximately 0.75 mile west of the new roadway intersection with Alvarado-Niles Road.

[2] Bifurcation is to divide or split into (two) branches.

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Figure 2-4
Existing Detention Basins and Line M Channel
ACTA East-West Connector Project, Alternative 1

Modifications to 7th Street and Union City Corporation Yard

The most easterly 500 feet of the Alternative 1 alignment would replace a short stretch of the existing 7th Street alignment, which currently curves toward the northwest and provides access to the Union City Corporation Yard and residential development. Chesapeake Drive currently intersects this curved portion of 7th Street, with a culvert (Chesapeake Culvert) crossing detention Basin 2C and Line M Channel. Alternative 1 proposes to replace this curved alignment of 7th Street with a straight alignment, as shown in Figure 2-5. The curved portion of 7th Street would be removed. The resulting intersection of the new roadway at 7th Street and Chesapeake Drive would be signalized.

The new roadway alignment would encroach on the parking lot and compressed natural gas (CNG) refueling island at the existing Union City Corporation Yard located off 7th Street. Alternative 1 would involve acquiring approximately 21,014 square feet to accommodate the needed right-of-way. There would be a loss of 18 parking stalls in the parking lot, and a loss of existing on-street parking on 7th Street. The area previously occupied by the now vacated 7th Street/Chesapeake Street intersection would be used to relocate the CNG fueling island and emergency shut-off valve, but the underground storage tank would remain in place. Plans and specifications for relocating the CNG fueling island would be reviewed and approved by the Union City Planning, Building, and Fire Departments and would conform to the Uniform Fire Code requirements. Replacement parking would be provided east of the realigned 7th Street.

Between 7th Street and Mission Boulevard, the new roadway alignment would require a minor right-of-way extension into the southern fringe of Drigon Park, a public dog park owned and operated by the Union City Leisure Services Department. Alternative 1 would take approximately 15,627 square feet from Drigon Park and would remove some vegetation at the edge of the park, but would entail no modification of any physical features inside the park, including the existing fence and surrounding pathway.

Silva Farmhouse Demolition

The Silva Farm is an existing single-family residence and associated barn located just southwest of the new roadway's proposed intersection with Alvarado-Niles Road. This property is owned by Caltrans and leased to the current tenants. Alternative 1 could include relocating the tenants and demolishing the house and barn to accommodate modification of Alvarado-Niles Road.

Wetlands Mitigation Site

Alternative 1 would establish a wetlands mitigation site on Old Alameda Creek to compensate for wetlands and linear aquatic features affected by Alternative 1. The mitigation would be achieved by:

- diverting water from the Line M Channel to increase flow to Old Alameda Creek;
- creating an enhanced open-channel segment of the Line M Channel drainage alignment to extend to the continuous linear aquatic habitat of Old Alameda Creek;
- grading new channel banks and regrading creek banks to create benches for additional waters, wetlands, and vegetation; and
- planting native wetland and riparian vegetation.

The wetlands mitigation site would also incorporate a recreation trail on the upper banks near the Mission Hills residential area.

ACTA would coordinate with the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), and other agencies as necessary to develop specifications to satisfy permitting requirements.

Other Infrastructure Improvements

Trail System Maintenance and Upgrades

Alternative 1 would include the construction of a multiuse path between Alvarado-Niles Road and Mission Boulevard on the north side of the new roadway. It would be of asphaltic concrete construction. The path would generally be a minimum of 10 feet wide and be separated from traffic either by landscaping or fences. The path would be connected to other existing and proposed trails and bicycle lanes in the area, including along Mission Alvarado-Niles Road, 7th Street, 11th Street, and Mission Boulevard to become part of the Union City system of pedestrian and bicycle circulation. When completed, the path would be maintained by Union City.

The proposed wetlands mitigation site would entail realignment of a portion of the existing City of Fremont trail running along the south side of Old Alameda Creek in the vicinity of the Mission Lakes Subdivision. The trail's termini would remain unchanged.

Utility Relocation and Construction

As proposed, Alternative 1 may include additional utility modifications or installations such as water, gas, electricity, and telecommunications facilities if needed or if so requested by the franchised utility providers within Union City.

Existing

Proposed

New Signal

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Figure 2-5
Proposed Modifications to Union City Corporation Yard and 7th Street Realignment
ACTA East-West Connector Project, Alternative 1

The locations and extent of these facilities are currently unknown and would be determined by the franchised utility providers.

Existing overhead utility lines on the west side of Mission Boulevard between Holly Leaf Lane and Appian Way would be relocated to the east side of Mission Boulevard to accommodate the southbound to westbound right-turn pockets.

Throughout the project alignment, existing storm drains and drainage inlets may be relocated and modified to accommodate roadway widening and intersection modifications. Covers and lids for existing underground utility facilities would also be adjusted.

2.3 Project Construction Activities

2.3.1 Construction Timing

The Alternative 1 alignment would be constructed between 2011 and 2015. Construction may include more than one construction contract, and usable segments would be opened as they are completed to provide congestion relief and traffic improvement to the traveling public.

Construction of Alternative 1 is expected to take up to 36 months. Construction of the grade separation structures would require close coordination with BART and UPRR. To minimize disruption to existing operations, temporary tracks called shooflies would be constructed adjacent to the existing tracks.

The wetlands mitigation plan improvements are also anticipated to have a duration of 36 months. There would be some overlap with construction activity associated with roadway construction and construction activity associated with implementation of the wetlands mitigation plan. Wetland mitigation plan improvements would begin following completion of all site grading and excavation activities required for roadway construction.

Construction activities would generally occur Monday through Friday, between 8:00 a.m. and 6:00 p.m. However, night work would be required for any work within BART's fenced right-of-way (operating envelope) or for construction activities involving cranes or heavy equipment adjacent to BART tracks. This night work within and immediately to adjacent BART's operating envelope would be limited to non-revenue hours, which are approximately 1:00 a.m. to 4:00 a.m. on weekdays, 1:00 a.m. to 5:00 a.m. on Saturdays, and 1:00 a.m. to 7:00 a.m. on Sundays. Night work would also be required for tie-ins along the UPRR Niles Subdivision line and Oakland Subdivision line.

2.3.2 Construction Methodology

The construction activities associated with Alternative 1 are described by project component, although project components with similar construction activities have been combined. Planned staging areas are also identified.

Modifications to Existing Roadways and Intersections

Modifications to existing roadways and intersections would include the 7th Street realignment and modifications to the Union City Corporation Yard. Construction activities would include shallow excavation to allow for construction of the new pavement sections and trenching for the installation of underground utilities conduits and structures. The widening would also require the installation of various types of poles and foundation to facilitate modification of traffic signals, street lights, relocation of existing overhead utility lines, and the adjustment of covers for existing underground utility vaults and boxes.

Landscaping installed in roadway medians and adjacent to sidewalks at various locations would include drought-tolerant trees and shrubs. Some of the tree wells would be designed to act as infiltration facilities to minimize stormwater runoff.

Interconnect cables would be installed to connect the traffic signals along the project alignment. This would enable signal operations at various intersections to be coordinated and monitored in the future.

For the realignment of 7th Street, the existing asphaltic concrete pavement would be coldplaned (i.e., ground to uniform depth) before placement of the new asphaltic concrete pavement or overlay. In certain areas, slurry seal may be placed in lieu of coldplaning and overlay. Other activities in this area would also include demolition of existing curb, gutter, and sidewalk and their reconstruction at different locations; and signing and striping.

New Roadway Construction

In general, construction for the new roadway would require shallow or open excavation, ranging from 2 to 10 feet deep, to allow for construction of the new pavement sections and trenching for the installation of underground utilities conduits and facilities. A construction corridor of up to 30 feet on either side of the roadway alignment could be disturbed for construction equipment and activities.

At the approaches to the grade separation structures and for the segment of roadway between the grade separation structures, including its intersection with 11th Street, the maximum excavation depth would be approximately 25 feet. In addition, retaining walls may be constructed at both the north and south side of the roadway. As the roadway in this segment would be below existing ground, there would be a need to install a pump station to discharge stormwater runoff. The pump station would be located on the south side of the new roadway to the west of the BART tracks.

The proposed project would entail the clearing of grassland habitat throughout the new roadway alignment and the two detention basins (New Basin and Basin 2C), as well as the removal of several mature trees located between Alvarado-Niles Road and the BART and UPRR railroad alignment.

Once the clearing is completed, the existing ground would be graded to the appropriate depths—as discussed below—and any underground utilities and pipes would be installed. The curbs, multiuse path, and sidewalks would be formed before the roadway is paved with asphaltic concrete. Lighting, landscaping, irrigation, streetlights, traffic signals, and ancillary roadway furniture including signing and striping would be completed before the new roadway is completed.

Rail and Road Grade Separation

Excavation

The construction of the BART and UPRR grade separation structures and the new roadway between these structures would require extensive excavation both in terms of volume and depth. It is anticipated that excavation for the grade separation and the new roadway between Alvarado-Niles Road and Mission Boulevard would total approximately 95,000 cubic yards and would extend up to 25 feet below the existing grade. For roadway and grade separation improvements, the maximum area simultaneously disturbed in a single day was assumed to be 25% of the total Alternative 1 alignment.

Because the excavation would extend below the existing groundwater table, Alternative 1 would include the installation of a subsurface soil-cement-mix wall to create an impermeable wall around the portion of the proposed excavation that extends below the groundwater table. The wall would be constructed on an existing layer of clay so that the entire excavation could be performed with no need for continuous dewatering, thereby minimizing any impact on the groundwater table.

To minimize the width of the overall excavation and to maintain a slope of not more than two horizontal to one vertical (2H:1V), reinforced concrete retaining walls would be constructed along a segment of the roadway from just west of the BART grade separation structure to just east of the UPRR Niles Subdivision grade separation structure.

Grade Separation Structures

The grade separation structures for BART and UPRR would be comprised of three separate structures. The structures would be ballasted deck using either steel or concrete for the super structure and would accommodate two sets of tracks. The substructures would be concrete supported on file foundations.

Where possible, existing utilities and pipelines that run along the various railroad lines would be supported in place during construction and placed on the new grade-separated structures upon completion.

Shoofly

A shoofly is a temporary railroad track. During construction of the grade separation structures, shooflies would be required for the BART, UPRR Oakland Subdivision, and UPRR Niles Subdivision tracks in order to allow continued operations of BART, Amtrak, and freight trains that operate along these tracks. Shoofly design has not yet been finalized but would be prepared in close consultation with BART and UPRR. The shooflies would be constructed to allow for the removal of the existing tracks and the construction of the grade separation structures while maintaining existing operations. They would be constructed within the existing railroad rights-of-way, and would extend approximately 2,000 feet north and south of the roadway alignment. There would be a minimum distance of 15 feet between the centerline of the shoofly track and adjacent residential soundwalls. Each shoofly would be constructed adjacent to the existing tracks, and temporary shoring would be required. Once the grade separation structures are completed, BART and UPRR would be restored to their existing alignments on the new structures, and the shooflies would be removed.

Construction Sequence

The first order of work would be the installation of the subsurface soil-cement-mix wall, followed by the excavation for the grade separation bridges. The existing grade for the shooflies would be maintained. The pile foundation for the grade separation structures would then be constructed. The bridge superstructure construction would follow. The remaining excavation would occur after the railroad tracks are relocated to the permanent structures.

The retaining wall would then be constructed, followed by the installation of underground utilities, pipelines, and a drainage pump station. The curbs, multiuse path, and sidewalks would be formed before the new roadway is paved. Lighting, landscaping, irrigation, streetlights, traffic signals, and ancillary roadway furniture including signing and striping would be completed before the new roadway is completed.

Silva Farmhouse Demolition

Alternative 1 could entail demolition and removal of the Silva farmhouse and barn located along Alvarado-Niles Road, approximately 300 feet south of Osprey Drive. A detailed hazardous materials survey would be performed, and any identified and regulated hazardous materials would be removed by a specialist contractor in compliance with the necessary laws and regulations. Thereafter, the building would be demolished. All necessary permits and manifests would be obtained. Any solid waste generated from the demolition would be handled in compliance with Union City recycling ordinances.

Line M Channel and Diversion Pipeline

The Line M Channel would be modified as part of Alternative 1. At approximately 250 feet east of Chesapeake Drive, a concrete drainage bifurcation structure would be installed and would connect to a double ~~8~~10-foot-by-5-foot concrete box culvert and an 84-inch diversion pipeline. The box culvert would have a depth of 12 to 14 feet and would reconnect to the existing Line M Channel just west of the Union City Corporation Yard. This can generally be completed by open cut excavation.

The 84-inch pipeline would continue along the south side of the new roadway until the roadway's terminus at Alvarado-Niles Road, at which point the pipeline would continue through the nonnative grassland field west of the road, along the general route followed by the Line M Channel pipeline in the proposed project. The pipeline would eventually discharge into Old Alameda Creek~~ via an outfall structure comprised of a 36-inch outfall pipe and 110 square foot rock slope protection area~~.

The depth of the pipeline would vary from approximately 12 feet at the bifurcation structure to ~~30~~ 28 feet near Old Alameda Creek. The outfall structure would likely be a concrete trough (three-sided box) and rock slope protection area in a new open channel in the wetlands mitigation site along Old Alameda Creek. Constructing the pipeline would entail trenching alongside the road up until Alvarado-Niles Road, then, where the Alternative 1 roadway ends at Alvarado-Niles Road, the trench would continue through an undeveloped grass field west of Alvarado-Niles Road and ultimately terminating at Old Alameda Creek. Installing the pipeline across Alvarado-Niles Road would entail cutting a trench across the road, which would require temporary lane closure. Installing the pipeline across Quarry Lakes Drive would either require trenching or tunneling beneath the road, both of which would entail lane closure.

Vegetated areas disturbed by trenching would be returned to their previous state following completion of work by the placement of fill dirt in the trench and the revegetation of the filled area. The depth of the excavation would require the use of shoring to support the excavation.

Wetlands Mitigation Site

Construction of the wetlands mitigation site would involve an undetermined amount of excavation along the banks of Old Alameda Creek to create the necessary channel and graded banks to support the wetlands and vegetation, as described under 2.2.3 Other Project Features.[3] For the wetlands mitigation plan improvements, the maximum area simultaneously disturbed in a single day was assumed to be 0.5 acre. The area would then be planted according to the final wetlands mitigation plan that will be prepared for the Alternative 1.

Staging Areas

Alternative 1 can generally be constructed using the existing roadway corridor and railroad right-of-way for staging. However, an open area at the southeast quadrant of the proposed intersection of Alvarado-Niles Road and the new roadway would be provided to the contractor for use during construction.

Materials Disposal

Alternative 1would generate solid waste, including asphalt and other materials removed during construction activities. This material would be recycled to the extent practicable. Surplus material would become property of the contractor and be disposed at an appropriate offsite location.

Alternative 1 would require extensive excavation for the railroad grade separation structures, for ~~and~~ the depressed roadway in the vicinity of the grade separation structures, ~~and~~ for cutting the trench and tunnel for installation of the Line M Channel diversion pipeline, and for constructing the wetlands mitigation site. A smaller excavation effort would be required to widen Mission Boulevard. The excavated material would be reused to the greatest extent possible to build roadway embankments and berms. Surplus material would become the property of the contractor, and would likely be reused on other projects requiring embankment material.

Dewatering

The construction of the Line M Channel diversion pipeline could require dewatering when the excavation is deeper than the groundwater table. However, it is expected that the amount of dewatering would be limited in scale. During the

[3] Excavation is estimated at 230,000 cubic yards of material for the proposed project; because Alternative 1 would result in fewer wetlands impacts than would the proposed project, the Alternative 1 wetlands mitigation site would be smaller than in the proposed project and, accordingly, would entail a smaller amount of excavation. A detailed wetlands mitigation site design has not been prepared for Alternative 1; therefore, an estimate of grading quantities specific to the alternative is not provided. For purposes of environmental analysis of Alternative 1, a conservative assumption was made that the wetlands mitigation site would require excavation of 200,000 cubic yards.

final design phase, construction specifications would be developed in consultation with ACWD and would include the methodology used for measuring the volume of water being dewatered and best management practices to minimize the amount of dewatering.

Best Management Practices

To reduce construction-related impacts, ACTA and its construction contractor would implement best management practices (BMPs) in accordance with RWQCB specifications, other permitting standards and requirements, and specific mitigation measures identified in Chapter 3.

2.4 Required Permits and Approvals

The agencies that have project permitting or approval authority or that may use this Draft EIR for their decision-making are identified in Table 2-2. These agencies have been informed of the proposed East-West Connector Project, and some have participated in meetings with members of the project development team and engineering staff to discuss project design and operation.

Table 2-2. Required Permits and Other Approvals

Agency	Required Permits, Approvals or Other Entitlements	Reason Required
Alameda County Water District	Approval and Permit for Water Main Construction	~~Work in Alameda Creek Flood Control Channel~~Public water facility modification or construction anywhere subsurface drilling activities occur and where groundwater may be affected
Bay Area Air Quality Control Board	Demolition Permit	Asbestos and other issues associated with demolishing the Silva Farmhouse
Bay Area Rapid Transit	Encroachment Permit	Grade Separation and shoofly construction affecting BART tracks
California Department of Transportation	Encroachment Permit	Intersection improvements affecting Mission Boulevard at east end of the project alignment
California Department of Fish and Game	Section 2081 Consultation and Section 1602 Streambed Alteration Agreement	Mitigation plan established in Old Alameda Creek.
California Public Utilities Commission	Approval of BART crossing and commercial rail crossing	Alignment requires construction of grade separation and alteration of the BART and UPRR crossings.
City of Union City	Planning Commission approval; City Council approval; Public Works Encroachment Permit; Planning, Building, and Fire Department approval/permits	Alignment within city limits. Relocation of the compressed natural gas station refueling island at the Union City Corporation Yard.

Agency	Required Permits, Approvals or Other Entitlements	Reason Required
Regional Water Quality Control Board	Section 401 Water Quality Certification, possible Waste Discharge Requirements	Discharge to Old Alameda Creek and fill within ~~Corps~~ jurisdictional wetlands/waters of the United States and state; possible discharge to ~~state~~ waters of the state (including Line M Channel)
Union Pacific Railroad	Right-of-Entry Construction and Maintenance Agreement	Grade separation and shoofly construction affecting UPRR tracks
U.S. Army Corps of Engineers	Section 404 Permit	Disturbance to jurisdictional waters and wetlands of the United States

Chapter 3
Environmental Setting and Impact Analysis

This chapter provides environmental analyses of the physical, biological, and social parameters relative to Alternative 1: Historic Alignment in Union City. Each environmental topic is discussed with respect to setting, impact analysis criteria, project impacts and significance, and applicable mitigation measures. This chapter is organized as follows.

- Section 3.1, Aesthetics
- Section 3.2, Air Quality
- Section 3.3, Biological Resources
- Section 3.4, Cultural Resources
- Section 3.5, Geology, Soils, and Seismicity
- Section 3.6, Hazards and Hazardous Materials
- Section 3.7, Hydrology and Water Quality
- Section 3.8, Land Use and Planning
- Section 3.9, Noise and Vibration
- Section 3.10, Population and Housing
- Section 3.11, Public Services, Utilities, and Recreation
- Section 3.12, Transportation and Traffic

For each section, the setting is presented first, followed by the impact analysis. The setting describes the existing environmental conditions that serve as a baseline for determining project impacts, and relevant regulations. The impact analysis includes a description of the methodology used for the analysis, the thresholds or significance criteria used to determine the significance of potential impacts, a discussion of each potential impact, a conclusion of significance, and any mitigation measures required to avoid, minimize, or reduce a significant impact to a less-than-significant-level.

Each impact is numbered according to section. For example, impacts in the Aesthetics section are numbered Impact AES-1, Impact AES-2, and so on. Similarly, each mitigation measure is numbered to correlate with the primary impact it is mitigating (i.e., Mitigation Measure BIO-1). In some cases, mitigations measures for a significant impact in one resource section are also used to mitigate a significant impact in another section. In these cases, the mitigation measure numbering refers to the primary impact.

Section 3.1
Aesthetics

3.1.1 Introduction

This section describes the affected environment and regulatory setting for aesthetics, also referred to as visual resources. It also describes the aesthetic impacts that would result from implementation of Alternative 1: Historic Alignment in Union city, and mitigation measures that would reduce these impacts. .

Additional information on aesthetics is provided in the Visual Impact Analysis (ICF Jones Stokes 2008).

Visual Resources Definitions

Visual character describes the visible setting within a particular area. It may be influenced by a combination of natural features and urban features. The appearance of the landscape is described in terms of the dominance of these various features, and judgments of visual character are based on a regional frame of reference, as the same components of the visual setting may have a different degree of visual quality and sensitivity when they appear in different geographic areas.

Visual quality defines how pleasing, memorable, or otherwise valuable a view may be. Whereas visual character more generally describes the elements in an area, visual quality attempts to define the positive and negative characteristics that create the atmosphere, and to assign some value to the relevant view. This is generally a subjective process highly affected by personal taste, though proper visual analysis requires the analyst to view the setting as objectively as possible.

A **scenic resource** is a specific visible component of the visual setting—usually a recognizable landmark—that is valued for its contribution to the area's visual quality and character. Visual resources may be either natural or constructed. Examples of common scenic resources include buildings, statues, trees or other vegetation, and rock outcroppings.

A **viewshed** comprises all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (Federal

Highway Administration 1983). Aesthetics impact assessment generally requires that important viewsheds be identified and delineated.

Viewer response is the psychological reaction of a person or group of people to visible changes in a viewshed, and is based on the sensitivity and exposure of the viewer to the viewshed. Sensitivity relates to the magnitude of the viewer's concern, value, and expectations for a viewshed. Exposure is a function of the number of affected viewers and the distance, perspective, and duration of the view. The importance of a view is related in part to the viewer's position relative to the resource. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer.

Visual sensitivity describes the relative importance of a viewshed or landscape to viewers. Visual sensitivity is dependent on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is generally higher for views seen by people who are driving for pleasure; people engaging in recreational activities such as hiking, biking or camping; and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work. Commuters and non-recreational travelers have generally fleeting views and tend to focus on commute traffic and not on surrounding scenery, and therefore are generally considered to have low visual sensitivity.

3.1.2 Setting

Sources of Information and Methodology

Discussion of the existing setting in the project area relies on the description provided in the Visual Impact Analysis, for which pedestrian surveys of the project area were conducted and representative photographs were taken. Other information sources include the municipal general plans maintained by Union City.

Evaluation of the existing visual setting is based on direct field observation from representative and critical vantage points and photographic documentation of key views of and from the Alternative 1 alignment. For Alternative 1, key views concentrate on public vantage points, as opposed to private views such as those from nearby residences. This aesthetics analysis supports the CEQA environmental review for Alternative 1, and CEQA concentrates on public views rather than private views. The intent of CEQA is to consider the impact of a project on the environment in general, not the impact on the environment of particular persons. The existing and post-project views from private locations are discussed, but detailed analysis and visual simulations from private locations are not a part of the analysis presented in this section.

Existing Conditions

This section discusses the existing conditions related to aesthetics in the project area. The text is supported by figures illustrating conditions along the Alternative 1 alignment, and figures showing simulations of the permanent visible changes that would accompany project implementation. Locations of the photographs and visual simulations are shown in Figure 3.1-1.

Regional Visual Character

The Alternative 1 alignment is located in a flat, developed area located between a set of hills in the east and I-880 in the west. Beyond I-880 is San Francisco Bay, with the Dumbarton Bridge spanning the Bay. In the project vicinity, the hillsides remain mostly undeveloped, but contain small areas of residential and agricultural-related development that is occasionally visible from the flat land to the west. The region's visual setting is characterized by a combination of moderately dense urban development—featuring single- and multi-family residential, commercial, institutional, and industrial buildings; infrastructure; landscape; and hardscape—and the adjacent hillsides, which are mostly covered in nonnative grasses, with scattered patches of oak and shrubs, as well as occasional development.

Visual Character and Visual Quality

The Alternative 1 alignment can be characterized as a redevelopment corridor. It traverses primarily flat land that is largely disturbed and is visually characterized by recent and ongoing redevelopment of a former industrial area for residential use. The Alternative 1 alignment itself is primarily undeveloped and covered in nonnative grasses, but it includes two stormwater detention basins between the railroad tracks on the western end and 7th Street at the eastern end. It is not accessible to the public. Land uses adjacent to the Alternative 1 alignment include a small residential subdivision adjacent to Alvarado-Niles Road, three sets of railroad tracks (BART and UPRR), recently constructed residential subdivisions on both sides, ongoing redevelopment of former industrial land, and the Union City Corporation Yard. North of the 7th Street portion of the Alternative 1 alignment is Drigon Park, a Union City dog park with an enclosed area and irrigated grass and landscaping.

Residential developments bordering the Alternative 1 alignment feature 8- to 10-foot soundwalls that substantially screen views to and from the Alternative 1 alignment. The eastern hillsides, which are partially developed in this area, are visible from portions of the alignment, including from some second-floor residential viewpoints and the sidewalks and park along 7th Street. Figure 3.1-2 shows two representative views of the Alternative 1 alignment from the eastern portion of this new roadway segment. Photograph 1 shows a rock-lined portion of the Line M Channel in the foreground, but also depicts the character of the adjacent residential development, including the soundwalls at the far left; at the far right are 7th Street and Drigon Park. Also evident are prominent utility poles and wires that follow 7th Street. Photograph 2 shows a view of the New Basin from the sidewalk on the Green Street bridge. Public views in this portion of the Alternative 1 alignment are limited, particularly in the western portion, because the area is either undeveloped or is screened from the views of recent residential development by high walls.

Scenic Vistas

Views of grass-covered, undeveloped hillsides to the east are available from certain areas in the general project vicinity, but are very limited from within and adjacent to the Alternative 1 alignment because they are screened by existing development or obstruction by prominent intervening features. Therefore, there are no scenic vistas in the project area.

Scenic Resources

The Alternative 1 alignment does not currently contain any specific scenic resources, as designated by Union City or other agencies. Several tall trees that are likely subject to the Union City tree ordinance exist along the Alternative 1 alignment. Alternative 1 must comply with the City's ordinance and obtain permits to remove any such trees, but these trees are not necessarily considered significant scenic resources.

Viewer Groups

Viewer groups with views of the Alternative 1 alignment include drivers, bicyclists, and pedestrians using the roads, bike lanes, and sidewalks in the vicinity of the proposed road; recreational users of Drigon Park; residents of neighboring homes; and BART and Amtrak passengers. The visibility of the Alternative 1 alignment to these viewer groups and their varying responses and sensitivity to these views are discussed below.

Auto and truck drivers have limited views of the Alternative 1 alignment, as the alignment is mostly blocked from view by existing buildings or soundwalls. Brief views are available from Alvarado-Niles Road, the Green Street bridge, 7th Street, Chesapeake Drive, Mission Boulevard, and Appian Way. In general, motorists travelling through developed areas have limited sensitivities to visual changes because of the rate of travel along roadway corridors. In addition, the driver is focused on roadway conditions rather than the surrounding area. As drivers grow accustomed to the developed nature of the scenery within an urban environment, sensitivity to additional development and growth along a commuter corridor is reduced. Therefore, overall sensitivity to changes within the built environment is minimal. Bicyclists along the same routes would have a greater sensitivity to views than motorists because they are travelling at slower speeds along the same roadway corridor, but views of the proposed roadway are limited

00703.07 Visual Impact (7-08)

Figure 3.1-1
Photo Locations
ACTA East-West Connector Project, Alternative 1

Photo 1: Line M Channel from south of 7th Street, facing west

Photo 2: New Basin from Green Street bridge, facing west

Photo locations are shown in Figure 3.1-1

00703.07 Visual Impact (7-08)

Figure 3.1-2
Photos 1 and 2
ACTA East-West Connector Project, Alternative 1

for these viewers as well. Furthermore, attention to the roadway conditions remains the primary concern of the cyclist, minimizing sensitivity to changes in the built environment.

Users of Drigon Park have views of the project area. In general, dog park users are sensitive to the visual elements of their surroundings because of the leisurely nature of their activities and their likely intention of visiting the park to enjoy time outdoors. Drigon Park features no screening and is located immediately off 7th Street, in plain view of the existing road.

BART and Amtrak riders have a very brief view of the Alternative 1 alignment. BART riders, who cross the alignment as they travel between the Union City Station and the Fremont Station, would have a longer view because of the slower train speeds. Passengers traveling these rail routes have views of the eastern hillsides in the distance, with foreground views containing a mixture of the local urbanized area, and vacant and disturbed land planned for development. BART riders are primarily commuters with limited sensitivity to surrounding visible features because of the routine nature of their travel. Amtrak riders may be less frequent viewers, but the greater speed of the passenger trains limits visibility of the Alternative 1 alignment.

Newer residential areas in the Alternative 1 alignment have second-level views of the new roadway alignment, as ground-level views are blocked by extensive soundwalls constructed in these areas.

Regulatory Setting

Federal

There are no federal regulations pertaining to aesthetics or visual resources that apply to Alternative 1.

State

Caltrans Review of Visual Impacts

Caltrans considers visual resources impacts during environment review of projects affecting roads within their jurisdiction. Scenic Resource Evaluations and Visual Impact Assessments are required on larger projects, conducted by landscape architects and coordinated with the agency’s Landscape Architecture Program. Caltrans’s review is based on the visual resources component of CEQA. Caltrans maintains design standards for various components of state jurisdiction roads in their *Highway Design Manual* and *Landscape Architecture Guide* (California Department of Transportation 2006), but, as the agency does not maintain impact assessment procedures of their own, such assessment often follows methods set forth in the FHWA *Visual Impact Assessment for Highway Projects* (Federal Highway Administration 1983).

For Alternative 1, Caltrans jurisdiction is limited to the short section of Mission Boulevard and its existing intersection with 7th Street, which represents the eastern terminus of the Alternative 1 alignment. Alternative 1 proposes slight widening of Mission Boulevard and lane reconfiguration, but does not propose landscaping removal or any other components that would damage the existing visual environment. Therefore, neither a Scenic Resource Evaluation nor Visual Impact Assessment, prepared to Caltrans standards, is necessary. Caltrans will use the Draft East West Connector Environmental Impact Report and the Visual Impact Analysis when considering Alternative 1's minimal aesthetic impact on the portion of Mission Boulevard under state jurisdiction. ACTA will continue to coordinate with Caltrans regarding design for the component of Alternative 1 that is within state jurisdiction.

Local

Alternative 1 would be implemented by ACTA, coordinating with Union City. ACTA does not maintain any visual resources policies for the roads it builds, but Union City maintains a general plan and other planning documents that include provisions regarding visual resources, as summarized below. A full listing and discussion of the Union City General Plan goals and policies pertinent to Alternative 1 are provided in Section 3.8, Land Use and Planning, in Chapter 3 of the Draft EIR.

Union City General Plan

Broadly speaking, the Union City General Plan (City of Union City 2002) notes "place making" as a high priority for the City and its residents, emphasizing such elements as high-quality design and architectural richness, beautiful streets and parks, creation of civic spaces, connections between districts, and the recognition of the natural landscape in order to strengthen the identity of existing neighborhoods and new development (Union City General Plan, Introduction pp. i–ii). A few specific goals and policies contained in the plan's Community Design Element are pertinent to the aesthetics characteristics of the project vicinity. These include goals for creating "distinct and attractive corridor environments along Union City's major roadways and transit lines" (Goal CD-C.1) and for creating "positive first impressions for motorists/pedestrians entering the City through enhancement of the City's gateways" (Goal CD-D.1).

Union City Tree Preservation and Mitigation Requirements

Union City considers larger trees within its boundaries to be important components of the scenic environment (although this does not necessarily make them significant scenic resources pursuant to CEQA). The City maintains a program whereby projects that propose removing large trees (those featuring a trunk diameter of 2 inches or greater, when measured at 4.5 feet above the ground) must plot the trees on a survey map and collect size and health data on the trees to be removed, in consultation with a qualified arborist. City planning staff reviews this information and determines on a project-specific basis the appropriateness of preservation or replacement.

3.1.3 Impact Analysis

This section describes the methods used to determine the aesthetics impacts of Alternative 1, lists the thresholds used to conclude whether an impact would be significant, and identifies impacts. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

Impacts on aesthetic or visual resources in the project area were assessed by reviewing project construction drawings and a series of visual simulations prepared at selected views by qualified landscape architects. These simulations concentrate on the key public viewpoints in the project area, rather than private views, though private views are analyzed descriptively as well. The post-project conditions for visual character, visual quality, visual resources, viewer groups/sensitivity, and view duration were then described, as were the potential impacts on any scenic resources or scenic vistas, pursuant to the significance criteria defined below. In accordance with the selected criteria, project plans were also reviewed for their potential to add significant sources or amounts of light or glare.

Significance Criteria

For this analysis, an impact pertaining to aesthetics was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 *et seq*.). A significant impact is identified if the project would:

- substantially degrade the existing visual character or quality of the site and its surroundings;
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway;
- have a substantial adverse effect on a scenic vista; or
- create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

Project Impacts and Mitigation Measures

Alternative 1 would result in several significant aesthetics impacts related to both the temporary construction phase and the permanent operation of the new roadway. Mitigation that would reduce these impacts to less-than-significant levels is identified. All but one of the impacts would be reduced to a less-than-significant level.

Impact AES-1: Temporary Degradation of Visual Character or Visual Quality along Wetlands Mitigation Site and Line M Channel Trenching between Old Alameda Creek and Alvarado-Niles Road during Construction (Less than Significant with Mitigation)

Project construction would include equipment and materials staging, clearing, grading, and pipe laying between Old Alameda Creek and Alvarado-Niles Road as construction teams dig the trench for the Line M Channel diversion and excavate and grade for construction of the wetlands mitigation site. This activity would be highly visible to public recreational users of public trails surrounding Old Alameda Creek and to viewers in the residential areas adjacent to the proposed trench alignment. This visibility would be temporary and would cease with completion of the work in this area, but there would be substantial degradation of the visual character and quality during construction. This impact is considered significant. The following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure AES-1: Provide Screened Fencing around Project Staging Areas during Construction

For all work occurring between Old Alameda Creek and Alvarado-Niles Road, ACTA will require their contractors to provide screens on all fencing that surrounds staging areas. Screens must be of a neutral color and made of a material that will prevent glare, as received from views outside the staging areas.

Impact AES-2: Degradation of Visual Character or Visual Quality along the Proposed Alternative 1 Alignment (Less than Significant)

The addition of the new roadway and other project modifications would not result in substantial degradation of visual character or visual quality. The roadway area is disturbed and undergoing redevelopment, and would not be substantially affected by constructing a new, landscaped roadway. Moreover, few views of the Alternative 1 alignment currently exist. The Alternative 1 corridor does not currently include public trails, and thus no potentially sensitive trail views of the Alternative 1 alignment exist. Public views from sidewalks along Green Street and 7th Street are currently of a semi-urban area that contains newer residential development, industrial buildings, and disturbed areas, including two stormwater detention basins. Existing residences along the new roadway alignment are screened from views of the corridor by substantial soundwalls, which were installed to shield noise from the new roadway and existing BART and UPRR railroad tracks, but also serve as visual buffers.

The new Alternative 1 roadway alignment would be mostly below grade in this area, as grade separations are required at the rail crossings. The grade separation structures would be visible by viewers using the new roadway, including drivers and bicyclists on the road and pedestrians on the separated path. The structures would also be visible by drivers and pedestrians on the Green Street bridge, who currently look out onto a disturbed, semi-urban environment. The addition of grade separations would not constitute a substantial change in character. Figure 3.1-3 shows a visual simulation of the project-related replacement of the New Basin with the subgrade new roadway alignment, viewed from the bridge at Green Street. The new Alternative 1 roadway alignment would feature ample landscaping in the median and on both sides of the roadway, and a divided sidewalk on the westbound side of the street. The uniform character of the new roadway's landscaping would mark a visual improvement from these public and private vantage points.

The improvements of 7th Street and the realignment of the 7th Street/Chesapeake Drive intersection would be visible from Drigon Park and the adjacent sidewalk. Alternative 1would entail a minor right-of-way acquisition from the grass-covered edge of the park and a realignment of the adjacent sidewalk, but this would not remove fencing or encroach into the developed portion of the park. Foreground and middle-ground views from this vantage point are urbanized, consisting of a paved roadway with un-landscaped sidewalks, and do not include any notable scenic elements. Alternative 1 would result in a beneficial impact on these foreground and middle-ground views, as the project landscaping would be an improvement to the scenic character of the adjacent street. Figure 3.1-4 shows a visual simulation of the project roadway improvements proposed in this area of 7th Street, with existing vegetation on the street's southern side complemented by a new landscaped median and landscaping lining the new roadway at the northern end.

Alternative 1 proposes minor widening of Mission Boulevard near its existing intersection with 7th Street and Appian Way. Widening would be limited to the parcels at the intersection's southwest and southeast corner, and would not extend further along Mission Boulevard. This widening would require removal of a small amount of grass on the fringe of the Union City-owned parcel at the intersection's southwest corner and a realignment of the sidewalk that extends from 7th Street. No other landscaping would be removed along Mission Boulevard. The sidewalk is incomplete on this short stretch of Mission Boulevard, and project improvements would entail completion of this sidewalk and provision of landscaping along the frontage of this parcel. The median, which is not landscaped in this area, would also be landscaped, pursuant to a design determined in consultation with Caltrans.

Minimal views of the alignment by BART and Amtrak riders would be slightly improved by the new roadway. Currently, views of the alignment from the train are very brief and include an urban and disturbed area characterized by recent and ongoing development, industrial uses, and the detention basins. The new roadway, with its ample landscaping, would lead to a more intact visual scene.

The Alternative 1 alignment contains few notable scenic elements. The new roadway alignment extends through a stand of large, mature trees in the median of Alvarado-Niles Road. These trees are not designated landmark trees and thus are not scenic resources, but removal would be subject to compliance with the Union City tree ordinance, requiring permission from Union City and planting of new trees at a ratio to be determined in coordination with the Union City Planning Department. The stormwater detention basins located in the corridor are not scenic resources, and their removal and replacement with open, landscaped roadway does not constitute a negative visual impact.

The wetlands mitigation site would replace existing areas of nonnative grassland, small patches of riparian and scrub habitat, and urban landscaping with a new open channel, wetlands, and riparian vegetation featuring native brush and trees. The existing trail situated on the southern bank of Old Alameda Creek would be moved further south and would continue along the southeastern side of existing Old Alameda Creek. This area would be visible from recreational trails surrounding Old Alameda Creek; public roads (Quarry Lakes Drive, Barnard Drive, Beeching Lane, and Osprey Drive); and from residences located on Barnard Drive and Osprey Drive. Once vegetation is established, the mitigation site would appear similar in character to the existing creek banks. This would not constitute a significant degradation of the area’s existing visual character.

In summary, construction of the landscaped roadway with sidewalks and bike lanes through the project corridor would not constitute a degradation of visual character or quality. The wetlands mitigation site would also not constitute a degradation of visual character or quality. This impact is less than significant. No mitigation is required.

Impact AES-3: New Source of Light and Glare along BART Corridor during Construction (Significant and Unavoidable)

During project construction, some night work would be required in this portion of the new roadway alignment to construct the BART and UPRR grade separations. Nighttime work would be necessary along the BART tracks. This work would occur intermittently throughout construction. This temporary nighttime work would require installation of flood lights to illuminate work areas on a temporary basis, and the lights would likely be visible from adjacent residences. Because of the high intensity of this light and the proximity to residences, this construction lighting would constitute a significant visual impact.

This impact is considered significant. The following mitigation measures would partially reduce this impact, but not to a less-than-significant level.

Before

After

00703.07 Visual Impact (7-08)

Photo location is shown in Figure 3.1-1

Figure 3.1-3
Visual Simulation #1, View from Green Street Bridge
ACTA East-West Connector Project, Alternative 1

Before

After

00703.07 Visual Impact (7-08)

Photo location is shown in Figure 3.1-1

Figure 3.1-4
Visual Simulation #2,
Eastern End of Project Alignment
ACTA East-West Connector Project, Alternative 1

Mitigation Measure NOI-2: Prepare a Community Awareness Program for Project Construction

In consultation with the representatives of Union City, ACTA will prepare and maintain a program to enhance community awareness of project construction issues, including the noise, vibration, nighttime noise, nighttime lighting, and park or trail closures. Initial information packets will be prepared and mailed to all residences within a1000-foot radius of project construction, with updates prepared as necessary to indicate new scheduling or processes. A project liaison will be identified who will be available to respond to community concerns regarding noise, vibration, and light.

Mitigation Measure AES-2: Minimize Fugitive Light from Portable Sources

In order to minimize fugitive light impacts on residents located along the existing and temporary BART alignment, portable construction lighting will use color-corrected halide lights. At a minimum, construction-related light and glare will be minimized to the maximum extent feasible, given safety considerations. Portable lights will be operated at the lowest allowable height. All lights will be screened and directed downward toward work activities and away from adjacent residences of the project area. The number of nighttime lights used will be minimized to the greatest extent possible.

Impact AES-4: New Source of Light and Glare from New Roadway (Less than Significant with Mitigation)

During project construction, a limited amount of glare would be caused by sunlight reflecting from the glass and metal surfaces of construction equipment. Aside from the nighttime work related to the BART grade separation (refer to Impact AES-3), there would be no nighttime construction work along this new roadway segment that would require temporary light fixtures to illuminate work. Therefore, this impact of construction-related light and glare is considered less than significant. No mitigation is required.

Alternative 1 would permanently install pole-mounted street lights to ensure driver, bicyclist, and pedestrian safety in this new roadway segment. This would represent a new source of light, as the corridor is currently unlit. Without proper design, this lighting could spill into neighboring residences, particularly in those areas where the corridor narrows and homes are located close to the roadway. Additionally, the vehicles traveling on the new roadway would introduce light and glare into this area, as sunlight reflects off the metal during the day and headlights are used at night. However, the below grade roadway and proposed landscaping along the roadway would minimize this increase, and soundwalls would further contain new light and glare.

The new light from the pole-mounted street lights along the new roadway would create a substantial amount of additional light in the area at night. This is considered a significant impact. The following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure AES-3: Install Low-Standing Light Standards with Directional Shields Downward along the New Roadway

The light standards used along the new roadway will be low-standing with shields directing the light downward. The lights will be the lowest height practicable where new lights are introduced adjacent to residences and where residences are not shielded from direct lighting by soundwalls or landscaping .

Section 3.2
Air Quality

3.2.1 Introduction

This section describes the affected environment and regulatory setting for air quality in the project area and its vicinity. It also describes the impacts on air quality that would result from implementation of Alternative 1: Historic Alignment in Union City, and mitigation measures that would reduce these impacts.

3.2.2 Setting

Existing Conditions

Ambient air quality is affected by climate conditions, topography, and the types and amounts of pollutants emitted. The following discussion describes relevant characteristics of the air basin and offers an overview of conditions affecting pollutant ambient air concentrations in the basin.

Sources of Information

The key sources of data and information used in the preparation of this section are listed and briefly described below.

- Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans (Bay Area Air Quality Management District 1999).
- Air quality monitoring data from the Fremont-Chapel Way monitoring station in Fremont.
- Traffic data included in Chapter 3, Section 3.12, Transportation and Circulation, and in Appendix Q of the Draft EIR. This includes existing conditions analysis on roadways, methodology description for travel demand forecasting, and operational analysis of roadways under future No Project and With Project conditions based upon level of service reports provided by Dowling and Associates.

- Climate change literature and data (California Air Resources Board 2008a; California Energy Commission 2006b, 2007; Hendrix and Cori 2007; Intergovernmental Panel on Climate Change 2007).

Climate and Topography

The Alternative 1 alignment is located in the Livermore Valley. The Livermore Valley is an inland valley east of the San Francisco Bay. The valley is bordered on the east and west by hills of approximately 1,000 to 1,500 feet in elevation. Two gaps, Hayward Pass and Niles Canyon, connect the valley to the central Bay Area to the west. One major passage, the Altamont Pass, and several secondary passages to the west connect Livermore Valley to the San Joaquin Valley. The Black Hills and Mount Diablo form the northern boundary of the valley. A northwest to southeast channel connects the Livermore Valley to the Diablo Valley. Mountains on the south side of the Livermore Valley rise to approximately 3,000 to 3,500 feet.

High temperatures in the Livermore Valley range from the high 80s (degrees Fahrenheit) to the low 90s, with extremes in the 100s during the summer. Average winter maximum temperatures range from the high 50s to the low 60s. Minimum temperatures in the winter range from the mid- to high 30s, with extremes in the high 10s and low 20s.

During the summer months, under conditions of strong inversion with a low ceiling, air movement is weak and pollutants become trapped and concentrated in the Livermore Valley. Occasionally during the summer, a strong Pacific high-pressure cell, coupled with hot inland temperatures, creates an onshore pressure gradient, which produces a strong afternoon wind. With a weak temperature inversion, air moves over the hills, dispersing pollutants into the San Joaquin Valley. In the winter, cold air drains off the hills and moves into the gaps and passes. On the eastern side of the valley, the prevailing winds blow from north, northeast, and east out of Altamont Pass. Winds are light during the late night and early morning hours. Winter daytime winds sometimes flow from the south through Altamont Pass to the San Joaquin Valley.

Criteria Pollutants

The following is a general description of the pollutants for which there are standards (criteria pollutants) and ambient measurements.

Ozone

Ozone (O_3) is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials.

Ozone is not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. Ozone precursors (reactive organic gases [ROG] and oxides of nitrogen [NO_X]) react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is an air pollution problem primarily in the summer.

State and federal standards for ozone have been set for 1- and 8-hour averaging times. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. The U.S. Environmental Protection Agency (EPA) recently replaced the 1-hour ozone standard with an 8-hour standard of 0.075 ppm. However, the California 1-hour standard will remain in effect. The state 8-hour standard is 0.070 ppm, not to be exceeded.

Carbon Monoxide

Carbon monoxide (CO) is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. CO can cause health problems such as fatigue, headache, confusion, dizziness, and even death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emissions at low air temperatures.

State and federal CO standards have been set for 1- and 8-hour averaging times. The state 1-hour standard is 20 ppm, not to be exceeded, whereas the federal 1-hour standard is 35 ppm, not to be exceeded more than 1 day per year. The state 8-hour standard is 9.0 ppm, while federal standard is 9 ppm. This means that a monitored 8-hour CO concentration from 9.1 to 9.4 ppm violates the state but not the federal standard.

Inhalable Particulate Matter

Particulates can damage human health and retard plant growth. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates also reduce visibility and corrode materials. Particulates are measured by size class: PM10 refers to particulate matter smaller than 10 microns in diameter; PM2.5 refers to particulate matter smaller than 2.5 microns in diameter. Sources of PM10 in Alameda County include urban sources, including industrial emissions; dust suspended by vehicle traffic; and secondary aerosols formed by reactions in the atmosphere.

The state PM10 standard is 50 micrograms per cubic meter (μg/m^3) as a 24-hour average and 20 μ/m^3 as an annual arithmetic mean. The federal PM10 standard is 150 μg/m^3 as a 24-hour average. For PM2.5, the state has adopted a standard of 12 μg/m^3 for the annual arithmetic mean. The federal PM2.5 standard is 35 μg/m^3 for the 24-hour average and 15 μg/m^3 for the annual arithmetic mean.

Toxic Air Contaminants

Toxic air contaminants (TACs) are pollutants that may result in an increase in mortality or serious illness, or that may pose a present or potential hazard to human health. Health effects of TACs include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. In 1998, following a 10-year scientific assessment process, the California Air Resources Board (ARB) identified particulate matter from diesel-fueled engines as a TAC. Compared to other air toxics that ARB has identified and controlled, diesel particulate matter emissions are estimated to be responsible for about 70% of the total ambient air toxics risk (California Air Resources Board 2008a).

The federal Clean Air Act as amended in 1990 (CAA) identifies 188 pollutants as being hazardous air pollutants (HAPs). From this list, the EPA identifies a group of 21 as mobile source air toxics (MSATs) in their final rule, Control of Emissions of Hazardous Air Pollutants from Mobile Sources (66 *Federal Register* [FR] 17235) in March 2001. From this list of 21 MSATs, the EPA identifies six MSATs—benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene—as being priority MSATs.

Greenhouse Gases

Greenhouse gases (GHG) include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. Presented below is a description of each GHG and their known sources.

Carbon dioxide (CO_2) enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees, and wood products; and through respiration and as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH_4) is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.[1]

[1] *Ibid.*

Nitrous oxide (N_2O) is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.[2]

Fluorinated gases are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global warming potential gases.[3]

- *Chlorofluorocarbons (CFCs)* are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are being replaced by other compounds that are GHGs covered under the Kyoto Protocol.
- Perfluorocarbons (PFCs) are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as byproducts of industrial processes and are also used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they are strong GHGs.
- Sulfur hexafluoride (SF_6) is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF_6 is a strong GHG used primarily in electrical transmission and distribution systems as a dielectric.[4]
- Hydrochlorofluorocarbons (HCFCs) contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs.
- Hydrofluorocarbons (HFCs) contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs.

Existing Air Quality Conditions

Existing air quality conditions in the Alternative 1 vicinity can be characterized in terms of the ambient air quality standards that the federal and state governments have established for various pollutants and by monitoring data collected in the region. Monitoring data concentrations are typically expressed as ppm or $\mu g/m^3$. The nearest air quality monitoring station in the project vicinity is

[2] *Ibid.*
[3] *Ibid.*
[4] An electrical insulator that is highly resistant to the flow of an electric current.

the Fremont-Chapel Way monitoring station, located at 40733 Chapel Way in the City of Fremont, which monitors for ozone, CO, PM10, PM2.5, sulfur dioxide (SO_2), methane, total hydrocarbons, and NO_2. Air quality monitoring data from the Fremont-Chapel Way monitoring station is summarized in Table 3.2-1. These data represent air quality monitoring data for the last 3 years (2005 through 2007) in which complete data is available.

Table 3.2-1. Ambient Air Quality Monitoring Data Measured at the Fremont-Chapel Way Monitoring Station

Pollutant Standards	2005	2006	2007
Ozone			
Maximum 1-hour concentration (ppm)	0.105	0.102	0.079
Maximum 8-hour concentration (ppm)	0.078	0.074	0.068
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	1	4	0
NAAQS 8-hour (>0.08 ppm)	0	0	0
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	0.78	0.74	0.68
Number of days standard exceeded[a]			
NAAQS 8-hour (≥9.0 ppm)	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0
NAAQS 1-hour (≥35 ppm)	0	0	0
CAAQS 1-hour (≥20 ppm)	0	0	0
Particulate Matter (PM10)[b]			
National[c] maximum 24-hour concentration (μg/m^3)	51.7	54.0	57.5
National[c] second-highest 24-hour concentration (μg/m^3)	33.1	40.6	47.4
State[d] maximum 24-hour concentration (μg/m^3)	54.1	56.6	60.6
State[d] second-highest 24-hour concentration (μg/m^3)	34.7	41.5	49.7
National annual average concentration (μg/m^3)	17.2	19.6	19.0
State annual average concentration (μg/m^3)[e]	17.8	20.0	19.6
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 μg/m^3)[f]	0.0	0.0	0.0
CAAQS 24-hour (>50 μg/m^3)[f]	1	1	1
Particulate Matter (PM2.5)			
National[c] maximum 24-hour concentration (μg/m^3)	33.4	43.9	51.2
National[c] second-highest 24-hour concentration (μg/m^3)	30.9	39.7	43.3
State[d] maximum 24-hour concentration (μg/m^3)	33.4	43.9	51.2
State[d] second-highest 24-hour concentration (μg/m^3)	30.9	39.7	43.3
National annual average concentration (μg/m^3)	9.0	–	8.7
State annual average concentration (μg/m^3)[e]	9.0	–	8.7
Number of days standard exceeded[a]			
NAAQS 24-hour (>65 μg/m^3)	0	–	0

Notes: CAAQS = California ambient air quality standards. ppm = parts per million.
NAAQS = national ambient air quality standards. μg/m^3 = micrograms per cubic meter.
– = insufficient data available to determine the value.

[a] An exceedance is not necessarily a violation.

[b] Measurements usually are collected every 6 days.

[c] National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

[d] State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California-approved samplers.
[e] State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
[f] Mathematical estimate of how many days' concentrations would have been measured as higher than the level of the standard had each day been monitored.
Sources: California Air Resources Board 2008b; U.S. Environmental Protection Agency 2008.

As shown in Table 3.2-1, the Fremont-Chapel Way monitoring station experienced no violations of the federal or state CO standards during the 3-year monitoring period. The state ozone standards were exceeded once in 2005 and four times in 2006 in the 3-year monitoring period. There were no violations of the federal 24-hour PM10 standard and PM2.5 standard; however, state PM10 standards were exceeded once each in 2005, 2006, and 2007.

An estimate of local CO concentrations at congested intersections throughout the project vicinity is provided below in Table 3.2-2 using the methodology described in Section 3.3.2, Impact Analysis, Methodology). As shown in Table 3.2-2, localized 1-hour and 8-hour CO concentrations under existing conditions are well below the state standard of 20 ppm and 9.0 ppm for the 1-hour and 8-hour averaging periods, respectively.

Table 3.2-2. Local Area Carbon Monoxide Concentrations—Existing Conditions

Intersection	Peak Period [a]	Maximum 1-Hour 2008 Base Concentration (ppm)[b]	Maximum 8-Hour 2008 Base Concentration (ppm)[c]
Decoto at 7th	AM	3.6	2.5
	PM	4.0	2.8
Decoto at 11th	AM	3.8	2.6
	PM	4.0	2.8
Decoto at Union Square	AM	4.0	2.8
	PM	4.7	3.3
Decoto at Alvarado	AM	4.2	2.9
	PM	4.3	3.0
Decoto at Perry	AM	4.6	3.2
	PM	5.5	3.8
Decoto at Paseo Padre	AM	4.5	3.1
	PM	4.9	3.4
Decoto at Brookmill	AM	4.2	2.9
	PM	5.4	3.8
Decoto at Fremont	AM	4.6	3.2
	PM	4.6	3.2
Decoto at southbound ramps	AM	6.7	4.7
	PM	7.7	5.4

Intersection	Peak Period [a]	Maximum 1-Hour 2008 Base Concentration (ppm)[b]	Maximum 8-Hour 2008 Base Concentration (ppm)[c]
Mission at Appian-7th	AM	3.5	2.4
	PM	3.8	2.6
Paseo Padre at Wyndham	AM	4.5	3.1
	PM	4.3	3.0
Paseo Padre at Temayo	AM	3.4	2.4
	PM	3.3	2.3
Paseo Padre at Thornton	AM	3.8	2.6
	PM	4.1	2.8
Paseo Padre at Peralta	AM	3.8	2.6
	PM	2.1	1.4
Fremont at southbound ramps	AM	3.4	2.4
	PM	3.9	2.7
Fremont at Paseo Padre	AM	3.7	2.6
	PM	4.0	2.8
Thornton at northbound on-ramp	AM	4.4	3.1
	PM	5.1	3.5
Thornton at Fremont	AM	3.5	2.4
	PM	3.4	2.4
Alvarado at Nursery	AM	3.3	2.3
	PM	3.6	2.5
Alvarado at Linda	AM	3.1	2.1
	PM	3.2	2.2
Mission at Nursery	AM	3.9	2.7
	PM	4.2	2.9
Mission at Niles	AM	4.0	2.8
	PM	4.7	3.3

Notes:

CALINE4 dispersion model output sheets and EMFAC2007 emissions factors are provided in Appendix G.

ppm = parts per million

[a] Peak hour traffic volumes are based on the Traffic Impact Analysis prepared for the project by Dowling Associates Inc, May 2008.

[b] 2008 1-hour ambient background concentration (1.77 ppm) + 2008 base traffic CO 1-hour contribution.

[c] 2008 8-hour ambient background concentration (1.24 ppm) + 2008 base traffic CO 8-hour contribution.

Source: Compiled from data provided in Appendix G

Areas are classified as either *attainment*, *unclassified*, or *nonattainment* with respect to state and federal ambient air quality standards. If a pollutant concentration is lower than or meets the state or federal standard over a designated period of time, the area is classified as being in attainment of the standard for that pollutant. If a pollutant violates the standard, the area is considered a nonattainment area for that pollutant. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated unclassified. This typically occurs in undeveloped areas where levels of the pollutant are not a concern.

The Alternative 1 alignment is located in the San Francisco Bay Area Air Basin (SFBAAB). The State of California has designated the SFBAAB as being in serious nonattainment for the state ozone standards and as a nonattainment area for the state PM10 standards. The SFBAAB is classified as an attainment area for the CO standards. The EPA has designated the SFBAAB as not classified/moderate/ other attainment for the federal ozone standards (2006 attainment deadline). The EPA has designated the SFBAAB as being unclassified/attainment for the federal PM10 standards and as unclassified/attainment for the federal CO standards.

Sensitive Receptors

A sensitive receptor is generally defined as a facility or land use that houses or attracts members of the population, such as children, the elderly, and people with illnesses, who are particularly sensitive to the effects of air pollutants. Examples of sensitive receptors include schools, hospitals, convalescent facilities, and residential areas. Since residential dwelling units are the predominant land uses in the project vicinity, sensitive receptors are present throughout the project area (Figure 2-1).

State Greenhouse Gas Emissions

California is the second largest emitter of GHG in the United States (Texas is the largest GHG emitter) and the sixteenth largest GHG emitter in the world. However, because of more stringent air pollutant emission regulations and mild climate, in 2001 California ranked fourth lowest in carbon emissions per capita and fifth lowest among states in CO_2 emissions from fossil fuel consumption per unit of gross state product (total economic output of goods and services). In 2004, California produced 492 million metric tons (MMT) of carbon dioxide equivalent (-CO_2e) GHG emissions, of which 81% were CO_2 from the combustion of fossil fuels, 2.8% were from other sources of CO_2, 5.7% were from methane, and 6.8% were from N_2O. The remaining 2.9% of GHG emissions were from high global warming potential gases (California Energy Commission 2006a).

Carbon dioxide emissions from human activities represent 84% of the total GHG emissions. California's transportation sector is the single largest generator of state GHG emissions, producing 40.7% of the state's total emissions. Electricity generation for in-state consumption is the second largest source, with 22.2%. While out-of-state electricity generation comprises 20 to 33% of California's total electricity supply, it contributes 39 to 57% of the GHG emissions associated with electricity consumption in the state. Industrial activities are California's third largest source of GHG emissions, producing 20.5% of state's total emissions. Other major sources of GHG emissions include mineral production, waste combustion, land use, and forestry changes. Agriculture, forestry, commercial, and residential activities comprise the balance of California's GHG emissions.[5]

Climate change could affect the natural environment in California in the following ways, including:

- raising sea levels along the California coastline, particularly in San Francisco and the San Joaquin Delta as a result of ocean expansion;
- causing extreme-heat conditions such as heat waves and very high temperatures, which could last longer and become more frequent;
- increasing heat-related human deaths, infectious diseases, and a higher risk of respiratory problems caused by deteriorating air quality;
- reducing snow pack and stream flow in the Sierra Nevada mountains, affecting winter recreation and water supplies;
- increasing the severity of winter storms, affecting peak stream flows and flooding;
- changing growing season conditions that could affect California agriculture, causing variations in crop quality and yield; and
- changing the distribution of plant and wildlife species as a result of changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

These changes in California's climate and ecosystems are occurring at a time when California's population is expected to increase from 34 million to 59 million by the year 2040. The number of people potentially affected by climate change, and the amount of anthropogenic GHG emissions expected under a "business as usual" scenario, are expected to increase. Similar changes as those noted for California would also occur in other parts of the world, affecting regional variations in resources and regional vulnerability to adverse effects.

Regulatory Setting

The air quality management agencies of direct importance in Alameda County include the EPA, ARB, and BAAQMD. The EPA has established federal

[5] *Ibid.*

standards for which ARB and BAAQMD have primary implementation responsibility. The ARB and BAAQMD are responsible for ensuring that state standards are met.

The Alternative 1 alignment is located in the Alameda County portion of the SFBAAB, which comprises Santa Clara, Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Napa Counties, as well as portions of Solano and Sonoma Counties. Air quality in the SFBAAB is regulated by BAAQMD, which administers air quality regulations developed at the federal, state, and local levels. These regulations are described below.

Federal

Clean Air Act

The CAA is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988 (CCAA). 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: CO, NO_2, O_3, PM10, PM2.5, lead (Pb), and SO_2.

Under the CAA, the U.S. Department of Transportation (DOT) cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to a State Implementation Plan (SIP) for achieving the goals of the CAA requirements. Conformity with the CAA takes place on two levels—first, at the regional level and second, at the project level. Alternative 1 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, ozone, PM10, and PM2.5. California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTP) include all of the transportation projects planned for a region over a period of years, usually at least 20 years. 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 CAA are met. If the conformity analysis is successful, the regional planning organization, such as the Metropolitan Transportation Commission for the Bay Area and the appropriate federal agencies, such as the FHWA, make the determination that the RTP is in conformity with the SIP for achieving the goals of the CAA. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of Alternative 1 are the same as described in the RTP, then Alternative 1 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 particulate matter. 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 particulate matter analysis performed for National Environmental Policy Act (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 particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Typically, evaluating whether a project is included in a conforming RTP and/or Transportation Improvement Plan (TIP) is done to determine transportation conformity for ozone precursors. Because PM10, PM2.5, and CO are localized pollutants, the determination of transportation conformity for these pollutants is assessed by identifying whether Alternative 1 would generate elevated hotspot concentrations for these pollutants. For PM10 and PM2.5, the determination of conformity is qualitative; for CO, the determination is quantitative.

Mobile Source Air Toxics

The CAA identified 188 pollutants as being air toxics or HAPs. From this list, the EPA identified a group of 21 as MSATs in their final rule, Control of Emissions of Hazardous Air Pollutants from Mobile Sources (66 FR 17235) in March 2001. From this list of 21 MSATs, the EPA has identified six MSATs—benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene—as being priority MSATs. To address emissions of MSATs, the EPA has issued a number of regulations that will dramatically decrease MSATs through cleaner fuels and cleaner engines. The area of air toxics analysis is a new and emerging issue and is a continuing area of research. Although much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques available for assessing project-specific health impacts from MSATs are limited. Given the emerging state of the science and of project-level analysis techniques, there are no established criteria for determining when MSAT emissions should be considered a significant issue in NEPA context. FHWA is currently preparing guidance as to how mobile source health risks should factor into project-level decision-making under NEPA. In addition, the EPA has not established regulatory concentration targets for the six relevant MSAT pollutants appropriate for use in the project development process. In light of the recent development regarding MSATs, the FHWA has issued interim guidance for the assessment of MSATs in NEPA documents.

Federal Climate Change Policy

Twelve U.S. states and cities (including California), in conjunction with several environmental organizations, have sued to force the EPA to regulate GHGs as a pollutant pursuant to the CAA (*Massachusetts vs. Environmental Protection*

Agency et al. [U.S. Supreme Court No. 05–1120; argued November 29, 2006; decided April 2, 2007]). The Supreme Court ruled that the plaintiffs had standing to sue, that GHGs fit within the CAA's definition of a pollutant, and that the EPA's reasons for not regulating GHGs were insufficiently grounded in the CAA. Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting GHG emissions.

State

California Air Resources Board

Responsibility for achieving California's ambient air quality standards (CAAQS) (Table 3.2-3), which, for certain pollutants and averaging periods are more stringent than federal standards, is placed on ARB and local air pollution control districts. State standards are to be achieved through district-level air quality management plans that are incorporated into the SIP. In California, EPA has delegated authority to prepare SIPs to ARB, which, in turn, has delegated that authority to individual air districts.

Table 3.2-3. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]
Ozone (O_3)	1 hour	0.09 ppm[c]	–
	8 hour	0.07 ppm	0.075 ppm
Carbon Monoxide (CO)	1 hour	20.0 ppm	35.0 ppm
	8 hour	9.0 ppm	9.0 ppm
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	–
	Annual	0.03 ppm	0.053 ppm
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	–
	3 hour	–	0.5 ppm
	24 hour	0.04 ppm	0.14 ppm
	Annual	–	0.030 ppm
Inhalable Particulate Matter (PM10)	24 hour	50.0 $\mu g/m^3$[c]	150.0 $\mu g/m^3$
	Annual	20.0 $\mu g/m^3$	–
Fine Particulate Matter (PM2.5)	24 hour	–	35.0 $\mu g/m^3$
	Annual	12.0 $\mu g/m^3$	15.0 $\mu g/m^3$
Sulfates	24 hour	25.0 $\mu g/m^3$	–
Lead (Pb)	30 day	1.5 $\mu g/m^3$	–
	Calendar quarter	–	1.5 $\mu g/m^3$
Hydrogen Sulfide	1 hour	0.03 ppm	–
Vinyl Chloride	24 hour	0.01 ppm	–

Notes:

[a] The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM10, and PM2.5 are values not to be exceeded. All other California standards shown are values not to be equaled or exceeded.

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]

[b] The NAAQS, other than O_3 and those based on annual averages, are not to be exceeded more than once a year. The O_3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

[c] ppm = parts per million by volume; μg/m^3 = micrograms per cubic meter

Source: California Air Resources Board, June 26, 2008a; compiled from data provided in Appendix G

ARB traditionally has established CAAQS, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emission inventories, collected air quality and meteorological data, and approved SIPs. Responsibilities of air districts include overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required by CEQA.

California Clean Air Act of 1988

The CCAA substantially added to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality attainment plans, and grants air districts authority to implement transportation control measures. In addition, the CCAA focuses on attainment of the CAAQS and requires designation of attainment and nonattainment areas with respect to these standards. The CCAA also requires that local and regional air districts expeditiously adopt and prepare an air quality attainment plan if the district violates state air quality standards for ozone, CO, SO_2, NO_2, or ozone. These plans are specifically designed to attain state standards and must be designed to achieve an annual 5% reduction in district-wide emissions of each nonattainment pollutant or its precursors. No locally prepared attainment plans are required for areas that violate the state PM10 standards; ARB is responsible for developing plans and projects that achieve compliance with the state PM10 standards.

The CCAA requires that the CAAQS be met as expeditiously as practicable, but, unlike the CAA, does not set precise attainment deadlines. Instead, the CCAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. The attainment status for the SFBAAB with respect to all criteria pollutants is provided in Table 3.2-4.

Table 3.2-4. Federal and State Attainment Status for San Francisco Bay Area Air Basin

Pollutants	Federal Classification	State Classification
O_3 (1-hour standard)	–	Nonattainment, Serious
O_3 (8-hour standard)	Nonattainment, Marginal	–
PM10	Unclassified/Attainment	Nonattainment
PM2.5	Unclassified/Attainment	Nonattainment
CO	Attainment/Maintenance	Attainment
NO_2	Unclassified/Attainment	Attainment
SO_2	Attainment	Attainment

Source: California Air Resources Board 2008a; compiled from data provided in Appendix G

The CCAA emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The CCAA does not define the terms *indirect [sources]* and *area-wide sources*. However, Section 110 of the CAA defines an indirect source as

> a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution. Such term includes parking lots, parking garages, and other facilities subject to any measure for management of parking supply….

The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures (TCMs). TCMs are defined in the CCAA as "any strategy to reduce trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing vehicle emissions."

Global Warming Solutions Act of 2006 (AB 32)

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to 1) 2000 levels by 2010, 2) 1990 levels by 2020, and 3) 80% below 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

ARB identified early actions in its April 20, 2007, report (California Air Resources Board 2007):

- **Group 1**—Three new GHG-only regulations are proposed to meet the narrow legal definition of "discrete early action greenhouse gas reduction measures" in Section 38560.5 of the Health and Safety Code. These include the Governor's Low Carbon Fuel Standard, reduction of refrigerant losses from motor vehicle air conditioning maintenance, and increased methane capture from landfills. These actions are estimated to reduce GHG emissions between 13 and 26 MMT-CO_2e annually by 2020 relative to projected levels. If approved for listing by the Governing Board, these measures will be brought to hearing in the next 12 to 18 months and take legal effect by January 1, 2010. When these actions take effect, they would influence GHG emissions associated with vehicle fuel combustion and air conditioning but would not affect project site design or implementation.
- **Group 2**—ARB is initiating work on another 23 GHG emission reduction measures in the 2007–2009 period, with rulemaking to occur as soon as possible where applicable. These GHG measures relate to the following sectors: agriculture, commercial, education, energy efficiency, fire suppression, forestry, oil and gas, and transportation.
- **Group 3**—ARB has identified 10 conventional air pollution control measures that are scheduled for rulemaking in the 2007–2009 period. These control measures are aimed at criteria and toxic air pollutants, but will have concurrent climate co-benefits through reductions in CO_2 or non-Kyoto pollutants (i.e., diesel particulate matter, other light-absorbing compounds, and/or ozone precursors) that contribute to global warming.

With the exception of the low-carbon fuel standard, none of the Group 1 measures specifically relate to construction or operation of Alternative 1. Proposed Groups 2 and 3 measures that could become effective during implementation of Alternative 1 and could pertain to construction-related equipment operations or specific facility design include the following actions:

- Measure 2-6, Education: Guidance and protocols for local governments to facilitate GHG emission reductions.
- Measure 2-9, Energy Efficiency: Light-covered paving, cool roofs, and shade trees.
- Measures 2-14, 3-2, and 3-4, Transportation: Emission reductions for heavy-duty vehicles, on-road diesel trucks, and off-road diesel equipment (non-agricultural); efficiency improvements.
- Measure 2-20, Transportation: Tire inflation program.

These measures have not yet been adopted. Some proposed measures will require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify.

In consultation with ARB and California Public Utilities Commission, the California Energy Commission is currently establishing a GHGs emission performance standard for local, public-owned electric utilities (pursuant to Senate Bill [SB] 1368). This standard will limit the rate of GHGs emissions to a level that is no higher than the rate of emissions of GHGs for combined-cycle natural gas baseload generation.

Senate Bill 1368

On August 31, 2006, the California Senate passed SB 1368 (signed into law on September 29, 2006), which required the California Public Utilities Commission to develop and adopt a "greenhouse gasses emission performance standard" by February 1, 2007, for the private electric facilities under its regulation. California Public Utilities Commission adopted an interim standard on January 25, 2007. These standards apply to all long-term financial commitments entered into by electric utilities (California Senate Bill 2006). California Energy Commission was required to adopt a consistent standard by June 20, 2007. However, this date was missed; California Energy Commission will address the concerns of the Office of Administrative Law and resubmit the rulemaking as soon as possible. The rulemaking then must be approved by Office of Administrative Law before it can take effect.

Assembly Bill 1493

On July 1, 2002, the California Assembly passed AB 1493 (signed into law on July 22, 2002), requiring ARB to "adopt regulations that achieve the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." The regulations will apply to 2009 and later model-year vehicles. In September 2004, ARB responded by adopting "CO_2e fleet average emission" standards. The standards will be phased in from 2009 to 2016, reducing emissions by 22% in the near term (2009–2012) and 30% in the mid-term (2013–2016), as compared to 2002 model-year fleets.

Executive Order S-01-07

Executive Order S-01-07 was enacted by Governor Schwarzenegger on January 18, 2007. Essentially, the order mandates the following: 1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020; and (2) that a Low Carbon Fuel Standard for transportation fuels be established in California.

Local

Bay Area Air Quality Management District

BAAQMD is responsible for implementing federal and state standards and strategies for air quality improvement, and for recommending mitigation measures for new growth and development. At the local level, air quality is managed through land use and development planning practices, which are implemented in Alameda County through the general planning process. BAAQMD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws.

Guidance for the determination of significant air impacts under CEQA in Alameda County is found in the BAAQMD document, BAAQMD CEQA Guidelines: Assessing Air Quality Impacts of Projects and Plans (Bay Area Air Quality Management District 1996, revised 1999).

BAAQMD does not require quantification of construction emissions. Instead, it requires implementation of effective and comprehensive feasible control measures to reduce PM10 emissions (Bay Area Air Quality Management District 1996, revised 1999). PM10 emitted during construction activities varies greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, and weather conditions. Despite this variability in emissions, experience has shown that there are a number of feasible control measures that can be reasonably implemented to reduce PM10 emissions during construction; these measures are summarized below in Table 3.2-5. According to BAAQMD, if all control measures listed in Table 3.2-5 are implemented (as appropriate, depending on the size of the project area), air pollutant emissions from construction activities would be considered less than significant (Bay Area Air Quality Management District 1996, revised 1999). Construction equipment also emits CO and ozone precursors. Guidance from BAAQMD indicates that construction emissions are already included in the emission inventory that forms the basis for BAAQMD's regional air quality plans and because those emissions are not expected to impede attainment or maintenance of ozone and CO standards in the Bay Area (Bay Area Air Quality Management District 1996, revised 1999).

Table 3.2-5. BAAQMD Feasible Control Measures for Construction Emissions of PM10

Basic Control Measures
The following controls should 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 0.6 meter (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 should be implemented at construction sites greater than 4 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 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 miles per hour. ▪ Limit the area subject to excavation, grading, and other construction activity at any one time.

For Alternative 1 operations, BAAQMD identifies a significant air quality impact as being a:

- net increase in pollutant emissions of 80 pounds per day or 15 tons per year of ROGs, NO_X, or PM10, or
- project-related contribution to CO concentrations exceeding the CAAQS for the 1- and 8-hour standards. Projects that do not result in the following are presumed to result in less-than-significant levels of CO emissions, and no estimation of CO concentrations is necessary (Bay Area Air Quality Management District 1996, revised 1999):
  - vehicle emissions of CO exceeding 550 pounds per day;
  - project traffic impacting intersections or roadway links operating at level of service (LOS) D, E, or F;
  - project traffic causing intersection or roadway link LOS to decline to D, E, or F; or
  - project traffic increasing traffic volumes on nearby roadways by 10% or more (unless the increase in traffic volume is less than 100 vehicles per hour).

Recently, BAAQMD has recommended additional air quality analyses that include a quantitative estimate of gross emissions (volatile organic compounds [VOCs], NO_X, and PM10) from construction equipment (Tholen pers. comm.). This recommendation is in addition to the guidelines published in 1999, which require a qualitative assessment and mitigation of construction dust impacts. Quantitative significance thresholds in the guidelines only apply to operational emissions and BAAQMD has not yet developed, nor does it currently recommend, a threshold of significance for gross emissions from construction activity. It is likely that once BAAQMD publishes construction emission thresholds they will be greater than operational thresholds; this is because construction emissions are transient and temporary whereas operational emissions are persistent. For this analysis, construction emission thresholds will be assumed equal to the operational emission thresholds given the absence of BAAQMD construction emission threshold guidelines.

3.2.3 Impact Analysis

Methodology

Alternative 1 would generate construction-related and operational emissions. The methodology used to evaluate construction and operational effects is described below.

Construction Impact Assessment Methodology

Construction activity is a source of dust and exhaust emissions that can have substantial temporary impacts on local air quality (i.e., exceed CAAQS for ozone, CO, PM10, and PM2.5). Such emissions would result from earthmoving and use of heavy equipment, as well as land clearing, ground excavation, cut-and-fill operations, and the construction of roadways. Emissions can vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather. A major portion of dust emissions for Alternative 1 would likely be caused by construction traffic on temporary areas.

The Road Construction Emissions Model

The Road Construction Emissions Model (Version 6.3) was used to estimate emission rates of CO, ROG, NO_X, and PM10 from project-related construction activities. The road construction model is a public-domain spreadsheet model formatted as a series of individual worksheets. The model enables users to estimate emissions using a minimum amount of project-specific information. The model estimates emissions for load hauling (on-road heavy-duty vehicle trips), worker commute trips, construction site fugitive PM10 dust, and off-road construction vehicles. This analysis is based on anticipated construction equipment calculated by the Road Construction Emissions Model, which estimates construction equipment based on project size, duration of construction activities, and level of daily construction activities. Although exhaust emissions are estimated for each activity, fugitive dust estimates are currently limited to the major dust-generating activities, which include grubbing/land clearing and grading/excavation.

Operational Impact Assessment Methodology

Section 15126 of the CEQA Guidelines provides that the environmental setting, which consists of existing physical conditions (at the time the notice of preparation [NOP] to prepare an EIR is distributed), will normally be the baseline by which a lead agency determines whether impacts are significant. When the project being analyzed is a transportation project that would not be constructed and operational for several years into the future, it is common professional practice for traffic, air quality, and noise analyses to use future conditions without the project as the baseline to compare future conditions with the project. The reason for using this baseline is that project conditions can only be reasonably described under a future design year condition. An existing-plus-project condition would never occur because it would be several years before Alternative 1 is operational. With respect to air quality, a comparison of the future-with-project condition to existing conditions would understate impacts because future-year mobile emissions factors improve (i.e., are less polluting) at a faster rate than the expected increases in local and regional background vehicle miles traveled (VMT). In order to characterize the direct impact of Alternative 1, changes in localized and regional air quality are evaluated by comparing project conditions to no project conditions in the same time frame (i.e., design year conditions). To remove the effect of improved emissions factors from the direct impact assessment, project and no project conditions must be compared in the same time frame. For this analysis of Alternative 1, the future years used are 2015 when project construction is expected to be complete and 2035 based on the industry standard of projecting 20 to 25 years out.

The primary operational emissions associated with Alternative 1 are CO, PM10, PM2.5, ozone precursors (ROG and NO_X), and CO_2 emitted as vehicle exhaust. The evaluation of transportation conformity with regards to criteria pollutants was done by evaluating the inclusion of Alternative 1 in the most recent RTP. The effects of localized CO hotspot emissions were evaluated through CO dispersion modeling using Caltrans' CO Protocol developed for Caltrans by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997).

Transportation Conformity

State Implementation Plan

The Alternative 1 alignment is located in a marginal nonattainment area for the federal 8-hour ozone standard. Because ozone and its precursors are regional pollutants, Alternative 1 must be evaluated under the transportation conformity requirements described earlier. An affirmative regional conformity determination must be made before Alternative 1 can proceed. Such a determination is not required if Alternative 1 is described in an approved RTP or TIP and if Alternative 1 has not been altered in design concept or scope.

Carbon Monoxide

Alternative 1 is located in a maintenance area for the federal CO standard (Table 3.2-3). Consequently, the evaluation of transportation conformity for CO is required. The CO transportation conformity analysis is based on and adheres to the methodology contained in Appendix B of the CO Protocol developed for Caltrans by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997).

Particulate Matter

Alternative 1 is located in an area designated unclassified/attainment area for the federal PM10 and PM2.5 standards. Consequently, conformity with regards to these pollutants is not applicable.

Ozone Precursors

Alternative 1 is a truncated version of the proposed project, which was included in the regional emissions analysis conducted by the Metropolitan Transportation Commission for the conforming Transportation 2030 Plan, approved on February 23, 2005 (Metropolitan Transportation Commission Resolution 3681, project number 21896) (Metropolitan Transportation Commission 2005). The proposed project's design concept and scope have not changed significantly from what was analyzed in both the 2030 RTP and the 2008 TIP. This analysis found that the plan and, therefore, the individual projects contained in the plan, are conforming projects, and would have air quality impacts consistent with those identified in the SIPs for achieving the NAAQS. Because Alternative 1 is a truncated version of the proposed project, it too would have air quality impacts consistent with or less than those identified in the SIPs for achieving the NAAQS. FHWA determined the RTP to conform to the SIP on June 28, 2006.

Alternative 1 is also included in the federally required Metropolitan Transportation Commission 2007 TIP dated July 28, 2006, and would not delay or otherwise interfere with any TCMs in the applicable SIP. Alternative 1's "open to the public year" is consistent with (within the same regional emission analysis period as) the construction completion date identified in the federal TIP and/or RTP. The federal TIP gives priority to eligible TCMs identified in the SIP and provides sufficient funds to provide for their implementation. FHWA determined the TIP to conform to the SIP on October 2, 2006 (Fong pers. comm.).

Dispersion Modeling

Predicting the ambient air quality impacts of pollutant emissions requires an assessment of the transport, dispersion, chemical transformation, and removal processes that affect pollutant emissions after their release from a source. Gaussian dispersion models are frequently used for such analyses. These models are a general type of mathematical equation used to describe the horizontal and vertical distribution of pollutants downwind from an emission source.

Gaussian dispersion models treat pollutant emissions as being carried downwind in a defined plume, subject to horizontal and vertical mixing with the surrounding atmosphere. The plume spreads horizontally and vertically with a reduction in pollutant concentrations as it travels downwind. Mixing with the surrounding atmosphere is greatest at the edge of the plume, resulting in lower pollutant concentrations outward (horizontally and vertically) from the center of the plume. This decrease in concentration outward from the center of the plume is treated as following a Gaussian (normal) statistical distribution. Horizontal and vertical mixing generally occurs at different rates. Because turbulent motions in the atmosphere occur on a variety of spatial and time scales, vertical and horizontal mixing also vary with distance downwind from the emission source.

The CALINE4 Model

The ambient air quality effects of traffic emissions were evaluated using the CALINE4 dispersion model (Benson 1989). CALINE4 is a Gaussian dispersion model specifically designed to evaluate air quality impacts of roadway projects. Each roadway link analyzed in the model is treated as a sequence of short segments. Each segment of a roadway link is treated as a separate emission source producing a plume of pollutants that disperses downwind. Pollutant concentrations at any specific location are calculated using the total contribution from overlapping pollution plumes originating from the sequence of roadway segments.

When winds are essentially parallel to a roadway link, pollution plumes from all roadway segments overlap. This produces high concentrations near the roadway (near the center of the overlapping pollution plumes) and low concentrations well away from the roadway (at the edges of the overlapping pollution plumes). When winds are at an angle to the roadway link, pollution plumes from distant roadway segments make essentially no contribution to the pollution concentration observed at a receptor location. Under such cross-wind situations, pollutant concentrations near the highway are lower than under parallel wind conditions (fewer overlapping plume contributions), while pollutant concentrations away from the highway may be greater than would occur with parallel winds (near the center of at least some pollution plumes).

The CALINE4 model employs a “mixing cell” approach to estimating pollutant concentrations over the roadway itself. The size of the mixing cell over each roadway segment is based on the width of the traffic lanes of the highway (generally 12 feet per lane) plus an additional turbulence zone on either side (generally 10 feet on each side). Parking lanes and roadway shoulders are not counted as traffic lanes. The height of the mixing cell is calculated by the model.

Pollutants emitted along a highway link are treated as being well-mixed within the mixing cell volume as a result of mechanical turbulence from moving vehicles and convective mixing due to the temperature of vehicle exhaust gases. Pollutant concentrations downwind from the mixing cell are calculated using horizontal and vertical dispersion rates, which are a function of various meteorological and ground surface conditions.

Local area CO concentrations for roadways were evaluated using the CALINE4 line-source dispersion model developed by Caltrans, in combination with

EMFAC2007 emission factors[6]. The analysis of roadway CO impacts followed the protocol recommended by Caltrans and published in the document titled Transportation Project-Level Carbon Monoxide Protocol, December 1997. All emissions calculation worksheets and air quality modeling output files are provided in Appendix G.

Vehicle Emission Rates

CO emission rates were determined using EMFAC2007 for the years 2015(opening year) and 2035 (future design year) for a Alameda County vehicle fleet with average speeds ranging from 3 (idling) to 40 miles per hour.

Receptor Placements for CO Hotspot Analysis

Consistent with the modeling procedures prescribed in the Caltrans CO Protocol, receptors were placed at all four corners of each intersection analyzed. Receptor locations for the 1-hour concentration analysis were placed at 3 meters from each intersection corner, while receptor locations for the 8-hour concentration analysis were placed at 7 meters from each intersection corner.

Mobile Source Air Toxics—Screening Procedure

The FHWA has issued interim guidance on how MSATs should be addressed in NEPA documents for highway projects and has developed a tiered approach for this analysis. This same approach is used to evaluate project impacts under CEQA. Depending on the specific project circumstances, FHWA has identified three levels of analysis:

- no analysis for exempt projects or projects with no potential for meaningful MSAT effects,
- qualitative analysis for projects with low-potential MSAT effects, or
- quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Exempt Projects or Projects with No Meaningful Potential MSAT Effects

The types of projects included in this category are:

- projects qualifying as a categorical exclusion under 23 CFR 771.117(c);
- projects exempt under the CAA conformity rule under 40 CFR 93.126; or
- other projects with no meaningful impacts on traffic volumes or vehicle mix.

Projects that are categorically excluded under 23 CFR 771.117(c), or are exempt under the CAA pursuant to 40 CFR 93.126, require no analysis or discussion of MSATs. Documentation sufficient to demonstrate that the project qualifies as a categorical exclusion and/or exempt project will suffice. For other projects with

[6] The EMission FACtors (EMFAC) model is used to calculate emission rates from all motor vehicles, from passenger cars to heavy-duty trucks, operating on highways, freeways and local roads in California. EMFAC2007 is the most recent version of this model.

no or negligible traffic impacts, regardless of the class of NEPA environmental document, no MSAT analysis is required.[7] However, the project record must document the basis for the determination of "no meaningful potential impacts" with a brief description of the factors considered.

Projects with Low Potential MSAT Effects

This category covers a broad range of projects, as projects included in this category are those that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase emissions.

FHWA anticipates that most highway projects will fall into this category. Any projects not meeting the threshold criteria for higher potential impacts identified in subsection (3), above, and not meeting the criteria in subsection (1), above, should be included in this category. Examples of these types of projects are minor widening projects and new interchanges, such as those that replace a signalized intersection on a surface street or where design year traffic is not projected to meet the annual average daily traffic (AADT) criterion of 140,000 to 150,000 automobiles.[8]

A qualitative assessment of emissions projections should be conducted for these projects. The qualitative assessment would compare, in narrative form, the expected effect of Alternative 1 on traffic volumes, vehicle mix, or routing of traffic and the associated changes in MSATs for the project alternatives, based on VMT, vehicle mix, and speed. It would also discuss national trend data projecting substantial overall reductions in emissions resulting from stricter engine and fuel regulations issued by EPA. Because the emission effects of these projects are low, FHWA expects there would be no appreciable difference in overall MSAT emissions among the various alternatives. In addition, quantitative emissions analysis of these types of projects would not yield credible results that would be useful to project-level decision-making because of the limited capabilities of the transportation and emissions forecasting tools.

Projects with Higher Potential MSAT Effects

Projects included in this category have the potential for meaningful differences among project alternatives. FHWA expects only a limited number of projects to meet this two-pronged test. To fall into this category, projects must:

- create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location; or
- create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes

[7] The types of projects categorically excluded under 23 CFR 771.117(d) or exempt from conformity under 40 CFR 93.127 do not warrant an automatic exemption from an MSAT analysis, but they usually will have no meaningful impact.

[8] The FHWA guidance for the assessment of MSATs in NEPA documents does not specifically address the analysis of construction-related emissions because of their relatively short duration. The FHWA is considering whether more guidance is needed on construction activities in future versions of their guidance.

where the AADT is projected to be in the range of 140,000 to 150,000[9], or greater, by the design year; and must also

- be proposed to be located in proximity to populated areas or in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

Projects falling within this category should be more rigorously assessed for impacts, and FHWA should be contacted for assistance in developing a specific approach for assessing impacts. This approach would include a quantitative analysis that would attempt to measure the level of emissions for the six priority MSATs for each alternative, to use as a basis of comparison. This analysis also may address the potential for cumulative impacts, where appropriate, based on local conditions. How and when cumulative impacts should be considered would be addressed as part of the assistance outlined above. If the analysis for a project in this category indicates meaningful differences in levels of MSAT emissions, mitigation options should identified and considered.

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, nonroad mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

MSATs are a subset of the 188 air toxics defined by the CAA. The MSATs are compounds emitted from highway vehicles and nonroad 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 secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead federal agency for administering the CAA and has certain responsibilities regarding the health effects of MSATs. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources (66 FR 17229) on March 29, 2001. This rule was issued under the authority in Section 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline program, its national low-emission vehicle standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. FHWA projects that even with a 64% increase in VMT between 2000 and 2020, these programs will reduce on-highway emissions of benzene, formaldehyde, 1.3-butadiene, and acetaldehyde by 57% to 65%, and on-highway diesel particulate matter emissions by 87%.

As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is

[9] Using EPA's MOBILE6.2 emissions model, FHWA technical staff determined that this range of AADT would be roughly equivalent to the CAA definition of a major HAP source (i.e., 25 tons per year for all HAPs or 10 tons per year for any single HAP. Significant variations in conditions such as congestion or vehicle mix could warrant a different range for AADT.

preparing another rule under authority of CAA Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.

Applicable Project MSAT Category Assessment

With respect to Alternative 1, the projected AADT volumes at horizon year 2035 of 41,025 would be well below the 140,000 to 150,000 AADT criterion established by FHWA for projects considered to have higher potential for MSAT effects. As such, Alternative 1 is considered a project with low-potential MSAT effects.

Unavailable Information for Project-Specific MSAT Impact Analysis

This air quality assessment includes a basic analysis of the likely MSAT emission impacts of Alternative 1. However, available technical tools do not enable the prediction of project-specific health impacts of the emission changes associated with Alternative 1 in this technical study. Because of these limitations, the following discussion is included in accordance with CEQA regulations (40 CFR 1502.22[b]) regarding incomplete or unavailable information.

Information that is Unavailable or Incomplete

Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling to estimate ambient concentrations resulting from the estimated emissions, exposure modeling to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of Alternative 1 at this time.

Emissions

EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. Although MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model—emission factors are projected based on a typical trip of 7.5 miles and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE 6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE 6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

Dispersion

The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of CO to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The National Cooperative Highway Research Program is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

Exposure Levels and Health Effects

Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to calculate accurate annual concentrations of MSATs near roadways and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs

Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment in 1996 to evaluate modeled estimates of human exposure applicable to the county level. Although not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the National Air Toxics Assessment database best illustrate the levels of various toxics when aggregated to a national or state level.

The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at <http://www.epa.gov/iris>. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization* summaries. This information is taken verbatim from EPA's IRIS database and represents the agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- **Benzene** is characterized as a known human carcinogen.
- The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- **Formaldehyde** is a probable human carcinogen, based on limited evidence in humans and sufficient evidence in animals.
- **1,3-butadiene** is characterized as carcinogenic to humans by inhalation.
- **Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- **Diesel exhaust** is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases. Diesel exhaust causes chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

Other studies have addressed MSAT health impacts in proximity to roadways. The Health Effects Institute, a nonprofit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hotspots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes—particularly respiratory problems. Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable a more comprehensive evaluation of the health impacts specific to Alternative 1.

Relevance of Unavailable or Theoretical Information on Impact Assessment

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level for Alternative 1. Although available tools do allow reasonable predictions of relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. (As noted above, the current emissions model is not capable of serving as a meaningful emissions analysis tool for smaller projects.) Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have significant adverse impacts on the human environment.

Climate Change and Greenhouse Gas Emissions

Impacts relative to GHG emissions during construction and operations are provided below. The relative amounts of construction and operational GHG emissions associated with the proposed project are negligible. The amount of emissions under Alternative 1, without considering other cumulative global emissions, would be insufficient to cause substantial climate change directly. Thus, project emissions, in isolation, are considered less than significant. However, climate change is a global cumulative impact, and the proper context for analysis of this issue is not a project's emissions in isolation but rather as a contribution to cumulative GHG emissions.

Project-related GHG emissions were estimated using the following methodology. First, CO_2 emissions were calculated by multiplying EMFAC2007 emissions factors by the change in regional VMT related to project development. Then methane and N_2O emissions were compiled using the calculation formulas provided in the California Climate Action Registry, General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, version 2.2 (California Climate Action Registry 2007).

Significance Criteria

For this analysis, an impact pertaining to air quality was considered significant under CEQA if it would result in any of the following environmental impacts, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 *et seq*.). A significant impact is identified if Alternative 1 would:

- conflict with or obstruct implementation of the applicable air quality management plan,
- violate any air quality standard or contribute substantially to an existing or projected air quality violation,
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors),
- expose sensitive receptors to substantial pollutant concentrations, or
- create objectionable odors affecting a substantial number of people.

Additionally, while not identified specifically in Appendix G of the State CEQA Guidelines, the potential impacts associated with GHG emissions would be significant if Alternative 1 would:

- conflict with the state goal of reducing GHG emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32, California Global Warming Solutions Act of 2006.

Project Impacts and Mitigation Measures

Impact AIR-1: Temporary Increase in Ozone Precursors (ROG and NO_X), CO, and PM10 Emissions during Grading and Construction Activities (Less than Significant with Mitigation)

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources. The equipment mix and duration for each construction stage is detailed in the Road Construction Emissions Model ~~and URBEMIS 2007 printout sheets~~ output sheets and emissions calculation worksheets provided in Appendix G (Volume 1), and the URBEMIS 2007 emissions report is included at the end of this Section 3.2.

The following assumptions were used as inputs to the Road Construction Emissions Model to estimate construction-period emissions.

- Air pollutant emissions are based on year 2011 emission factors regardless of the actual start date of the construction. Since emission factors estimates are expected to decrease in the future, using an earlier project start date results in greater emissions estimates (i.e., results are conservative).

- The predominant soil type in the Alternative 1 alignment is sand/gravel.
- EMFAC2007 emission factor estimates were used.
- The size of the Alternative 1 alignment would be the product of the centerline distance of a road by the roads proposed right-of-way if the road is expected to have any alteration. This approach results in the maximum possible Alternative 1 alignment for air quality calculations, whereas the actual Alternative 1 alignment for most links would only be a fraction of the total right-of-way.
- There would be some overlap with construction activity associated with roadway construction and construction activity associated with implementation of the wetlands mitigation plan (Mitigation Measure BIO-7 in Section 3.3). Wetland mitigation plan improvements would begin following completion of all site grading and excavation activities required for roadway construction.
- For roadway improvements, the ~~The~~ maximum area simultaneously disturbed in a single day was assumed to be 25% of the total Alternative 1 alignment.
- For the wetlands mitigation plan improvements, the maximum area simultaneously disturbed in a single day was assumed to be 0.5 acre.
- It is assumed that haul~~water~~ trucks would have an~~be used and that the~~ average capacity of ~~truck is~~ 14 cubic yards.
- Project construction is anticipated to start in 2011 and have a duration of 36 months.
- The wetlands mitigation plan improvements are also anticipated to have a duration of 36 months.

The total amount of construction, the duration of construction, and the intensity of construction activity would have a substantial impact on the amount of construction emissions occurring at any one time. As such, the emissions estimates provided below are based on the conservative assumption that the most intense elements of all construction activities would occur concurrently and at the earliest possible moment (i.e., within year 2011). Because of this conservative assumption, actual emissions could be less than those forecasted. For example, if construction is delayed or occurs over a longer time period, emissions would be reduced because of either a more modern and cleaner burning construction equipment fleet mix, or a less intensive buildout schedule (i.e., fewer daily emissions occurring over a longer interval).

Table 3.2-6 presents the estimate of project construction emissions derived using the Road Construction Model for roadway improvements; and the URBEMIS 2007 model for emissions associated with constructing the wetlands mitigation plan. As shown therein, daily emissions for all criteria pollutants are anticipated to remain below respective significance criteria.

Table 3.2-6. Estimate of Emissions during Construction (pounds per day)

Construction Activity	ROG	NO_X	CO	PM10	PM2.5
Roadway Improvements					
Grubbing/Land Clearing	5	36	19	27	7
Grading/Excavation	6	44	32	27	7
Drainage/Utilities/Sub-grade	4	28	16	27	7
Paving	3	13	9	1	1
Wetlands Mitigation Site Improvements					
Excavation and Hauling	6	51	30	8	3
Maximum Daily Emissions	9~~6~~	71~~36~~	41~~32~~	34~~27~~	8~~7~~
Regional Significance Threshold	80	80	–	80	–
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**

Notes:
Road Construction Model ~~and URBEMIS 2007~~ output sheets and emissions calculation worksheets are included in Appendix G (of Volume 1), and the URBEMIS 2007 emissions report is included at the end of this Section 3.2.
Wetlands mitigation site improvements would begin following completion of the grading and excavation activities required for roadway construction. As such, maximum daily emissions assume concurrent excavation for sub-grade drainage/utilities installation related to roadway construction and implementation of the wetlands mitigation site improvements.
Source: Compiled from data provided in Appendix G.

Although emissions would remain below the respective thresholds, Caltrans and the BAAQMD require implementation of feasible control measures for construction emissions of PM10, as described in Table 3.2-5. Therefore, the following mitigation measure is required to ensure this impact is considered less than significant.

Mitigation Measure AIR-1: Employ Measures to Reduce Criteria Pollutant Emissions during Construction

Construction activities are subject to Caltrans requirements found in the Caltrans document, *Standard Specifications: For Construction of Local Streets and Roads* (California Department of Transportation 2002). ACTA will follow Caltrans Standard Specification 7-1.01F, Standard Specification 10, and Standard Specification 18, which address the requirements of the local air pollution control district (BAAQMD) and dust control and dust palliative application, respectively. Standard Specification 7-1.01F stipulates that construction activities must comply with all rules, regulations, ordinances, and statutes of the local air pollution control district, while Standard Specification 10 addresses dust control requirements. In addition, BAAQMD requires the implementation of all feasible, effective, and comprehensive control measures to reduce PM10 emissions from construction activities. Therefore, this mitigation includes the following control measures.

- 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 miles per hour.
- Limit the area subject to excavation, grading, and other construction activity at any one time.
- 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 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.
- 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.
- Use alternate fuels, catalyst and filtration technologies, and retrofit existing engines in construction equipment.
- Minimize idling time to 5 minutes when construction equipment is not in use, unless per engine manufacturer’s specifications or for safety reasons more time is required.
- Manage operation of heavy-duty equipment to reduce emissions and maintain heavy-duty earthmoving, stationary, and mobile equipment in optimum running conditions.
- Employ construction management techniques such as timing construction to occur outside the ozone season of May through October, or scheduling equipment use to limit unnecessary concurrent operation.
- Use electric equipment when feasible.
- Properly maintain equipment according to manufacturers’ specifications.

Impact AIR-2: Violation of Carbon Monoxide NAAQS or CAAQS (Less than Significant)

In an urban setting, vehicle exhaust is the primary source of CO. Consequently, the highest CO concentrations are generally found in close proximity to congested intersection locations. Under typical meteorological conditions, CO concentrations tend to decrease as the distance from the emissions source (i.e., congested intersection) increases. For purposes of providing a conservative, worst-case impact analysis, CO concentrations are typically analyzed at congested intersection locations, because if impacts are less than significant in close proximity of the congested intersections, impacts will also be less than significant at more distant sensitive receptor locations.

The traffic study for the East-West Connector project (Dowling Associates 2008b) and the additional traffic analysis conducted for Alternative 1 (Appendix Q) was reviewed to identify intersection locations anticipated to operate at LOS C or worse during opening year 2015 and horizon year 2035, for both morning and evening peak-hour periods, under Alternative 1. Local area CO concentrations were predicted using the CALINE 4 line-source dispersion model. The analysis of CO impacts followed the protocol recommended by the Caltrans, published as Transportation Project-Level Carbon Monoxide Protocol, December 1997, whereas all four corners at each intersection were analyzed to determine whether Alternative 1 would result in a CO concentration that exceeds federal or state CO standards.

Predicted CO concentrations are presented in Table 3.2-7 (year 2015 results) and Table 3.2-8 (year 2035 results). As shown therein, Alternative 1 would not have a significant impact on 1-hour or 8-hour local CO concentrations as a result of mobile-source CO emissions. Because significant impacts would not occur at the intersections with the highest traffic volumes located adjacent to sensitive receptors, no significant impacts are anticipated to occur at any other locations in the study area because the conditions yielding CO hotspots would not be worse than those occurring at the analyzed intersections. Alternative 1 would not cause a new exceedance or exacerbate an existing exceedance of federal or state CO standards at any intersection location. As such, this impact is considered less than significant. No mitigation is required.

Table 3.2-7. Local Area Carbon Monoxide Dispersion Analysis—Year 2015

Intersection	Peak Period[a]	Maximum 1-Hour 2008 Base Concentration (ppm)[g]	Maximum 8-Hour 2008 Base Concentration (ppm)[h]	Maximum 1-Hour 2015 Base Concentration (ppm)[b]	Maximum 1-Hour 2015 with Project Concentration (ppm)[c]	Significant 1-Hour Concentration Impact?[d]	Maximum 8-Hour 2015 Base Concentration (ppm)[e]	Maximum 8-Hour 2015 w/ Project Concentration (ppm)[f]	Significant 8-Hour Concentration Impact?[d]
Decoto at 7th	AM	3.6	2.5	2.8	2.9	No	1.9	2.0	No
	PM	4.0	2.8	2.9	2.7	No	2.0	1.9	No
Decoto at 11th	AM	3.8	2.6	3.0	3.1	No	2.1	2.2	No
	PM	4.0	2.8	3.2	3.0	No	2.2	2.1	No
Decoto at Alvarado	AM	4.2	2.9	3.5	3.4	No	2.4	2.4	No
	PM	4.3	3.0	3.2	3.4	No	2.2	2.4	No
Decoto at Paseo Padre	AM	4.5	3.1	3.6	3.5	No	2.5	2.4	No
	PM	4.9	3.4	3.5	3.6	No	2.4	2.5	No
Decoto at Brookmill	AM	4.2	2.9	3.2	3.4	No	2.2	2.4	No
	PM	5.4	3.8	3.0	3.1	No	2.1	2.2	No
Decoto at Fremont	AM	4.6	3.2	3.3	3.4	No	2.3	2.4	No
	PM	4.6	3.2	3.2	3.3	No	2.2	2.3	No
Decoto at southbound ramps	AM	6.7	4.7	4.8	4.5	No	3.3	3.1	No
	PM	7.7	5.4	4.9	5.0	No	3.4	3.5	No
Mission at 7th	AM	3.5	2.4	2.9	3.4	No	2.0	2.4	No
	PM	3.8	2.6	2.9	3.5	No	2.0	2.4	No
Paseo Padre at Wyndham	AM	4.5	3.1	3.1	3.2	No	2.2	2.2	No
	PM	4.3	3.0	2.9	3.0	No	2.0	2.1	No
Paseo Padre at Tamayo	AM	3.4	2.4	3.1	3.1	No	2.2	2.2	No
	PM	3.3	2.3	2.7	2.7	No	1.9	1.9	No
Paseo Padre at Isherwood	AM	N/A	N/A	3.2	3.3	No	2.2	2.3	No
	PM	N/A	N/A	3.4	3.4	No	2.4	2.4	No
Paseo Padre at Thornton	AM	3.8	2.6	3.3	3.4	No	2.3	2.4	No
	PM	4.1	2.8	3.1	3.2	No	2.2	2.2	No

Intersection	Peak Period[a]	Maximum 1-Hour 2008 Base Concentration (ppm)[g]	Maximum 8-Hour 2008 Base Concentration (ppm)[h]	Maximum 1-Hour 2015 Base Concentration (ppm)[b]	Maximum 1-Hour 2015 with Project Concentration (ppm)[c]	Significant 1-Hour Concentration Impact?[d]	Maximum 8-Hour 2015 Base Concentration (ppm)[e]	Maximum 8-Hour 2015 w/ Project Concentration (ppm)[f]	Significant 8-Hour Concentration Impact?[d]
Paseo Padre at Peralta	AM	3.8	2.6	3.3	3.3	No	2.3	2.3	No
	PM	2.1	1.4	3.4	3.4	No	2.4	2.4	No
Fremont at SB Ramps	AM	3.4	2.4	3.6	3.6	No	2.5	2.5	No
	PM	3.9	2.7	3.2	3.0	No	2.2	2.1	No
Thornton at northbound ramp	AM	4.4	3.1	4.2	4.2	No	2.9	2.9	No
	PM	5.1	3.5	3.9	3.6	No	2.7	2.5	No
Thornton at Fremont	AM	3.5	2.4	2.8	2.8	No	1.9	1.9	No
	PM	3.4	2.4	3.0	3.3	No	2.1	2.3	No
Mission at Nursery	AM	3.9	2.7	3.0	3.1	No	2.1	2.2	No
	PM	4.2	2.9	3.1	3.0	No	2.2	2.1	No
Mission at Niles Canyon	AM	4.0	2.8	3.3	3.2	No	2.3	2.2	No
	PM	4.7	3.3	3.6	3.6	No	2.5	2.5	No

Notes:

CALINE4 dispersion model output sheets and EMFAC2007 emissions factors are provided in Appendix G. ppm = parts per million.

[a] Peak hour traffic volumes are based on the Traffic Impact Analysis prepared for the project by Dowling Associates Inc, September 2008.

[b] 2015 1-hour ambient background concentration (1.77 ppm) + 2015 base traffic CO 1-hour contribution.

[c] 2015 1-hour ambient background concentration (1.77 ppm) + 2015 with-project traffic CO 1-hour contribution.

[d] The State standard for the 1-hour average CO concentration is 20 ppm, and the 8-hour average concentration is 9.0 ppm.

[e] 2015 8-hour ambient background concentration (1.24 ppm) + 2015 base traffic CO 8-hour contribution.

[f] 2015 8-hour ambient background concentration (1.24 ppm) + 2015 with-project traffic CO 8-hour contribution.

Source: compiled from data provided in Appendix G

3.8

2.6

Table 3.2-8. Local Area Carbon Monoxide Dispersion Analysis—Year 2035

Intersection	Peak Period[a]	Maximum 1-Hour 2008 Base Concentration (ppm)[g]	Maximum 8-Hour 2008 Base Concentration (ppm)[h]	Maximum 1-Hour 2035~~2015~~ Base Concentration (ppm)[b]	Maximum 1-Hour 2035~~2015~~ w/ Project Concentration (ppm)[c]	Significant 1-Hour Concentration Impact?[d]	Maximum 8-Hour 2035~~2015~~ Base Concentration (ppm)[e]	Maximum 8-Hour 2035~~2015~~ w/ Project Concentration (ppm)[f]	Significant 8-Hour Concentration Impact?[d]
Decoto at 7th	AM	3.6	2.5			No	1.5	1.6	No
	PM	4.0	2,8			No	1.5	1.5	No
Decoto at 11th	AM	3.8	2.6	2.4	2.3	No	1.7	1.6	No
	PM	4.0	2.8	2.4	2.2	No	1.7	1.5	No
Decoto at Union Square	AM	3.3	2.3	2.4	2.4	No	1.7	1.7	No
	PM	3.4	2.4	2.4	2.4	No	1.7	1.7	No
Decoto at Alvarado	AM	4.2	2.9	2.3	2.2	No	1.6	1.5	No
	PM	4.3	3.0	2.3	2.3	No	1.6	1.6	No
Decoto at Perry	AM	4.6	3.2	2.5	2.4	No	1.7	1.7	No
	PM	5.5	3.8	2.4	2.4	No	1.7	1.7	No
Decoto at Paseo Padre	AM	4.5	3.1	2.3	2.3	No	1.6	1.6	No
	PM	4.9	3.4	2.5	2.5	No	1.7	1.7	No
Decoto at Brookmill	AM	4.2	2.9	2.5	2.5	No	1.7	1.7	No
	PM	5.4	3.8	2.4	2.6	No	1.7	1.8	No
Decoto at Fremont	AM	4.6	3.2	2.3	2.3	No	1.6	1.6	No
	PM	4.6	3.2	2.5	2.3	No	1.7	1.6	No
Decoto at southbound ramps	AM	6.7	4.7	2.5	2.6	No	1.7	1.8	No
	PM	7.7	5.4	2.5	2.6	No	1.7	1.8	No
Mission at 7th	AM	3.5	2.4	3.0	3.0	No	2.1	2.1	No
	PM	3.8	2.6	3.0	3.0	No	2.1	2.1	No
~~Niles~~ Alvarado at Union Square	AM	3.3	2.3	2.4	2.5	No	1.7	1.7	No
	PM	3.4	2.4	2.3	2.7	No	1.6	1.9	No

Intersection	Peak Period[a]	Maximum 1-Hour 2008 Base Concentration (ppm)[g]	Maximum 8-Hour 2008 Base Concentration (ppm)[h]	Maximum 1-Hour 2035~~2015~~ Base Concentration (ppm)[b]	Maximum 1-Hour 2035~~2015~~ w/ Project Concentration (ppm)[c]	Significant 1-Hour Concentration Impact?[d]	Maximum 8-Hour 2035~~2015~~ Base Concentration (ppm)[e]	Maximum 8-Hour 2035~~2015~~ w/ Project Concentration (ppm)[f]	Significant 8-Hour Concentration Impact?[d]
Paseo Padre at Wyndham	AM	4.5	3.1	2.3	2.3	No	1.6	1.6	No
	PM	4.3	3.0	2.3	2.2	No	1.6	1.5	No
Paseo Padre at Tamayo	AM	3.4	2.4	2.2	2.3	No	1.5	1.6	No
	PM	3.3	2.3	2.3	2.3	No	1.6	1.6	No
Paseo Padre at Isherwood	AM	N/A	N/A	2.2	2.3	No	1.5	1.6	No
	PM	N/A	N/A	2.2	2.2	No	1.5	1.5	No
Paseo Padre at Thornton	AM	3.8	2.6	2.4	2.4	No	1.7	1.7	No
	PM	4.1	2.8	2.4	2.3	No	1.7	1.6	No
Paseo Padre at Peralta	AM	3.8	2.6	2.4	2.4	No	1.7	1.7	No
	PM	2.1	1.4	2.4	2.4	No	1.7	1.7	No
Fremont at SB Ramps	AM	3.4	2.4	2.5	2.5	No	1.7	1.7	No
	PM	3.9	2.7	2.7	2.5	No	1.9	1.7	No
Freemont at Paseo Padre	AM	3.7	2.6	2.6	2.6	No	1.8	1.8	No
	PM	4.0	2.8	2.4	2.4	No	1.7	1.7	No
Thornton at northbound ramp	AM	4.4	3.1	2.5	2.6	No	1.7	1.8	No
	PM	5.1	3.5	2.5	2.4	No	1.7	1.7	No
Thornton at Fremont	AM	3.5	2.4	2.8	2.8	No	1.9	1.9	No
	PM	3.4	2.4	2.7	2.6	No	1.9	1.8	No
Alvarado-Niles at Nursery	AM	3.3	2.3	2.3	2.3	No	1.6	1.6	No
	PM	3.6	2.5	2.5	2.4	No	1.7	1.7	No
Alvarado-Niles at Linda	AM	3.1	2.1	2.2	2.2	No	1.5	1.5	No
	PM	3.2	2.2	2.4	2.4	No	1.7	1.7	No
Mission at Nursery	AM	3.9	2.7	2.2	2.2	No	1.5	1.5	No
	PM	4.2	2.9	2.2	2.2	No	1.5	1.5	No
Mission at Niles	AM	4.0	2.8	2.4	2.4	No	1.7	1.7	No

Intersection	Peak Period[a]	Maximum 1-Hour 2008 Base Concentration (ppm)[g]	Maximum 8-Hour 2008 Base Concentration (ppm)[h]	Maximum 1-Hour 2035~~2015~~ Base Concentration (ppm)[b]	Maximum 1-Hour 2035~~2015~~ w/ Project Concentration (ppm)[c]	Significant 1-Hour Concentration Impact?[d]	Maximum 8-Hour 2035~~2015~~ Base Concentration (ppm)[e]	Maximum 8-Hour 2035~~2015~~ w/ Project Concentration (ppm)[f]	Significant 8-Hour Concentration Impact?[d]
Canyon	PM	4.7	3.3	2.3	2.4	No	1.6	1.7	No

Notes:

CALINE4 dispersion model output sheets and EMFAC2007 emissions factors are provided in Appendix G. ppm = parts per million.

[a] Peak hour traffic volumes are based on the Traffic Impact Analysis prepared for the project by Dowling Associates Inc, September 2008.

[b] 2035 1-hour ambient background concentration (1.77 ppm) + 2035 base traffic CO 1-hour contribution.

[c] 2035 1-hour ambient background concentration (1.77 ppm) + 2035 with-project traffic CO 1-hour contribution.

[d] The State standard for the 1-hour average CO concentration is 20 ppm, and the 8-hour average concentration is 9.0 ppm.

[e] 2035 8-hour ambient background concentration (1.24 ppm) + 2035 base traffic CO 8-hour contribution.

[f] 2035 8-hour ambient background concentration (1.24 ppm) + 2035 with-project traffic CO 8-hour contribution.

Source: compiled from data provided in Appendix G

Impact AIR-3: Increase in Greenhouse Gas Contaminant Emissions (Less than Significant with Mitigation)

Global climate change is caused by worldwide GHG emissions, and mitigating global climate change will require worldwide solutions. GHGs play a critical role in Earth's radiation budget by trapping infrared radiation emitted from Earth's surface, which could have otherwise escaped to space. Prominent GHGs contributing to this process include water vapor, CO_2, N_2O, CH_4, O_3, and certain hydro- and fluorocarbons. This phenomenon, known as the "greenhouse effect," keeps Earth's atmosphere near the surface warmer than it would be otherwise and allows for successful habitation by humans and other forms of life. Increases in these gases lead to more absorption of radiation and warm the lower atmosphere further, thereby increasing evaporation rates and temperatures near the surface. Emissions of GHGs in excess of natural ambient concentrations are thought to be responsible for the enhancement of the greenhouse effect and to contribute to what is termed "global warming," a trend of unnatural warming of the Earth's natural climate. Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors) and TACs, which are pollutants of regional and local concern.

The estimated Alternative 1 impact on GHG emissions during construction and operations is presented in Table 3.2-9. Because quantitative GHG guidelines, including thresholds, have not been developed by BAAQMD, these emissions are provided for information purposes only.

Table 3.2-9. Estimate of Project-Related Greenhouse Gas Emissions (pounds per day)[a]

Emissions	CO_2e
California State-wide Average Daily Emissions (year 2004)	2,972,314,499
Project Emissions	
Maximum Temporary Construction-period Emissions	8,011~~4,884~~
Operations-period Emissions	
Opening Year 2015	(3,888)
Horizon Year 2035	(6,651)

Notes:

[a] EMFAC2007 emissions factors and calculation worksheets are provided in Appendix G.

Source: Compiled from data provided in Appendix G.

Construction Impacts

Alternative 1's worst-case GHG emissions that would occur during construction would be approximately 8,011~~4,884~~ CO_2 pounds per day. This amount represents approximately ~~0.0002%~~0.0003% of the statewide total daily GHG emissions.

Existing ARB regulations (Title 13 of the CCR, Sections 2480 and 2485), which limit idling of diesel-fueled commercial motor vehicles, would help to limit GHG emissions associated with project-related construction vehicles. In addition, ARB's proposed Early Action Measures (pursuant to the California Global Warming Solutions Act of 2006) include other emission reduction measures for diesel trucks and diesel off-road equipment. ARB will review and adopt Early Action Measures by January 1, 2010, and equipment used for construction of Alternative 1 after 2010 could be subject to these requirements.

Operations Impacts

Changes in VMT related to Alternative 1 would result in direct and indirect emissions of GHG emissions. As provided in Table 3.2-9, project-related GHG emissions during opening year 2015 and horizon year 2035 would be reduced by approximately 3,888 CO_2e pounds per day and 6,651 CO_2e pounds per day, respectively, in comparison to the no project condition.

No federal, state, or regional air quality agency has adopted a methodology or quantitative threshold that can be applied to evaluate the significance of an individual project's contribution to GHG emissions, such as the thresholds that exist for criteria pollutants. The relative quantity of project-related GHG emissions during short-term construction and long-term operations is negligible in comparison to statewide and worldwide daily emissions. Alternative 1's amount of emissions, without considering other cumulative global emissions, would be insufficient to cause substantial climate change directly.

Emission of GHGs and the resulting climate change impacts represent a global cumulative impact, and growth in the region will contribute to this cumulative impact. Alternative 1 is anticipated to reduce VMT in 2015, when compared to the 2015 no project condition. This would result in a reduction of GHG emissions (a beneficial GHG impact). However, under 2035 conditions, there would be a slight increase in VMT in 2035, when compared to the 2035 no project conditions. Therefore, local area GHG emissions in 2035 would increase, contributing to this cumulative air quality impact.

Implementation of the following measure to reduce GHG emissions would reduce the impact to a less-than-significant level. Therefore, Alternative 1 would not make a considerable contribution to cumulative air quality impacts related to GHGs.

Mitigation Measure AIR-2: Employ Measures to Reduce Project-Related GHG Emissions

ACTA will ensure the construction contractor employs the following measures to reduce GHG emissions.

- Use recycled, low-carbon, and otherwise climate-friendly building materials such as salvaged and recycled-content materials for hard surfaces, and non-plant landscaping materials.
- Minimize, reuse, and recycle construction-related waste.

- Minimize grading, earth-moving, and other energy-intensive construction practices.
- Landscape to preserve natural vegetation and maintain watershed integrity.
- Use alternative fuels in construction equipment and require construction equipment to use the best available technology to reduce emissions.
- Use energy-efficient low-sodium street lights. Given the relatively small amount of GHG emissions that would be emitted from Alternative 1 during short-term construction, and implementation of prescribed mitigation measures, Alternative 1 would not conflict with the state's goals of reducing GHG emissions to 1990 levels by 2020 relative to construction emissions.

Impact AIR-4: Increase in Localized MSAT Emissions (Less than Significant)

Under Alternative 1, the projected AADT volumes at horizon year 2035 of 41,025 (Table 3.2-10) would be well below the 140,000 to 150,000 AADT criterion established by FHWA for projects considered to have higher potential for MSAT effects. As such, Alternative 1 is considered a project with low-potential MSAT effects.

Table 3.2-10. Estimate of Horizon Year 2035 Traffic Volumes

Street	Location	2035 AM Peak-Hour Volumes	2035 PM Peak-Hour Volumes	2035 AADT Volumes
New Roadway	SW of Mission	4,379	3,826	41,025

Notes: AM and PM traffic volume estimates taken from project traffic study (Dowling Associates, Inc. 2008). AADT estimate was calculated by multiplying the sum of AM and PM peak-hour volumes by 5.

Source: Compiled from data provided in Appendix G.

As discussed above, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of Alternative 1. However, even though reliable methods do not exist to estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences among MSAT emissions—if any—from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at <www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm.>

Under both the Alternative 1 and no project condition, the amount of MSATs emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each alternative. MSAT emissions would likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57% to 87% from 2000 to 2020. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the Alternative 1 alignment would likely be lower in the future in virtually all locations.

Because of the specific characteristics of Alternative 1 (i.e., new connector roadways), there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the new roadway sections that would be built. However, even if these increases do occur, they too will be substantially reduced in the future as a result of the implementation of EPA's vehicle and fuel regulations.

In sum, with or without development of Alternative 1, in the design year MSAT emissions would be reduced in the immediate Alternative 1 alignment, relative to the no project alternative, as a result of the reduced VMT associated with more direct routing, and EPA's MSAT reduction programs. In comparing Alternative 1 and no project conditions, MSAT levels could be higher in some locations than others, but current tools and science are not adequate to quantify them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

This impact is considered less than significant. No mitigation is required.

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: G:\Los Angeles\3_Projects_Air Quality\East-West Connector\URBEMIS\mitplncnst_1.urb924

Project Name: Wetlands Mitigation Plan Improvements - Alternative 1

Project Location: Alameda County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011 TOTALS (lbs/day unmitigated)	4.97	42.58	25.04	0.01	5.06	2.08	7.13	1.06	1.91	2.97	4,959.94
2012 TOTALS (lbs/day unmitigated)	4.72	39.74	24.16	0.01	5.06	1.91	6.96	1.06	1.75	2.82	4,960.10
2013 TOTALS (lbs/day unmitigated)	4.48	37.08	23.33	0.01	5.06	1.75	6.81	1.06	1.61	2.67	4,960.24
2014 TOTALS (lbs/day unmitigated)	4.25	34.45	22.58	0.01	5.06	1.58	6.64	1.06	1.46	2.52	4,960.36

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

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Time Slice 3/1/2011-12/31/2011 Active Days: 263	**4.97**	**42.58**	**25.04**	**0.01**	**5.06**	**2.08**	**7.13**	**1.06**	**1.91**	**2.97**	4,959.94
Mass Grading 03/01/2011-03/01/2014	4.97	42.58	25.04	0.01	5.06	2.08	7.13	1.06	1.91	2.97	4,959.94
Mass Grading Dust	0.00	0.00	0.00	0.00	5.00	0.00	5.00	1.04	0.00	1.04	0.00
Mass Grading Off Road Diesel	4.38	34.54	19.79	0.00	0.00	1.78	1.78	0.00	1.64	1.64	3,482.48
Mass Grading On Road Diesel	0.50	7.90	2.56	0.01	0.04	0.29	0.33	0.01	0.26	0.28	1,222.41
Mass Grading Worker Trips	0.09	0.15	2.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	255.05
Time Slice 1/2/2012-12/31/2012 Active Days: 313	4.72	39.74	24.16	**0.01**	**5.06**	1.91	6.96	**1.06**	1.75	2.82	4,960.10
Mass Grading 03/01/2011-03/01/2014	4.72	39.74	24.16	0.01	5.06	1.91	6.96	1.06	1.75	2.82	4,960.10
Mass Grading Dust	0.00	0.00	0.00	0.00	5.00	0.00	5.00	1.04	0.00	1.04	0.00
Mass Grading Off Road Diesel	4.17	32.53	19.36	0.00	0.00	1.64	1.64	0.00	1.51	1.51	3,482.48
Mass Grading On Road Diesel	0.46	7.08	2.33	0.01	0.04	0.26	0.30	0.01	0.24	0.25	1,222.41
Mass Grading Worker Trips	0.08	0.14	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01	255.21
Time Slice 1/1/2013-12/31/2013 Active Days: 313	4.48	37.08	23.33	**0.01**	**5.06**	1.75	6.81	**1.06**	1.61	2.67	4,960.24
Mass Grading 03/01/2011-03/01/2014	4.48	37.08	23.33	0.01	5.06	1.75	6.81	1.06	1.61	2.67	4,960.24
Mass Grading Dust	0.00	0.00	0.00	0.00	5.00	0.00	5.00	1.04	0.00	1.04	0.00
Mass Grading Off Road Diesel	3.98	30.65	18.94	0.00	0.00	1.52	1.52	0.00	1.40	1.40	3,482.48
Mass Grading On Road Diesel	0.43	6.31	2.12	0.01	0.04	0.23	0.27	0.01	0.21	0.22	1,222.41
Mass Grading Worker Trips	0.07	0.12	2.27	0.00	0.01	0.01	0.02	0.00	0.01	0.01	255.36

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Time Slice 1/1/2014-3/1/2014 Active Days: 52	4.25	34.45	22.58	**0.01**	**5.06**	1.58	6.64	**1.06**	1.46	2.52	**4,960.36**
Mass Grading 03/01/2011-03/01/2014	4.25	34.45	22.58	0.01	5.06	1.58	6.64	1.06	1.46	2.52	4,960.36
Mass Grading Dust	0.00	0.00	0.00	0.00	5.00	0.00	5.00	1.04	0.00	1.04	0.00
Mass Grading Off Road Diesel	3.79	28.73	18.57	0.00	0.00	1.38	1.38	0.00	1.27	1.27	3,482.48
Mass Grading On Road Diesel	0.40	5.61	1.92	0.01	0.04	0.20	0.24	0.01	0.19	0.20	1,222.41
Mass Grading Worker Trips	0.06	0.11	2.09	0.00	0.01	0.01	0.02	0.00	0.01	0.01	255.48

Phase Assumptions

Phase: Mass Grading 3/1/2011 - 3/1/2014 - Excavation and Hauling

Total Acres Disturbed: 0.5

Maximum Daily Acreage Disturbed: 0.5

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 303.63

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

4 Signal Boards (15 hp) operating at a 0.78 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Section 3.3
Biological Resources

3.3.1 Introduction

This section provides information on biological resources located in the project area. Biological resources include plants, wildlife, fish, habitat, waterways, and wetlands. A discussion of federal, state, and local laws, policies, and regulations that influence biological resources is also presented in this chapter. Impacts on biological resources that may result from project implementation are identified, and mitigation measures to avoid, minimize, and compensate for potential significant impacts on biological resources are described.

3.3.2 Setting

Methodology

ICF Jones & Stokes biologists conducted an assessment of biological resources in the study area, including a review of relevant literature and field surveys. The literature review included the following documents.

- California Department of Fish and Game Natural Diversity Database (CNDDB) 2008. Search for the Newark, San Leandro, Redwood Point, Palo Alto, Hayward, Mountain View, Niles, Milpitas and Dublin 7.5-minute quadrangles
- California Native Plant Society (CNPS) 2008. Inventory of Rare and Endangered Plants, online version 7-08, accessed June 20, 2008
- Jones & Stokes 2006. Environmental Constraints Analysis Route 84 East-West Connector SR 238 to I-880
- ICF Jones & Stokes file information
- ICF Jones & Stokes 2008. Preliminary Delineation of Wetlands and Other Waters for the East-West Connector Project
- California Department of Transportation 2002. Route 84 Realignment Project: Final Environmental Impact Statement and Section 4(f) Evaluation

- U.S. Fish and Wildlife Service (USFWS). Federal Endangered and Threatened Species List for U.S. Geological Survey (USGS) 7.5 Quads: Dublin, Niles Hayward and Newark. <http://www.fws.gov/sacramento/es/spp_list.htm>. June 18, 2008
- California Native Plant Society Inventory of Rare and Endangered Plants, online version 7-07d, accessed December 18, 2007

ICF Jones & Stokes biologists, including a wildlife biologist, fisheries biologist, and botanist visited the study area on October 9 and 10 and December 6 and 19, 2007; and on February 25, May 14, and July 2, 2008. The field surveys included a visual appraisal of biological resources throughout the entire Alternative 1 alignment. Field notes and photographs documented field observations. Vegetation was mapped in the field on aerial photographs and digitized on desktop geographic information systems (GIS) software. Vegetation mapping provided the basis for analyzing impacts on sensitive communities and wetlands. Habitat acreages presented in this report are based on GIS analysis.

Existing Conditions

This section discusses the existing conditions related to biological resources in the study area.

Study Area Description

The Alternative 1 alignment is located on the Newark 7.5-minute quadrangle in an unsurveyed section of Township 4 South, Range 1 West (formerly the Potrero de los Cerritos and Arroyo de la Alameda land grants). The geographic coordinates of the site are 37.57512° N, 122.01831° W.

For the purposes of this biological resources study, the study area is defined as all areas within the construction footprint, as well as immediately adjacent habitats that could support special-status species, including portions of wetlands that are not directly within the construction footprint. This is the area in which Alternative 1 could result in direct or indirect impacts on special-status species and sensitive natural communities.

Biotic Communities

The majority of the study area consists of residential or commercial development, most of which is hardscape, including buildings, roads, parking lots, driveways, and sidewalks. Most of the native vegetation throughout the hardscape area has been replaced with urban landscaping and some nonnative annual grasslands.

The major aquatic resources in the project area include Old Alameda Creek, the Line M Flood Control Channel (Line M Channel), and two stormwater detention basins (New Basin and Basin 2C). These major aquatic resources are discussed below.

The plant communities and wildlife habitats in the study area are illustrated in Figure 3.3-1, and summarized in Table 3.3-1. The acreages presented are estimates determined by GIS analysis and represent the total acreage for each habitat type in the study area.

Table 3.3-1. Habitat Acreages in the Study Area

Habitat Type	Acreage
Urban landscaping	0.25
Nonnative annual grassland	2.07
Willow riparian woodland and scrub	~~<0.01~~0.11
Total Acreage	**~~2.32~~2.43**

Plant Communities and Wildlife Habitats

Urban Landscaping

Urban landscaping around buildings and roads in the study area consists of shade and street trees, hedges and shrubs, and lawns and gardens. Most of these species are nonnative perennials, such as blue gum (*Eucalyptus globulus*) and Canary Island pine (*Pinus canariensis*), although some natives have also been planted, such as California redwood (*Sequoia sempervirens*). This vegetation type also includes ruderal (disturbance-adapted) species that occur in disturbed areas adjacent to the paved and landscaped areas. Within the study area, approximately 0.25 acre of urban landscaping was mapped. Though urban landscaping has limited value for native wildlife, commensal species such as raccoons (*Procyon lotor*) and opossums (*Didelphis virginiana*) can be common. Street trees and other urban planting can also be used during the nesting season by several species of migratory birds, including common species such as Brewer's blackbird (*Euphagus cyanocephalus*), American goldfinch (*Carduelis tristis*), and mourning dove (*Zenaida macroura*).

Nonnative Annual Grassland

Portions of the western end of the study area—including the area between Old Alameda Creek and Alvarado-Niles Road, and between Alvarado-Niles Road and the railroad tracks— are dominated by nonnative annual grasses and forbs, appearing to be abandoned agricultural fields. Within the study area, approximately 2.07 acre of nonnative annual grassland were mapped.

These nonnative annual grasslands are dominated by grass and forb species, with widespread invasion by mustard (*Hirschfeldia incana*, *Brassica nigra*) and wild radish (*Raphanus sativus*). Nonnative grass species include wild oats (*Avena fatua*), Mediterranean barley (*Hordeum marinum*), and soft chess (*Bromus hordeaceus*); other herbaceous weedy species include bull thistle (*Cirsium vulgare*), filaree (*Erodium cicutarium*, *Erodium botrys*), and English plantain (*Plantago major*).

Annual grasslands are used by many wildlife species for foraging and breeding. Reptiles that breed in annual grassland habitats include western fence lizards (*Sceloporus occidentalis*) and Pacific gopher snake (*Pituophis catenifer catenifer*). Grasslands provide foraging habitat for wide-ranging avian species such as red-tailed hawks (*Buteo jamaicensis*), turkey vultures (*Cathartes aura*), and American kestrels (*Falco sparverius*). Mammals typically found in this habitat include California vole (*Microtus californicus*), western harvest mouse (*Reithrodontomys megalotis*), and California ground squirrel (*Spermophilus beecheyi*) (Mayer and Laudenslayer 1988).

Willow Riparian Woodland and Scrub

Willow riparian woodland and scrub is a woody riparian plant community that occurs at and above the ordinary high-water mark along Old Alameda Creek. This vegetation is well-developed and typically dense. The dominant canopy species are arroyo willow (*Salix lasiolepis*) and sandbar willow (*Salix exigua*). Other common canopy species include blue elderberry (*Sambucus mexicanus*), red willow (*Salix laevigata*), and northern California black walnut (*Juglans hindsii*). The understory is dominated by Himalaya blackberry (*Rubus armeniacus*). Where canopy openings occur, the understory consists of annual grassland, characterized by nonnative annual grasses in association with native and nonnative forbs. Approximately 0.11~~Less than 0.01~~ acre of willow scrub was mapped within the study area along~~, encompassing the 110-square-foot area in~~ Old Alameda Creek where the wetlands mitigation plan would be implemented~~identified for the Line M Channel diversion outfall structure~~.

Because the vegetation is diverse and well-developed, riparian forest provides high-value habitat for wildlife. Riparian forest habitat provides food, water, and migration and dispersal corridors, as well as escape, nesting and thermal cover for many wildlife species (Zeiner et al. 1988). Willow riparian woodland and scrub habitats are important nesting, foraging, and resting habitat for numerous riparian-associated resident and migratory birds, such as black phoebe (*Sayornis nigricans*), western scrub jay (*Aphelocoma californica*), song sparrow (*Melospiza melodia*), and Bewick's wren (*Thryomanes bewickii*). Common amphibian and reptile species associated with riparian habitats include Pacific chorus frog (*Hyla regilla*), western toad (*Bufo boreas*), and coast garter snake (*Thamnophis elegans*). Mammals typically found in this habitat include raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and mule deer (*Odocoileus hemionus*).

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ICF Jones & Stokes
an ICF International Company

April 2009

Figure 3.3-1
Existing Plant Communities and Habitats
ACTA East-West Connector Project, Alternative 1

Aquatic Resources

The aquatic resources in the study area are described below and illustrated in Figure 3.3-2. The Line M Channel and detention basins are also illustrated in Figure 2-4.

Old Alameda Creek

Old Alameda Creek is a portion of the ancestral stream channel that no longer experiences stream flow except during periods of high rainfall. Old Alameda Creek provides drainage for a very localized area and overflow drainage for the Quarry Lakes (outside the study area) via a 36-inch culvert. Additionally, a weir is present at junction with the Alameda Creek Flood Control Channel to provide floodwater retention during heavy storm events. Neither the 36-inch culvert to Quarry Lakes nor the weir to the flood control channel have been used historically. Old Alameda Creek has also been used for groundwater recharge using water from the Alameda Creek Flood Control Channel.

Vegetation along Old Alameda Creek consists of well-developed willow riparian woodland and scrub on the banks and herbaceous wetlands in the channel bottom. Nonnative annual grassland surrounds the banks of the creek for much of its length. Herbaceous wetlands are also present in some of the channels in the study area. Portions of the creek are littered with garbage and debris, including shopping carts and signs of apparent homeless encampment.

Line M Channel

The Line M Channel is a flood control drainage system (open channel and pipeline) that replaced a natural drainage. It drains the hills north and west of the study area and flows into the Alameda Creek Flood Control Channel. An approximately 1,100-foot segment of open Line M Channel extends through the project alignment. Standing water was observed along its entire reach in the study area during fieldwork for the wetland delineation on October 9 and 10, 2007. Vegetation along the Line M Channel is predominately nonnative annual grassland.

The existing open Line M Channel is a linear aquatic habitat with degraded ecologic function. It lacks meander, has engineered side slopes, continuous gradient, and uniform grassy vegetation. The lack of natural channel form and riparian cover creates a channel that is hydraulically efficient and well suited for flood control.

Detention Basins

Basin 2C

The detention basin known as Basin 2C was constructed in 1999 in uplands adjacent to the Line M Channel to serve as a stormwater detention basin for the Park Ridge Phase II and III residential development project. This site also serves at mitigation for this project to compensate for the loss of 0.276 acre of seasonal wetland that was filled through implementation of the project. The source of water for the basin appears to be stormwater runoff from the adjacent residential areas. Should the basin fill, overflow would enter the Line M Channel via a lower section of the berm along the channel. The vegetation is dominated by grasses and annual and perennial forbs and is a mosaic of areas dominated by hydrophytic species and areas dominated by upland species.

New Basin

The detention basin known as New Basin is located between Green Street and the BART tracks. It was constructed in 2006 to serve as stormwater detention for the KB Homes development just south of the recently constructed Green Street bridge. The basin was constructed in uplands on the site of a former iron works. In addition to receiving stormwater from adjacent developments, water is drained into the basin from the Line M Channel and is pumped back into the Line M Channel. It is surrounded by steep banks vegetated with nonnative annual grassland. During the October 9, 2007, field visit, the basin was dry and unvegetated. During subsequent field visits on December 19, 2007; February 25, 2008; and March 18, 2008, the basin was inundated with water more than 6 feet deep.

Potentially Jurisdictional Waters of the United States

ICF Jones & Stokes wetland specialists, including a botanist and soil scientist, conducted a wetland delineation for the ~~Alternative 1~~ proposed project alignment on October 9 and 10, 2007. The routine on-site determination method described in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and, where applicable, the methods identified in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Army Corps of Engineers 2006) were used to determine wetlands within the study area. Other waters of the United States were mapped and delineated in the field in accordance with U.S. Army Corps of Engineers (Corps) Regulatory Guidance Letter No. 05-05, dated December 7, 2005. A wetlands verification visit was conducted with Paula Gill, Corps, San Francisco District, on February 25, 2008. Additional field work was then undertaken to characterize the wetlands in the detention basins adjacent to the Line M Channel on March 18, 2008. The Corps confirmed their jurisdiction with respect to the proposed project in a verification letter dated August 11, 2008. A summary of the results of the jurisdictional wetland delineation, as modified for Alternative 1, are presented below. The complete wetland delineation for the East-West Connector Project may be found in Appendix H of the Draft EIR.

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November 2008

Figure 3.3-2
Existing Aquatic Resources
ACTA East-West Connector Project, Alternative 1

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A total of 0.87 acres of jurisdictional wetlands of the United States and 0.23 acres of potentially jurisdictional other waters of the United States are located within the study area. All wetlands and other waters mapped within the study area are directly or indirectly hydrologically connected to the San Francisco Bay. The types of wetlands and other waters within the project site are described below and summarized in Table 3.3-2.

Table 3.3-2. Summary of Potentially Jurisdictional Wetlands and Open Waters of the State and/or United States in the Study Area

Feature Name	Potential Jurisdiction		Area	
	State (RWQCB)	Federal (Corps)	Acres	Linear Feet
HERBACEOUS WETLANDS				
Basin 2C	Yes	Yes	0.87	--
Total Wetlands			**0.87**	**--**
OPEN WATERS				
Line M Channel	Yes	Yes	0.23	1,017
New Basin [1]	No	No	2.85	--
Total Open Waters			**3.08**	**1,017**
Total Wetlands and Open Waters			**3.95**	**1,017**

[1] New Basin is a detention basin that includes features that were determined not to be Corps jurisdictional waters of the United States. It has not yet been determined if the RWQCB considers it to be waters of the state, and this will be resolved during the permit process. For purposes of the Draft EIR analysis, it is considered not to be subject to the jurisdiction of the state.

RWQCB: Regional Water Quality Control Board

Potentially Jurisdictional Waters of the State

Water bodies within the State of California may also be considered jurisdictional wetlands and waters of the state. Under California State law, "waters of the state" means any surface water or groundwater, including saline waters, within the boundary of the state.[1] Therefore, state water quality laws apply to both surface and groundwater. The potential waters of the state and their associated acreages are listed in Table 3.3-2.

A total of 0.87 acre of potentially jurisdictional wetlands of the state and 3.08 acres of potentially jurisdictional other waters of the state are located in the study area. Potentially jurisdictional wetlands of the state include all of the acres that are considered potentially jurisdictional wetlands and waters of the United States, as well as the 2.85 acres of wetlands identified in the New Basin (see

[1] California Water Code, section 13050(e).

discussion below). The types of wetlands and other waters of the state within the study area are described below and summarized in Table 3.3-2.

~~**Table 3.3-2.** Summary of Jurisdictional Waters of the United States in the Study Area~~

~~Jurisdictional Feature~~	~~Wetlands Acreage~~
~~Old Alameda Creek Historic Channel~~	~~<0.01~~
~~Line M Channel~~	~~0.23~~
~~Detention Basin 2C~~	~~0.80~~
~~New Basin~~	~~0.00~~
~~**Total**~~	~~**1.03**~~

Wetlands

~~Seasonal~~ Emergent Wetlands

The historic channel of Old Alameda Creek features a seasonal herbaceous wetland. The vegetation is dominated by hydrophytes, and the hydrology appears to be seasonal and intermittent. The channel receives hydrologic inputs from precipitation, runoff, and a small area of localized drainage via Line N-12. At the time of the survey, one short section of the channel was inundated, but most of the channel was dry.

Because of the urban nature of the surrounding area, this wetland has the potential to provide significant water quality and wildlife habitat functions. Wildlife may use the wetland for nesting and foraging, and the channel provides a migration corridor through the area. The wetland supports water quality functions, trapping sediment and removing nutrients or toxicants, and the channel provides appreciable surface water storage. The wetland affords scenic value for local residents because it provides a natural open space in an otherwise highly developed landscape. However, because of the surrounding urban influence, the wetland has been adversely affected by trash dumping, unauthorized camping, and invasive exotic plants.

Herbaceous Wetlands

Seasonal herbaceous wetlands in the study area include those in Basin 2C. Herbaceous wetlands within Basin 2C were determined to be jurisdictional waters of the state and United States, as this site supports 0.87 acre of wetlands and serves as wetland mitigation for prior residential development, as described above. This determination was verified by the Regional Water Quality Control Board (RWQCB) and the Corps.

Open~~Other~~ Waters

Perennial Drainages

The Line M Channel carries stormwater throughout the year, and is classified as a perennial drainage, or “open waters.”

~~Detention Basins~~New Basin

New Basin is a 2.85-acre detention basin that includes features that were determined not to be jurisdictional waters of the United States but that could be subject to the jurisdiction of the state.~~Basin 2C and New Basin are the detention basins located within the study area. These resources have been described above under Aquatic Resources. Wetlands in Basin 2C were determined to be jurisdictional, as this site supports 0.8 acre of wetlands, and serves as wetland mitigation for prior residential development, as described above. New Basin was determined to support non-jurisdictional features.~~

Sensitive Biological Resources

Regulatory Guidelines

Special-status species are plants and animals that are legally protected under the California Endangered Species Act (CESA), the federal Endangered Species Act (ESA), or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. Special-status species are defined as:

- species listed or proposed for listing as threatened or endangered under the ESA (Title 50, Code of Federal Regulations [CFR], Section 17.12 for listed plants, 50 CFR 17.11 for listed animals, and various notices in the *Federal Register* for proposed species);
- species that are candidates for possible future listing as threatened or endangered under ESA (CFR 71:53756-53835, September 12, 2006);
- species that are listed or proposed for listing by the State of California as threatened or endangered under CESA (Title 14, CCR, Section 670.5);
- plants listed as rare under the California Native Plant Protection Act of 1977 (California Fish and Game Code, Section 1900, *et seq*.);
- plants considered by CNPS to be “rare, threatened, or endangered in California and elsewhere” (List 1B, 2, and 3) (List 4 species were included and evaluated in the impact analysis to determine whether they should be considered special-status species for the purposes of analysis) (California Native Plant Society 2008);
- species that meet the definition of rare or endangered under the CEQA Guidelines, Section 15380;
- animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]); or

- animal species of special concern to the California Department of Fish and Game (DFG) (California Department of Fish and Game 2006; Shuford and Gardali 2008 [birds]; Williams 1986 [mammals]; and Jennings and Hayes 1994 [amphibians and reptiles]).

Details about the special-status plants, wildlife, and fish species that have the potential to occur in the study area are provided below.

Special-Status Plant Species

Based on information from CNDDB (2008) and CNPS (2008), a total of 35 special status plant species were identified with the potential to occur in the study area. Of these, 18 were eliminated from further consideration because the study area was outside their range or did not include any potentially suitable habitat. The study area was examined closely on December 19, 2007, to determine whether suitable microhabitats are present for the remaining 17 species. These are described in Table 3.3-3. Based on this database search and site survey, two special-status plant species were determined to have a very slight potential to occur within in the study area. These are Congdon’s tarplant (*Centramadia parryi* ssp. *congdonii*), a CNPS List 1B species that could occur in nonnative annual grasslands, and slender-leaved pondweed (*Potamogeton filiformis*), a CNPS List 2 species that could occur in areas of standing water. Focused surveys for these plants were conducted by a ICF Jones & Stokes botanist on July 2, 2008, at which time both species would have been flowering and visible, if present. Neither of these species nor any other special-status species were identified during this survey.

Table 3.3-3. Special-Status Plants with Potential to Occur in the Study Area

Common and Scientific Name	Status[a] Federal/State/ CNPS	California Distribution	Habitats	Blooming Period	Potential Occurrence in the Study Area
Astragalus tener var. *tener* Alkali milk-vetch	–/–/1B.2	Historically found in western San Joaquin Valley, San Francisco Bay area, and Monterey County. Likely extirpated from all historical occurrences except those in Merced, Solano, and Yolo Counties; below 200 feet.	Playas and grasslands with adobe clay soils and alkaline vernal pools.	March–June	Unlikely; no suitable habitat in study area
Atriplex depressa Brittlescale	–/–/1B.2	Western Central Valley and valleys in foothills on west side of Central Valley, below 660 feet.	Alkali grasslands, alkali meadows, alkali scrublands, chenopod scrublands, playas, valley and foothill grasslands; on alkaline or clay soils.	May–October	Unlikely; no suitable habitat in study area
Atriplex joaquiniana San Joaquin spearscale (saltbush)	–/–/1B.2	West margin of Central Valley from Glenn to Tulare Counties below 1,000 feet.	Alkali grasslands, alkali scrublands, alkali meadows, saltbush scrublands.	April–September	Unlikely; no suitable habitat in study area
Balsamorhiza macrolepis var. *macrolepis* Big-scale balsamroot	–/–/1B.2	San Francisco Bay area, Sierra Nevada foothills, Coast Ranges, eastern Cascade Range, and Sacramento Valley; below 4,600 feet.	Rocky annual grasslands and fields, foothill woodland hillsides; locally on serpentine soils.	March–June	Unlikely; no suitable habitat in study area
Centramadia parryi ssp. *congdonii* Congdon's tarplant	–/–/1B.2	Eastern San Francisco Bay area, Salinas Valley, and Los Osos Valley; below 700 feet.	Lower slopes, flats, and swales in annual grasslands; locally on alkaline or saline soils.	June–November	Very Low; may be small areas of suitable habitat in nonnative annual grassland
Eryngium aristulatum var. *hooveri* Hoover's button-celery	–/–/1B.1	South San Francisco Bay area, South Coast Ranges.	Vernal pools	July	Unlikely; no suitable habitat in study area
Fritillaria liliacea Fragrant fritillary	–/–/1B.2	Coast Ranges from Marin to San Benito Counties; below 1,350 feet.	Adobe soils of interior foothills, coastal prairie, coastal scrub, annual grassland, often on serpentinite.	February–April	Unlikely; no suitable habitat in study area

Common and Scientific Name	Status[a] Federal/State/ CNPS	California Distribution	Habitats	Blooming Period	Potential Occurrence in the Study Area
Helianthella castanea Diablo helianthella	–/–/1B.2	San Francisco Bay area; Alameda, Contra Costa, Marin[b], San Francisco[b], and San Mateo Counties; 80–3,800 feet.	At chaparral/oak woodland ecotone, often in partial shade, on rocky soils.	April–June	Unlikely; no suitable habitat in study area
Holocarpha macradenia Santa Cruz tarplant	T/E/1B.1	Coastal California from Marin County to San Luis Obispo County; 30–900 feet.	Coastal prairie, valley and foothill grasslands, on sandy, clay soils, often with nonnatives,	June–October	Unlikely; no suitable habitat in study area
Lasthenia conjugens Contra Costa goldfields	E/–/1B.1	Scattered occurrences in Coast Range valleys and southwest edge of Sacramento Valley; Alameda, Contra Costa, Mendocino, Napa, Santa Barbara[b], Santa Clara[b], and Solano Counties. Historically distributed through the north coast, southern Sacramento Valley, San Francisco Bay region, and south coast; below 700 feet.	Alkaline or saline vernal pools and swales.	March–June	Unlikely; no suitable habitat in study area
Monardella villosa spp. *globosa* Robust monardella	–/–/1B.2	North Coast Ranges and eastern San Francisco Bay area; Alameda; Contra Costa, Humboldt, Lake, Marin, Napa, San Mateo, and Sonoma Counties.	Oak woodland and grassy openings in chaparral.	June–July	Unlikely; no suitable habitat in study area
Navarretia prostrata Prostrate navarretia	–/–/1B.1	Alameda, Los Angeles, Merced, Monterey, Orange, Riverside, San Bernardino[b], San Diego, San Luis Obispo Counties.	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools	April–July	Unlikely; no suitable habitat in study area
Plagiobothrys glaber Hairless popcorn-flower	–/–/1A	Coastal valleys from Marin County to San Benito Counties.	Alkaline meadows, coastal salt marsh	April–May	Unlikely; no suitable habitat in study area
Potamogeton filiformis Slender-leaved pondweed	–/–/2.2	Scattered locations in California: Lassen, Merced, Mono, Placer, and Sierra Counties; Arizona, Nevada, Oregon, Washington.	Freshwater marsh, shallow emergent wetlands and freshwater lakes, drainage channels	May–July	Very low; may be small areas of suitable habitat in creek channel, and detention basins

Common and Scientific Name	Status[a] Federal/State/CNPS	California Distribution	Habitats	Blooming Period	Potential Occurrence in the Study Area
Sanicula maritima Adobe sanicle	–/–/1B.1	Alameda[b], Monterey, San Francisco[b], and San Luis Obispo Counties.	Chaparral, coastal prairie, meadows and seeps, valley and foothill grassland on clay, serpentinite	February–May	Unlikely; no suitable habitat in study area
Trifolium depauperatum var. *hydrophilum* Saline clover	–/–/1B.2	Alameda, Colusa, Monterey, Napa, San Benito, Santa Clara, San Luis Obispo, San Mateo, Solano, Sonoma Counties; 300–900 feet.	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools	April–June	Unlikely; no suitable habitat in study area
Tropidocarpum capparideum Caper-fruited tropidocarpum	–/–/1B.1	Historically known from the northwest San Joaquin Valley and adjacent Coast Range foothills; below 1,500 feet.	Grasslands in alkaline hills	March–April	Unlikely; no suitable habitat in study area

Notes:

[a] Status explanations:

Federal
- E = listed as endangered under the federal Endangered Species Act.
- T = listed as threatened under the federal Endangered Species Act.
- – = no listing.

State
- E = listed as endangered under the California Endangered Species Act.
- T = listed as threatened under the California Endangered Species Act.
- – = no listing.

California Native Plant Society (CNPS)
- 1A = List 1A species: presumed extinct in California.
- 1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
- 2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.
- 3 = List 3 species: plants about which more information is needed to determine their status.
- – = no listing.

[b] Populations uncertain or extirpated in the county.

Special-Status Wildlife Species

Based on information from CNDDB (2008), the species list obtained from the USFWS (2008), and previously prepared environmental documents, 40 special-status wildlife species were identified as having the potential to occur in the study area (see Draft EIR Section 3.3, Biological Resources). Field survey information, species distribution, and suitable habitat information were used to determine which species could occur in the study area. Of the 40 species identified, ~~27~~ 26 were eliminated from further consideration because habitat for these species is not present in the study area and/or the study area is located outside of the species' known range. The ~~13~~ 14 species with the potential to occur in the study area are discussed below.

California Tiger Salamander

The California tiger salamander (CTS) (*Ambystoma californiense*) is federally listed as threatened (69 FR 47212–47248, August 4, 2004). Final designation of critical habitat occurred on August 23, 2005 (70 FR 49380-49458). CTS is also a candidate species for state listing (February 5, 2009). The species is endemic to the San Joaquin–Sacramento River valleys, bordering foothills, and coastal valleys of central California (Barry and Shaffer 1994). The species' range is from Sonoma County and the Colusa-Yolo County line south to Santa Barbara County in the Coast Ranges and from southern Sacramento County south to Tulare County in the Central Valley (Jennings and Hayes 1994).

CTS is a lowland species restricted to grasslands and low foothill regions where its breeding habitat (temporary ponds or pools, slower portions of streams, and some permanent waters) occurs (Stebbins 2003). Adult CTS move from subterranean burrow sites to breeding pools from November through February after warm winter and spring rains (Jennings and Hayes 1994). CTS eggs hatch in 10 to 14 days and larvae generally metamorphose in 3 to 6 months (68 FR 28647, May 23, 2003). This species also requires dry-season refuge sites in uplands in the vicinity of breeding sites. Dry-season refuge sites include ground squirrel burrows, other rodent burrows, or crevices in the soil (Loredo et al. 1996).

There are three CNDDB records for CTS within a 5--mile radius of the study area (California Department of Fish and Game Natural Diversity Database 2008). Within the study area, marginal aquatic habitat exists in Old Alameda Creek and Basin 2C for CTS. The remnant portion of Alameda Creek serves as a seasonal holding pond. The upland habitat surrounding the creek is marginal for CTS. At Basin 2C, the grasslands along the railroad and Line M Channel northwest of the detention basins could provide enough refugia for a population of CTS. No ground squirrel burrows were observed at either site, but CTS can take advantage of other forms of cover including rubble piles, logs, and other debris. CTS can also use housing and industrial structures (Murphy pers. comm. 2009a).

In the remainder of the study area, grasslands adjacent to the creek may be disked annually and agricultural fields look too groomed to contain refugia (Murphy pers. comm. 2009a). However, without protocol-level surveys, absence of CTS cannot be confirmed.

California Red-Legged Frog

California red-legged frog (*Rana aurora draytonii*) (CRLF) is a federal threatened species and California species of special concern. The species is known or expected to occur in association with its preferred habitat, permanent water (including marshes, streams, lakes, and ponds) often with densely vegetated shorelines (Stebbins 2003). Although CRLF typically remain near streams or ponds, marked and radio-tagged frogs have been observed to move more than 2 miles through terrestrial upland habitats as they move between aquatic features, often as the result of breeding pools drying up at the onset of summer. These movements are typically made during wet weather and at night (U.S. Fish and Wildlife Service 2002). CRLF may also use terrestrial habitat near aquatic features (e.g., stream banks) as temporary refugia from predators or during inclement habitat conditions (e.g., high water).

CRLF have the potential to occur in or near creeks, drainages, and upland areas in the study area, including the Line M Channel. However, the majority of the surrounding area is heavily urbanized and may not provide a sufficient dispersal corridor for the species.

No CRLF were found during visual and dip-netting surveys conducted in 1993 by Engineering-Science, Inc. In 1996, CRLF became listed as threatened by USFWS; in 1997, USFWS adopted guidelines for site assessments and field surveys for the species. These guidelines require that a habitat assessment be conducted to evaluate the habitat and, thus, determine the likelihood that CRLF occur in the study area. Parsons Harland Bartholomew & Associates conducted a habitat assessment according to these new guidelines in October 1998, in support of environmental review for a previous version of the East West Connector Project partially located along a similar alignment. This habitat assessment confirmed that Old Alameda Creek appeared to provide potentially suitable habitat for CRLF; but it is a remnant segment almost completely surrounded by existing urban development and therefore was determined not suitable habitat.

In May 1999, while environmental review for the previous version of the East-West Connector Project was still underway, an adult CRLF was observed by accredited herpetologist Mark Jennings in a dirt-lined flood canal 0.2 miles southwest of the Mission Boulevard/Appian Way intersection. That frog was collected and relocated (California Natural Diversity Database 2008). Until the 1999 sighting, the nearest known locality of the species was in Garin Dry Creek below Jordan Dam, approximately 1.2 miles north of the project area, and outside of the zone of urbanization.

As a result of the 1999 sighting, a new site assessment and surveys for CRLF were conducted in 2001. No frogs were observed during the June 7 and 19, 2001 surveys; and no tadpoles were observed on July 16, 2001. In a letter dated January 15, 2002, USFWS states that the East West Connector Project alignment for the new roadway segment (formerly "the proposed realignment of SR 84 along historic Alameda Creek") is not likely to adversely affect CRLF. The most recent surveys in the study area were reconnaissance-level surveys conducted by ICF Jones & Stokes biologists in December 2007, specifically for the current proposed, and no CRLF were observed.

The Lead Agency, ACTA, submitted a letter to USFWS in 2008 requesting concurrence with their 2002 determination, and USFWS requested protocol level surveys be conducted to confirm the determination. ~~ACTA is planning to conduct these surveys January through August of 2009.~~ Protocol surveys require four rounds of daytime and nighttime surveys that are at least 2 weeks apart, including a late summer or early fall survey, to allow the surveyors the opportunity to see frogs in many different life stages. ACTA began conducting these surveys in February 2009, and no CRLF or egg masses were observed at that time (Murphy pers. comm. 2009b).

Western Pond Turtle

Western pond turtle (*Clemmys marmorata*), a California species of special concern, prefers permanent or nearly permanent waters of ponds, lakes, marshes, rivers, streams, and irrigation ditches that have a rocky or muddy bottom and emergent vegetation (Stebbins 2003). The species occurs in a wide range of both permanent and intermittent aquatic environments (Jennings et al. 1992). Western pond turtles spend a considerable amount of time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris. Western pond turtles move to upland areas up to several hundred meters from watercourses to deposit eggs and overwinter (Jennings and Hayes 1994).

There is potential for western pond turtle to inhabit aquatic and riparian habitats of the Line M Channel. There are two CNDDB (2008) records for western pond turtle in Alameda Creek Flood Control Channel within a 5-mile radius; one approximately 0.3 mile southwest of the Mission Boulevard crossing in Quarry Lakes Regional Park, and another upstream, approximately 5 miles to the east of the study area. No sign of the species was observed during any of the ~~December 2007 reconnaissance-level~~ wildlife surveys.

Northern Harrier

Northern harrier (*Circus cyaneus*) is designated as a state species of special concern by DFG. Northern harriers use tall grasses and forbs in wetlands and field borders for cover (Zeiner et al. 1990). They roost on the ground in shrubby vegetation, often near a marsh edge (Brown and Amadon 1968). The species' breeding season is between April and September, with peak activity in June and July.

Northern harriers have been observed breeding and nesting within 5 miles of the study area, in and around the marshes to the southwest (California Natural Diversity Database 2008). Though there is potential for northern harriers to forage and breed in the nonnative grassland within and near the study area, the possibility of nesting is unlikely since they generally prefer nesting near marsh habitat. No sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

Sharp-Shinned Hawk

Sharp-shinned hawk (*Accipiter striatus*) is a California species of special concern. This species is a migrant and winter resident throughout most of California. Sharp-shinned hawks nest in ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats. They breed between April 1 and September 1 (Zeiner et al. 1990a).

There is one record of a nesting sharp-shinned hawk, approximately 4 miles north of the study area near Walpert Ridge (California Natural Diversity Database 2008). The potential for sharp-shinned hawk to nest in the riparian habitat of Old Alameda Creek is low because of the proximity to development and human activity. No sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

Cooper’s Hawk

Cooper’s hawk (*Accipiter cooperii*), a California species of special concern, is a year-round resident throughout much of California, except in the high Sierra Nevada. Cooper’s hawks nest in riparian, deciduous, conifer, and mixed woodlands (Garrett and Dunn 1981), but will also nest in urban areas and seem to tolerate human disturbance near the nest (Palmer 1988). The species’ breeding season is between March 1 and August 1.

There are three recent records for nesting Cooper’s hawks, 3 to 4 miles east of the study area (California Natural Diversity Database 2008). The potential for Cooper’s hawk to use the riparian habitat of Old Alameda Creek for nesting is low because of the proximity to development and human activity. No sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is fully protected under the California Fish and Game Code. White-tailed kite occurs in coastal and valley lowlands in California (Zeiner et al. 1990a). This species generally inhabits low-elevation grassland, savannah, oak woodland, wetland, agricultural, and riparian habitats. Nest trees range from small, isolated shrubs and trees to trees in relatively large stands (Dunk 1995). White-tailed kites make nests of loosely piled sticks and twigs, lined with grass and straw, near the top of dense oaks, willows, and other tree stands. The breeding season lasts from February through October and peaks between May and August (Zeiner et al. 1990a).

There are three CNDDB (2008) records for nesting white-tailed kites approximately 3 miles southwest of the study area. This species may nest in suitable shrubs or in the willow riparian woodland and scrub habitats of the study area. No sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

Western Burrowing Owl

Western burrowing owl (*Athene cunicularia hypugaea*), a California species of special concern, requires habitat with three basic attributes: open, well-drained terrain; short, sparse vegetation; and underground burrows or burrow facsimiles. Burrowing owls occupy grasslands, deserts, sagebrush scrub, agricultural areas (including pastures and untilled margins of cropland), earthen levees and berms, coastal uplands, and urban vacant lots, as well as the margins of airports, golf courses, and roads (Haug et al. 1993). The breeding season of western burrowing owls extends from March through August (Zeiner et al. 1990a).

Within a 5-mile radius, there are six CNDDB records (2008) for western burrowing owls; the closest being approximately 3 miles to the southeast of the study area, near Lake Elizabeth. In the study area, there is potential for western burrowing owls to nest in fallow agricultural lands as well as in annual grassland habitat, although the likelihood is low because of a very limited number of mammal burrows scattered around the annual grasslands in the study area. No sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

California Horned Lark

California horned lark (*Eremophila alpestris actia*) is a California species of special concern. This species inhabits a variety of open habitats, usually where large trees and shrubs are absent. Range-wide, California horned larks breed in level or gently sloping shortgrass prairie, montane meadows, “bald” hills, open coastal plains, fallow grain fields, and alkali flats (Grinnell and Miller 1944). California horned lark constructs nests on the ground, often in sparsely vegetated areas. Breeding season is typically from March through July, with a peak in activity in May.

There is one recorded observation of a California horned lark, exhibiting breeding behavior, within a 10-mile radius of the study area (California Natural Diversity Database 2008). Potential for this species to use the study area for nesting is low since the grassland habitat present for foraging and nesting is of marginal quality. No sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

Bank Swallow

Bank swallow (*Riparia riparia*) is a state-threatened neotropical migrant. In California, this species breeds primarily in riparian forests dominated by willows (*Salix spp.*) and Fremont cottonwood (*Populus fremontii*) (Zeiner et al. 1990a). Bank swallows are predominantly colonial breeders, digging horizontal nests into vertical faces of banks and bluffs with fine-textured or sandy soils (Zeiner et al. 1990a). Nesting colonies are ephemeral, which affects the distribution as sites become inactive and habitat conditions change (Garrison 1998).

During surveys performed for the original Natural Environment Study (Engineering-Science 1995), a bank swallow nesting colony site was observed adjacent to the historic Proposed Parkway Alternative Crossing of the Alameda County Flood Control Channel (California Department of Transportation 2002), which is approximately 600 feet south of the proposed alignment. The site consisted of a few nesting holes located in a low, unstable portion of bank, subject to inundation from storm flows. A follow-up survey in 1998 confirmed that there were no nesting swallows within 500 feet of ground-disturbing activities associated with construction (California Department of Transportation 2002). There is limited potential for swallows to nest along Old Alameda Creek within the study area, although the likelihood of bank swallows nesting in the area is very low. No sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

Yellow Warbler

Yellow warbler (*Dendroica petechia*) is designated as a state species of special concern. This species typically nests in dense riparian habitats dominated by willows and other riparian species, including, alders, cottonwoods, and sycamores (Dunn and Garrett 1997). Breeding distribution includes most of California except the Central Valley, the Mojave Desert region, and high altitudes and the eastern side of the Sierra Nevada. Yellow warblers generally nest from April through late July.

There is one CNDDB record within 10 miles of the study area, of a male yellow warbler exhibiting breeding behavior (California Natural Diversity Database 2008). There is suitable nesting habitat in the riparian zone of Old Alameda Creek, not within the proposed alignment. No sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

Hoary Bat

Hoary bat (*Lasiurus cinereus*) is a California species of special concern. Habitats suitable for breeding include all woodlands and forests with medium to large trees, and dense foliage (Zeiner et al. 1990b). They reproduce in late spring or early summer, often producing two offspring at a time.

There is one CNDDB record (2008) for hoary bat approximately 6 miles to the northwest of the study area. There is potential for hoary bats to roost and forage in the riparian habitat associated with Old Alameda Creek, not within the proposed alignment. No sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

Pallid Bat

Pallid bat (*Antrozous pallidus*) is a California species of special concern. Pallid bat is found in a variety of habitats including desert, brushy terrain, coniferous forest, and non-coniferous woodlands. In Central and Northern California, the species is associated with oak, ponderosa pine, redwood, and giant sequoia habitats. Daytime roost sites include rock outcrops, mines, caves, hollow trees, buildings, and bridges. Night roosts are commonly under bridges but are also in cave and mines (The Wildlife Society 1996). Hibernation may occur during late November through March. Pallid bats breed in late October and November in Central California (Orr 1954), and one or two young are born in May or June (The Wildlife Society 1996).

There are three CNDDB records for pallid bat within a 5 to 10 mile radius of the study area (California Natural Diversity Database 2008). There is potential for pallid bats to roost and forage in the riparian habitat associated with Old Alameda Creek, not within the proposed alignment. No sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

San Francisco Dusky-Footed Woodrat

San Francisco dusky-footed woodrat (*Neotoma fuscipes*) is a California species of special concern. The subspecies' range is from the west side of Mount Diablo to the coast, including San Francisco Bay. Habitats occupied by woodrats include chaparral and conifer or hardwood forests with a moderate understory (Peeters 2004). Dusky-footed woodrats have a complex social structure, which can make them particularly vulnerable to disturbance. They build large lodges of sticks, leaves, bark, and other debris, up to 8 feet high and 8 feet in diameter; often on the ground against a tree or shrub (Whitaker 1996). Dusky-footed woodrats breed from December to September, with a peak in mid-spring (Zeiner et al. 1990b).

There are no CNDDB records for San Francisco dusky-footed woodrat within a 5-mile radius of the study area, and no sign of the species was observed during December 2007 reconnaissance-level wildlife surveys.

Sensitive Communities

One sensitive community, willow riparian woodland and scrub, occurs along Old Alameda Creek in the project area. Willow riparian woodland and scrub is a riparian plant community dominated by willows and other riparian tree and shrub species. It is considered sensitive because it is of conservation concern as a riparian plant community, and because it provides important habitat for many native and special-status species. Some of the wildlife species that may rely on willow riparian woodland and scrub for some or all of their life history needs include western pond turtle, sharp-shinned hawk, song sparrow, and yellow warbler.

Regulatory Setting

Federal Regulations

Federal Endangered Species Act

The ESA protects fish and wildlife species and their habitats that have been identified by USFWS or the NMFS as threatened or endangered. *Endangered* refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range; *threatened* refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

USFWS and NMFS administer the ESA. In general, NMFS is responsible for protection of ESA-listed marine species and anadromous fish, whereas listed, proposed, and candidate wildlife and plant species and commercial fish species are under USFWS jurisdiction. *Take* of listed species can be authorized through either the Section 7 consultation process for actions by federal agencies or the Section 10 permit process for actions by nonfederal agencies. Federal agency actions include activities that are:

- on federal land,
- conducted by a federal agency,
- funded by a federal agency, or
- authorized by a federal agency (including issuance of federal permits and licenses).

Under Section 7, the federal agency conducting, funding, or permitting an action (the federal lead agency) must consult USFWS or NMFS, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed project "may affect" a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment evaluating the nature and severity of the expected effect. In response, USFWS issues a biological opinion with a determination that the proposed action either:

- may jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding); or

- will not jeopardize the continued existence of any listed species (no jeopardy finding) or result in adverse modification of critical habitat (no adverse modification finding).

The biological opinion issued by USFWS may stipulate discretionary “reasonable and prudent” conservation measures. If the project would not jeopardize a listed species, USFWS issues an incidental take statement to authorize the proposed activity.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S. Government Code [USC] 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR 10, 21). Most actions that result in taking or in permanent or temporary possession of a protected species constitute violations of the MBTA. Examples of permitted actions that do not violate the MBTA are the possession of a hunting license to pursue specific game birds, legitimate research activities, collection for display in zoological gardens, bird-banding, and other similar activities. USFWS is responsible for overseeing compliance with the MBTA, and the U.S. Department of Agriculture’s Animal Damage Control Officer makes recommendations on related animal protection issues.

Clean Water Act

The federal Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA serves as the primary federal law protecting the quality of the nation’s surface waters, including lakes, rivers, and coastal wetlands. The following discussion gives background information as relevant to biological resources; additional discussion of the CWA relative to hydrology and water quality can be found in the Initial Study.

Waters of the United States are areas subject to federal jurisdiction pursuant to Section 404 of the CWA. *Waters of the United States* are typically divided into two types: *wetlands* and *other waters of the United States*.

Wetlands are “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR § 328.3[b], 40 CFR § 230.3). To be considered subject to federal jurisdiction, a wetland must normally support hydrophytic vegetation, hydric soils, and wetland hydrology (Environmental Laboratory 1987).

Other waters of the United States are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an OHWM but lack positive indicators for the three wetland parameters (33 CFR 328.4).

Permits for Fill Placement in Waters and Wetlands (Section 404)

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States. Applicants must obtain a permit from the Corps for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity. The Corps may issue either an individual permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. Nationwide permits (NWP) are a type of general permit issued to cover particular fill activities. Each NWP specifies particular conditions that must be met for the NWP to apply to a particular project.

Water Quality Certification (Section 401)

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

California Statutes and Regulations

Porter-Cologne Water Quality Control Act

The RWQCBs designate beneficial uses and establish Water Quality Objectives (WQOs) for the state's waters through development of water quality control plans (basin plans) under the Porter-Cologne Act, CWA, and general provisions of California Water Code Section 13000. The WQOs include both quantitative and narrative targets that may differ depending on the specific beneficial uses being protected. Any activity that results or may result in a discharge that directly or indirectly affects waters of the state or the beneficial uses of those waters are subject to WDRs.

California Fish and Game Code—Wildlife Protection

The California Fish and Game Code provides protection from take for a variety of species, referred to as *fully protected species*. Section 5050 lists protected amphibians and reptiles. Section 3515 prohibits take of fully protected fish species. Eggs and nests of all birds are protected under Section 3503, nesting birds (including raptors and passerines) under Sections 3503.5 and 3513, birds of prey under Section 3503.5, and fully protected birds under Section 3511. Migratory non-game birds are protected under Section 3800. Mammals are protected under Section 4700. The California Fish and Game Code defines *take* as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Except for take related to scientific research, all take of fully protected species is prohibited.

The white-tailed kite is the only fully protected species with the potential to occur in the study area

California Fish and Game Code—Streambed Alteration Agreements

DFG has jurisdiction over wetland resources associated with rivers, streams, and lakes under California Fish and Game Code Section 1602. DFG has the authority to regulate all work under the jurisdiction of California that would substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed.

In practice, DFG marks its jurisdictional limit at the top of the stream or lake bank, or the outer edge of the riparian vegetation, where present, and sometimes extends its jurisdiction to the edge of the 100-year floodplain. Because riparian habitats do not always support wetland hydrology or hydric soils, wetland boundaries, as defined by CWA Section 404, sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Therefore, jurisdictional boundaries under Section 1600 may encompass a greater area than those regulated under CWA Section 404.

DFG enters into a streambed alteration agreement with an applicant and can request conditions to ensure that no net loss of wetland values or acreage will be incurred. The streambed or lakebed alteration agreement is not a permit but, rather, a mutual agreement between DFG and the applicant.

California Fish and Game Code—Bird and Raptor Protections

Section 3503 of the California Fish and Game Code prohibits the killing of birds or the destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and the destruction of raptor nests.

Local

City of Union City General Plan

Alternative 1 would be located partially within the City of Union City, under the planning guidance of the City of Union City General Plan. The Natural and Historic Resources Element of the General Plan includes a biological resources section that defines overall goals, objectives, and specific policies to guide the development of the City in accordance with the unique biological resources present throughout the area. The following policies from the General Plan are applicable to Alternative 1.

- **Policy NHR-A.1.3:** On sites that have the potential to contain critical or sensitive habitats, or special-status species, or are within 100 feet of such areas, the City shall require the project applicant to survey the site by a qualified biologist at the proper time of year. A report of the findings of this survey shall be submitted to the City as part of the application process. Appropriate mitigation measures will be incorporated into the project as necessary to protect the resources.
- **Policy NHR-A.1.4:** On sites with the potential to contain wetland resources, the City shall require that a wetland delineation be prepared using the protocol defined by the Corps. The applicant shall submit a report on the findings of this survey to the City as part of the application process. Appropriate mitigation measures will be incorporated into the project as necessary to protect the resources.
- **Policy NHR-A.1.15:** The City shall commit to preservation of significant natural resources including wetlands, bay shores, plant, animal, and fish habitats.

City of Union City Tree Protection Ordinance

Union City has a Tree Protection Ordinance which protects trees with a circumference of 35 inches or greater, or 70 feet or greater if multi-trunk, if located on residential property; 12 inches or greater if located on a vacant lot, undeveloped property, or commercial, office, or industrial developed property; 12 inches or greater if removal relates to any transaction for which zoning or subdivision approval is required; or any tree required to be planted by the terms of a zoning approval or a subdivision approval.

Tree removal requires an arborist report that provides details on size and health of trees within the project area. A removal permit requires replacement with 15-gallon container replacement trees at a ratio to be determined on a project-specific basis.

3.3.3 Impact Analysis

This impact analysis describes the methods used to determine the impacts of Alternative 1, identifies the thresholds used to conclude whether an impact would be significant, and identifies measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts where required.

Methodology

Impacts on biological resources were analyzed through a combination of quantitative and qualitative techniques, incorporating professional judgment in light of the nature of the proposed activities and current conservation practices.

The analysis focuses on the potential to adversely impact sensitive resources. Impacts on special-status species include direct disturbance, injury, and mortality, as well as indirect effects through habitat loss and degradation. Adverse impacts were identified as either temporary (short-term) or permanent (long-term). Temporary impacts could result from construction noise, runoff, staging, and other construction activities. Permanent effects could result from continuous operation of the new road.

For the purpose of this analysis, sensitive habitats include sensitive natural communities, as defined by Holland (1986) and CNDDB (2007). More common or widespread habitats would also be affected by the project, such as nonnative annual grassland; such impacts must be extensive to be considered significant. To determine the level of impact on all communities and habitats, the estimated amounts of total ground disturbance were calculated and are displayed in Table 3.3-1 (see above). Impacts on sensitive habitats also include the disturbance or removal of large, old, or historically important trees.

Significance Criteria

For this analysis, an impact pertaining to biological resources was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 et seq.).

- Substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by DFG or USFWS.
- Substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by DFG or USFWS.
- Substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool,

coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan or local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Impacts on biological resources can be direct, resulting from the permanent removal of habitat, or indirect, resulting from changes in land use adjacent to natural habitats (e.g., increased light, noise, vibration, and urban runoff, interruption of wildlife movement corridors, etc.). Both of these types of impacts and their levels of significance are discussed in this section. The project area is not located within habitat conservation plan or natural community conservation plan areas. Therefore, there would not be a potential conflict with such conservation plans.

Project Impacts and Mitigation Measures

The impacts of Alternative 1 on biological resources are discussed below.

Impact BIO-1: Loss of or Disturbance to Special-Status Plants (Less than Significant)

Construction activities along the new roadway segment could result in the disturbance or loss of special-status plants. Two special-status plants, Congdon’s tarplant and slender-leaved pondweed, have been identified as having the potential to occur in the study area, but were not observed during floristic surveys conducted during the spring and summer, when both would be flowering. Therefore, this impact is considered less than significant. No mitigation is required.

Impact BIO-2: Loss of or Disturbance to Western Burrowing Owls or their Nesting and Foraging Habitat (Less than Significant)

While any patch of annual grassland in an urban area in the Bay Area region would be considered potential habitat for western burrowing owl, no owls have been observed along the project alignment during the nesting or wintering period. Further, there are no nesting owls or owl colonies in the project vicinity that could be foraging in the annual grasslands along the project alignment. Impacts on nesting, wintering, or foraging western burrowing owls would be less than significant. No mitigation would be required.

Impact BIO-3: Loss of or Disturbance to California Red-Legged Frogs, California Tiger Salamanders, Western Pond Turtles, and their Habitat (Less than Significant with Mitigation)

The CRLF, CTS, and western pond turtle could occur in the aquatic habitats that would be affected by construction of the new roadway segment. These aquatic habitats include the Line M Channel, and all other wetland features identified above.

As described under Sensitive Biological Resources, Special Status Wildlife Species, neither the CRLF, CTS, or ~~nor~~ the western pond turtle were observed during site assessments~~surveys~~. Protocol breeding season surveys ~~Several surveys and studies~~ were conducted for the CRLF and, to date, no CRLF have been observed in the study area. ~~and the~~ The potential for both species to occur remains low. Although Alternative 1 is not expected to adversely affect the CRLF or CTS, preconstruction surveys would ensure that individuals would not be affected during construction and that this impact is less than significant.

Although habitat potential is low and western pond turtles were not observed during reconnaissance field visit, this species could be in the project area during construction. Excavation of channel banks or disturbance of adjacent habitat where nesting could occur could result in the loss of individuals or nests. Because western pond turtles do not begin to reproduce until several years into their adult life and nests are rarely successful as they compete with predators (skunks, raccoons, etc.), the loss of even one nest can be devastating to the local population. Therefore, the potential for loss of individuals or nests is considered a significant impact.

In conclusion, there would be a potential impact on ~~California red-legged frog~~CRLF, CTS, western pond turtles, and their habitat. This impact is considered significant. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-1: Provide Construction Worker with Awareness Training for Special-Status Species and Sensitive Habitats in the Construction Area

ACTA will ensure that all construction personnel receive worker awareness training provided by a qualified wildlife biologist experienced in training non-specialists to ensure that they can recognize CRLF, western pond turtle, and other aquatic and riparian wildlife, and that they understand where sensitive resource areas are within the construction zone so that they could minimize their impact on all sensitive habitats.

Mitigation Measure BIO-2: Conduct Preconstruction Surveys and, if Necessary, Implement Measures to Protect California Red-Legged Frog, California Tiger Salamander

Prior to the start of construction activities, ACTA will retain a qualified biologist to conduct preconstruction surveys for CRLF and CTS in all suitable habitats in the study area. Surveys will take place no more than 72 hours prior to the onset of site preparation and initial ground-clearing activities. If the species is observed during preconstruction surveys, the biologist will remain on site during initial ground-disturbing activities to monitor individuals and ensure that CRLF and CTS are not affected by construction activities. If necessary, individual turtles, CRLF, and CTS will be relocated by a DFG approved biologist, in accordance with DFG specifications.

If individuals are observed in areas that will be directly affected by construction activities, a USFWS-approved biologist will capture those individuals and release them in approved, nearby habitats outside of the construction zone. In this case, individuals will likely be released back into the Old Alameda Creek channel but sufficiently outside of the affected area. Habitat in the region is very limited so if the Old Alameda Creek channel is deemed inappropriate for release, a release site outside of the immediate urban area in the eastern hills will be sought. The release site will be approved by USFWS and DFG. The on-site biologist will retain the right to halt work temporarily in sensitive areas to ensure that individuals are not lost as the result of construction activities.

Mitigation Measure BIO-3: Conduct Preconstruction Surveys and, If Necessary, Implement Measures to Protect Western Pond Turtle

Prior to the start of construction activities, ACTA will retain a qualified biologist to conduct preconstruction surveys for western pond turtle in all suitable habitats in the study area. Surveys will take place no more than 72 hours prior to the onset of site preparation and construction, and will review the suitable habitat for individuals and nests. If the species is observed during preconstruction surveys, the biologist will remain on site during initial ground-disturbing activities to monitor individuals and ensure that western pond turtles are not affected by construction activities. Whenever possible, the biologist will work with construction crews to avoid impacts on individuals. If necessary, individual turtles will be relocated by a DFG approved biologist, in accordance with DFG specifications.

If construction activities occur from May through July, there is the possibility of affecting active nests. If preconstruction surveys identify active nests, the biologist will establish visual no-disturbance buffer zones around each nest using temporary orange construction fencing. The demarcation will be permeable to allow young turtles to move away from the nest following hatching. The radius of the buffer zone and the duration of exclusion will be determined in consultation with DFG. The buffer zones and fencing will remain in place until the young have left the nest, as determined by a qualified biologist.

Mitigation Measure HWQ-1: Comply with National Pollutant Discharge Elimination System Requirements and Develop and Implement a Stormwater Pollution Prevention Plan

ACTA will comply with the requirements of the Alameda Countywide Clean Water Program (ACCWP) Stormwater Quality Management Plan (SWQMP), Alameda County's National Pollutant Discharge Elimination System (NPDES) General Construction Permit, and Caltrans NPDES permit where applicable before the onset of any construction activities. Compliance and coverage with the SWQMP and NPDES General Construction Permit will require controls of pollutant discharges that use BMPs and technology to reduce erosion and sediments to meet water quality standards. BMPs may consist of a wide variety of measures taken to reduce pollutants in stormwater and other non-point-source runoff. Measures range from source control, such as reduced surface disturbance, to the treatment of polluted runoff, such as detention basins.

A Stormwater Pollution Prevention Plan (SWPPP) will be developed by a qualified engineer or erosion control specialist in accordance with the San Francisco Bay RWQCB requirements for NPDES compliance and implemented prior to the issuance of any grading permit before construction. Additionally, local requirements by the City planning or public works departments will also be incorporated. The SWPPP will be kept on site during construction activity and will be made available upon request to representatives of the San Francisco Bay RWQCB.

The SWPPP will include BMPs to be used for the East-West Connector Project and may include the following practices.

- Erosion control measures will be installed adjacent to suitable aquatic habitat to prevent soil from eroding or falling into these areas. Natural and biodegradable erosion control measures (i.e., straw wattles and hay bales) will be used. Plastic monofilament netting (erosion control matting) will not be allowed because salamanders and frogs can become caught in this type of erosion control material.~~Employ temporary erosion control measures (such as silt fences, staked straw bales and wattles, silt and sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) to control erosion from disturbed areas.~~
- Contain soil and filter runoff from disturbed areas by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.
- ~~Use other temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) to control erosion from disturbed areas as necessary.~~
- Use a dry detention basin (which is typically dry except after a major rainstorm, when it will temporarily fill with stormwater), designed to decrease runoff during storm events, prevent flooding, and allow for off-peak discharge. Basin features will include maintenance schedules for the periodic removal of sediments, excessive vegetation, and debris that may clog basin inlets and outlets.
- Cover, or apply nontoxic soil stabilizers to, inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways.

- Ensure that no earth or organic material will be deposited or placed where it may be directly carried into a stream, marsh, slough, lagoon, or body of standing water.
- Ensure that grass or other vegetative cover will be established on the construction site as soon as possible after disturbance.
- Locate staging areas at least 50 feet away from any drainages.
- Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete; solvents and adhesives; thinners; paints; fuels; sawdust; dirt; gasoline; asphalt and concrete saw slurry; heavily chlorinated water.

ACTA, in coordination with the city planning or public works departments, will select a combination of BMPs to minimize runoff flows and remove contaminants from stormwater discharges. The final selection of BMPs will be subject to approval by the RWQCB. ACTA will verify that a Notice of Intent has been filed with the State Water Resources Control Board (State Water Board) and that a SWPPP has been developed before allowing construction to begin. ACTA will perform inspections of the construction area, to verify that the BMPs specified in the SWPPP are properly implemented and maintained. ACTA will notify contractors immediately if there is a noncompliance issue and will require compliance. If necessary, ACTA will require that additional BMPs be designed and implemented if those originally constructed do not achieve the identified performance standard.

Impact BIO-4: Potential Loss of Nesting Migratory Birds, including Raptors, or Loss of Their Nests or Eggs (Less than Significant with Mitigation)

Construction activities would require the use of heavy equipment, which could cause disturbance to birds and raptors nesting and foraging in the area. General human presence, activity, and noise during project construction may also disturb nesting and foraging. All natural and landscaped areas provide suitable nesting habitat for migratory birds. If occupied nests are present on, or adjacent, to the construction area, construction activities could result in the abandonment of nests, the death of nestlings, or the destruction of eggs in active nests. Because the death of nestlings or destruction of eggs would violate these acts, this impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-4: Conduct Site Preparation and Construction Activities between September 1 and ~~March 14~~January 31 to Avoid the Typical Nesting Period of Migratory Birds, and Implement Preconstruction Surveys and Protective Measures if Necessary

Site preparation and initial ground disturbance that require vegetation removal will occur between September 1 and ~~March 14~~January 31, outside the migratory bird nesting period (~~March 15~~February 1 through August 31). Additionally, any demolition of structures will occur outside of the typical nesting period to avoid loss of birds that nest on structures (e.g., phoebes, swallows). If vegetation removal occurs outside the nesting period, no preconstruction survey will be required.

If construction activities must occur between ~~March 15~~February 1 and August 31 during the nesting period, ACTA will retain a qualified wildlife biologist to conduct a survey for nesting raptors and migratory birds that may nest in any available habitats that will be removed during construction. Surveys will take place no more than 48 hours prior to vegetation removal and will cover all suitable raptor and migratory bird nesting habitat that will be affected directly or any adjacent areas where nesting birds may be affected by construction noise or human presence. This includes areas potentially used by ground-nesting migratory bird species.

The potential habitats to be surveyed will be determined by the qualified biologist during the survey. If an active nest is discovered, the biologist will establish a no-disturbance buffer zone around the nest tree (or, for ground-nesting species, the nest itself). This no-disturbance zone will be marked with some visual markers (flagging or fencing) that are easily identified by the construction crew, and will not draw attention to the nesting bird. Buffers will remain in place as long as the nest is active or young remain in the area and are dependent on the adults. No construction activity of any type will be permitted within buffer zones. In general, the minimum buffer zone widths will be 300 feet for white-tailed kite and raptors, and 250 feet for migratory birds. Based on discussion with DFG, buffer widths may be modified, depending on the proximity of activities to the nest(s) and whether the nest(s) will have a direct line of sight to construction activities, existing disturbance levels at the nest(s), local topography and vegetation, the nature of proposed activities, and the species potentially affected.

Impact BIO-5: Degradation of Water Quality in Aquatic Resources from Construction Activities (Less than Significant with Mitigation)

General construction activities in or near aquatic resources, including Old Alameda Creek and the Line M Channel, could increase erosion processes, thereby increasing the potential for releasing sediment and other water quality constituents into aquatic resources. Fine sediments can increase turbidity. Increased turbidity can degrade aquatic habitat and increase mortality of aquatic organisms. Although such an event is unlikely, refueling, operation, and storage of construction equipment and materials could result in accidental spills of pollutants, such as concrete, sealants, oil, and paint, into the river.

This impact is considered significant. Implementation of a SWPPP as part of the NPDES permit, as discussed under Section 3.7, Hydrology and Water Quality, as well as the following mitigation measure, would reduce this impact to a less-than-significant level.

Mitigation Measure HWQ-4: Implement Additional Water Quality Protection Measures to Reduce Sediment in Surface Waters during Construction

If construction occurs when flows are present in on-site surface waters (Old Alameda Creek, Line M Channel, and other drainages), the contractor will implement measures to protect surface water quality. These measures may include flow diversions, impoundments (e.g., diversion structures), or other methods to avoid the direct exposure of surface water to sediment created as part of construction activity. As a performance standard, the measures will maintain basin plan standards for turbidity. If ambient turbidity is greater than 50 NTUs, then project construction will not exceed 10% over the ambient conditions.

Where Alternative 1 has potential to result in elevated turbidity, monitoring will be performed at least twice daily at upstream and downstream locations to determine whether the standards outlined above have been met. In the event that they are not being met, the turbidity-generating activities will cease until turbidity is within the identified limits, and construction methods or turbidity control measures will be modified to ensure that turbidity limits continue to be met.

Impact BIO-6: Loss of Wetlands and Other Waters of the United States and of the State (Less than Significant with Mitigation)

Construction activities associated with the new roadway, the wetlands mitigation plan (Mitigation Measure BIO-5), and the outfalls from the infiltration basin pipelines (Mitigation Measure HWQ-5) would result in temporary and permanent impacts on wetlands and other waters that are under the jurisdiction of the United States and of the state. Permanent impacts would result from permanent removal of habitat and wetland features and replacement with the project's physical structures, such as roadways, bridges, and retaining walls. Acreage estimates of permanent jurisdictional wetlands and waters impacts are provided in Table 3.3-4 and below based on preliminary design drawings of the project alignment and on the project wetland delineation (ICF Jones & Stokes 2008), and the draft wetlands mitigation plan (described in Mitigation Measure BIO-5).

- Line M Channel. The new roadway would permanently remove 0.23 acre (1,100 linear aquatic feet) of the Line M Channel that currently extends along the north side of the project alignment. Alternative 1 would replace the open culvert with a pipeline that would extend beneath the new roadway on the north side.
- Basin 2C. The new roadway would require the removal of Basin 2C, resulting in permanent impacts on 0.87 ~~0.80~~ acre of wetlands or waters of the United States and state.
- New Basin. The new roadway would require the removal of the New Basin, which is approximately 2.85 acres. The New Basin is not a water of the Unites States, but the state may claim jurisdiction over this feature. This

aspect of Alternative 1 may result in 2.85 acres of permanent impacts on waters of the state.

- Old Alameda Creek. Alternative 1 entails constructing the wetlands mitigation site along the banks of Old Alameda Creek and installing a new outfall in the banks of Old Alameda Creek to receive water from the project-related diversion of the Line M Channel. The outfall structure would likely be comprised of a 36-inch outfall pipe and 110 square foot rock slope protection area on the creek bank, equating to less than 0.01 acre of permanent impact on wetlands under federal and state jurisdiction for this aspect of Alternative 1. Alternative 1 would also result in temporary impacts at this location resulting from construction access to install the outfall.

In total, there would be a permanent loss of approximately 1.03 acres of wetlands or other waters of the United States. If jurisdiction is taken by the state over the New Basin, an additional 2.85 acres of waters of the state would be permanently affected. This is considered a significant impact. Implementation of the mitigation measures below would reduce this impact to a less-than-significant level. Mitigation Measure BIO-5 includes preparation of a wetlands mitigation plan. A conceptual mitigation plan was developed for the proposed project, and the plan developed for Alternative 1 would be similar. Refer to Figure 3.3-3 in Chapter 3, Section 3.3 of the Draft EIR.

Alternative 1 would also result in temporary impacts on jurisdictional wetlands and waters as a result of mitigation implementation. Construction specifications developed later in the project design process would allow the calculation of temporary acreages for wetlands so affected. In addition, final planning for the wetland mitigation site would provide specific locations for implementation actions to support the creation of the mitigation site. At that time, temporary acreages would be calculated. These acreages would then be mitigated for, in addition to the permanent impact acreages that have been identified, through the design of the wetlands mitigation plan for Alternative 1. Implementation of the mitigation measures described below would reduce this impact to a less-than-significant level.

~~**Table 3.3-4.** Preliminary Wetland Mitigation Planning Area Habitat Acreages~~

~~Habitat Type~~	~~Area Affected~~	~~Mitigation Area Required (based on a 2:1 ratio)~~
~~Emergent wetland (Line M Channel)~~	~~0.23~~	~~0.46~~
~~Herbaceous wetland (Basin 2c)~~	~~0.80~~	~~1.60~~

Table 3.3-4. Impacts and Mitigation for Aquatic Features, Riparian Habitat, and Wetlands in the Study Area for Alternative 1[2]

Habitat Type	Impacts				Mitigation Calculations							Mitigation Requirements (See Figure 3.3-3)		
					Mitigation Ratio		Calculated Mitigation					Wetland Mitigation Plan		Riparian Vegetation Restoration
	Stream Length (linear feet)	Permanent (acres)[1]	Temporary from WMP (acres)[2]	Other Temporary (acres)[3]	Permanent	Temporary	Stream Length (linear feet)	Permanent (acres)[1]	Temporary from WMP (acres)[2]	Other Temporary (acres)[3]	Subtotal Required Mitigation (acres)	(linear feet)	(acres)	(acres)
Willow Riparian/ Woodland Scrub	-	1.7[a]	3.2	2.2	2:1	1:1	-	3.5	3.2	2.2	8.9[e]	-	6.7	2.3
Wetlands	-	1.2[b]	0.0	0.4	2:1	1:1	-	2.3	0.0	0.4	2.7[f]	-	2.7	0.0
Open Waters	1132[d]	0.4[c]	0.0	0.0	1:1	-	1132	0.4	0.0	0.0	0.4[g]	1075	0.9	0.0
Subtotals	1132	3.3	3.2	2.6	-	-	1132	6.2	3.2	2.6	12.0	1075	10.3	2.3
Total Extent of Mitigation												**1075[h]**	**12.6[i]**	

Notes:

The numbers in this table are based on the proposed project footprint, most recent vegetation mapping (Figure 3.3-1), and GIS calculations in March 2009. Because Alternative 1 results in a much smaller amount of impacts to wetlands and willow riparian/woodland scrub impacts than the proposed project, the acreage needed to mitigate these impacts for Alternative 1 will be substantially less than that stated in the table and shown in Figure 3.3-3. The required mitigation will be determined during the permitting process if Alternative 1 be selected.

1 Permanent impacts and mitigation for constructing the new roadway, bicycle/pedestrian trail, and infiltration basin overflow pipelines/outfalls.

2 Temporary impacts and mitigation for implementing the Wetland Mitigation Plan (WMP).

3 Temporary impacts and mitigation for the 30 foot disturbance area on both sides of the new roadway and bicycle/pedestrian trail.

a Acreage of willow riparian/woodland scrub that would be permanently impacted by construction of the new roadway, bicycle/pedestrian trail, and infiltration basin overflow pipelines. Includes habitat associated with Old Alameda Creek (OAC) and the Alameda Creek Flood Control Channel (ACFCC).

b Acreage of wetlands that would be permanently impacted by construction of the new roadway, bicycle/pedestrian trail, and infiltration basin overflow outfalls. Includes habitat associated with Basin 2C (0.87 acre), OAC (0.07 acre), and ACFCC (0.22 acre) for a total of 1.16 (1.2) acres.

c Acreage of open waters that would be permanently impacted by construction of the new roadway and bicycle/pedestrian trail. Includes habitat associated with Line M (0.23) and ACFCC (0.07) for a total of 0.35 (0.4) acre.

d Total linear feet of open waters (Line M) that would be permanently impacted by the project.

e Total mitigation required for permanent and temporary impacts to willow riparian/woodland scrub is 8.9 acres [1.7 acres x 2 (2:1 ratio) = 3.5 acres] + [3.2 acres x 1 (1:1 ratio) = 3.2 acres] + [2.2 acres x 1 (1:1 ratio) = 2.2 acres]. The WMP includes 6.7 acres of mitigation (3.5 acres + 3.2 acres), and an additional 2.3 acres are mitigated through riparian vegetation along OAC (replacement in kind of vegetation disturbed during construction).

f Total mitigation required for permanent and temporary impacts to wetlands is 2.7 acres [1.2 acres x 2 (2:1 ratio) = 2.3 acres] + [0.4 acres x 1 (1:1 ratio) = 0.4 acre].

g Total mitigation required for permanent and temporary impacts to open waters 0.4 acres [0.4 acre x 1 (1:1 ratio)]. The WMP includes 0.9 acre of mitigation, which is 0.5 acre beyond calculated required mitigation.

h The total aquatic linear feet impacted and calculated for mitigation is approximately 1,100 feet. When calculated using GIS, the impacted area is 1,132 feet, and the mitigation area is 1,075 feet. The slight difference is compensated by the 0.5 acre extra provided in the WMP (see footnote "g" above).

k The total mitigation acreage proposed by the project is 12.6 acres (10.3 acres WMP + 2.3 acres Riparian Vegetation Restoration), which is 0.6 acre beyond calculated required mitigation.

Mitigation Measure BIO-5: Prepare and Implement a Wetlands Mitigation Plan that Includes the Creation of New Wetlands, ~~and~~ Waters of the United States and State, and Replacement and Enhancement of Willow Riparian Woodland and Scrub ~~to Replace Permanent Loss~~

A plan for wetlands mitigation ~~plan~~ adjacent to and including Old Alameda Creek will be developed by qualified wetland botanists, wildlife biologists, hydrologists, engineers, and restoration ecologists.

The wetlands mitigation plan will include the creation and enhancement of wetlands, riparian vegetation, and linear aquatic features ~~and open water~~ along Old Alameda Creek that will ensure no net loss of wetlands or waters of the United States or ~~State~~ state as a result of Alternative 1. Impacts on wetlands or waters and required compensation will be developed based on the wetland delineation prepared for the East-West Connector Project and in consultation with the Corps and RWQCB. ACTA will retain a qualified biologist to survey and flag willow riparian woodland and scrub that will be permanently affected by construction of Alternative 1, and the mitigation plan will include replacement and enhancement of existing willow riparian woodland and scrub along Old Alameda Creek to ensure no net loss of willow riparian woodland and scrub.

The wetlands mitigation plan will evolve throughout the project planning so that a self-sustaining mosaic of vegetation communities will replace those affected through project implementation. Ongoing planning efforts will include further input from ICF Jones & Stokes biologists and restoration planners, and consultation with ACTA as further project details are defined. In order to meet the objectives of the mitigation planning process and establish the proposed wetland mitigation site at Old Alameda Creek, Alternative 1 ~~would~~ will include:

- diverting water from Line M Channel to increase flow to Old Alameda Creek;
- creating an enhanced open channel segment of the Line M Channel drainage alignment to extend to the continuous linear aquatic habitat of Old Alameda Creek;
- grading new channel banks and regrading creek banks to create benches for additional waters, wetlands, and vegetation; and
- planting native wetland and riparian vegetation.

A draft wetlands mitigation plan for the wetlands mitigation site is shown in Figure 3.3-3. Mitigation acreages for affected habitats and linear feet for linear aquatic features are included in Table 3.3-4. For purposes of analyzing and disclosing environmental impacts in this Draft EIR, Figure 3.3-3 assumes that the wetlands mitigation plan will be similar in shape and provide approximately the same amount of coverage as that of the proposed project; however, this is a very conservative assumption because Alternative 1 would affect a much smaller amount of wetlands and riparian habitat than the proposed project. Unlike the proposed project, Alternative would not include bridge construction over and fill within the Alameda Creek Flood Control Channel and Old Alameda Creek. Therefore, the plan presented in Figure 3.3-3 is over-inclusive and would not likely include the additional wetlands on the west side of Old Alameda Creek in

Figure 3.3-3
Draft Wetlands Mitigation Plan
ACTA East-West Connector Project, Alternative 1

April 2009

Q:\PROJECTS\TYLIN\00703_07\MAPDOC\BIOASSESS\FIG_3.3-3_MITIGATION_ALT1.MXD_PG (4-1-09)

the City of Fremont. Acreage numbers provided in Table 3.3-4 present an estimate of the impact and mitigation acreages required for Alternative 1. The specifics of the plan and the acreages will evolve over time as project details are finalized, and the slightly scaled-down version of the wetlands mitigation plan will be solidified as the permit process for Alternative 1 progresses.

Because the plan is conceptual and will require coordination and approval from the Corps and RWQCB, specific information on the anticipated amount of excavation required to implement the plan is not finalized. Based on the draft wetlands mitigation plan for the proposed project, which estimates 230,000 cubic yards of excavation, a conservative estimate of 200,000 cubic yards was assumed for Alternative 1. Thus, there would be secondary impacts from implementation of this mitigation, including loss of nonnative grasslands and riparian vegetation and increased air emissions. Construction-related impacts have been addressed in this and other sections of the Draft EIR. Compensation for impacts on biological resources is included in this wetlands mitigation plan.

The wetlands mitigation plan includes creating an approximately 1,100-foot linear aquatic feature (open channel) adjacent and connecting to the existing segment of Old Alameda Creek to provide 1:1 compensation for the loss of linear aquatic features (from culverting Line M Channel). The new open channel would begin on the south side of the new roadway at the outfall for the Line M Channel diversion pipeline, extend along the east side of Old Alameda Creek, and connect with Old Alameda Creek at its upstream end near the Line N-12 outfall. The new secondary channel will convey flow from the Line M Channel diversion pipeline into Old Alameda Creek.

The wetlands mitigation plan includes creating 2.7 acres of wetlands within the new secondary channel and in the upstream end of Old Alameda Creek to provide 2:1 compensation for the loss of wetlands and waters of the United States and waters of the state (from placing fill in Basin 2C and Old Alameda Creek).

The draft wetlands mitigation plan prepared for the proposed project includes creation of 6.7 acres of willow riparian woodland and scrub to replace (2:1 compensation) loss of this sensitive habitat (from construction of the new roadway and bicycle/pedestrian trail). An additional 2.3 acres of willow riparian woodland and scrub would be restored (1:1 compensation) in areas temporarily disturbed by construction activities. Because Alternative 1 results in a much smaller amount of impacts to wetlands and willow riparian/woodland scrub impacts than the proposed project, the acreage needed to mitigate these impacts for Alternative 1 will be less and will be determined during the permitting process if Alternative 1 be selected.

The wetlands mitigation plan will be supported by flow from the Line M Channel diversion pipeline, as well as from Line N-12, which currently enters Old Alameda Creek at its southernmost point near Quarry Lakes Drive. The Line M Channel diversion pipeline will discharge into a concrete dissipation structure located at the upstream end of the new secondary channel.

ACTA will be responsible for implementation of the wetlands mitigation plan, including construction and maintenance of the wetlands mitigation site until it is established based on permitting criteria. Post-construction maintenance responsibilities will be the subject of future agreements between and amongst ACTA, the cities of Fremont and Union City, and the Alameda County Flood Control and Water Conservation District. Once established, the mitigation site will be self-sustaining.

Mitigation Measure BIO-6: Identify Wetlands and Other Waters Temporarily Affected and Install Protective Fencing during Construction

ACTA will retain a qualified biologist to survey and flag wetlands that could be temporarily affected by project construction. All wetlands will be protected from encroachment and damage during construction by installing temporary construction fencing. Fencing will be bright-colored and highly visible. Fencing will be installed under the supervision of a qualified biologist to prevent damage to wetlands during installation. The fencing will protect all potentially affected wetlands and a minimum 20-foot buffer zone. Where appropriate and feasible, the buffer zone will be expanded up to 100 feet. Fencing will be installed before any site preparation or construction work begins and will remain in place for the duration of construction. Construction personnel will be prohibited from entering fenced areas (the exclusion zone) for the duration of project construction. Essential vehicle operation on existing roads will be permitted, but all other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited within the exclusion zone.

Impact BIO-7: Permanent Loss and Temporary Disturbance of a Sensitive Community—Willow Riparian Woodland and Scrub (Less than Significant with Mitigation)

The wetlands mitigation plan (constructed as part of Mitigation Measure BIO-7 and shown in Figure 3.3-3) and installing ~~Installing~~ the outfall structure for the Line M Channel in Old Alameda Creek would result in temporary and permanent impacts on willow riparian woodland and scrub. Based on preliminary design drawings of the wetlands mitigation plan, impacts would amount to disturbance of approximately 3.2 acres through implementation of the wetlands mitigation plan (which creates open water, wetlands, and riparian habitat)~~may entail disturbance of a small amount (less than 0.01 acre) of willow riparian woodland and scrub~~. Because of its scarcity in the study area, its biological importance, and its sensitivity to disturbance, any impacts on riparian habitat, including willow riparian woodland and scrub, are considered significant. Temporary impacts on willow riparian woodland and scrub habitat through implementation of the wetlands mitigation plan would be replaced at a ratio of 1:1. Impacts would be reduced to a less-than-significant level by implementing the following mitigation measures.

Mitigation Measure BIO-5: Prepare and Implement a Wetlands Mitigation Plan that Includes the Creation of New Wetlands, ~~and~~ Waters of the United States and State, and Replacement and Enhancement of Willow Riparian Woodland and Scrub ~~to Replace Permanent Loss~~

Mitigation Measure BIO-7: ~~Identify~~ Protect Willow Riparian Woodland and Scrub Habitat ~~Temporarily Affected and Install Protective Fencing~~ during Project Construction

ACTA will retain a qualified biologist to survey and flag the limits of construction in areas that support willow riparian woodland and scrub ~~that could be temporarily impacted by project construction~~. ~~All such riparian vegetation~~ The construction contractor will be required to protect ~~protected by~~ these areas from encroachment and damage during project construction by installing temporary construction fencing. Fencing will be bright-colored and highly visible. Fencing will be installed under the supervision of a qualified biologist to prevent damage to riparian vegetation during installation. The fencing will protect all potentially affected wetlands and a minimum 20-foot buffer zone. Where appropriate and feasible, the buffer zone will be expanded up to 100 feet. Fencing will be installed before any site preparation or construction work begins and will remain in place for the duration of construction. Construction personnel will be prohibited from entering fenced areas (the exclusion zone) for the duration of project construction. Essential vehicle operation on existing roads will be permitted, but all other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited within the exclusion zone.

Impact BIO-8: Loss of Disturbed or Non-Sensitive Habitats (Less than Significant)

Constructing the Alternative 1 road alignment would result in permanent loss of approximately 2.07 acres of nonnative annual grassland and approximately 0.25 acre of urban landscaping. Additionally, the wetlands mitigation plan (constructed adjacent to Old Alameda Creek, as part of Mitigation Measure BIO-5) and the associated trail realignment south of the wetlands mitigation area would result in the permanent loss of approximately 6.4 acres of nonnative grassland, 0.21 acre of coyote brush scrub, and 0.48 acre of urban landscaping to open water, wetland, and willow riparian woodland and scrub habitat.

In summary, approximately 8.47 acres of nonnative grassland, 0.73 acre of urban landscaping, and 0.21 acre of coyote brush scrub could be lost. These acreages are preliminary and will be finalized during the final design process, when the mitigation plan for Alternative 1 is finalized. These types of disturbed areas and non-sensitive habitats are common throughout the region and do not provide significant wildlife habitat value. This impact is considered less than significant. No mitigation would be required.

Impact BIO-9: Loss of or Disturbance to Protected Trees (Less than Significant with Mitigation)

Alternative 1 would remove trees that qualify for protection by the Union City Tree Protection Ordinance. Additionally, project construction could disturb tress that qualify for protection but are not planned for removal. Construction activities, including the use of heavy equipment and vehicles, stockpiling of excavated materials, and tree removal, could inadvertently damage trees designated for preservation or protection. These activities can damage root systems by:

- directly cutting or injuring roots,
- compacting the soil and reducing the tree's ability to take up water, or
- compromising the tree's structural integrity.

In addition, injuries to limbs or trunk can alter the tree's ability to transport water and nutrients, or compromise its structural integrity. All of these impacts can decrease a tree's chances of survival.

Removal of or damage to trees protected under the Union City tree ordinances and designated for preservation in the project area would be considered a significant indirect impact. The following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-8: Prepare an Arborist Report and Develop and Implement a Landscaping Plan that Includes Compensation for Loss of Protected Trees

ACTA will retain a qualified arborist to prepare an arborist report detailing the size and health of trees that fall within the project alignment and could be removed by the Alternative 1. The report will identify trees protected under the City of Union City Tree Protection Ordinance. ACTA will hire a qualified landscape architect to prepare a landscape plan that includes adequate compensation or replacement for the loss of protected trees. The Union City Tree Protection Ordinance requires replacement trees in a 15-gallon container at a ratio to be determined by the City of Union City staff.

The landscaping plan for the Alternative 1 alignment will specifically identify the locations where replacement trees are to be planted. The replacement trees will be located on site to the extent feasible, based on space considerations. The plan will be subject to review and approval by Union City.

Newly planted trees will be monitored by ACTA at least once a year for 3 years. Each year, any trees that do not survive will be replaced. Any trees planted as remediation for failed plantings will then be monitored for a period of 3 years in the same manner.

Mitigation Measure BIO-9: Install Temporary Fencing around Remaining Protected Trees

Trees that are identified as "protected trees" in the arborist report and that will remain during project construction will be protected from damage during construction by installing temporary fencing. If possible, fencing will be located immediately outside each tree's drip line. Fencing will keep construction equipment away from trees and prevent unnecessary damage to or loss of heritage trees in the project area. Like newly planted trees, any protected trees that are retained and are located adjacent to construction activities will be monitored by ACTA at least once a year for 3 years. Each year, any trees that do not survive will be replaced. Any trees planted as remediation for failed plantings will then be monitored for a period of 3 years in the same manner.

Impact BIO-10: Potential Introduction or Spread of Noxious Weeds into a Sensitive Plant Community (Less than Significant with Mitigation)

Construction activities in Old Alameda Creek could introduce noxious weeds or result in their spread into a sensitive community that is not currently infested (willow riparian woodland and scrub). This could degrade habitat for common native and special-status plant and wildlife species. Plant parts or seeds of noxious weeds may be dispersed via construction equipment or personnel if appropriate measures are not implemented. The introduction or spread of noxious weeds could result in the long-term degradation of riparian willow scrub in the area. This is considered a significant indirect impact. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-10: Implement Measures to Avoid or Minimize the Dispersal of Noxious Weeds into Sensitive Riparian Areas during Construction

To avoid or minimize the introduction or spread of noxious weeds into sensitive riparian areas, ACTA will incorporate the following measures into the construction BMPs.

- If erosion control is needed along the banks of Old Alameda Creek, only certified weed-free erosion-control materials will be used.
- Construction supervisors and managers will be educated about noxious weed identification and the importance of controlling and preventing their spread.
- Equipment that enters the construction area adjacent to Old Alameda Creek will be cleaned at designated wash stations before entering the project area. Equipment traveling between the staging area and the riparian construction area will be cleaned once at the start of the project and only subsequently if the equipment leaves the area and returns.

Section 3.4
Cultural Resources

3.4.1 Introduction

This section describes the affected environment and regulatory setting for cultural resources within the project area. It also describes the impacts on cultural resources that may result from implementation of Alternative 1, and mitigation measures that would reduce these impacts.

This section summarizes information presented in the Cultural Resources Inventory and Evaluation of the East-West Connector Project, Alameda County, California (Cultural Resources Report) (ICF Jones & Stokes 2008).

3.4.2 Setting

Sources of Information

The key sources of data and information used in the preparation of this section are listed below.

- Cultural Resources Inventory and Evaluation of the East-West Connector Project, Alameda County, California (ICF Jones & Stokes 2008).
- Historic Property Survey Report and Finding of No Effect, Route 84 Realignment Project (Basin Research Associates 1995).
- Historic Architectural Survey Report, Route 84 Realignment Project Alternatives, Route 84 Realignment Project (Ward Hill 1994).
- Archaeological Survey Report, Route 84 Realignment Project Alternatives in Hayward, Union City and Fremont (Basin Research Associates 1994).

Existing Conditions

This section discusses the existing conditions related to cultural resources in the study area, presents regulations pertinent to project impacts, and describes the physical setting in the study area. The study area for cultural resources is defined by the limits of the construction footprint, although for historic resources, the entirety of each property affected by project construction and right-of-way expansion is also considered.

The existing conditions discussion is based on a literature review and pedestrian surveys, as fully described in the Cultural Resources Inventory. Literature review entailed a records search (encompassing the study area and the area within a 1-mile radius) at the Northwest Information Center of the California Historical Resources Information System, and a review of two architectural history-related reports prepared in 1994 and 1995 for the SR 84 Realignment Project, which present prior survey results of the East-West Connector Project alignment. Separate pedestrian surveys were conducted by ICF Jones & Stokes archaeologists and architectural historians, who faxed and mailed project information to the Native American Heritage Commission (NAHC) and local Native American groups in order to expedite consultation. As of the time of publication, no replies from these groups had been received.

This existing conditions description focuses on resources known to exist or potentially present within the study area.

Archaeological Resources

There are no known archaeological resources in the study area. The records search indicated no previously recorded archaeological resources within the project area or the 1-mile radius. Similarly, the pedestrian survey identified no archaeological resources. Based on the negative results of the records search, the negative results of the archaeological survey, and the project area's highly disturbed nature, there is a low potential for the presence of archaeological resources within the Alternative 1alignment. The site survey also gave no indication that human remains would be present in the project area.

Archaeological resources usually lie beneath the ground surface and, despite the lack of evidence that archaeological resources exist in the study area, the total absence of such resources cannot be determined. The potential does exist for previously undiscovered archaeological resources to exist within the area.

Historic Resources

One structure in the project vicinity is 50 years old or older (i.e., predating 1958), which is generally the age threshold for reviewing buildings for historical significance. The Silva farmhouse is located at 35075 Alvarado-Niles Road, northwest of the Peterson farmhouse. This property was concluded to be ineligible for listing in the National Register of Historic Places (NRHP)[1] in the Ward Hill Report, a conclusion that that was confirmed by updated surveys by ICF Jones & Stokes. The Silva Farm includes a bungalow-style house built in approximately 1925, and features an adjacent barn. The Architectural

[1] NRHP is further defined below under Regulatory Setting.

Inventory/Evaluation form filed for the property in 1994 states, "although this bungalow has good integrity, it is a typical farmhouse from the 1920s and 1930s still common in much of the Fremont/Union City area." The barn was cited as having lost its original integrity as a result of "a number of insensitive alterations, and the deterioration of the exterior walls and roof," and since 1994, the roof of the barn has further deteriorated. (See 1994 Architectural Inventory/Evaluation for the Silva Farm, included in Appendix A of the Cultural Resources Report, Appendix J of this Draft EIR.) The property was also determined to not meet the listing criteria for the California Register of Historical Resources (CRHR).[2] Therefore, the Silva Farm is not considered a significant historic resource. Photos of the Silva farmhouse are shown in Appendix A of the Cultural Resources Report.

No other properties in the study area appear to be eligible for inclusion in the NRHP and CRHR.

Regulatory Setting

Federal

National Register of Historic Places

The National Park Service, a division of the U.S. Department of the Interior, administers the NRHP, the official list of the historic places in America that are deemed worthy of preservation. The NRHP was authorized by the National Historic Preservation Act of 1966, and now contains approximately 80,000 listings (National Parks Service 2008). A property is deemed NRHP-eligible if it:

- is associated with events that have made a contribution to the broad pattern of our history;
- is associated with the lives of people significant in our past;
- embodies the distinct characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- has yielded, or is likely to yield, information important in prehistory or history. (36 CFR 60.4.)

National Historic Preservation Act, Section 106

Section 106 requires federal agencies to take into account the effect of their undertakings on historic properties. If federal agencies (i.e., the U.S. Army

[2] CRHR is defined below under Regulatory Setting.

Corps of Engineers) have to issue permits for projects, then they will be required to comply with Section 106 of the NHPA.

The Section 106 process (as detailed in implementing regulations at 36 CFR 800) entails assessment of properties in the vicinity of the site for their eligibility for inclusion in the NRHP, identification of impacts on these properties, and consultation with the State Historic Preservation Officer (SHPO) and any other consulting or concerned parties to resolve adverse effects.

Section 106 defines historic properties as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP (36 CFR 800.16[1]).

State

California Register of Historical Resources

The CRHR, administered by the State Office of Preservation, is the state equivalent to the NRHR. It serves as a list of California's significant historic and archaeological resources, and is used by agencies, private groups, and citizens to indicate the resources deserved of protection. The CRHR is defined in PRC Section 5024.1 (California Office of Historic Preservation 2006).

A cultural resource is defined as eligible for the CRHR if it meets one or more of the following criteria:

- it is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- it is associated with the lives of persons important to our past;
- it embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values; or
- it has yielded, or may be likely to yield, information important to prehistory or history.

California Environmental Quality Act

CEQA requires assessment of impacts on cultural resources, and contains guidance on the identification of resources and analysis of impacts. Cultural resources are generally defined in the State CEQA Guidelines as buildings, sites, structures, objects, or districts, each of which may have historic, architectural, archaeological, cultural, or scientific significance (PRC 5024.1). CEQA states that if a proposed project would result in an effect that may cause a substantial adverse change in the significance of a historic resource, alternative plans or mitigation measures must be considered; however, only those impacts on "significant" historic resources need to be addressed (14 CCR 15064.5). The

CEQA statutes define a significant cultural resource as “a resource listed or eligible for listing on the California Register of Historical Resources” PRC 5024.1; 14 CCR 15064.5), which is defined above.

An archaeological resource is considered a significant cultural resource if meets the criteria for CRHR listing or if it is deemed a “unique archaeological resource.” A unique archaeological resource is one that meets one or more of the following criteria:

- it is associated with an event or person of recognized significance in California or American history or of recognized scientific importance in prehistory;
- it can provide information that is of demonstrable public interest and is useful in addressing scientifically consequential and reasonable research questions; or
- it has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind (PRC 21083.2).

CEQA requires identification of known resources and requires analysis of the project’s potential to have a substantial adverse change in the significance of the resources, with “substantial change” further defined as “the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historic resource would be materially impaired.”

California Health and Safety Code

The disturbance of human remains without authority of law is considered a felony (California Health and Safety Code Section 7052), and if human remains are Native American in origin, they are within the jurisdiction of the NAHC (California Health and Safety Code Section 7052.5c, California PRC Section 5097.98). When human remains are discovered in any location other than a dedicated cemetery, California Health and Safety Code (Section 7050.5, PRC Section 5097.98), prohibits further disturbance of the site and requires review by the respective county coroner. If the remains are determined to be of Native American origin, the NAHC is contacted and the descendents of the deceased are consulted as to the proper means of treating or disposing of the remains with appropriate dignity.

Local

Union City General Plan

The Union City General Plan discusses the presence of important cultural resources within the City and announces the importance of those resources to the City’s character and heritage. The General Plan identifies the maintenance of the City’s historic resources inventory—the Union City Cultural Resources Survey—

and establishes a Landmark and Historic Preservation Overlay Zone. The Alternative 1 alignment does not contain and is not adjacent to any features on the Union City Cultural Resources Survey, and the Landmark and Historic Preservation Overlay Zone does not apply to the study area.

Union City Zoning Ordinance

The Union City Zoning Ordinance (Title 18 of the Municipal Code) defines and the City's Landmark and Historic Preservation Overlay Zone and sets forth use and development restrictions within that zone. This overlay does not apply to the Alternative 1 alignment.

3.4.3 Impact Analysis

This section describes the impact analysis relating to cultural resources for Alternative 1. It describes the methods used to determine the impacts of Alternative 1 and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

Impacts on cultural resources for Alternative 1 were determined qualitatively. The geographic project construction footprint and methods of construction were reviewed in terms of their proximity to and physical impact on known cultural resources occurring in the project area, as well as their potential to have a physical impact on resources that may be present beneath the surface but that remain undiscovered. The methodology for determining existing and potentially occurring cultural resources, including field surveys and literature research, is described above under Existing Conditions.

Analysis of impacts considers such construction impacts as structural demolition and disturbance during grading work, and such operational impacts as increased proximity of t new roadway features to known cultural resources, resulting in noise or character degradation that could affect the integrity of a site as a cultural resource.

Significance Criteria

For this analysis, an impact pertaining to cultural resources was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines

Appendix G (14 CCR 15000 *et seq*.). A significant impact is identified if Alternative 1 would:

- cause a substantial adverse change in the significance of a historic resource as defined in Section 15064.5 of the State CEQA Guidelines;
- cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the State CEQA Guidelines; or
- disturb any human remains, including those interred outside of formal cemeteries.

The definitions of historic resources and archaeological resources, as stated in Section 15064.5 of the State CEQA Guidelines, are given above under Regulatory Setting.

Project Impacts and Mitigation Measures

Impact CUL-1: Construction Impacts on Archaeological Resources from New Roadway and Wetlands Mitigation Site (Less than Significant with Mitigation)

The new roadway is proposed within a semi-developed area that contains open fields, stormwater detention basins adjacent to residential development, and existing infrastructure. Construction would include clearing and grading for the new roadway, pile installation for bridges and grade separation structures, excavation for the underpass, utilities installment within the roadway. In addition, Alternative 1 would require excavation west of Alvarado-Niles Road for the diversion pipeline for Line M Channel and near Old Alameda Creek for the Line M Channel outfall structure, and the wetlands mitigation site would ~~likely~~ be constructed along Old Alameda Creek. Parts of the new roadway would be constructed below the existing grade. The Alternative 1 alignment would include a grade separation below the BART and UPRR tracks. Additional excavation may be conducted for utilities placement. The probability of previously undiscovered subsurface archaeological resources existing in this portion of the Alternative 1 alignment is low, but the absence of such resources cannot be confirmed. There is a chance that project grading and excavation could encounter significant archaeological resources, including Native American human remains.

This impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure CUL-1: Conduct Earthwork Monitoring by Qualified Archaeologist during Construction and Implement Management Measures if Resources are Discovered

ACTA will retain a qualified consulting archaeologist to monitor ground-disturbing activities in all trenching work for utilities installation. The grading plans for Alternative 1 will contain a note stating that all grading, excavation, or other ground-disturbing activities will be monitored by the consulting archaeologist. The consulting archaeologist will meet with the grading and/or excavation contractor prior to any grading or excavation to discuss the grading plan and explain the monitoring procedures to be followed if cultural resources are encountered. The consulting archaeologist will be present on site when initial ground-disturbing activities begin, and will monitor all grading, trenching, or other ground disturbance until the grading and trenching reach sterile sandstone or conglomerate strata (where it is assumed that no buried deposits would be present).

In the event cultural resources are encountered during project earthwork, the consulting archaeologist will be empowered to temporarily redirect, divert, or halt project activity to allow recovery of potentially significant cultural resources. The resource's significance will be determined by the archaeologist and, if the resource is deemed significant, it will be photographed at the site and mapped, before being collected or otherwise addressed in a manner deemed appropriate by the consulting archaeologist (e.g., resource avoidance, data recovery excavations, and so on). The consulting archaeologist will ensure that all significant cultural resources uncovered on the site are analyzed, collected, catalogued, and curated with the Northwest Information Center of the California Historical Resources Information System or other appropriate scientific institution, as deemed appropriate. At the completion of the project monitoring, the consulting archaeologist will prepare a report of findings, even if negative, and submit the report to ACTA and the Northwest Information Center. If cultural resources are not discovered by grading and excavation monitoring, this mitigation measure is not required.

If human remains are uncovered during project earthwork, work will cease and the Alameda County Coroner will be contact. If the remains are determined to be Native American in origin, the County Coroner will notify NAHC, which will determine and notify the most likely descendent, and coordinate the appropriate management of the remains. If human remains are not discovered by grading and excavation monitoring, this mitigation measure is not required.

Impact CUL-2: Change to Historic Resources from New Roadway (No Impact)

There are no historic resources within the project vicinity; therefore, Alternative 1 would have no impact on historic resources.

Section 3.5
Geology, Soils, and Seismicity

3.5.1 Introduction

This section describes the affected environment and regulatory setting for geology, soils, and seismicity within the project area. It also describes the impacts on geology and soils and impacts related to seismicity that would result from implementation of Alternative 1, and mitigation measures that would reduce these impacts.

Additional information on geology and soils is included in the Geologic and Seismic Report, East West Connector Between I-880 and Mission Boulevard (SR 238) (Parikh Consultants, Inc. 2008).

3.5.2 Setting

Sources of Information

The key sources of data and information used in the preparation of this geology, soils, and seismicity section include the following.

- Geologic & Seismic Report, East West Connector Between I-880 and Mission Boulevard (SR 238) (Parikh Consultants, Inc. 2008)
- 2002 Union City General Plan Policy Document (City of Union City 2002)

Existing Conditions

This section addresses the regional and project area geology and topography. Quaternary sediments and geologic hazards pertaining to the project area are emphasized.

Regional Geology

The project area is in Alameda County, which is located on the East Bay of the San Francisco Bay Plain. Alameda County is located at the northern end of the

Diablo Range of Central California. It is bounded on the north by the south flank of Mount Diablo, one of the highest peaks in the Bay Area, reaching an elevation of 3,849 feet. San Francisco Bay forms the western boundary, the San Joaquin Valley borders Alameda County on the east, and an arbitrary line from the Bay into the Diablo Range forms the southern boundary.

Geologic Units

General geologic features pertaining to the project area were evaluated by reference to the Quaternary Geology of Alameda County and Surrounding Areas, California (Helley and Graymer 1997). Based on this map, a number of different geologic units are present along the proposed alignment. The project area subsoils mainly consist of Basin Deposits (Qhb; Holocene), Natural Levee Deposits (Qhl; Holocene), and Alluvial Fan and Fluvial Deposits (Qhaf; Holocene) in the Alternative 1alignment. A description of the main geologic units is provided below.

- **Qhb:** Basin Deposits (Holocene)—Very fine silty clay to clay deposits occupying flat-floored basins at the distal edge of alluvial fans adjacent to the bay mud (Qhbm).
- **Qhl:** Natural Levee Deposits (Holocene)—Loose, moderately to well-sorted sandy or clayey silt grading to sandy or silty clay. These deposits are porous and permeable and provide conduits for transport of groundwater. Levee deposits border stream channels, generally on both banks, and slope away to more flat floodplain and basins.
- **Qhaf:** Alluvial Fan Deposits (Holocene)—Alluvial Fan Deposits are brown or tan medium dense to dense gravelly sand or sandy gravel that generally grade upward to sandy to silty clay. The alluvial fan is confined to narrow valley floors.

Subsurface Conditions

Based on existing soils and geologic literature pertaining to the project area, the subsoil is predominantly clay underlain by sand and gravel material. The subsoils consist of natural levee deposits composed of clayey silt to sandy/silty clay material. Verification of subsurface soil conditions would be undertaken during the planning, specification, and estimation phase of Alternative 1.

Seismicity

The project area is located in a seismically active part of northern California. Many faults exist in the San Francisco Bay Area. Major earthquakes have occurred in the vicinity of the project area in the past and can be expected to occur again in the near future. The 2002 Working Group on California Earthquake Probabilities estimated that there is a 62% probability of at least one magnitude 6.7 or greater earthquake to occur on one of the major faults within the San Francisco Bay region before 2030 (Working Group on California Earthquake Probabilities 2003). These faults are capable of producing earthquakes and may cause strong ground shaking at the project area.

Figure 3.5-1 displays active faults, including the Hayward Fault, Calaveras-Pacines-San Benito Fault, and San Andreas Fault, which are within the vicinity of the project area. A major earthquake on these faults could produce strong ground shaking throughout the project area. Maximum credible earthquake magnitudes for these faults have been determined, were researched on the California Seismic Hazard Map (Mualchin 1996), and are summarized in Table 3.5-1. These maximum credible earthquake magnitudes represent the largest earthquakes that could occur on the given fault based on the current understanding of the regional tectonic structure.

Table 3.5-1. Regional Faults and Distance to Project Area

Fault	Distance to Fault from Center of Project Area (Mile)	Maximum Credible Earthquake
Hayward (Strike-Slip)	1.6	7.5
Calaveras-Pacines-Benito (Strike-Slip)	8.3	7.5
San Andreas (Strike-Slip)	16.5	8.0
Source: Mualchin 1996.		

Seismic Hazards

Potential seismic hazards that may arise in the project area include ground shaking, surface fault rupture, and liquefaction.

Based on available geological and seismic data, the possibility of the project area to experience strong ground shaking may be considered moderate to high. In order to assess fault locations in relation to the project area, the Alquist-Priolo Special Studies Zones Maps for the Niles Quadrangle and Newark Quadrangle (The California Conservation 2000) were reviewed. Based on these publications, there are no active faults that pass through the project area. Therefore, the potential for fault rupture is considered relatively low.

Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a temporary but total loss of shear strength under the reversing, cyclic shear stresses associated with earthquake shaking. Submerged cohesionless sands and silts of low relative density are the types of soils that are usually susceptible to liquefaction. Clays are generally not susceptible to liquefaction. The Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility database was reviewed for the project area to determine liquefaction potential within the project area (Knudsen et al. 2000). Figure 3.5-2 shows the liquefaction potential for the project area and immediate vicinity.

For the most part, liquefaction susceptibility along the proposed alignment is considered moderate, with a small area along Alvarado-Niles Road considered very high. During the final design phase of Alternative 1, additional investigation would be undertaken to verify the liquefaction potential of this area.

Boring information relevant to the Alternative 1 alignment is available for the area between the two UPRR tracks, based on existing information and four additional borings undertaken for the project geotechnical study. This area is generally underlain by firm to very stiff lean clays overlying dense to very dense sands. Throughout this portion of the project area, the liquefaction potential along the Alternative 1alignment is generally low to moderate. However, additional investigation would also be undertaken in the final design phase of Alternative 1 to verify liquefaction potential.

Two potential ground failure types associated with liquefaction in the region are lateral spreading and differential settlement (Association of Bay Area Governments 2001). Lateral spreading involves a layer of ground at the surface being carried on an underlying layer of liquefied material over a gently sloping surface toward a river channel or other open face. Lateral spreading is common in the region and poses a moderate to significant hazard (Association of Bay Area Governments 2001).

Another common hazard in the region is differential settlement (also called ground settlement and, in extreme cases, ground collapse) as soil compacts and consolidates after the ground shaking ceases. Differential settlement occurs when the layers that liquefy are not of uniform thickness, a common problem when the liquefaction occurs in artificial fills. Settlement can range from 1% to 5%, depending on the cohesiveness of the sediments (Tokimatsu and Seed 1984).

Erosion and Sedimentation

The project area was evaluated for erosion and sedimentation potential based on the National Cooperative Soil Survey Map (Natural Resources Conservation Service 2008). The underlying native soil units and characteristics are summarized in Table 3.5-2.

Table 3.5-2. Underlying Soil Characteristics

Soil Unit	Map Unit Name	Surface Texture	Permeability	Slope (%)	Drainage	Shrink-Swell Potential
DaB	Danville Loam	Silty Clay Loam	Moderately low to moderately high	3-10	Well drained	Moderate (depth of 0-21 inches and 53-80 inches) High (depth of 21-53 inches)
107	Clear Lake	Clay	Moderately low to moderately high	0–2	Poorly drained	High
161	Yolo Loam	Silt	Moderately high to high	0–2	Well drained	Moderate

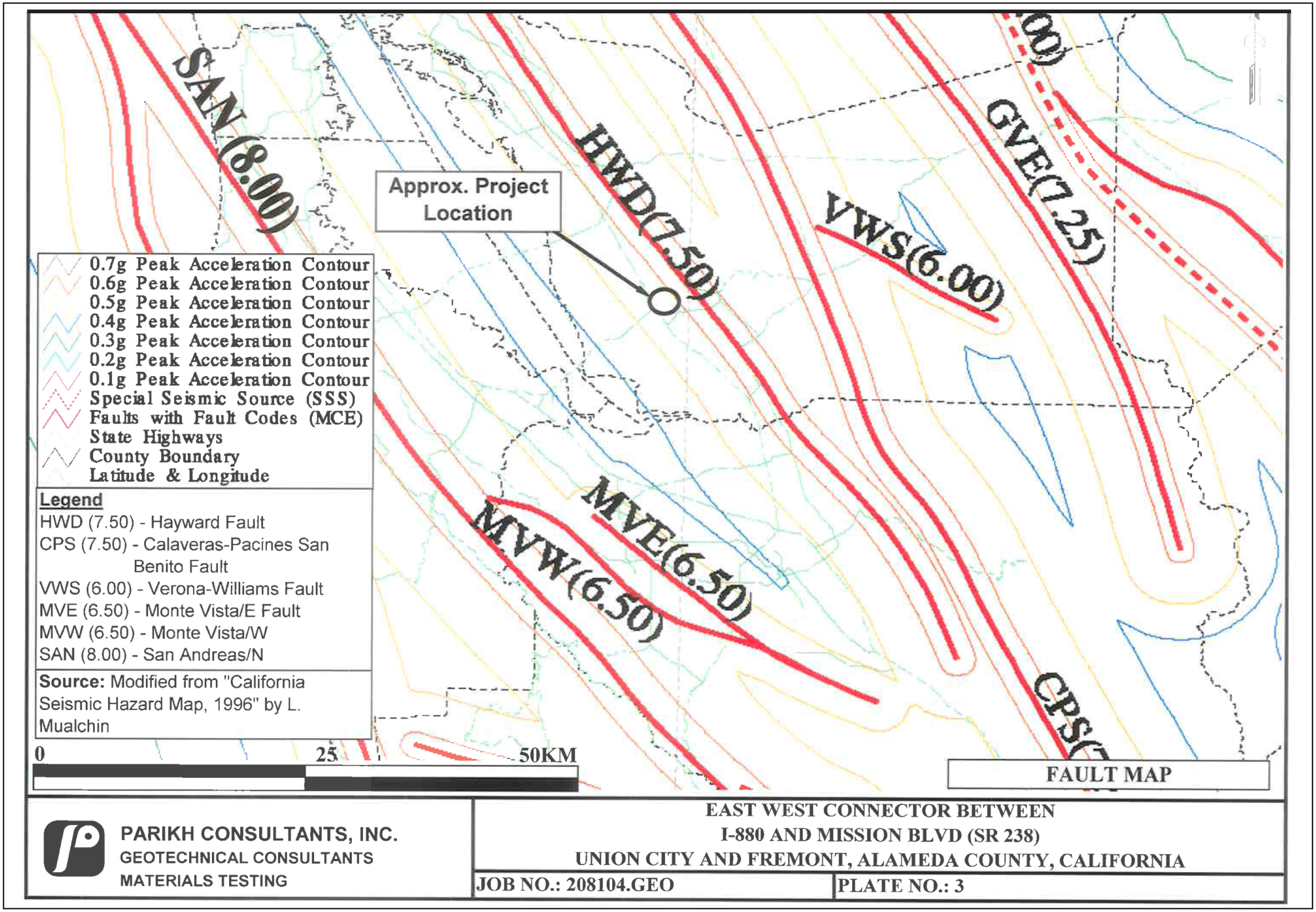

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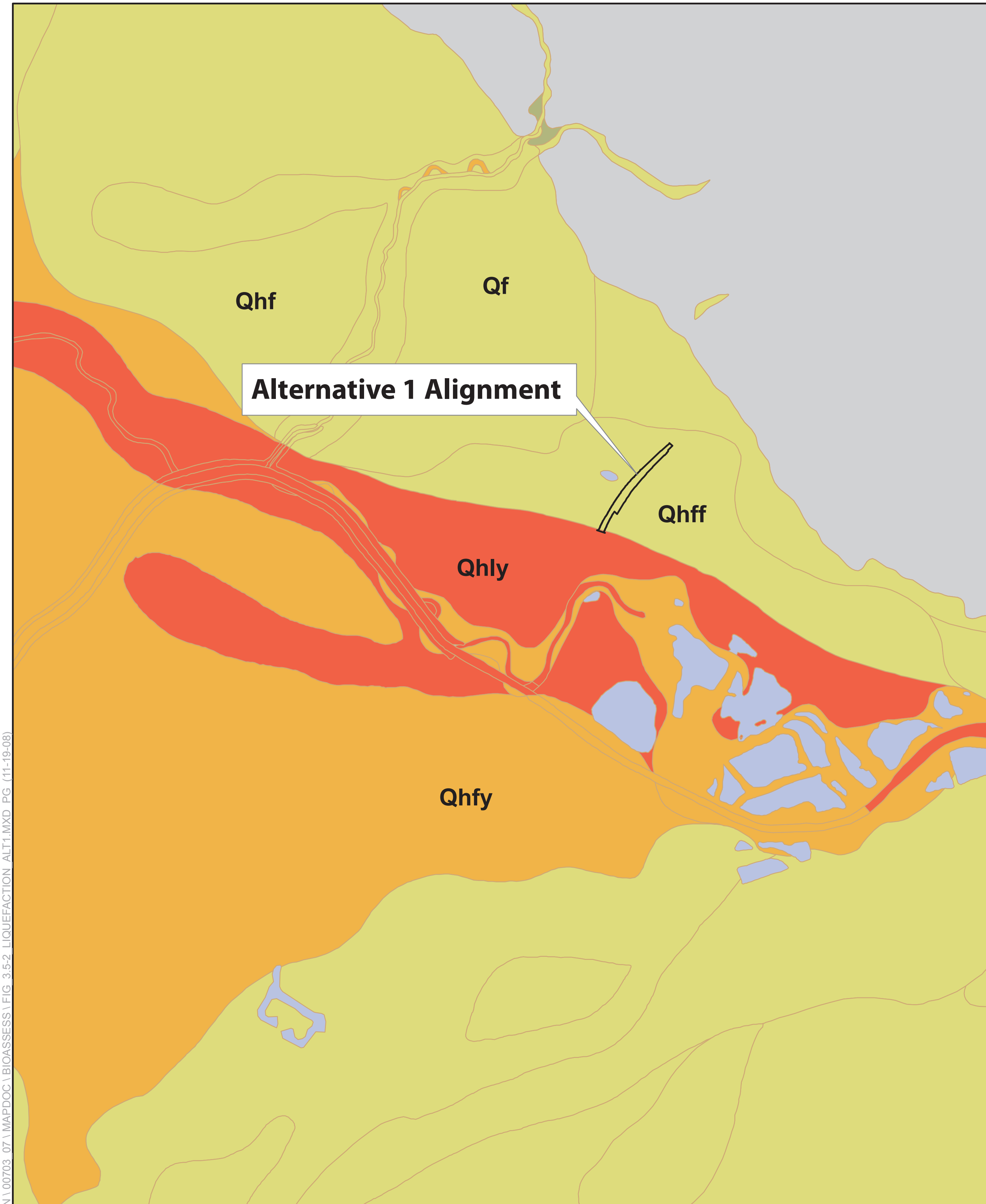
Figure 3.5-1
Active Faults in Project Vicinity
ACTA East-West Connector Project, Alternative 1



0 0.5 1
Miles

N

Liquefaction Susceptibility
- Very High
- High
- Moderate
- Low
- Very Low

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Figure 3.5-2
Liquefaction Potential in the Project Area
ACTA East-West Connector Project, Alternative 1

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The soils in the project vicinity are mainly silt to silty clay loam and the permeability ranges from moderately low to moderately high. Soils in the project vicinity are classified as poorly drained to well drained. The project area would also have a low erosion potential.

Regulatory Setting

Federal

Clean Water Act 402 and National Pollutant Discharge Elimination System

The CWA is discussed in detail in Section 3.7, Hydrology and Water Quality. However, because CWA 402 is directly relevant to construction, additional information is provided below.

Amendments in 1987 to the CWA added Section 402p, which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES program. The EPA has delegated to the State Water Board the authority for the NPDES program in California, which is implemented by the state's nine RWQCBs. The project area is under the jurisdiction of the San Francisco Bay RWQCB. Under the NPDES Phase II Rule, construction activity disturbing 1 acre or more must obtain coverage under the state's General Construction Permit. General Construction Permit applicants are required to prepare a Notice of Intent and a SWPPP, and to implement and maintain BMPs to avoid adverse effects on water quality as a result of construction activities, including earthwork.

State

Alquist-Priolo Earthquake Fault Zoning Act

California's Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (PRC 2621 *et seq*.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the corridors along active faults. It also defines criteria for identifying active faults, giving legal weight to terms such as "active," and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones.

Under the Alquist-Priolo Act, faults are zoned, and construction along or across them is strictly regulated if they are "sufficiently active" and "well-defined." A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for the purposes of the Act as within the last 11,000 years). A fault is considered well-defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Hart and Bryant 1997).

Seismic Hazards Mapping Act

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (PRC 2690–2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped seismic hazard zones.

Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites in seismic hazard zones until appropriate site-specific geologic or geotechnical investigations have been carried out, and measures to reduce potential damage have been incorporated into the development plans.

Caltrans Seismic Design Criteria

The Caltrans Seismic Design Criteria (SDC) specify the minimum seismic design requirements for bridges designed by and for the California Department of Transportation (Caltrans). The criteria outline the Caltrans bridge category and classification system, seismic performance criteria, seismic design philosophy and approach, seismic demands and capacities on structural components and seismic design practices that collectively make up the Caltrans seismic design methodology. Bridges are categorized as either Important or Ordinary depending on the desired level of seismic performance. The Ordinary category is divided into two classifications: Standard and Nonstandard. A bridge’s category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capacities. The structures proposed through project implementation would be considered Ordinary Standard features.

Local

City of Union City General Plan

The Union City General Plan (2002) includes policies that guide development in the City to ensure the safety of the public in accordance with local geologic conditions and hazards. The policies listed below are applicable to Alternative 1.

- **Policy HS-B.1.1:** The City shall require investigations by both registered soils engineers and engineering geologists prior to issuing building permits or discretionary approvals (i.e., general plan amendment, rezoning, conditional use permit, tentative subdivision map, etc.) for any new construction unless waived due to current existing information and location. Soils engineering reports shall specifically address secondary seismic hazards, especially potential for soil liquefaction, ground shaking, lateral spreading, local subsidence, and lurch cracking. All such reports shall be independently evaluated, on behalf of the City, for completeness and accuracy.
- **Policy HS-B.1.4:** The City shall continue to implement updated editions of the Uniform Building Code published by the International Conference of Building Officials.
- **Policy HS-B.1.5:** All environmental analyses submitted to the City under the California Environmental Quality Act in support of development proposals shall include sections evaluating seismic and geologic hazards.

City Grading and Erosion Control Ordinances

Union City has a grading and erosion control ordinance, as found in the City of Union City Municipal Code 18.92.170, Grading. These ordinances are intended to control erosion and sedimentation caused by construction activities. A grading permit is required for construction-related projects. As part of the permit, the project applicants must submit a grading and erosion control plan, vicinity and site maps, and other supplemental information. Standard conditions in the grading permit include a description of BMPs similar to those contained in a SWPPP.

3.5.3 Impact Analysis

This section describes the impact analysis relating to geology, soils, and seismicity for Alternative 1. It describes the methods used to determine the impacts of Alternative 1 and lists the significance criteria and thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

The evaluation of the geology, soils, and seismicity impacts in this section is based on the results of technical maps, reports, and other documents that describe the geologic, seismic, and soil conditions of the project area, and on professional judgment. The analysis assumes that the project applicants would conform to the latest UBC standards, CBSC standards, Union City General Plan seismic safety standards, and Union City grading ordinances and NPDES requirements.

Significance Criteria

For this analysis, an impact pertaining to geology, soils, and seismicity was considered significant under CEQA if it would result in any of the following environmental impacts, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 *et seq*.). A significant impact is identified if Alternative 1 would:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving the:
  - rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo earthquake fault zoning map issued by the state geologist for the project area or based on other substantial evidence of a known fault;
  - strong seismic ground shaking;
  - seismic-related ground failure, including liquefaction;
  - landslides; or
- cause substantial soil erosion or loss of topsoil;
- be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; or
- be located on expansive soil, as defined in Table 18-1-B of the UBC (International Conference of Building Officials 1997), creating substantial risks to life and property.

Project Impacts and Mitigation Measures

The impacts that Alternative 1 would have on geology, soils, and seismicity issues are described below. None of the impacts are identified as potentially significant; therefore, no mitigation is required for any of the impacts.

The topography of the project area is relatively flat, with surface elevations of approximately 50 feet msl. Because the project area is relatively flat, and Alternative 1 would not disrupt any hillsides in the project area, project implementation would not affect landslide conditions in the project area. Therefore, this impact is not discussed further and no mitigation is required.

Impact GEO-1: Potential Structural Damage and Injury Caused by Fault Rupture (Less than Significant)

Alternative 1 includes a new roadway and grade separation structures for railroad crossings. Based on available knowledge of fault locations and locations of earthquake epicenters, the risk of surface fault rupture in the project area is low. Risks associated with fault rupture include the potential to compromise the structural stability of the new roadway and support features, and the potential to cause injury to construction workers and residents in the project vicinity. ACTA is required to implement BART, American Railway Engineering and Maintenance of Way Association (AREMA), Caltrans, and Union City General Plan standards into the project design. Risks due to fault rupture are considered low, and implementation of the BART, AREMA, Caltrans and Union City General Plan standards into the project design for Alternative 1 would further minimize potential fault rupture hazards on associated project features. Therefore, this impact is considered less than significant, and no mitigation is required.

Impact GEO-2: Potential Structural Damage and Injury from Ground Shaking (Less than Significant)

A large earthquake on a nearby fault, including the Hayward, Calaveras-Pacines-Benito, and San Andreas faults, all within 20 miles of the project area, could cause moderate to high ground shaking in the project area. This may cause liquefaction and associated ground failure, such as lateral spreading or differential settlement, which in turn could increase the risk of structural loss, injury, or death. ACTA is required to implement BART, AREMA, Caltrans and Union City General Plan standards into the project design for applicable features to minimize potential ground shaking hazards on associated project features.

The grade separation structures are expected to require excavations of 30 feet below ground and would also require retaining walls. Based on available geotechnical information and groundwater data, it appears that one of the construction options for the grade separation structure may require building a system of concrete structural mat and retaining walls (boat slab). The slab would be subject to groundwater pressures and therefore would require a pile foundation system. This area may also require a deep soil mix type of wall system around the perimeter of the area of excavation to restrict the groundwater flow across the excavation footprint. Detailed studies and engineering analysis will be conducted to assess and mitigate these conditions.

The grade separation structures for the BART and UPRR lines may be supported on concrete driven piles, Steel H piles, cast-in-drilled-hole piles or on special footings such as reinforced concrete box. Following the determination of construction measures that are possible in this area, further geotechnical investigations would be used to determine the most appropriate design for this phase of the Alternative 1 alignment.

Miscellaneous structures throughout the Alternative 1 alignment including retaining walls and culverts would be supported on foundations that are designed based on geotechnical studies conducted during the design phase of Alternative 1. In addition, pavement construction is expected to be based on detailed studies and Caltrans design standards. In general, pavement may consist of concrete pavement, hot mix asphalt pavement, rubberized pavement or other effective systems as deemed appropriate for site conditions.

ACTA would also be required to conduct further geotechnical investigations for the Alternative 1 alignment to verify the potential for liquefaction, lateral spreading, and differential settlement that may occur through ground shaking during the project design phase of Alternative 1. Based on subsurface conditions, ACTA would design Alternative 1 to accommodate the effects of these conditions. Through implementation of these project design features, this impact is considered less than significant, and no mitigation is required.

Impact GEO-3: Potential Structural Damage and Injury from Development on Unsuitable Materials or Materials Subject to Liquefaction (Less than Significant)

Liquefaction susceptibility maps have identified the project area as primarily moderate liquefaction susceptibility, with the westernmost area along Alvarado-Niles Road identified as very high. The potential for liquefaction increases the risk of structural loss, injury, or death. ACTA is required to implement BART, AREMA Caltrans, and Union City General Plan standards into the project design for applicable features to minimize the potential liquefaction hazards on associated project features.

ACTA would also be required to conduct further geotechnical investigations for the project area to verify liquefaction potential through the project design phase of the project. Regular interval borings would occur along the roadways and proposed support structures. Based on subsurface conditions, ACTA would design Alternative 1 to accommodate the effects of liquefaction. If liquefiable soils or soils susceptible to seismically induced settlement are determined to be present at any location where project activities would occur, corrective actions would be taken as necessary, and may include removal and replacement of soils, on-site densification, grouting and design of special foundations, or other similar measures, depending on the extent and depth of susceptible soils. All of these measures reduce pore water pressure during ground shaking by densifying the soil or improving its drainage capacity (Johansson 2000).

ACTA would be required to conduct further geotechnical investigations for the project alignment to determine the existence of any landfill or other unsuitable materials underlying the project alignment. If any are present, ACTA would follow recommendations in the geotechnical report for removal of these materials and replacement with appropriately engineered fill.

Through implementation of these project design features, this impact is considered less than significant, and no mitigation is required.

Impact GEO-4: Potential Accelerated Runoff, Erosion, and Sedimentation from Grading Activities (Less than Significant)

Grading, excavation, and removal of vegetation cover associated with construction activities could temporarily increase erosion and sedimentation throughout the project area. Construction activities could also result in soil compaction and wind erosion impacts that could adversely affect soils and reduce the revegetation potential at the construction sites and staging areas. Normal measures to maintain surface drainages and slope maintenance would be incorporated into project plans in order to maintain soil and slope stability throughout the project area. In addition, landscaping plans would be implemented along new slopes throughout the project area, including the wetlands mitigation site and the infiltration basins (Mitigation Measures BIO-7 and HWQ-5, respectively), to reduce sedimentation and erosion.

As described in Section 3.7, Hydrology and Water Quality, an SWPPP would be developed by a qualified engineer or erosion control specialist and implemented before construction activities are undertaken. The SWPPP would be kept on site during construction activity and would be made available upon request to representatives of the San Francisco Bay RWQCB. The objectives of the SWPPP would be to (1) identify pollutant sources that may affect the quality of stormwater associated with construction activity; and (2) identify, construct, and implement measures to reduce pollutants in stormwater discharges during and after construction. The SWPPP would identify potential pollutants and address the management of dredged sediments and hazardous materials present on the site during construction (including vehicle and equipment fuels). The SWPPP also would include details of how the sediment and erosion control practices, referred to as BMPs, would be implemented. Implementation of the SWPPP would comply with state and federal water quality regulations. A detailed discussion of the project SWPPP is included in Section 3.7, Hydrology and Water Quality under Mitigation Measure HWQ-1.

Furthermore, compliance with the Union City grading ordinance would also minimize any adverse impacts associated with erosion and sedimentation. ACTA would be required to obtain a grading permit prior to project implementation from Union City. The grading permit would require BMPs.

Therefore, this impact is considered less than significant. No further mitigation is required.

Impact GEO-5: Potential Structural Damage as a Result of Development on Expansive Soils (Less than Significant)

Geotechnical investigations have not been undertaken in order to determine the expansive properties of soils in the Alternative 1 alignment. However, based on information provided by the Alameda County Soil Survey, the shrink-swell potential for the soils that are mapped for the project area range from moderate to high (Welch, 1981). Expansive soils have the potential to compromise the structural integrity of the proposed new roadway and support structures. However, this impact is considered less than significant because, as part of the design process described above, ACTA is required to implement BART, AREMA, Caltrans, and Union City General Plan standards into the project design for applicable features to minimize the potential shrink-swell hazards on associated project features.

In accordance with Union City requirements, ACTA would also be responsible for conducting a geotechnical evaluation for expansive soils. The proposed alignment and associated support structures would require subsurface borings at regular intervals. Based on subsurface conditions, ACTA would design Alternative 1 to accommodate the effects of expansive soils. Therefore, this impact is considered less than significant. No further mitigation is required.

Section 3.6
Hazards and Hazardous Materials

3.6.1 Introduction

This section describes the environmental and regulatory setting for hazards and hazardous materials within or adjacent to the Alternative 1 alignment. It also describes the impacts from hazardous materials that would result from implementation of Alternative 1 and mitigation measures that would reduce these impacts. Public safety issues associated with construction-related roadway disruptions are addressed in Section 3.12, Transportation and Traffic. Flooding hazards are discussed in Section 3.7, Hydrology and Water Quality.

3.6.2 Environmental Setting

Sources of Information

The key sources of data and information used in the preparation of this hazards and hazardous materials section are listed below.

- Phase I Environmental Site Assessment, Proposed I-880 to 238 East-West Connector (Fugro West 2008).
- Union City General Plan Policy Document (City of Union City 2002).

Existing Conditions

This section discusses the existing conditions related to hazards and hazardous materials in the Alternative 1 alignment.

Phase I Environmental Site Assessment

The purpose of the Phase I Environmental Site Assessment is to provide general information regarding recognized environmental conditions of the project alignment and adjacent properties that could pose a risk to workers during project construction. The Phase I Environmental Site Assessment was prepared for the proposed East-West Connector Project but is applicable to Alternative 1, which is a truncated version of the proposed project.

A Phase I Environmental Site Assessment for the East-West Connector Project was conducted in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Designation: E 1527 05, Standard Practice for Environmental Site Assessments. Recognized environmental conditions as defined by the ASTM Standard are the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, past release, or material threat of a release into structures at the property or into the ground, groundwater, or surface water at the property. This term includes hazardous substances or petroleum products even under conditions in compliance with laws.

The results of the assessment revealed the following applicable environmental conditions as related to project implementation.

- The Newark Aquifer constitutes a major drinking water source for residents of Union City; therefore the Alameda County Water District (ACWD) has made a requirement on the final vertical depth of cut for the Alternative 1 alignment to preserve the boundary between the Newark Aquifer and the Newark Aquiclude. ACWD requires that a minimum of 5 feet of Newark Aquiclude material remain undisturbed above the aquifer boundary.
- Total Petroleum Hydrocarbon (TPH)-affected soils were encountered on the former Pacific States Steel Corporation property and remnant concentrations may coincide with construction elements of the Alternative 1 alignment (Site 28, Figure 3.6-1). Excavation of the TPH-affected soil was previously restricted by ACWD to a vertical depth corresponding to an elevation of 10 feet above mean sea level. Since the roadway alignment located in this area consists of a depressed section excavated to an elevation of approximately 16 feet above mean sea level, the residual TPH-affected soil would likely be left in place.
- Historically, land uses in the area of the roadway alignment were agricultural; therefore, shallow soils may contain remnant concentrations of agricultural chemicals from past applications. In addition, the Alternative 1 alignment may support agricultural improvements such as water production wells, buried pipelines, and drainage systems.
- Shallow soils may contain aerially deposited lead from historic automobile or industrial business emissions in the area.
- The Alternative 1 alignment crosses under two UPRR rights-of-way. Typically, railroad rights-of-way are viewed as potential areas of soil contamination because petroleum or chemical conveyance pipelines are located within the right-of-way easement. Although no indication of long-term surface releases nor pipeline conveyances were observed in the Alternative 1 alignment, other potential contaminants could be present in the surficial soil.
- The Alternative 1 alignment extends across two detention basins. Stormwater detention basin sediments may contain elevated concentrations of stormwater contaminants, including petroleum hydrocarbons and heavy metals.

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Figure 3.6-1
Hazardous Materials Site Locations
ACTA East-West Connector Project, Alternative 1

Reconnaissance Surveys

On February 25, March 5, and June 13, 2008, the Alternative 1 alignment and adjacent land uses were surveyed at a reconnaissance level. During these surveys, there were no observations of stressed vegetation or stained soils. In addition, no past or current uses of underground storage tanks (USTs), above-ground storage tanks (ASTs), hazardous materials, waste sumps, pits, or clarifiers were observed in the limits of the roadway alignment.

Background Information Collection

In order to obtain information about historic uses of the Alternative 1 alignment, topographic maps and aerial photographs of the Alternative 1 alignment were reviewed. The 1947 and 1978 USGS Topographic Maps of the Newark Quadrangle were reviewed, and showed the gradual change from agricultural and rural land uses to the existing residential and commercially developed land uses seen today along the Alternative 1 alignment.

Aerial photographs of the project site dating from 1954 to 2004 were reviewed and compared with current aerial photographs to assess changes in land uses within the Alternative 1 alignment. Current photographs were used to determine adjacent land uses, and to identify features that may indicate the use, storage, spillage, or disposal of hazardous materials or wastes.

Agency Records Search

A record search was conducted on the Environmental Data Resources (EDR) Well Search Report, the California Department of Toxic Substances Control's (DTSC's) Envirostor website, and the RWQCB's Geotracker website.

The results of the EDR search indicate that no state water wells or public supply wells are located within a 0.25-mile radius of the Alternative 1 alignment, but one agricultural well is present within 0.25 mile of the Alternative 1 alignment.

Well 4S1W18K002, according to ACWD records, is located within the undeveloped grass field west of Alvarado-Niles Road and west of Quarry Lakes Drive. According to ACWD, several wells were at one time present at this general area, but some may have been destroyed.

Properties in the immediate vicinity of the Alternative 1 alignment listed on the Envirostor and Geotracker websites include the following.

Envirostor

- Former Kraftile Facility at 800 Kraftile Road, Fremont
- Cattellus Property at Mission Boulevard and 7th Street, Union City
- Pacific States Steel Corporation, Union City

Geotracker

- City of Union City Corporation Yard at 34900 Alvarado-Niles Road, Union City
- Former Kraftile Facility at 800 Kraftile Road, Fremont

The Union City Fire Department was contacted to review environmental records pertaining to these facilities. In addition, records were requested for any sites within Union City that may support USTs or hazardous materials. The Alameda County Environmental Health Department was also contacted to determine if USTs or hazardous materials records had been identified for any of the properties located within and adjacent to the Alternative 1 alignment; no records for any of the properties were reported.

Environmental Case and Records Review

The EDR database was reviewed to generate a list of properties with documented hazardous materials handling, storage, or releases in the vicinity of the entire East-West Connector Project. The EDR report is compiled from published federal, state, and local regulatory agency databases. After reviewing the initial EDR map, site visits were undertaken to identify the accurate locations of the listed facilities, and to determine which facilities were in close proximity to the Alternative 1 alignment. Several of the listed sites do not have the potential to affect the Alternative 1 alignment because of their physical location, direction, or environmental status. The four sites that were identified as being within the Alternative 1 alignment or its immediate vicinity, as shown in Figure 3.6-1, are described below.

The properties were numbered according to EDR's numerical designation.

Pacific States Steel Corporation—Union City (EDR 11, 26, and 28)

The Pacific States Steel Corporation properties cover three sites, totaling approximately 85 acres. Section I was formerly located south of the intersection of 7th Street and Mission Boulevard and consisted of 5.5 acres. Phase II, located immediately west of Phase I, consisted of 16.6 acres of land. Phase III was the former plant and consisted of 62.6 acres. The roadway alignment would traverse through a portion of the Phase III property.

The Phase II property was purchased for use as a disposal area for slag material and industrial waste-water generated during the steel making process from 1966 to 1978. This facility is listed as a State of California Superfund site, and is on the California Bond Expenditure Plan, indicating that heavy metals (cadmium, chromium, nickel, lead, and zinc), oils, and TPH have been detected in slag piles and ponds on site. Transformers and capacitors containing polychlorinated biphenyls (PCBs) and asbestos-containing material were also found on site.

Several remedial actions have been undertaken at this site, with ACWD and the City of Union City identified as cleanup oversight agencies. In 2006, DTSC certified the Pacific States Steel Corporation site, determining that the cleanup of all hazardous substances on the site is now complete. Following remediation activities, residential and commercial developments were constructed at this location.

Because this site history, further investigations following the determination of project design specifications would be required to ensure the construction and operational safety of Alternative 1 through both potential soil and groundwater contamination conditions that may be present at this site.

Former City of Union City Corporation Yard—Union City (EDR 25)

The City of Union City Department of Public Works used this property as a corporation and maintenance yard for equipment and storage. Operations at the facility included vehicle maintenance, material storage, parking yard for City vehicles, and a fueling station. Although remediation activities have occurred on site, groundwater monitoring efforts in 2008 reported elevated concentrations of total petroleum hydrocarbons. This facility is down-gradient of the Alternative 1 alignment. However, elevated concentrations of total petroleum hydrocarbons in the groundwater may represent a risk if subsurface improvements proposed through final project designs would intercept the affected water.

Cattellus—Union City (EDR 8)

This facility was listed on the DTSC Envirostor database. Potential contaminants of concern include lead, pesticides in rinse waters, contaminated soil, and halogenated solvents. No further information was provided in the database report or on Envirostor. The property has since been redeveloped, and is not considered to represent a risk during construction of Alternative 1.

Relocation of Compressed Natural Gas Refueling Island

Through project implementation, the new roadway alignment and 7th Street modification would encroach on the compressed natural gas (CNG) refueling island at the existing Union City Corporation Yard located off 7th Street (Figure 2-6). The area previously occupied by the now vacated 7th Street/Chesapeake Street intersection would be used to relocate the CNG fueling island and emergency shut-off valve, but the underground storage tank would remain in place.

Nearby Schools and Airports

There are no existing schools within 0.25 mile of the Alternative 1 alignment.

The Alternative 1 alignment is not located within 2 miles of a public airport, or in the vicinity of a private airstrip.

Emergency Routes

Mission Boulevard is a major roadway providing primary access to residential and commercial development in the Alternative 1 alignment. This roadway also provides emergency access and evacuation routes for local residences and establishments.

Regulatory Setting

A hazardous material is defined by DTSC as a material that poses a significant present or potential hazard to human health and safety or the environment if released because of its quantity, concentration, or physical or chemical characteristics (26 California Code of Regulations [CCR] 25501). Common hazardous materials include petroleum hydrocarbons, pesticides, volatile organic chemicals, and certain metals.

Various federal and state agencies exercise regulatory authority over the use, generation, transport, and disposal of hazardous substances. The primary federal regulatory agency is the U.S. Environmental Protection Agency (EPA). The primary California state agency with similar authority and responsibility is the California Environmental Protection Agency (Cal-EPA), which may delegate enforcement authority to other local agencies with which it has agreements. Federal regulations applicable to hazardous substances are contained primarily in the CFR Titles 29 (Labor), 40 (Protection of Environment), and 49 (Transportation). State regulations are contained in CCR Titles 13 (Motor Vehicles), 19 (Public Safety), 22 (Social Security), and 26 (Toxics).

Applicable legislation and policies related to hazards and hazardous materials are summarized below.

Federal

Comprehensive Environmental Response, Compensation, and Liability Act of 1980

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also called the Superfund Act (42 United States Code [USC] 9601 *et seq.)*, is intended to protect the public and the environment from the effects of prior hazardous waste disposal and new hazardous material spills. Under CERCLA, EPA has the authority to seek the parties responsible for hazardous materials releases and to ensure their cooperation in site remediation. CERCLA also provides federal funding (the Superfund) for the remediation of hazardous materials contamination. The Superfund Amendments and Reauthorization Act of 1986 amends some provisions of CERCLA and provides for a Community Right-to-Know program.

EPA has the authority to implement CERCLA in all 50 states and all United States territories, using a variety of enforcement tools, including orders, consent decrees, and other small-party settlements. Identification, monitoring, and remediation of Superfund sites are usually coordinated by state environmental protection or waste management agencies. When potentially responsible parties cannot be identified or located, or when responsible parties fail to act, the EPA has the authority to remediate abandoned or historic sites where hazardous materials contamination is known to exist and to pose a human health hazard.

Pursuant to CERCLA, the EPA maintains a National Priorities List of uncontrolled or abandoned hazardous waste sites identified for priority remediation under the Superfund program. Sites are identified for listing on the basis of the EPA's hazard ranking system. Sites also may be placed on the National Priorities List if they meet the following requirements.

- The Agency for Toxic Substances and Disease Registry of the U.S. Public Health Service has issued a health advisory that recommends removing people from the site.
- EPA has determined that the site poses a significant threat to public health.

State

EPA granted the state primary oversight responsibility to administer and enforce hazardous waste management programs. In addition, state regulations, which are equal to or more stringent than federal regulations, require planning and management to ensure that hazardous wastes are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several key state laws pertaining to hazardous wastes are discussed below.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a hazardous materials business plan that describes their facilities, inventories, emergency response plans, and training programs. Under the Business Plan Act, hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste, although the health concerns pertaining to the release or inappropriate disposal of these materials are similar to those relating to hazardous waste.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program. The Hazardous Waste Control Act is implemented by regulations contained in 26 CCR, which describe:

- identification and classification;
- sources;
- transport;
- design and permitting of recycling, treatment, storage, and disposal facilities;
- treatment standards;
- operation of facilities, including staff training;
- closure of facilities; and
- liability issues of hazardous waste management.

Regulations in 26 CCR list more than 800 materials that may be hazardous and establishes criteria for identifying, packaging, and disposing of them. Under the Hazardous Waste Control Act and 26 CCR, hazardous waste generators must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with DTSC.

Emergency Services Act

Under the Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. This office coordinates the responses of other agencies, including EPA, the California Highway Patrol, the nine RWQCBs, the various air quality management districts and air pollution control districts, and county disaster response offices.

California Occupational Safety and Health Administration Standards

Worker exposure to contaminated soils, vapors that could be inhaled, or possibly groundwater containing hazardous levels of constituents would be subject to monitoring and personal safety equipment requirements that are established in California Occupational Safety and Health Administration (Cal-OSHA) regulations. Title 8 specifically addresses airborne contaminants. The primary intent of the Title 8 requirements is to protect workers, but compliance with some of these regulations also would reduce potential hazards to non-construction workers and those using facilities in the Alternative 1 alignment because required site monitoring, reporting, and other controls would be in place.

Workers who are in direct contact with soil or groundwater containing hazardous levels of constituents would perform all activities in accordance with a hazardous operations site-specific health and safety plan, as outlined in Cal-OSHA standards. A health and safety plan is not required for workers such as heavy equipment operators, carpenters, painters, or other construction workers who would not be performing investigation or remediation activities where direct contact with materials containing hazardous levels of constituents could occur. However, elements of a health and safety plan protect those workers who may be adjacent to cleanup activities by establishing engineering controls, monitoring, and security measures to prevent unauthorized entry to cleanup sites and to reduce hazards outside the investigation or cleanup area.

Other State Laws, Regulations, and Programs

Additional state regulations that affect hazardous waste management include:

- Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65), which requires the labeling of substances known or suspected by the state to cause cancer; and
- California Government Code 65962.5, which requires the Office of Permit Assistance to compile a list of potentially contaminated sites in the state.

Local

City of Union City Plans and Regulations

The City of Union City General Plan includes a number of policies to regulate hazards and hazardous materials in the City. In addition, the City has programs in place to deal with the identification and removal of hazardous wastes, and remediation efforts, as necessary, under disaster conditions or incidents in which hazardous materials are discovered. The following policies from the General Plan are applicable to project implementation:

- **HS-A.1.10:** The City shall maintain an up-to-date Emergency Plan which is consistent with the State and Federal disaster preparedness requirements, participate in disaster response exercises, provide for the training of personnel and elected officials after every election in emergency response.
- **HS-A.1.13:** The City shall include as part of the Emergency Plan an emergency evacuation plan.

The Environmental Programs Division of the City administers the hazardous materials technical standards contained in the Uniform Fire Code. These include new construction and plan check activities, chemical inventory evaluation, occupancy classification, field inspections, and operational support.

In 1983, the City of Union City adopted a Hazardous Materials Storage Ordinance and amended the Fire Code to implement the state's community right-to-know laws and the UST regulations. The goal of the ordinance and subsequent amendments is to protect people, businesses, structures, and the environment from the adverse effects of hazardous materials used and stored in Union City. Cal-EPA recently designated Union City as the local Certified Unified Program Agency and delegated several new programs to the Division, namely the Aboveground Storage Tank, Hazardous Waste Generator, and the Hazardous Waste Tiered Permit treatment program.

The Underground Storage Tank program authorized by Chapter 6.7 of California's Health and Safety Code has been implemented by the City of Union City since 1983. Components of this program have included inspection, permitting, installations and removals, and cleanups associated with releases. Currently, this program element covers 39 sites with an aggregate of 92 active, inactive, or temporarily closed USTs.

The Hazardous Materials Release Response Plan and Inventory Program for the City includes the Hazardous Materials Management Plan described in Title 24 of CCR Section 80.113, Part 9. The City of Union City has been implementing a program to collect and disseminate information regarding the types and quantities of hazardous materials handled, stored, or used by a business since 1983. Since the program's inception, the number of regulated facilities has grown to over 250. Facilities range in size from small auto repair and print shops, to moderate-sized plating and light manufacturing operations, to very large industrial plants.

3.6.3 Impact Analysis

This section describes the impact analysis relating to hazards and hazardous materials for Alternative 1. It describes the methods used to determine the impacts of Alternative 1 and lists the criteria used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

Impacts on the public and environment that could result from hazardous materials and other hazards were evaluated based on the results of the Phase I Environmental Assessment (Fugro West 2008). This report includes a list of all known hazardous sites in the Alternative 1 alignment. The analysis is also based on the known presence of other health-threatening factors in the project vicinity.

Evaluation of safety, fire, and emergency response impacts considered the relative location of the Alternative 1 alignment, the types of hazards present, and the proximity to emergency response services. It is assumed that hazardous spill prevention and response measures would be incorporated into the construction specifications.

Significance Criteria

For this analysis, an impact pertaining to hazards and hazardous materials was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 *et seq*.). A significant impact is identified if Alternative 1 would:

- create a significant hazard to the public or the environment as a result of routine transport, use, production, upset, or disposal of hazardous materials;
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- allow hazardous emissions or use of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- be located on a site that is included on a list of hazardous materials sites pursuant to Government Code 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- if identified in an airport land use plan or, where such a plan has not been adopted, be located within 2 miles of a public airport or public use airport, and create a safety hazard for people residing or working in the Alternative 1 alignment;
- if located in the vicinity of a private airstrip, create a safety hazard for people residing or working in the Alternative 1 alignment;
- impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Project Impacts and Mitigation Measures

Impacts that could occur as a result of project implementation are described below. Because Alternative 1 would not be located within 0.25 mile of an existing or proposed school, there would be no impacts on school facilities from emissions or the handling of hazardous materials in relation to Alternative 1. In addition, Alternative 1 would not be located within a 2-mile radius of a public airport or public use airport, or within the vicinity of a private airstrip. Therefore, no impacts from hazards or hazardous materials related to Alternative 1 concerning schools or airports would occur. Therefore, these impacts are not further discussed and no mitigation would be required.

Impact HAZ-1: Creation of a Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials (Less than Significant with Mitigation)

Construction of Alternative 1 would require the use of vehicles and other construction equipment that use hazardous materials such as gasoline and diesel fuels, motor oil, gear lubricants, transmission fluids, hydraulic fluids, coolants and degreasers. The accidental releases of small quantities of these substances during construction could contaminate soils and degrade the quality of surface water and groundwater, resulting in a public safety hazard. This impact is considered significant. Implementation of Mitigation Measure HWQ-4 would reduce this impact to a less-than significant level.

Operation of Alternative 1 would not result in impacts on the public or environment through hazardous materials. The roadway alignment would be designed for safety, and would not increase the risk of hazardous materials spills over conditions present along existing roadways. Therefore, no impacts are expected.

Mitigation Measure HWQ-4: Prepare and Implement a Hazardous Materials Spill Prevention and Control Program during Construction
To ensure compliance with the NPDES General Construction Permit, ACTA will require that project contractors develop and implement a spill prevention and control program to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during all construction activities. The NPDES General Construction Permit requires the spill prevention and control program. The program will be completed before any construction activities begin. The program may include the following practices.

- Provision of security for storage areas that contain hazardous materials.
- Secondary containment for hazardous materials storage.
- Implementation of preventative measures, specified to hazardous materials that would be used, to prevent spillage of each material.
- Provision of containment and cleanup/mop up supplies at each site.
- Posted emergency contact information

ACTA will review and approve the spill prevention and control program before the onset of construction activities. ACTA will inspect the construction area routinely to verify that the measures specified in the spill prevention and control program are properly implemented and maintained. ACTA will notify contractors immediately if there is a noncompliance issue and will require compliance.

The federal reportable spill quantity for petroleum products, as defined in 40 CFR 110, is any oil spill that:

- violates applicable water quality standards,

- causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or
- causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If a spill is reportable, the contractor will notify the City's Fire Department and the DTSC, which has a spill response and cleanup ordinances to govern emergency spill response. A written description of reportable releases must be submitted to the San Francisco Bay RWQCB and the DTSC. This submittal must include a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form. The contractor will also notify ACWD of reportable spills, and include ACWD in the distribution of spill-related reports prepared for other agencies.

Impact HAZ-2: Accidental Mobilization of and Exposure of Workers and Public to Hazardous Materials (Less than Significant with Mitigation)

The Phase I Site Assessment prepared for the proposed project (Fugro West 2008) showed that there are potential hazardous materials sites in the vicinity of the Alternative 1 alignment that are listed as hazardous in government databases. These sites include the Pacific States Steel Corporation and former Union City Corporation Yard. In addition, land uses adjacent to the Alternative 1 alignment and the wetlands mitigation site may present unknown hazardous materials that could be encountered through project implementation. Various organic substances, metals, petroleum products, and other chemicals may be present in the soil at these sites. There also is the possibility that unknown or unrecorded contamination exists because of past agricultural or industrial uses or construction activities in the area. Soil disturbance from grading, trenching, excavating, and other ground-disturbing activities have the potential to expose or mobilize hazardous substances in soils, sediments, and groundwater, and could expose construction workers and the public to contaminated dust or soil gases. Past agricultural uses may also include unknown agricultural wells that may be present on undeveloped portions of the Alternative 1 alignment and the wetlands mitigation site.

This impact is considered significant. Alternative 1 would implement a Phase II Environmental Site Assessment following the more precise determination of the roadway alignment and construction specifications. This assessment would include a hazardous materials assessment of soil and groundwater that would be disturbed through construction implementation of Alternative 1. These studies and the specific measures they will identify to reduce hazards-related impacts have been incorporated into Mitigation Measure HAZ-2 below. In addition, implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

The relocation of the compressed natural gas station on the Union City Corporation Yard site may also present a hazard to workers and the public. Although the underground storage tank would not be moved, the above ground fueling station would be relocated. Prior to implementation on the project, ACTA would acquire the required permits from the City of Union City to ensure the safe movement of this structure. Plans and specifications for relocating the CNG fueling island would be reviewed and approved by the Union City Planning, Building, and Fire Departments and would be required to conform to the Uniform Fire Code requirements (Perez pers. comm.). Implementation of Mitigation Measure PSR-1 would also require an investigation of existing utility locations to identify the exact locations of the pipelines supporting this facility. This information would then be used to identify the appropriate measures to be taken throughout the movement of the fueling station to ensure the continuous stability of the natural gas system at this site. Through the implementation of these measures, this impact is considered less than significant.

Mitigation Measure HAZ-1: Train Construction Workers to Identify Potentially Contaminated Materials and, if Found, Stop Work and Implement Hazardous Materials Investigations and Remediation

Prior to the onset of construction, all construction workers will be trained in the identification of potentially contaminated soil and water, including information on the characteristics of potential contamination, such as discolored soil, oils or sheens on water, and unusual odors. In the event that hazardous materials are encountered during construction, all construction activities in the area of the discovery will stop, and ACTA will conduct hazardous materials investigations to identify the nature and extent of contamination and evaluate potential impacts on project construction. If necessary, ACTA will implement remediation measures consistent with all applicable local, state, and federal codes and regulations. Construction will not resume until remediation is complete. If waste disposal is necessary, ACTA will ensure that all hazardous materials removed during construction are handled and disposed of by a licensed waste disposal contractor and transported by a licensed hauler to an appropriately licensed and permitted disposal or recycling facility, in accordance with local, state, and federal requirements.

Mitigation Measure HAZ-2: Implement Recommendations in the Phase I Environmental Site Assessment to Prepare a Phase II Environmental Site Assessment, a Health and Safety Plan, and a Soil and Groundwater Management Plan, and to Properly Abandon any Agricultural Wells

ACTA will implement the following recommendations from the Phase I Environmental Site Assessment (Fugro West 2008), including preparation of a Phase II Environmental Site Assessment. As required for any specific Phase II ESA conducted in ACWD jurisdiction, the scope of work will be submitted to ACWD and other jurisdictional entities for their review and comment prior to implementation. The Phase II Environmental Site Assessment will be conducted by qualified professionals and will conform to all relevant regulations. For any soil and groundwater assessment requiring a Drilling Permit from ACWD pursuant to this Phase II Environmental Site Assessment or subsequent review, a work plan for chemical investigation will be submitted to ACWD for their approval.

- As required by Cal-OSHA standards, a Health and Safety Plan will be prepared prior to the onset of construction activities throughout the Alternative 1 alignment. The project-specific Health and Safety Plan will be developed under the guidance of a health and safety professional or certified industrial hygienist before any investigation or cleanup activities or construction activities begin in the area. Workers who could directly contact soil, vapors, or groundwater containing hazardous levels of constituents will perform all activities in accordance with the Health and Safety Plan. The plan will include:
  - a description of all planned construction activities;
  - a list of known contaminants that may be present, including the media that may be affected (e.g., soil, groundwater, soil vapor) and the highest known concentrations;
  - the identification of potential physical, mechanical, electrical, and biological hazards that may be encountered;
  - the identification of special procedures or precautions that need to be employed (e.g., confine space entry, ambient air monitoring, dust suppression, and so on);
  - the determination of the level of and list of required personal protective equipment;
  - the development of contingency measures and decontamination procedures;
  - listed emergency contact information, including directions to the nearest hospital; and
  - provisions for daily tailgate meetings.
- Based on the results of the Phase II Environmental Site Assessment performed for the Alternative 1 alignment, a Soil and Groundwater Management Plan will be prepared to address potential impacts that may occur through implementation of Alternative 1. Alternative 1 would disturb existing shallow soil conditions in the alignment, and encounter subsurface soil and groundwater where improvements extend below the surface. At a minimum, the Soil and Groundwater Management Plan will establish soil and groundwater mitigation and control specifications for grading and construction activities, including health and safety provisions for monitoring exposure to construction workers, procedures to be undertaken in the event that previously unreported contamination is discovered, and emergency procedures and responsible personnel. The plan will also include procedures for managing soils and groundwater removed from the site to ensure that any excavated soils or dewatered groundwater with contaminants are stored, managed, and disposed of in accordance with applicable regulations. The plan will include:
  - the project background and description of proposed actions;

- summary of environmental conditions (e.g. previous investigations, known contaminants, media affected, highest known concentrations, potential exposure pathways, etc.);
- general soil and groundwater management practices, including:
  - site dewatering procedures,
  - excess soil handling procedures,
  - general construction activities that will occur on or adjacent to the hazardous materials site,
  - dust control procedures,
  - stormwater runoff procedures,
  - soil transportation and disposal procedures (if necessary)
  - contingency procedures for unexpected conditions (e.g. upon encountering stained or obviously contaminated soil, any USTs, well, associated piping and/or other identifiable environmental conditions posing a potential risk to health, safety, or the environment)
- Reporting procedures.

Any wells, agricultural wells, and other improvements that may be encountered throughout the Alternative 1 alignment and wetlands mitigation site during construction activities will be properly abandoned or removed, in coordination with ACWD. In accordance with prior communication with ACWD, abandonment of each agricultural well or improvement will need to be handled on a case-by-case basis in accordance with the California Department of Water Resources guidelines and ACWD specifications. If any hazardous materials, underground storage tanks, soil contamination, or groundwater contamination is encountered during excavation or construction activities, ACWD will be included in the notification and reporting procedures.

Mitigation Measure PSR-1: Conduct an Investigation of Utility Line Locations and Maintain Utility Services

A detailed study identifying the locations of utilities along the project alignment will be conducted during the design phase of Alternative 1. For areas with the potential for adverse impacts on utility services, the following measures will be implemented.

- Utility excavation or encroachment permits will be required from the appropriate agencies. These permits include measures to minimize utility disruption. ACTA and its contractors will comply with permit conditions. Such conditions will be included in construction contract specifications.
- Utility locations will be verified through a field survey (potholing) and use of the Underground Service Alert services.
- Detailed specifications will be prepared as part of the design plans to include procedures for the excavation, support, and fill of areas around utility cables and pipelines. All affected utility services will be notified of the project

construction plans and schedule. Arrangements will be made with these entities regarding the protection, relocation, or temporary disconnection of services.

- Residents and businesses adjacent to the project alignment will be notified of planned utility service disruption 2 to 4 days in advance, in conformance with the Cities of Fremont and Union City and state standards.
- Disconnected cables and lines will be reconnected promptly.
- The project will observe the California Department of Health Services (DHS) standards, which require:
  - a 10-foot horizontal separation between parallel sewer and water mains, and
  - a 1-foot vertical separation between perpendicular water and sewer line crossings.

In the event that separation requirements cannot be maintained, the project proponent will obtain a DHS variance through provisions of water encasement or other means deemed suitable by the department.

Impact HAZ-3: Impairment of the Implementation of or Physical Interference with an Adopted Emergency Response Plan or Emergency Evacuation Plan (Less than Significant with Mitigation)

Construction of the new roadway and improvements to intersecting roads may require temporary lane closures on existing roads that could result in the alteration of emergency evacuation routes. This impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure TRA-1: Develop and Implement a Traffic Control Plan for Project Construction

In accordance with Union City policies on street closures and traffic diversion for arterial and collector roadways, the construction contractor will prepare a traffic control plan (to be approved by the City engineers) before construction. The traffic control plan will include:

- a street layout showing the location of construction activity and surrounding streets to be used as detour routes, including special signage;
- the name, address, and emergency contact number for those responsible for maintaining the traffic control devices during the course of construction; and
- written approval to implement traffic control from other agencies, as needed.

Additionally, the traffic control plan will address the following stipulations required of Alternative 1.

- Provide access for emergency vehicles at all times.
- Avoid creating additional delay at intersections currently operating at or approaching congested conditions, either by choosing routes that avoid these locations, or restricting construction-related trips to and from the site to ~~constructing during~~ nonpeak times of day.
- Maintain access for driveways and private roads, except for brief periods of construction, in which case property owners will be notified.
- Provide adequate off-street parking areas at designated staging areas for construction-related vehicles.
- Maintain pedestrian and bicycle access and circulation during project construction where safe to do so. If construction encroaches on a sidewalk or recreational trail, a safe detour will be provided for pedestrians at the nearest crosswalk. If construction encroaches on a bike lane, warning signs will be posted that indicate bicycles and vehicles are sharing the roadway.
- Provide detours as necessary throughout project construction to maintain safe access to the Quarry Lakes Regional Recreation Area.
- Control traffic with flag persons wearing Occupational Safety and Health Administration–approved vests and using a Stop/Slow paddle to warn motorists of construction activity.
- Maintain access to transit services and ensure that public transit vehicles are detoured.
- Post standard construction warning signs in advance of the construction area and at any intersection that provides access to the construction area.
- Notify police and fire departments of construction locations to ensure that alternative evacuation and emergency routes are designed to maintain response times during construction periods, if necessary during lane closures.
- Provide written notification to contractors regarding appropriate routes to and from construction sites, and weight and speed limits for local roads used to access construction sites. Submit a copy of all such written notifications to the City of Union City planning department.
- Repair or restore the road rights-of-way to their original condition or better upon completion of the work.

Impact HAZ-4: Exposure of People or Structures to Increased Risk of Loss, Injury, or Death Involving Urban or Wildland Fires (Less than Significant with Mitigation)

The new roadway alignment supports nonnative grasslands and ruderal vegetation. Land uses surrounding this roadway segment support residential and commercial development. Because of the vegetated condition of the site on which construction activities would occur, this area may be susceptible to wildfire as a result of construction activities (i.e., inadvertent ignition of flammable materials). After full development of Alternative 1, there would be no project features that would put this area at risk for future wildland fires.

This impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure HAZ-3: Implement Procedures to Reduce Fire Risk during Construction

During construction, all staging areas or areas slated for development using spark-producing equipment will be cleared of dried vegetation or other materials that could serve as fire fuel. Any construction equipment that normally includes a spark arrester will be equipped with an arrester in good working order. During construction, adequate water will be made available for fire protection.

Section 3.7
Hydrology and Water Quality

3.7.1 Introduction

This section describes the affected environment and regulatory setting for hydrology and water quality in the project area and its vicinity. It also describes the impacts on hydrology and water quality that would result from implementation of Alternative 1, and mitigation measures that would reduce these impacts.

3.7.1 Environmental Setting

Sources of Information

The key sources of data and information used in the preparation of this chapter are listed and briefly described below.

- Hydrology and Hydraulics Study Report prepared by WRECO (2008a).
- Water Quality Report prepared by WRECO (2008b).

Existing Conditions

This section discusses the existing conditions related to hydrology and water quality in the study area.

Climate

The City of Union City has a mean high annual temperature of 79.6ºF, and a mean low annual temperature of 43.6ºF (Fizber 2008). The average rainfall in California is variable and inconsistent from region to region. The average rainfall in Union City is 15 to 19 inches per year (Alameda County Public Works Agency 2003). The rainy season is October 15 through April 15 (California Department of Transportation 2003).

Surface Water

The project area is located in the San Francisco Bay Hydrologic Region, which is divided into seven hydrologic units. The project area falls within the South Bay Hydrologic Unit, which is further divided into four subregions or hydrologic areas. Specifically, the project falls within the Alameda Creek Hydrologic Area (California Watershed Portal 2008).

The major aquatic resources along the Alternative 1 alignment include the Line M Flood Control Channel (Line M Channel) and two stormwater detention basins (called New Basin and Basin 2C). The Line M Channel flows into the Alameda Creek Flood Control Channel north of the Alternative 1 alignment, and the Alameda Creek Flood Control Channel ultimately flows to the San Francisco Bay. These major aquatic resources are discussed in Section 3.3, Biological Resources.

The Alternative 1 alignment crosses the Line M Channel as shown in Figure 2-4. Approximately 1,100 feet of the Line M Channel would be replaced by double ~~8~~10-foot-by-5-foot box culverts.

Surface Water Quality

The San Francisco Bay Regional Water Quality Control Board (RWQCB) defines the beneficial uses for certain creeks, rivers, lakes, and bays. Beneficial uses of waterways can be impaired by pollutants. Beneficial use impairments result from several factors but generally result from point-source and nonpoint-source pollutants. Generally, surface water quality in the project area is considered sufficient for wildlife, urban, agricultural, and recreational activities. Point-source pollutants include discharges of wastewater from municipal sewage treatment plants, and industrial and commercial facilities. Nonpoint-sources include urban runoff containing oils, grease, and toxic chemicals; construction runoff; livestock and animal wastes; and runoff from agricultural and residential areas.

CWA Section 303(d) (see discussion in Regulatory Setting, below) establishes the total maximum daily load (TMDL) process to assist in guiding the application of state water quality standards. This process requires states to identify streams with “impaired” water quality (those affected by the presence of pollutants or contaminants) and to establish the TMDL or the maximum quantity of a particular constituent that a water body can assimilate without experiencing adverse effects. The Alameda Creek Flood Control Channel, which is located west of the Alternative 1 alignment, was listed as impaired in for diazinon according to CWA Section 303(d) (State Water Resources Control Board 2006).

In general, the water quality of Alameda Creek Flood Control Channel is representative of urban runoff. Urbanized environments can capture pollutants from many sources such as oil from vehicles and tires. Other sources may include household chemicals such as pesticides and fertilizers. During the dry season, such chemicals collect on impervious surfaces. Many of the chemicals may break down prior to a storm event; however, these products are often resilient in the environment and can affect beneficial uses. During the first major storm event, water quality is often degraded in urbanized environments as a result of all the pollutant buildup during the dry season. In general, typical runoff from roadway projects may contain constituents similar to those listed in Table 3.7-1 below.

Table 3.7-1. California Department of Transportation Pollutant Sources

Constituents	Primary Sources
Particulates	Pavement wear, vehicles, atmosphere, maintenance, snow/ice abrasives, sediment disturbance
Nitrogen, Phosphorus	Atmosphere, roadside fertilizer application, sediments
Lead	Auto exhaust, tire wear, lubricating oil and grease, bearing wear, atmospheric fallout
Zinc	Tire wear, motor oil, grease
Iron	Auto body rust, steel highway structures, moving engine parts
Copper	Metal plating, bearing and bushing wear, moving engine parts, brake lining wear, fungicide and insecticide application
Cadmium	Tire wear, insecticide application
Chromium	Metal plating, moving engine parts, brake lining wear
Nickel	Diesel fuel and gasoline, lubricating oil, metal plating, bushing wear, brake lining wear, asphalt paving
Manganese	Moving engine parts
Bromide	Exhaust
Cyanide	Anticake compound used to keep deicing salt granular
Sodium, Calcium	Deicing salts, grease
Chloride	Deicing salts
Sulphate	Roadway bed, fuel, deicing salts
Petroleum	Spills, leaks or blow-by of motor lubricants, antifreeze and hydraulic fluids, asphalt leachate
PCBs, Pesticides	Spraying of highway rights-of-way, atmospheric deposition, PCB catalyst in synthetic tires
Pathogenic Bacteria	Soil litter, bird droppings, trucks hauling livestock/stockyard waste
Rubber	Tire wear
Asbestos*	Clutch and brake lining wear

* No mineral asbestos has been identified in runoff; however some breakdown products of asbestos have been measured.

Source: Federal Highway Administration 1996.

Groundwater

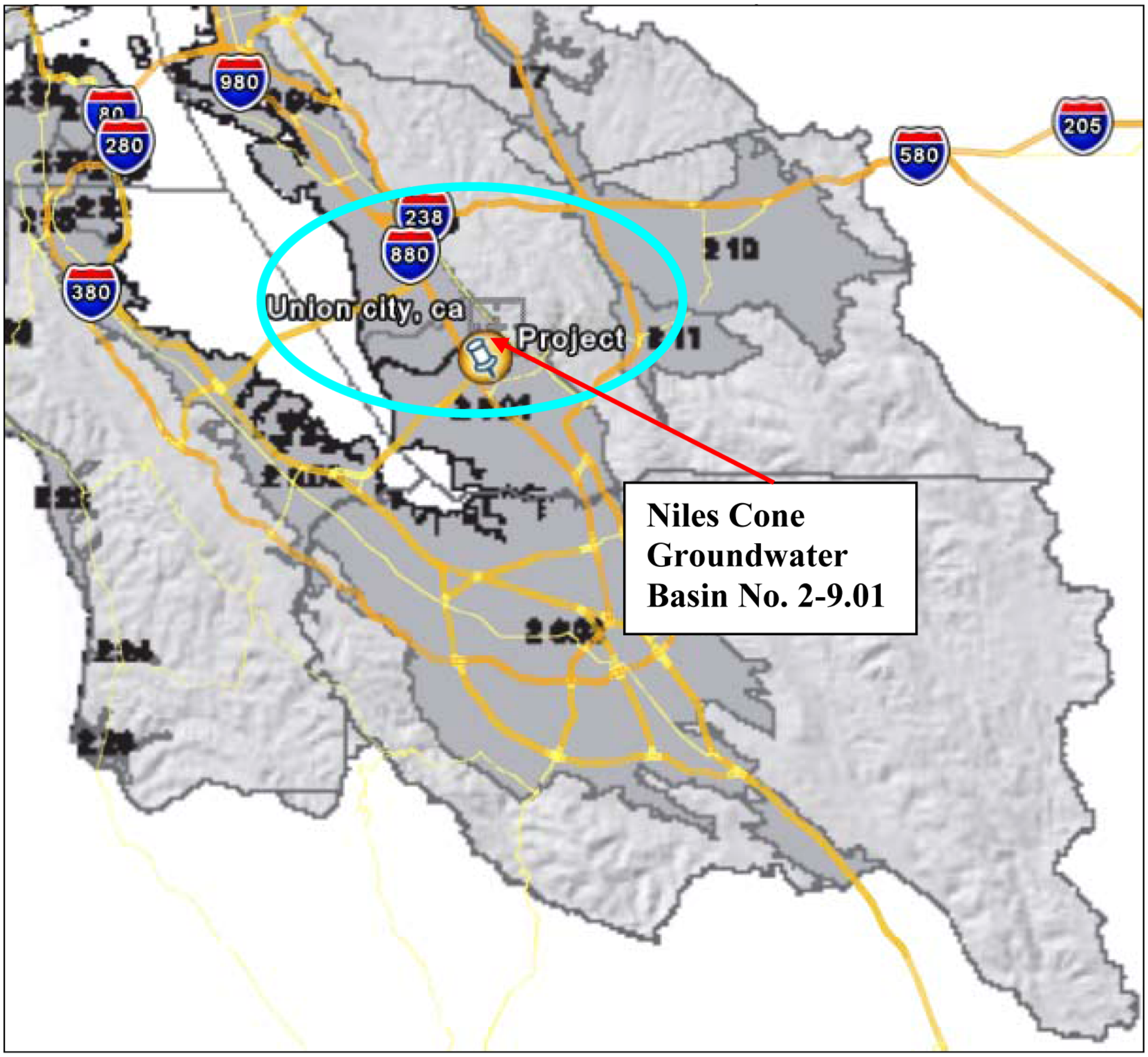
The project area overlies the Santa Clara Valley Groundwater Basin, Niles Cone Subbasin (Figure 3.7-1). The Niles Cone Subbasin is bounded on the east by the Diablo Range and on the west by the San Francisco Bay. Alameda Creek Flood Control Channel is the principal stream in the basin and flows near the eastern and northern margins of the basin while Coyote Creek flows along the southern margin of the basin (California Department of Water Resources 2006).

The Niles Cone subbasin has a surface area of 65,800 acres, or 103 square miles. The subbasin is drained by Alameda Creek Flood Control Channel as it runs from the Diablo Range down into San Francisco Bay. Water-bearing formations of significance in this subbasin include an alluvial fan created by Alameda Creek Flood Control Channel, the Dry Creek alluvial fan, and the Newark, Centerville, Fremont, and Deep aquifers, created by transgression and regression of San Francisco Bay's shoreline. The Hayward Fault cuts across the top of the Alameda Creek alluvial fan, impeding flow of groundwater and divides the basin into the Below Hayward Fault and Above Hayward Fault subbasins. The impermeable nature of the Hayward fault is characterized by the discrepancies in water levels on either side of the fault line (California Department of Water Resources 2006). The project area lies in the ~~Above~~ Below Hayward Fault subbasin.

Groundwater levels in the Niles Cone Subbasin have seen a recent decline as a result of overdraft, making it necessary to obtain water from the State Water Project to recharge groundwater levels in the basin (California Department of Water Resources 2006). Between 2006 and 2007, water levels dropped in the Above Hayward Fault Aquifer indicator well from 35.9 feet to 29.2 feet, a decrease of 6.7 feet (Alameda County Water District 2008). According to the ACWD, groundwater elevation currently ranges from ground level to 76 feet below ground surface. The current estimated storage capacity corresponding to mean sea level is 47,000 acre-feet (California Department of Water Resources 2006). For a discussion of the potential for contamination by hazardous waste, see Section 3.6.2, subsection Pacific States Steel Corporation—Union City.

Groundwater Quality

The Niles Cone Subbasin is characterized as a sodium chloride groundwater type along the western margin and a sodium bicarbonate type along the eastern portion (California Department of Water Resources 2006). Total dissolved solids range from about 286 milligrams per liter (mg/L) to 39,734 mg/L and average about 2,204 mg/L based on data from 113 wells (California Department of Water Resources 2006). Local impairments include saline water intrusion from overdraft of the aquifer.



Source: California's Groundwater –Bulletin 118

Source: WRECO

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Figure 3.7-1
Groundwater Basins and Subbasins within the Project Vicinity
ACTA East-West Connector Project, Alternative 1

Flooding

The Federal Emergency Management Agency (FEMA) delineates floodplains and publishes the information in flood insurance rate maps (FIRMs). Floodplains in the vicinity of the Alternative 1 alignment are shown in Figure 3.7-2.[1] The proposed alignment would cross Line M Channel, which is identified as falling within the 100-year flood boundary. FIRM Panel Number 0600140010C shows a floodplain area southeast of Mission Boulevard. The Line M Channel bed and sides are mainly unlined with earthen embankments. However, portions of the channel are concrete lined.

The floodplain associated with Line M Channel in the project area is located in the two main floodplain zones. Zone X shows areas above the base flood or above the 500-year flood, with minimal to moderate flood hazard. Zone AH areas are characterized by shallow flooding. Zone AE areas are within the base flood, with a 1% chance of being equal to or exceeding in any given year (100-year storm event) (WRECO 2008a).

Regulatory Setting

Federal

Clean Water Act

The CWA is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that any discharge of pollutants into the nation's waters is prohibited unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool.

The State Water Board is the state agency with primary responsibility for implementation of state and federally established regulations relating to water resource issues. Typically, all regulatory requirements are implemented by the State Water Board through one of nine geographically separated RWQCBs. The San Francisco Bay RWQCB is the agency responsible for regulating discharges to the local waterways near the project area.

The following paragraphs provide additional details on specific sections of the CWA.

[1] Please note that during the public review period for the Draft EIR, the City of Union City submitted a comment stating that the floodplain in the eastern end of the project alignment had recently been revised by FEMA, and that a large portion of the residential area west of Mission Boulevard and south of the project alignment was no longer within the Zone A (100-year) floodplain. The revised floodplain is shown in Figure 3.7-3 in the revised Draft EIR. Figure 3.7-2 in Appendix E was created using GIS data depicting the flood zone; because the available data has not been revised, Figure 3.7-2 of Appendix E cannot be revised.

Section 404 Permits for Fill Placement in Waters of the United States

CWA Section 404 regulates the discharge of dredged and fill materials into "waters of the United States," which include oceans, bays, rivers, streams, lakes, ponds, and wetlands. Project proponents must obtain a permit from the Corps for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity.

Before any actions that may affect surface waters are carried out, a delineation of jurisdictional waters of the United States must be completed, following Corps protocols, in order to determine the presence of wetlands or other waters of the United States that qualify for CWA protection. These include any or all of the following.

- Areas within the ordinary high water mark of a stream, including non-perennial streams with a defined bed and bank and any stream channel that conveys natural runoff, even if it has been realigned.
- Seasonal and perennial wetlands, including coastal wetlands.

Wetlands are defined for regulatory purposes as areas "inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." (33 CFR 328.3, 40 CFR 230.3.)

CWA Section 404 permits may be issued only for the least environmentally damaging practicable alternative. That is, authorization of a proposed discharge is prohibited if there is a practicable alternative that would have less adverse impacts and lacks other significant adverse consequences. If the proposed action or any subsequent intends on dumping any fill material for rail alignment or bridge crossings, then this permit would be applicable.

The wetland delineation prepared for Alternative 1 and potential impacts on wetlands are addressed in Section 3.3, Biological Resources.

Section 402 National Pollutant Discharge Elimination System Permits for Discharge to Surface Waters

CWA Section 402 regulates discharges to surface waters through the NPDES program, administered by the EPA.

In California, the State Water Board is authorized by EPA to oversee the NPDES program through the RWQCBs (see related discussion under Porter-Cologne Water Quality Control Act below). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits.

Section 303(d) List of Impaired Water Bodies and Total Maximum Daily Load

CWA Section 303(d) requires the identification of water bodies that do not meet, or are expected to not meet water quality standards, or are considered impaired. The affected water body and associated pollutant is then prioritized in the 303(d) list. Once a TMDL has been established, or the maximum amount of a

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N

Union City Historic Alignment Alternative

FEMA Floodplain Zone A: Inundated by 100-year flooding

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November 2008

Figure 3.7-2
Floodplain in the Project Vicinity
ACTA East-West Connector Project, Alternative 1

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contaminant a water body can assimilate without affecting beneficial uses has been identified, the RWQCB's Water Quality Control Plan (basin plan) is updated and the water quality objective is enforced.

According to the 2006 San Francisco Bay RWQCB 303(d) List of impaired waterways, there are no local impairments within the Alternative 1 alignment right-of-way.

Section 401 Water Quality Certification

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate. If appropriate, certification must be obtained from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect the quality of the state's waters (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

Federal Flood Insurance Program

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were enacted to reduce the need for large, publicly funded flood control structures and disaster relief by restricting development on floodplains.

FEMA administers the National Flood Insurance Program to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains.

FEMA issues FIRMs for communities participating in the National Flood Insurance Program. These maps delineate flood hazard zones in the community. The locations of FEMA-designated floodplains in the project area are included in the discussion of physical setting below.

Executive Order 11988

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. The order requires that federal agency construction, permitting, or funding of a project must:

- avoid incompatible floodplain development,
- be consistent with the standards and criteria of the National Flood Insurance Program, and
- restore and preserve natural and beneficial floodplain values.

This order will apply to the proposed action if a Section 404 permit is determined to be required.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act), passed in 1969, articulates with the CWA (see the Clean Water Act section above). It established the State Water Board and divided the state into nine regions, each overseen by a RWQCB.

The State Water Board is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs, which are responsible for implementing CWA, Sections 401, 402, and 303(d).

In general, the State Water Board manages both water rights and statewide regulation of water quality, while the RWQCBs focus exclusively on water quality within their regions.

The State Water Board has regulatory authority over wetlands and waterways under both the federal CWA and the State of California's Porter-Cologne Water Quality Control Act (California Water Code, Division 7). Under the CWA, the State Water Board has regulatory authority over actions in waters of the United States, through the issuance of water quality certifications under Section 401 of the CWA, which are issued in combination with permits issued by the Corps, under Section 404 of the CWA. When the State Water Board issues Section 401 certifications, it simultaneously issues general Waste Discharge Requirements for the project, under the Porter-Cologne Water Quality Control Act. Activities in areas that are outside of the jurisdiction of the Corps (e.g., isolated wetlands, vernal pools, or stream banks above the ordinary high water mark) are regulated by the State Water Board, under the authority of the Porter-Cologne Water Quality Control Act. Activities that lie outside of Corps jurisdiction may require the issuance of either individual or general Waste Discharge Requirements from the State Water Board.

Basin Plans and Water Quality Objectives

The Porter-Cologne Act provides for the development and periodic review of basin plans that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. Beneficial uses are defined as a means to categorize waterways into specific uses (i.e., the reasons why the water body is considered valuable), while water quality objectives represent the standards necessary to protect and support those beneficial uses.

Basin plans are primarily implemented by using the NPDES permitting system to regulate waste discharges so that water quality objectives are met (see discussion of the NPDES system in the Clean Water Act section above). Basin plans are updated every 3 years, and provide the technical basis for determining waste discharge requirements and taking enforcement actions.

Water Quality Objectives

The San Francisco Bay RWQCB has set water quality objectives, narrative or numeric, for both surface waters and groundwater in its region. Surface water objectives are established for the following substances or parameters: ammonia, bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, and turbidity. Specific objectives for concentrations of chemical constituents are applied to water bodies based on their designated beneficial uses.

Dewatering Activities

On 18 June 2002, the RWQCB adopted Order No. R2-2007-0033 (General Dewatering Permit). This general NPDES permit covers the discharge to waters of the United States of clean or relatively pollutant-free wastewater that poses little or no threat to water quality. This order covers well development water, construction dewatering, pump and well testing, pipeline and tank pressure testing, pipeline and tank flushing or dewatering, condensate discharges, water supply system discharges, and miscellaneous dewatering or low threat discharges.

The General Dewatering Permit would be applicable to Alternative 1 and alternatives if there would be any excavation below the water table. However, the aquitard is thick, and construction of the grade separation would not expose the aquifer to construction materials.

San Francisco Bay Regional Water Quality Control Board, Alameda County's NPDES Permit, Provision C.3

In February 2003, the RWQCB for the San Francisco Bay Region revised Provision C.3 in the County's NPDES permit governing discharges from the municipal storm drain systems in cities and towns within Alameda County. The permit provision was phased in from 2004 through 2006.

Provision C.3 requirements are separate from, and in addition to, requirements for erosion and sediment control and for pollution prevention measures during construction. Project site designs must minimize the area of new roofs and paving. Where feasible, pervious surfaces should be used instead of paving so that runoff can percolate to the underlying soil. Runoff from impervious areas must be captured and treated. The permit specifies ways to calculate the required size of treatment devices.

Local

Alameda County Water District

ACWD is the local water purveyor in the project vicinity. ACWD works to protect surface water and groundwater quality. In 2006 and 2007, ACWD pumped about 31,400 acre-feet of groundwater from the groundwater basin (an acre-foot is the amount of water it would take to cover 1 acre with water 1 foot deep). ACWD interests are to protect groundwater quality from contamination by pollutants from industry and other sources.

Alameda County Flood Control and Water Conservation District

The Alameda County Flood Control and Water Conservation District (ACFCWCD) helps protect western Alameda County residents and property from flooding while preserving the natural environment. ACFCWCD is the devoted steward of a valuable resource—a vast flood control infrastructure including channels, pump stations, and other facilities.

Within the Public Works Agency, ACFCWCD works specifically to protect Alameda County citizens from flooding while preserving the natural environment.

Alameda County Watercourse Protection Ordinance

The Alameda County Watercourse Protection Ordinance restricts the discharge of pollutants to watercourses and the encroachment of new development into watercourses of unincorporated areas of the County. In addition to prohibiting discharges into watercourses, the ordinance establishes a 20-foot building setback from the top of the bank to contain flows from the 100-year flood event. Implementation of this ordinance serves to protect surface water and groundwater recharge areas from erosion, sedimentation, and sources of pollution. Alternative 1 would be required to comply with this ordinance.

Alameda Countywide Clean Water Program

The Alameda Countywide Clean Water Program (ACCWP) was initiated with the goal of forging consistent, effective Countywide strategies to control sources of stormwater pollution. In support of this program, the San Francisco Bay RWQCB has issued a joint municipal stormwater permit to the 17 agencies and cities participating in the ACCWP, recently reissued on February 19, 2003 (Alameda Countywide Clean Water Program 2003). The participating entities include Alameda County; the Alameda County Flood Control Department and its Zone 7; and the Cities of Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City. The ACCWP is responsible for helping participant entities ensure that they are fulfilling their obligations under the permit and for preparing detailed reports that describe what each entity is doing to prevent stormwater pollution. The program coordinates its activities with other pollution prevention programs, such as wastewater treatment, hazardous waste disposal, and waste recycling.

The ACCWP has developed a Stormwater Quality Management Plan (SWQMP) that describes the program's approach to reducing stormwater pollution. The SWQMP for 2001 through 2008 serves as the basis of the ACCWP's NPDES permit (Alameda Countywide Clean Water Program 2003). The project area is within the boundaries addressed by the SWQMP. The plan does not regulate discharge requirements. Rather, the ACCWP is an advisory tool intended to assist dischargers within the boundaries of the 17 participatory agencies to comply with San Francisco Bay RWQCB regulations. The SWQMP provides details and guidelines for San Francisco Bay RWQCB compliance for entities that would generate discharges to water bodies.

The ACCWP permit included additional requirements (Provision C.3) specifically addressing control of stormwater impacts associated with new development and redevelopment projects. Provision C.3 states that permit holders must incorporate stormwater source control measures, site design principles, and treatment control measures in new development and significant redevelopment projects to reduce water quality impacts of stormwater runoff for the life of these projects. Generally, new development and redevelopment projects must now incorporate on-site stormwater treatment devices into project designs. As of August 15, 2006, these requirements apply to projects creating or replacing more than 10,000 square feet of impervious surface area. The ACCWP published a guidance manual, which directs member agencies on application and implementation of stormwater control measures. Provision C.3 requirements of the ACCWP permit are enforced according to this guidance manual. New development and redevelopment projects must also develop a hydrograph modification management plan that includes analysis of the project's potential to modify the stormwater hydrograph. Specifically, projects must address potential increases in the frequency and duration of flow magnitude and runoff volume from increased impervious surfaces.

3.7.2 Impact Analysis

This section describes the impact analysis relating to hydrology and water quality for Alternative 1. It describes the methods used to determine the impacts of Alternative 1 and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Significance Criteria

For this analysis, an impact pertaining to hydrology and water quality was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 *et seq*.). A significant impact is identified if Alternative 1 would:

- violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality from construction or operation of the project;
- substantially deplete groundwater supplies or substantially interfere with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level by increasing the amount of impervious surfaces;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river from bridge footings or channel lining, in a manner that would result in substantial erosion or siltation on site or off site;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site;
- create or contribute to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- substantially degrade water quality;
- place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or FIRM or other flood hazard delineation map;
- place structures within a 100-year flood hazard area, thus impeding or redirecting flood flows; or
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

Approach and Methodology

The evaluation of hydrology and water quality effects is based on professional standards and the conclusions of hydrology and water quality reports prepared for the East West Connector Project (WRECO 2008a, 2008b). The key construction-related impacts were identified and evaluated qualitatively based on the physical characteristics of the project area and the magnitude, intensity, location, and duration of activities. The key operational- or buildout-related impacts were identified and evaluated qualitatively and quantitatively based on currently available plans. It is assumed that the project applicants would conform to City and County building standards, grading permit requirements, erosion control requirements, and stormwater treatment and detentions standards.

Impact conclusions were made after considering the implementation of BMPs and water quality improvements and after consideration of the application of all relevant City, state, and federal regulations. For example, conclusions below about flooding take into account the full effect of the proposed flood control improvements.

Project Impacts and Mitigation Measures

Review of the thresholds of significance indicated that Alternative 1 would not cause exposure of persons or property to increased risks involving seiche, tsunami, or mudflow because of the project area's distant location from the ocean and the relatively flat topography of the area.

Alternative 1 would not place housing or structures in a 100-year flood zone. The increased amount of impervious surface and associated runoff from Alternative 1 would be captured and detained and would not cause any drainages to exceed the 1 foot freeboard requirement for the 100-year event. Additionally, although Alternative 1 would increase impervious surfaces (e.g., roads and structures) and reduce the infiltration of groundwater to the underlying aquifer along the Alternative 1 alignment, the project area is less than 1% of the total Niles Cone Subbasin surface area (65,800 acres) and would not interfere with the overall recharge of the subbasin. Therefore, there would be no impact on groundwater recharge.

These topics are not addressed further. The remaining thresholds identified above are discussed in the analysis below.

Impact HWQ-1: Degradation of Surface Water Quality from Construction-Related Earth-Disturbing Activities (Less than Significant with Mitigation)

Construction-related earth-disturbing activities would introduce the potential for increased erosion and sedimentation, which could adversely affect water quality. During site grading, trenching, and other construction activities, areas of bare soil could be exposed to erosive forces. Bare soils are much more likely to erode than vegetated areas because of the lack of dispersion, infiltration, and retention properties created by covering vegetation. Construction activities involving soil disturbance, excavation, cutting and filling, stockpiling, and grading could result in increased erosion and sedimentation into stormwater runoff and to surface waters which would degrade water quality.

This impact is considered significant. The following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure HWQ-1: Comply with National Pollutant Discharge Elimination System Requirements and Development and Implement a Stormwater Pollution Prevention Plan

ACTA will comply with the requirements of the ACCWP SWQMP, Alameda County's NPDES General Construction Permit, and Caltrans NPDES permit where applicable before the onset of any construction activities. Compliance and coverage with the SWQMP and NPDES General Construction Permit will require controls of pollutant discharges that use BMPs and technology to reduce erosion and sediments to meet water quality standards. BMPs may consist of a wide variety of measures taken to reduce pollutants in stormwater and other non-point-source runoff. Measures range from source control, such as reduced surface disturbance, to the treatment of polluted runoff, such as detention basins.

A Stormwater Pollution Prevention Plan (SWPPP) will be developed by a qualified engineer or erosion control specialist in accordance with the San Francisco Bay RWQCB requirements for NPDES compliance and implemented prior to the issuance of any grading permit before construction. Additionally, local requirements by the City planning or public works departments will also be incorporated. The SWPPP will be kept on site during construction activity and will be made available upon request to representatives of the San Francisco Bay RWQCB.

The SWPPP will include BMPs for Alternative 1 and may include the following practices.

- Erosion control measures will be installed adjacent to suitable aquatic habitat to prevent soil from eroding or falling into these areas. Natural and biodegradable erosion control measures (i.e., straw wattles and hay bales) will be used. Plastic monofilament netting (erosion control matting) will not be allowed because salamanders and frogs can become caught in this type of erosion control material.
- ~~Employ temporary erosion control measures (such as silt fences, staked straw bales and wattles, silt and sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) to control erosion from disturbed areas.~~
- Contain soil and filter runoff from disturbed areas by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.
- Use other temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) to control erosion from disturbed areas as necessary.
- Use a dry detention basin (which is typically dry except after a major rainstorm, when it will temporarily fill with stormwater), designed to decrease runoff during storm events, prevent flooding, and allow for off-peak discharge. Basin features will include maintenance schedules for the periodic removal of sediments, excessive vegetation, and debris that may clog basin inlets and outlets.

- Cover, or apply nontoxic soil stabilizers to, inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways.
- Ensure that no earth or organic material will be deposited or placed where it may be directly carried into a stream, marsh, slough, lagoon, or body of standing water.
- Ensure that grass or other vegetative cover will be established on the construction site as soon as possible after disturbance.
- Locate staging areas at least 50 feet away from any drainages.
- Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete; solvents and adhesives; thinners; paints; fuels; sawdust; dirt; gasoline; asphalt and concrete saw slurry; heavily chlorinated water.

ACTA, in coordination with the city planning or public works departments, will select a combination of BMPs to minimize runoff flows and remove contaminants from stormwater discharges. The final selection of BMPs will be subject to approval by the RWQCB. ACTA will verify that a Notice of Intent has been filed with the State Water Board and that a SWPPP has been developed before allowing construction to begin. ACTA will perform inspections of the construction area, to verify that the BMPs specified in the SWPPP are properly implemented and maintained. ACTA will notify contractors immediately if there is a noncompliance issue and will require compliance. If necessary, ACTA will require that additional BMPs be designed and implemented if those originally constructed do not achieve the identified performance standard.

Mitigation Measure HWQ-2: Clean Paved Areas with Street-Sweeping Equipment

To minimize the amount of pollutants entering the storm drain system during construction, project roadways and other paved areas will be cleaned regularly using street-sweeping equipment. Additionally, litter and debris that may accumulate on the streets of the project area will be regularly collected and properly disposed of. These activities will be the responsibility of the applicant or its contractors.

Mitigation Measure HWQ-3: Implement Additional Water Quality Protection Measures to Reduce Sediment in Surface Waters during Construction

If construction occurs when flows are present in on-site surface waters (Old Alameda Creek and Line M Channel), the contractor will implement measures to protect surface water quality, including flow diversions, impoundments (e.g., diversion structures), or other methods to avoid the direct exposure of surface water to sediment created as part of construction activity. As a performance standard, the measures will maintain basin plan standards for turbidity. If ambient turbidity is greater than 50 NTUs, then project construction will not exceed 10% over the ambient conditions.

Where the project has potential to result in elevated turbidity, monitoring will be performed at least twice daily at upstream and downstream locations to determine whether the standards outlined above have been met. In the event that they are not being met, the turbidity-generating activities will cease until turbidity is within the identified limits, and construction methods or turbidity control measures will be modified to ensure that turbidity limits continue to be met.

Impact HWQ-2: Contamination of Surface Water Quality from Leak or Accidental Spill of Hazardous Materials during Construction (Less than Significant with Mitigation)

As a result of close proximity to water features, construction equipment and activities would have the potential to leak hazardous materials, such as oil and gasoline, and potentially affect surface or groundwater quality. Improper use or accidental spills of fuels, oils, and other construction-related hazardous materials, such as construction-borne sediment, hydrocarbons, and heavy metals from vehicles, also could pose a threat to water quality. While water quality in the project area may currently be affected by contaminants in urban runoff, construction of Alternative 1 would represent a different type of potential contaminant release associated with construction-related hazardous materials.

This impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure HWQ-4: Prepare and Implement a Hazardous Materials Spill Prevention and Control Program during Construction

To ensure compliance with the NPDES General Construction Permit, ACTA will require that project contractors develop and implement a spill prevention and control program to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during all construction activities. The NPDES General Construction Permit requires the spill prevention and control program. The program will be completed before any construction activities begin. The program may include the following practices.

- Provision of security for storage areas that contain hazardous materials.
- Secondary containment for hazardous materials storage.
- Implementation of preventative measures, specific to hazardous materials that would be used, to prevent spillage of each material.
- Provision of containment and cleanup or mop up supplies at each site.
- Posted emergency contact information.

ACTA will review and approve the spill prevention and control program before the onset of construction activities. ACTA will inspect the construction area routinely to verify that the measures specified in the spill prevention and control program are properly implemented and maintained. ACTA will notify contractors immediately if there is a noncompliance issue and will require compliance.

The federal reportable spill quantity for petroleum products, as defined in 40 CFR 110, is any oil spill that:

- violates applicable water quality standards,
- causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or
- causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If a spill is reportable, the contractor will notify the City's Fire Department and the DTSC, which has a spill response and cleanup ordinances to govern emergency spill response. A written description of reportable releases must be submitted to the San Francisco Bay RWQCB and the Department of Toxic Substances Control. This submittal must include a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form. The contractor will notify ACWD of reportable spills, and include ACWD in the distribution of spill-related reports prepared for other agencies.

Impact HWQ-3: Increased Runoff from New Impervious Surfaces and Adverse Impacts on Surface Waters (Less than Significant with Mitigation)

Alternative 1, when fully built, would result in new impervious surfaces, which would result in an incremental reduction in the amount of natural soil surface available for infiltration of rainfall and runoff, potentially generating additional runoff during storm events. Additional runoff could contribute to the flood potential of natural stream channels, accelerate soil erosion and stream channel scour, and provide an efficient means of transport for pollutants to enter waterways. Project features that detain water, such as the proposed infiltration basins required by Provision C.3 would assist with reducing rates of runoff.

The existing Old Alameda Creek is only receiving runoff from two local tracts and Zone 5 Line N-12. The upstream groundwater recharge basins do not contribute flows to this stretch of Old Alameda Creek near the Alternative 1 alignment. The existing 100-year flow for Old Alameda Creek is 250 cfs. With the proposed bifurcation from Zone 5 Line M Channel and runoff from local residential developments (Tract 7405), the additional runoff to be discharged to Old Alameda Creek would be 298 cfs. Additional flow from the Line M Channel diversion pipeline would have minimal impact on the hydraulic capacity of the channel and would be contained within the channel, with at least 1 foot of freeboard (WRECO 2008a). In addition, the added discharge would enter the new open channel segment connecting to Old Alameda Creek to support the wetlands mitigation plan~~could be used~~ to enhance the existing Old Alameda Creek habitat and restore more riparian habitat to mitigate the wetland impacts from Alternative 1. Refer to Mitigation Measure ~~BIO-8~~BIO-5 in Section 3.3, Biological Resources.

Approximately 1,100 feet of the existing Line M Channel would be replaced by double box culverts (~~8~~ 10 feet by 5 feet), and a bifurcation structure would be installed up stream of this point to divert 50% of the Line M Channel flow through an 84-inch pipeline to Old Alameda Creek ~~under the new roadway alignment and a new pipeline west of the alignment's terminus for the flow conveyance in the affected Line M Channel~~. A limited amount of biofiltration water quality treatment would be lost by replacing the 1,100-foot open channel with a culvert. The existing vegetation offers some potential improvement to water quality during low flows through the capture of fine sediments and nutrient uptake. However, during storm events, this section of hydraulically efficient channel likely transports most of the sediment load downstream with high velocity to receiving waters at the existing Line M Channel terminus, offering little to no water quality benefit. Fill of this open channel section of Line M Channel and replacement with twin 10-foot-by-5-foot box culverts, a bifurcation structure, and an additional 84-inch diversion pipeline to route 50% of flood flows to Old Alameda Creek would improve local flood control and eliminate nuisance flooding along Line M Channel.

Additional water quality treatment, as well as replacement of open water habitat, would be achieved through construction of the new open channel segment connecting to Old Alameda Creek to support the wetlands mitigation plan (Mitigation Measure BIO-5 in Section 3.3). The 84-inch diversion pipeline would extend from the bifurcation structure to this new channel. Flow energy at the outfall will be dissipated on a concrete or rock stilling basin and then travel downstream through 1,100 feet of new open channel, connecting to the current upstream end of Old Alameda Creek. This new channel section would provide a larger geometric cross section than the old Line M Channel with greater slope and vegetation complexity. This would reduce the overall flow velocities, and increase sediment capture and contact time to improve nutrient uptake potential. Overall water quality would be improved.

The proposed project would not substantially alter the drainage patterns or alter the watershed boundary that is tributary to Alameda Creek Flood Control Channel. All surface water flows that are collected in the existing stormwater drainage system would be captured in the proposed roadway storm drain system (including the infiltration basins), Line M Channel improvements, and Old Alameda Creek habitat enhancements. Surface water runoff generated by storm events and low flow urban runoff would be routed to Alameda Creek Flood Control Channel through the existing Line M Channel and the improved Old Alameda Creek channel. If there is a heavy storm event, there is adequate capacity in the Old Alameda Creek to contain the flows and maintain freeboard levels in Alameda Creek Flood Control Channel (WRECO 2008a). There would only be a minor change to the existing Old Alameda Creek flood hydrograph.

Existing drainage facilities throughout the Alternative 1 alignment would be extended, replaced, repaired, and/or improved as necessary to provide proper drainage for the increase runoff of the widened roadways.

The objective of the drainage design is to limit the design water surface elevations and velocities to no greater than the existing conditions, or to what can be handled by the existing conditions, at the boundary of the project area (WRECO 2008a). In addition, the project's design goal is to maintain pre-construction storm water discharge flows by metering or detaining these flows to pre-construction rates prior to discharge to a receiving water body. One of the overall project goals is to alleviate current flooding in the Line M Channel, which does not have adequate capacity during major storms, by diverting 50% of the flow and carrying it through Old Alameda Creek to the Alameda Creek Flood Control Channel.

Thus, operation of Alternative 1 would not generate an increase in runoff flows such that it would result in significant flooding or soil erosion impacts. However, any increase in surface runoff as a result of Alternative 1 could result in an increased transport of pollutants to waterways and affect water quality.

This impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure HWQ-5: Construct the Tree Wells and Infiltration Basins to Implement the Hydrograph Modification Management Plan for Stormwater Runoff

ACTA will coordinate with ACWD, ACCWP, and RWQCB to design and construct the hydrograph modification management plan to detain runoff to match the pre-project runoff conditions for low flows. The plan will include construction of tree wells and infiltration basins as Integrated Management Practices. Stormwater runoff from the new roadway will be collected and conveyed through the use of underground conduits to infiltration basins. The infiltration basins will be planted with grasses and other vegetation to provide primary treatment by means of infiltration. The tree wells and infiltration basins will be constructed and the vegetation established so they can effectively control flows, trap sediments and uptake nutrients, and decrease the likelihood of poor quality surface runoff reaching Old Alameda Creek. During large storm events when the infiltration basins cannot absorb all the stormwater, the high flows will go into an overflow pipeline extending underground from the basins to an outfall in Old Alameda Creek. ~~The high flows will bypass infiltration basins and will be discharged directly to the Old Alameda Creek via outfall pipe to provide drainage relief for large storm events.~~ The conceptual hydrologic modification management plan for the proposed project, based on the Water Quality Report prepared by WRECO (2008b) (Appendix M), is shown in Figure 3.7-4 in Chapter 3, Section 3.7 of the Draft EIR. Alternative 1 would only require construction of infiltration basin 3, as shown in that figure, while infiltration basins 1 and 2 would not be necessary due to the reduced amount of ground disturbance required for construction of Alternative 1 and the reduced surface area of Alternative 1, when compared to the proposed project. The location of the basins—including basin 3—and tree-wells shown in the figure are tentative and will be further detailed during the design phase. ~~The basins~~ Basin 3 will be sized according to guidelines set forth in the Alameda Countywide Cleanwater Program and ~~are~~ is expected to be sized in the range from about 10,000 square feet to 30,000 square feet. It will be located on existing nonnative grassland and will avoid riparian vegetation to the extent possible. If this is not possible, additional mitigation will be required to compensate for these impacts (in addition to what is specified in Mitigation Measure BIO-5). The outfall from the basin to Old Alameda Creek will include rock slope protection, which will be approximately 72 square feet (6 feet wide, 12 feet long, and 2 to 3 feet deep). The outfall will be situated above the depth of the 100-year water level.

Implementation of this plan would result in temporary secondary impacts ~~of removing~~ on existing vegetation, including nonnative grassland and vegetation at Arroyo Park (from the infiltration basins), some riparian vegetation, and wetlands along Old Alameda Creek and vegetation at Arroyo Park (from the overflow pipelines and outfalls). The vegetation planted in the infiltration basins will be a seeding mix of native grasses that will result in~~the same as that removed so there is~~ a 1:1 replacement ratio. Replacement vegetation for Arroyo Park will be "Bay-friendly landscaping" in that it is native, drought-tolerant and thrives in the Bay Area. Replacement of riparian vegetation~~, which may require a higher replacement ratio,~~ and wetlands will be ~~consistent with or~~ incorporated into the wetlands mitigation plan as required. Refer to Impacts BIO-6 and BIO-7 and Mitigation Measure BIO-5, BIO-6, and BIO-7~~, Identify Willow Riparian Woodland and Scrub Temporarily Affected and Install Protective Fencing during Construction,~~ in Section 3.3, Biological Resources of Appendix E.

Mitigation Measure HWQ-6: Incorporate Site-Specific Water Quality Treatment Devices into Site Drainage Plans to Meet Water Quality Standards and Maintain Beneficial Uses

ACTA or their contractors will incorporate stormwater treatment devices into the drainage plan and size the treatment devices according to the Alameda Countywide Clean Water Program (ACCWP)'s permit section Provision C. Up to 50% of this water treatment may occur off site within the swales and/or infiltration basins after they are constructed and landscaping is established. The water treatment devices and detention basins will ensure that water quality standards and beneficial uses of downstream water bodies are met. These plans will address, but may not be limited to:

- manipulation of the hydroperiod to allow for appropriate plant growth;
- other vegetation and sediment management activities, such as periodic vegetation and sediment removal every 5 to 10 years;
- control of water residence time, periodic flushing of the water features, and maintenance of drainage channels and culverts;
- source control of contaminants reaching the water bodies;

- measures to reduce the potential for disease vectors (e.g., mosquitoes and rodents);
- measures to ensure that groundwater does not become contaminated; and
- use of water quality treatment devices such as traction sand traps or media filters; and
- water quality treatment features to be installed in the bridges proposed over Alameda Creek Flood Control Channel and Old Alameda Creek.

The measures identified in the drainage plans and measures to protect water quality according to Provision C.3 will conform to the performance standard that water quality in the off-site water features meets the numeric and narrative water quality objectives of the basin plan and that beneficial uses of the downstream water bodies are not compromised.

In addition to water quality BMPs incorporated in the project landscaping as described above, existing stormwater pipes that carry runoff that has not received primary treatment before being discharged to Line M Channel will have an in-line mechanical filtration vault installed before being connected to the new Line M Channel diversion pipeline. The vault will contain replaceable filtration media designed to remove sediment and other water quality target contaminants in order to meet Provision C.3 goals. This filtration device is not the primary water quality measure, but will act in series with other BMPs, and the sediment trapping and biological processes in Old Alameda Creek.

The 1,100 feet of new channel construction adjacent and connecting to Old Alameda Creek will also increase residence time and vegetation contact time with the project area drainage. This increase in residence time will increase potential for nutrient uptake and sediment removal from Line M Channel diversion flows before they enter Alameda Creek Flood Control Channel. These flows will also expand the contiguous aquatic habitat and riparian corridor of Old Alameda Creek, improving its overall water quality improvement capacity.

Impact HWQ-4: Water Quality Impacts from Discharges to CWA 303(d)-Listed Surface Water Bodies-Diazinon (Less than Significant)

Surface water runoff from Alternative 1 ultimately could be discharged into the Alameda Creek Flood Control Channel—which is on the CWA 303(d) list of water quality-limited segments being addressed by EPA-approved TMDLs for diazinon—and could contribute to the creek's concentrations of this constituent. Alameda Creek Flood Control Channel was moved to this list from the CWA 303(d) list of impaired water bodies because of a completed EPA- approved TMDL. ~~Because of the impairment, Alameda Creek Flood Control Channel has no remaining assimilative capacity or ability to accommodate additional quantities of this contaminant, irrespective of concentration. However, diazinon~~ Diazinon was phased out of use in 2001 and urbanized environments typically do not have a diazinon impairment anymore because household-related pesticides no longer contain diazinon. Additionally, diazinon is not one of the pollutants described in Table 3.7-1, which lists typical pollutants found from roads and highways.

As a result, this impact is considered less than significant. No mitigation is required.

Impact HWQ-5: Potential Flood Hazards Associated with Levee or Dam Failure (Less than Significant)

There are no levees or dams in the vicinity of the Alternative 1 alignment. Therefore, this impact is considered less than significant. No mitigation is required.

Section 3.8
Land Use and Planning

3.8.1 Introduction

This section describes the affected environment and regulatory setting for planning and land use in the project area. It also describes the impacts on land use and planning that would result from implementation of Alternative 1, and mitigation measures that would reduce these impacts.

3.8.2 Setting

Sources of Information

Planning documents prepared and maintained by Union City formed the basis for the setting information presented in this section. Information obtained from field visits was also used to describe the existing setting. The key sources of information used in the preparation of this section are listed below.

- Union City General Plan, Draft May 1991, amended November 2002 (City of Union City 2002).
- Union City Pedestrian and Bicycle Master Plan (City of Union City 2006).
- Alameda County Congestion Management Agency Countywide Bicycle Plan (Alameda County Congestion Management Agency 2006).
- East Bay Regional Parks District Parks Master Plan (East Bay Regional Parks District 1997).

Existing Conditions

This section discusses the existing conditions related to planning and land use in the project vicinity. Existing conditions were determined by conducting pedestrian and windshield surveys of the Alternative 1 alignment, reviewing aerial photographs of the Alternative 1 alignment and the surrounding vicinity, and reviewing planning maps and planning documents relevant to the Alternative1 alignment.

Jurisdictional Setting

The Alternative 1 alignment traverses a primarily urbanized area that lies within the incorporated boundaries of Union City. In certain places, the Alternative 1 alignment crosses land within the jurisdictional boundary of Union City but owned by Alameda County Flood Control and Water Conservation District (ACFCWCD), Alameda County Water District (ACWD), and Caltrans.

Existing Land Uses

The Alternative 1 alignment includes 0.6 mile of new roadway, from Alvarado-Niles Road on the west to Mission Boulevard on the east, in an area that is primarily undeveloped. The land has been reserved for roadway development since 1958, when Caltrans proposed a six-lane freeway extending from I-880 on the west to Mission Boulevard on the east. Undeveloped land in this corridor is variously owned by ACFCWCD, ACWD, Caltrans, City of Fremont, and Union City.

The undeveloped corridor between Alvarado-Niles Road and Mission Boulevard is within the Union City corporate limits. The corridor is primarily undeveloped and includes two stormwater detention basins (called Basin 2C and New Basin) and the Line M Channel. BART and UPRR tracks, as well as Green Street bridge and Chesapeake Drive, cross through the corridor. The corridor is surrounded by existing and proposed residential development, existing industrial uses, and some proposed commercial development located north of the Alternative 1 alignment. Most of the land immediately adjacent to the proposed road comprises existing and proposed single-family residential development. The Union City Corporation Yard and Drigon Park also abut the Alternative 1 alignment to the north on the east end near Mission Boulevard.

The proposed wetlands mitigation site comprises undeveloped, disturbed land adjacent to Old Alameda Creek, partially within Fremont and partially within Union City. Under Alternative 1, it would be predominately within Union City.

Existing Land Use Designations

Figure 3.8-1 shows the land use designations of the Alternative 1 roadway alignment and immediately surrounding areas, pursuant to the Union City General ~~Plans~~Plan. As shown in the figure, the Alternative 1 vicinity is primarily residential, with some commercial, industrial, and open space designations.

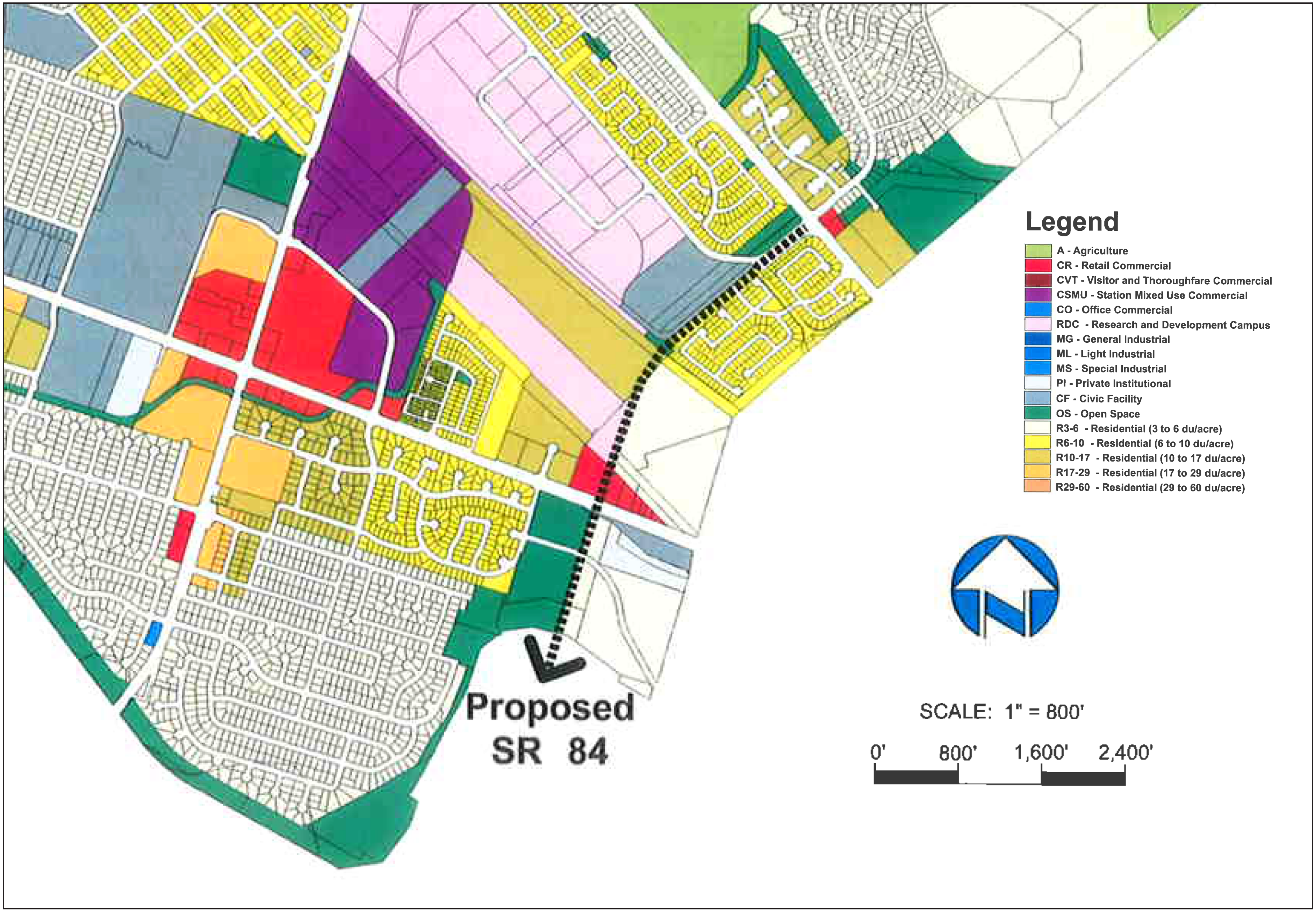

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Figure 3.8-1
General Plan Land Use Designations, Union City
ACTA East-West Connector Project, Alternative 1

The Alternative 1 alignment enters undeveloped land designated by Union City as Retail Commercial (RT) in the Union City General Plan map[1], and crosses the BART and UPRR Oakland Subdivision tracks. The Alternative 1 alignment continues along undeveloped land designated as Research and Development Campus (RDC), Residential 10 to 17 d.u./acre (R10–17), and Civic Facility (CF, marking the Union City Corporation Yard). The Alternative 1 alignment meets up with 7th Street, which has no designation because it is an existing road, and terminates at Mission Boulevard. Adjacent land uses in this area include Open Space (OS) on the north side of the Alternative 1 alignment—marking Drigon Park—and Residential 6 to 10 d.u./acre (R6–10)—indicating the recently constructed single-family development on the Alternative 1 alignment's south side.

The proposed wetlands mitigation site straddles the existing alignment of Old Alameda Creek, which in this area serves as the border between Fremont and Union City. (The Fremont General Plan map for the Fremont portion of this area is shown in Figure 3.8-2b of the Draft EIR.) On the south side of the creek, the site has the Fremont General Plan designation I-OS; on the north side of the creek, the site encompasses land with the Union City General Plan designations of OS and Private Institutional (PI). (Refer to Figure 3.3-3 for a preliminary illustration of the wetlands mitigation site.)

Regulatory Setting

Federal

There are no federal land use or planning regulations that apply to Alternative 1 or the Alternative 1 alignment.

State

California Government Code—Title 7

Section 65100, *et seq.*, of the California Government Code assigns planning responsibility within each city and county to the respective jurisdictions' planning agencies. Planning documents adopted by Union City discussed below under local regulations.

[1] The purpose of this designation is to conserve lands that should remain as open space for passive and active recreation uses, resource management, flood control management, and public safety. Uses that would typically be appropriate in this land use designation include but are not limited to public parks, playgrounds, golf courses and driving ranges, parkways, vista areas, wetlands, wildlife habitats and outdoor nature laboratories; stormwater management facilities; and buffer zones separating urban development and ecologically sensitive resources.

Caltrans Right-of-Way Division

The Property Management Department within the Caltrans Right of Way Division manages all property held for future transportation projects and excess properties. A portion of the project area is owned by Caltrans, and is leased to tenants. Rules and policies pertaining to acquisition, management, lease, and rental within Caltrans-owned property are published in Chapter 11 of the Caltrans Right-of-Way Manual (California Department of Transportation 2008a).

Local

City of Union City

Union City General Plan

The Union City General Plan (City of Union City 2002) establishes Union City's comprehensive and long-term goals and policies regarding land use planning and development within its borders, and outlines a plan for achieving those goals and implementing those policies. The current General Plan was adopted in February 2002 as an update to the previous plan adopted in 1991. It is organized in two main parts—the General Plan Policy Document, which contains the specific goals and policies, and the General Plan Background Report, which contains supporting information. The General Plan Policy Document is divided into nine sections addressing various California requirements for general plans: Economic Development; Youth, Family, Seniors, and Health; Land Use; Community Design; Transportation; Health and Safety; Public Facilities and Services; and Natural and Historical Resources. Several of these elements contain goals and policies that are pertinent to Alternative 1 as presented below in Table 3.8-1.

Table 3.8-1. Relevant Union City General Plan Goals, Policies, and Implementation Items

Goal/Policy No.	Text
YOUTH, FAMILY, SENIORS, AND HEALTH ELEMENT	
Goal YFSH-E.1	To provide parks and facilities that serve the diverse needs of the city's growing population.
Policy YFSH-E.1.3	The City shall commit to increasing the number and /or size of neighborhood and /or citywide parks.
Policy YFSH-E.1.11	The City shall prepare a capital improvements program for parks acquisition and development.
Implementation YFSH-E.4	The City shall produce a trail and bike route map for public distribution.
LAND USE ELEMENT	
Goal LU-A.7	To achieve maximum jurisdictional and agency coordination in all aspects of physical and social planning.
Policy LU-A.7.1	The City shall coordinate growth and development with surrounding jurisdictions, the Local Agency Formation Commission, Congestion Management Agency, transit providers, and other regional agencies as appropriate to promote common goals.

Goal/Policy No.	Text
Policy LU-A.7.2	The City should continue to coordinate with special districts such as the Alameda County Water District, Union Sanitary District, and East Bay Regional Park District, as part of the land use decision-making process.
Goal LU-B.2	To establish landscape and other buffer zones between potentially incompatible uses.
Goal LU-I.1	To create a community park site that serves as a gateway to Union City along SR 84.
Policy LU-I.1.1	The City shall make efforts to purchase the Caltrans property and expand Arroyo Park.
Policy LU-I.1.2	The City shall ensure that Arroyo Park is functionally linked to Quarry Lakes (in the city of Fremont) by park and open space areas along Alameda Creek.
Policy LU-I.1.3	The City shall strive to design the park so that it buffers residential uses from SR 84 and provides recreation facilities to serve the neighborhood and the community as space allows.
Policy LU-I.1.4	The City shall allow single-family residential to develop on the remainder of the Caltrans property, if any, that is not utilized for park or SR 84.
COMMUNITY DESIGN ELEMENT	
Goal CD-C.1	To create distinct and attractive corridor environments along Union City's major roadways and transit lines.
Policy CD-C.1.1	The City shall prepare an overall streetscape master plan for the entire city that identifies various improvements such as providing a variety of light fixture styles, accent landscaping, street furniture, decorative signage, landscape medians, and bollards.
Policy CD-C.1.2	The City shall create a citywide sign program that places "icon" signs along major corridors to help distinguish Union City from Fremont and Hayward. The sign program shall also address standards for signs within the public right-of-way.
Policy CD-C.1.3	Whenever possible, the City shall avoid road alignments that result in long stretches that encourage speeding by motorists and that are visually monotonous.
Goal CD-D.1	To create positive first impressions for motorists/pedestrians entering the city through enhancement of the city's gateways.
Policy CD-D.1.1	The City shall enhance all city gateways by providing city identification signs, additional lighting, and accent planting.
Policy CD-D.1.2	The City shall provide attractive landscaping that reduces the visual impact of sound walls near gateways into Union City.
Goal CD-E.3	To enhance creeks as visual and trail resources and make connections between community parks, schools, residential, and commercial destinations.
Policy CD-E.3.1	Where feasible, the City should restore the natural edges along the city's creek system by planting natural vegetation.
Policy CD-E.3.3	The City shall in collaboration with Alameda County Flood Control prepare a creek system master plan that identifies potential improvements to the creek system.
TRANSPORTATION ELEMENT	
Goal TR-A.1	To establish a safe, convenient, and efficient roadway system that minimizes peak hour traffic congestion.
Policy TR-A.1.6	The City shall establish truck routes that will minimize noise impacts and safety hazards on the community. … The City shall discourage the use of Alvarado-Niles Road as a truck route.

Goal/Policy No.	Text
Policy TR-A.1.9	The City shall support the timely construction of the SR 84 extension as a partially depressed and at-grade parkway through the Station District to Mission Boulevard in order to resolve current circulation deficiencies, improve the area's regional access and visibility, and stimulate the market for region-serving retail, light industrial/service commercial, and office uses.
Policy TR-A.1.10	The City shall ensure that the design of SR 84, 7th Street, and 11th Street is completed in such a manner that the industrial uses in the Station District can gain direct access to the facility with minimum disturbance to other uses in the area.
Policy TR-A.1.13	The City shall control the number of direct access points to SR 84, Mission Boulevard, Decoto Road, Union City Boulevard, Alvarado Boulevard, Dyer Street, Whipple Road and Alvarado-Niles Road to maintain traffic flow and minimize potential for accidents.
Policy TR-A.1.15	All new traffic signals should be equipped with audible signal devices, traffic signal timing and coordination, and signal emergency vehicle preemption. The City shall investigate new technologies which will improve movement of pedestrians, bicyclists, public transit and emergency vehicles.
Goal TR-A.2	To keep the transportation system in balance with the land uses in Union City.
Policy TR-A.2.1	The City shall work with the City of Fremont, Caltrans, and ACTA to complete the SR 84 extension between I-880 and Mission Boulevard.
Goal TR-A.3	To protect neighborhood integrity and livability and improve safety by minimizing through traffic in residential neighborhoods.
Goal TR-B.1	To provide an efficient, convenient public transportation system for residents and workers in Union City.
Goal TR-C.1	To create an institutional framework that supports bicycle and pedestrian travel through policy development, city staff and committee actions, and capital project implementation.
Policy TR-C.1.1	The City shall consider the needs of bicyclists and pedestrians in all future road construction or widening projects and development projects.
Goal TR-C.2	To develop a comprehensive signed bicycle route network composed of Class I (paved off-street paths and multi-use trails), Class II (bicycle lanes), and Class III (shared-use roadways) facilities connecting all of Union City’s neighborhoods and adjacent communities.
Policy TR-C.2.1	The City shall develop a planned bicycle route network that conveniently and efficiently links residential neighborhoods, parks and open space areas, transit centers, schools, shopping areas, public facilities, major employment centers, and the regional bicycle network.
Policy TR-C.2.9	The City shall encourage the development of easily accessible and safe bike paths along the SR 84 extension.
Goal TR-C.3	To develop Union City’s local trail system and integrate local trails with regional trail systems whenever possible.
Policy TR-C.3.1	The City shall continue to improve its local trail system and ensure that all local trails meet the design requirements set forth in the bicycle and/or pedestrian design guidelines.
Policy TR-C.3.2	The City shall support regional efforts to implement trails (such as the Bay Trail and Bay Area Ridge Trail), and shall identify opportunities to connect local trails with regional trails.
Policy TR-C.3.3	The City shall seek opportunities to connect existing and planned trails to the bicycle route network.

Goal/Policy No.	Text
Goal TR-C.4	To create a continuous pedestrian network that meets ADA standards and allows pedestrians to safely and conveniently access parks and open space areas, transit centers, schools, shopping areas, public facilities, major employment centers, and other significant destinations.
Policy TR-C.4.5	The City shall prioritize safety in the design of sidewalk improvements along major arterials, including separating sidewalks from motor vehicle travel lanes where possible.
Implementation TR-C.3	The City shall work with the Cities of Fremont and Hayward to ensure bicycle and pedestrian facilities are continuous between neighboring jurisdictions.
PUBLIC FACILITIES ELEMENT	
Goal PF-E.1	To collect and dispose of stormwater in a manner that minimizes inconvenience to the public, minimizes potential water-related damage, and enhances the environment.
Policy PF-E.1.4	The City shall improve the quality of runoff from urban and suburban development through use of appropriate and feasible mitigation measures including, but not limited to, artificial wetlands, grassy swales, infiltration/sedimentation basins, riparian setbacks, oil/grit separators, and other best management practices.
Policy PF-E.1.8	The City shall allow stormwater detention facilities to mitigate drainage impacts and reduce storm drainage system costs. To the extent practical, stormwater detention facilities should be designed for multiple purposes, including environmental, recreational and/or stormwater quality improvement.
NATURAL AND HISTORICAL RESOURCES ELEMENT	
Goal NHR-A.1	To protect, restore, and enhance important biological habitats and their associated plant, wildlife, and fish species throughout Union City and to educate people as to this need.
Policy NHR-A.1.3	On sites that have the potential to contain critical or sensitive habitats, or special-species, or are within 100 feet of such areas, the City shall require the project applicant to survey the site by a qualified biologist at the proper time of year. A report of the findings of this survey shall be submitted to the city as part of the application process. Appropriate mitigation measures will be incorporated into the project as necessary to protect the resources.
Policy NHR-A.1.4	On sites with the potential to contain wetland resources, the City shall require that a wetland delineation be prepared using the protocol defined by the U.S. Army Corps of Engineers.
Policy NHR-A.1.13	The City shall continue to require a burrowing owl study on all development projects that incorporate vacant, unpaved parcels, or parcels adjacent to possible owl habitat.
Goal NHR-B.1	To protect and enhance the natural qualities of Union City's groundwater, surface water, and streams, and to ensure sufficient water supplies of good quality for all beneficial uses.
Policy NHR-B.1.1	The City shall work with Alameda County Flood Control in an effort to ensure protection of the natural conditions along stream and creek corridors. a. In areas already disturbed, efforts should be made to restore the natural character to the extent possible. b. The development of trails along the corridors should be encouraged, and streamside rest areas should be provided that include indigenous streamside vegetation. c. New projects for flood and erosion control should be designed to preserve the natural creekside condition where possible. Alteration of streambeds and adjacent vegetation is to be permitted only as a means of erosion or flood control as permitted by the City and in such a manner as to enhance the area within the city.

Goal/Policy No.	Text
Policy NHR-B.1.2	The City shall require that an erosion control plan be prepared and approved prior to the issuance of a grading permit. This plan shall be prepared in keeping with standards for non-point source pollutants applied by the Regional Water Quality Control Board.
Policy NHR-B.1.3	The City shall take or encourage actions to protect the Niles Cone water-bearing aquifers. Particular attention shall be paid to the use of recharge wells, salt water barriers, and importation of water necessary to maintain the water levels at surface elevations adequate to prevent salt water intrusion. Efforts should ensure maximum opportunity for surface runoff to recharge groundwater basins, including the use of checkdams, ponding, or retention basins, where compatible with policies for stream and creek protection.
Policy NHR-B.1.4	The City shall evaluate public and private development projects, including golf courses, to determine the effects of the projects on on-site and downstream drainage patterns and associated ecological systems.
Policy NHR-B.1.5	Within its authority, the City shall ensure that flood control facilities built in natural areas be designed to use "soft" channel structures (i.e., avoid lined channels and culverts) that maintain to the greatest extent possible natural vegetation and infiltration.
Goal NHR-C.1	To protect, to the extent possible, the City's significant archeological and historical resources.
Policy NHR-C.1.5	The City shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures and sites.
Policy NHR-C.1.6	The City shall support efforts to protect and recover archeological resources.
Policy NHR-C.1	The City shall maintain and publish a historical resource inventory.
Policy NHR-C.4	The City shall apply the Landmark and Historic Overlay Zone to noteworthy resources.
Goal NHR-D.1	To provide for a continuous system of open spaces for the preservation, enhancement and protection of open space land.
Policy NHR-D.1.16	The City shall protect open space from intrusion by public projects. Planned open space is to be protected from intrusion by massive public works projects such as freeways and utility systems wherever possible. When protection is not possible, such projects shall be designed to permit compatible recreational development.

In addition to the goals and policies listed in Table 3.8-1, the Union City General Plan includes the following discussion specifically addressing the Alternative 1 alignment and the SR 84 Realignment Project, which is a reference to the East-West Connector Project in its former iteration as a Caltrans project. The Union City General Plan has identified this project in its General Plan since 1986, when voters approved a ballot initiative to construct the road (Malloy pers. comm.).

- "The 35-acre Caltrans Property is a located south of Alvarado-Niles Road on the eastern end of the city. The City recognizes this site as an important future gateway and potential open space resource and would like to develop the site with residential and recreational uses. There is a tremendous opportunity to develop the park so that it could complement Quarry Lakes and extend into Fremont. Some portion of the land would also be developed as single-family residential. The availability of the Caltrans property is dependent on the construction and configuration of SR 84 connections to

Union City." (Land Use Element, page LU-40 through LU-41.) The Caltrans Property, part of which would be used for the wetlands mitigation site, has the land use designation of IS, which is intended for uses including, but not limited to, cemeteries, churches, private educational facilities, private nonprofit and service organizations, and continuing care retirement communities. However, as stated above, the Land Use Element acknowledges the potential for development of this site for park and residential uses.

- "The only new highway projects are the SR 84 extension proposed to be constructed on the eastern side of the City near the Union City/Fremont city limits, and the proposed widening of SR 238 (Mission Boulevard) to six lanes. The SR 84 extension is a new four- to six-lane parkway that, when completed, will extend from Mission Boulevard to I-880 in Fremont and to the Dumbarton Bridge. Also planned is an extension of 11th Street from Decoto Road to the proposed SR 84. These connections will provide important alternatives for through traffic in the Decoto Road corridor. SR 84 is planned to have a grade separation at the former Southern Pacific Railroad line and BART/Union Pacific Railroad line, and will provide regional access to the BART station area. This roadway will clearly strengthen the development potential of the Station District." (Transportation Element, page TR-1.)

Figure TR-5 of the Transportation Element (updated March 2005) shows the existing and proposed bicycle system within the City. In the project area, the figure shows Alvarado-Niles Road as a street with existing bicycle lanes. The Alternative 1 alignment is generally outlined on this map, and labeled as part of the proposed bicycle network, as are 7th Street, 11th Street, and Mission Boulevard.

Union City Zoning Ordinance

Title 18 of the Union City Municipal Code is the Union City Zoning Ordinance, which identifies zones, or land use designations, applied to land within the City's jurisdiction. The Zoning Ordinance restricts and regulates the location, construction, reconstruction, alteration and use of buildings, structures and land for various allowable purposes.

Union City Pedestrian and Bicycle Master Plan

The City of Union City prepared a Pedestrian and Bicycle Master Plan (UC Ped and Bike Plan) in 2006 to specify the City's policies related to providing pedestrian and bicycle facilities and to identify future improvements for the City's roads and trails. The plan includes engineering and design guidelines for constructing and maintaining pedestrian facilities and bicycle facilities. Bike lanes are proposed as Class I, Class II, or Class III (see additional discussion in Section 3.12, Transportation and Traffic). Figure 3.8-2 represents Figure 5-2 of the UC Ped and Bike Plan in the project area, with a generalized alignment of the project roadway, and lists it as a Pedestrian Improvement Corridor.[2] Pedestrian Improvement Corridors are defined as "major arterials and collector streets

[2] The Pedestrian Improvement Corridor shown along the project roadway alignment in Figure 5-2 of the Union City Pedestrian and Bicycle Master Plan also extends the corridor south of Alvarado-Niles Road, as it was originally intended to abut new roadway planned for to be built in the undeveloped area beyond the Alternative 1 alignment.

providing direct pedestrian access to transit, commercial centers, and employment centers" and "assume a need for significant improvements to accommodate current and/or projected pedestrian traffic volumes and to provide a desirable pedestrian experience." Alvarado-Niles Road in the project area is also listed as a Pedestrian Improvement Corridor and is shown as a Sidewalk Gap Closure, meaning a "street segment where sidewalk facilities are inadequate or nonexistent." Figure 3.8-3 shows Figure 5-3 of the Pedestrian and Bicycle Master Plan, which includes the project alignment as part of the proposed bike network, but does not specify whether it is to be Class I, II, or III. Although their respective classes are not specified, 7th Street, 11th Street, and Mission Boulevard are also shown as part of the proposed bike network.

City of Fremont

Fremont General Plan

The Fremont General Plan (City of Fremont 1991) establishes Fremont's comprehensive and long-term goals and policies regarding land use planning and development within its borders, and outlines a plan for achieving those goals and implementing those policies. The current General Plan was adopted in May 1991. Fremont is currently in the process of updating its General Plan, but has not yet adopted this update. The Fremont General Plan includes the following chapters: Land Use, Housing, Local Economy, Open Space, Public Facilities, Transportation, Natural Resources, Health and Safety, and Parks and Recreation.

Table 3.8-2 lists the goals and policies from the Fremont General Plan that are relevant to Alternative 1 (i.e., the proposed wetlands mitigation site), identified by element.

Table 3.8-2. Relevant Fremont General Plan Goals, Policies, and Implementation Items

Goal/Policy No.	Text
LAND USE ELEMENT	
Goal LU 4	Conservation of the city's open space resources.
Policy LU 4.3	Development on land designated Institutional Open Space is limited to compatible recreational and community uses.
Policy LU 4.4	Development of recreational or other public facilities on open space lands should conserve the open space character of the site and minimize impacts on mature landscaping and environmentally sensitive areas.
OPEN SPACE ELEMENT	
Goal OS 2	Recognition, protection, and enhancement of significant natural areas and wildlife habitats in the city, including Bay tidal, seasonal, and freshwater wetlands, and open meadows and fields.
Objective OS 2.2	Protection and enhancement of wetlands within the city.
Policy OS 2.2.1	The City shall take an active role in protecting wetlands. There shall be no net loss of wetlands as a result of development in Fremont.
Objective OS 2.3	Conservation of natural areas within the city.

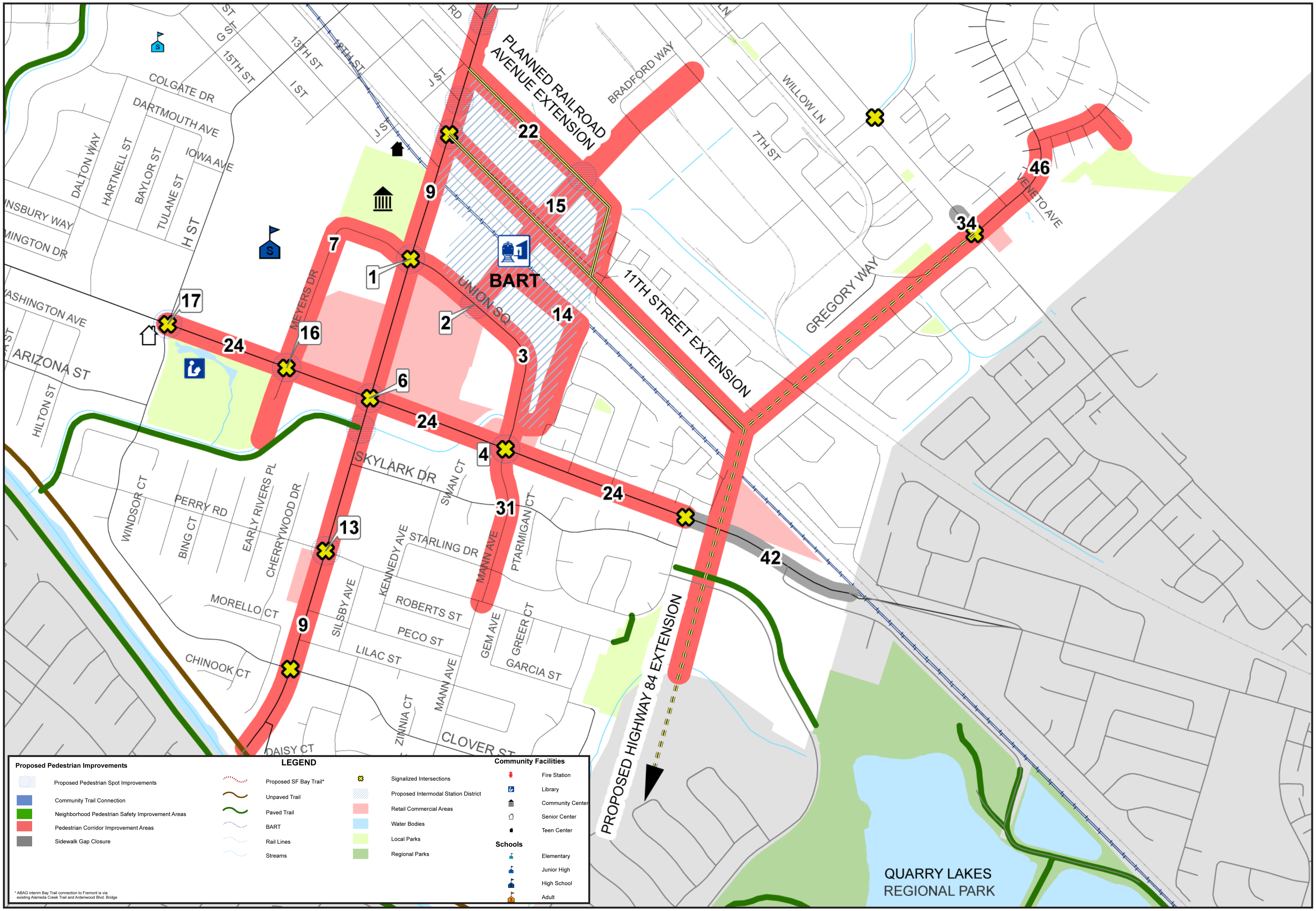

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Figure 3.8-2
Existing and Proposed Pedestrian Network, Union City
ACTA East-West Connector Project, Alternative 1

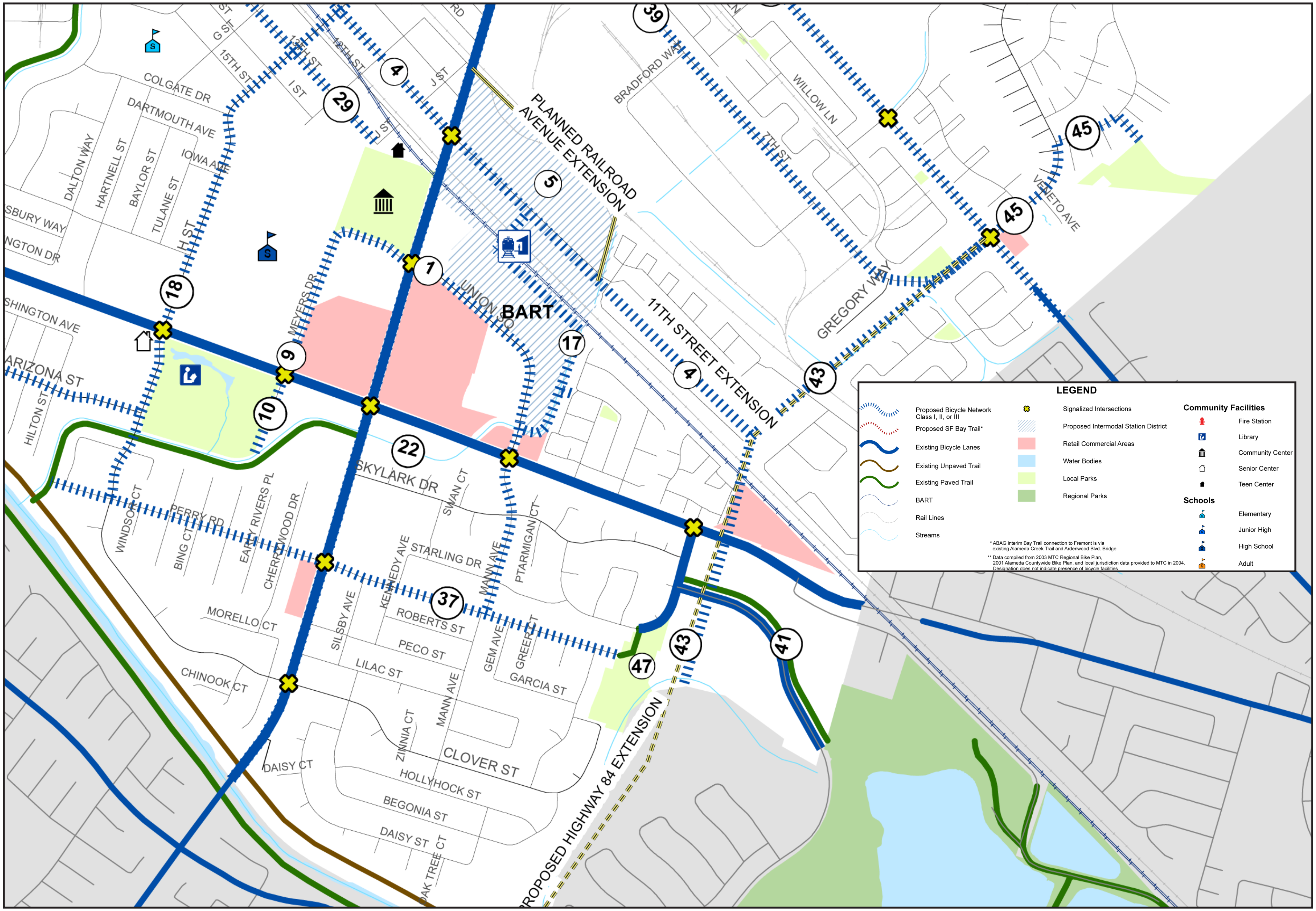

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Figure 3.8-3
Existing and Proposed Bicycle Network, Union City
ACTA East-West Connector Project, Alternative 1

Goal/Policy No.	Text
Policy OS 2.3.1	Publicly owned unique natural areas remaining in the flatland area of the city (see Natural Resources Chapter, Figure 9-3) shall be managed to protect and enhance wildlife habitats to the degree feasible (See Biological Resources Section of the Natural Resources Chapter for implementation measures).
Objective OS 2.5	A comprehensive system of trails connecting destinations within Fremont.
Policy OS 2.5.1	Develop a system of trails shown on the General Plan trails map, as funding permits. Effort shall be concentrated on trails that link major destinations and are accessible to a large number of people.
Policy 2.5.2	Provide public access to major trails, with appropriate staging areas and parking where feasible. Public access points shown on the General Plan are approximate locations. … Where access is provided, (either as required or as part of project designs), site and building design adjacent to the access point or trail shall also provide for sufficient privacy and a clear boundary between public access and private uses.
NATURAL RESOURCES ELEMENT	
Goal NR 1	Biological resources protected and enhanced.
Goal NR 2	Protection and conservation of natural resources in the planning, design and management of the City's landscape.
Goal NR 7	Development sensitive to surface water resources.
Goal NR 13	An open space frame to the City.
Objective NR 13.1	Preservation of the visual character of the City's Open Space frame and other unique natural visual elements of Fremont. The Frame includes the Hill Face, Bay lands, Alameda Creek flood control channel and adjacent publicly owned open space areas (Ardenwood Regional Park, Alameda Creek Quarries).
Goal NR 14	A distinctive, positive visual image for Fremont.
TRANSPORTATION ELEMENT	
Objective T 2.4	A safe and convenient bicycle network that facilitates bicycle travel for commuting to work, school, shopping and for recreation.
Policy T 2.4.1	Complete the bicycle route system identified on the Planned Bicycle Route, Horse and Foot Trails map (Figure 8-13).
Policy T 2.4.2	To increase bicycle safety, the bicycle system shall consist of on-road striped bicycle lanes and off-road bicycle trails, whenever feasible.

Alameda County Congestion Management Agency

Alameda County Congestion Management Agency prepared the most recent update to the Alameda County Congestion Management Program in 2007, describing updated strategies to reduce roadway congestion throughout the County and identifying projects intended to implement those strategies. Alternative 1 is not included on the Capital Improvement Projects list published in that document. In 2008 Alameda County Congestion Management Agency also prepared the most recent update of the Alameda Countywide Transportation Plan, a long-range policy document that guides transportation decisions and presents a vision for improving transportation circulation throughout the County. According to the Alameda County Congestion Management Agency, the proposed project ~~Alternative 1~~ is ~~not~~ included on the list of committed projects presented in the Alameda Countywide Transportation Plan; the version of the project proposed as Alternative 1 is not specifically included on that plan's list either(Alameda County Congestion Management Agency 2009). ~~However, the~~ The Route 84 project (also called the historic parkway) is also included in the Alameda County Congestion Management Agency's countywide traffic model.

Alameda County Congestion Management Agency prepared the Alameda Countywide Bicycle Plan (Alameda Bike Plan) in 2006—a framework established by multi-jurisdictional input to provide background, direction, and tools to improve the bicycling environment throughout the County. There are no proposed improvements within the project area that are identified as high-priority projects.

East Bay Regional Park District

EBRPD provides and manages the regional parks for Alameda and Contra Costa Counties, and publishes their policies and guidelines relating to parks and resource management in the EBRPD Master Plan. The most recent plan was adopted in 1997. The Alameda Creek Trail, which runs along both banks of the Alameda Creek Flood Control Channel, is an EBRPD facility, listed in the Master Plan's inventory of existing, completed regional trails. Regional trails are defined in the Master Plan as providing "non-motorized, multiple-use, pedestrian, equestrian, and bicycling connections between District parks, thus encouraging alternative modes of transportation and helping to reduce pollution. They also link District parks with other local parks, open spaces, trails, transportation and employment centers, and urban communities." The Alameda Creek Trail connects San Francisco Bay in the west to an area in Niles Canyon (east of the Mission Boulevard/SR 84 intersection), southeast of the terminus of the Alternative 1 alignment.

3.8.3 Impact Analysis

This section describes the impact analysis relating to land use and planning for Alternative 1. It describes the methods used to determine the impacts of Alternative 1 and lists the criteria used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

Baseline conditions were determined by conducting site visits and reviewing aerials photographs and maps and relevant planning documents. Impacts related to land use and planning were determined by reviewing relevant plans and policies and then identifying any potential conflicts or inconsistencies between Alternative 1 and the goals, policies, objectives, or implementation items published in those plans. Potential conflicts with existing or planned land uses were also considered.

Significance Criteria

For this analysis, an impact pertaining to land use was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 *et seq*.). A significant impact is identified if Alternative 1 would:

- physically divide an established community;
- conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;
- conflict with any applicable habitat conservation plan or natural community conservation plan; or
- result in a substantial conflict with existing or planned land uses.

Project Impacts and Mitigation Measures

There are no habitat or natural community conservation plans specifically applicable to Alternative 1 or its alignment. Therefore, these impacts are not discussed further and no mitigation is required.

Impact LUP-1: Divide an Established Community (Less than Significant)

There are Union City residential areas on both sides of the corridor between Alvarado-Niles Road and Mission Boulevard. The corridor, which includes two detention basins, already divides this area of Union City. The builders of recent Union City developments along the corridor were informed of the corridor’s purpose and the potential for the roadway’s construction. Accordingly, much of the newer residential developments on each side feature soundwalls in anticipation of the new roadway, and the existing soundwalls serve to divide this area under existing conditions. Alternative 1 would not further divide these residential developments. Therefore, Alternative 1 would not divide an established community.

This impact is considered less than significant. No mitigation is required.

Impact LUP-2: Potential Conflict with the Union City General Plan (Less than Significant)

Table ~~3.8-2~~ 3.8-3 provides a discussion of the Alternative 1's potential conflict with the Union City General Plan.

Table ~~3.8-2~~3.8-3. Consistency of Alternative 1 with the Union City General Plan

Goal/Policy No.	Text	Project Consistency Discussion
YOUTH, FAMILY, SENIORS, AND HEALTH ELEMENT		
Goal YFSH-E.1	To provide parks and facilities that serve the diverse needs of the city's growing population.	Alternative 1 would encroach on Drigon Park, located near the project area's eastern terminus at Mission Boulevard. Therefore, Alternative 1would reduce the size of this park, and conflict with Policy YFSH-E1.3. The Drigon Park impact area is estimated at approximately 15,600 square feet. Drigon Park was planned and developed with setbacks taking into consideration the future presence of SR-84, and Alternative 1's encroachment would be less than was previously planned. Impacts on this park would occur on the fringes of the park and would not substantially affect activities or facilities available for recreation. ACTA would continue to coordinate with the Union City Department of Public Works and Planning Department as project design progresses, and would identify appropriate compensation for any parkland that is taken by the Alternative 1 alignment. Therefore, this is not a significant conflict with this policy. There are no specific capital improvements for this park listed in the UC General Plan. Therefore, Alternative 1 would not conflict with policy YFSH-E.1.11.
Policy YFSH-E.1.3	The City shall commit to increasing the number and /or size of neighborhood and/or citywide parks.	
Policy YFSH-E.1.11	The City shall prepare a capital improvements program for parks acquisition and development.	
Implementation YFSH-E.4	The City shall produce a trail and bike route map for public distribution.	7th Street, 11th Street, and Mission Boulevard are shown as components of the bike network. Project-related construction of 11th Street, realignment of 7th Street, and widening of Mission Boulevard near their respective intersections with the project roadway would include the proper bicycle facilities, providing connections to the project roadway's bike and trail facilities.

Goal/Policy No.	Text	Project Consistency Discussion
LAND USE ELEMENT		
Goal LU-A.7	To achieve maximum jurisdictional and agency coordination in all aspects of physical and social planning.	The design and environmental review for the East-West Connector Project has involved a great deal of coordination between ACTA and Union City; therefore, Alternative 1 is consistent with this goal and its related policies.
Policy LU-A.7.1	The City shall coordinate growth and development with surrounding jurisdictions, the Local Agency Formation Commission, Congestion Management Agency, transit providers, and other regional agencies as appropriate to promote common goals.	
Policy LU-A.7.2	The City should continue to coordinate with special districts such as the Alameda County Water District, Union Sanitary District, and East Bay Regional Park District, as part of the land use decision-making process.	
Goal LU-B.2	To establish landscape and other buffer zones between potentially incompatible uses.	Alternative 1 landscaping along the edges of the roadway, providing a physical and visual buffer to adjacent residential and park land uses. Therefore, Alternative 1 is consistent with this goal.
Goal LU-I.1	To create a community park site that serves as a gateway to Union City along SR 84.	Alternative 1 represents a revised version of the SR 84 Realignment Project referenced in this goal and its related policies, indicating that the project road has been assumed in Union City's comprehensive land us planning process. Constructing Alternative 1 would not prevent the City from implementing this potential park acquisition and residential development. Therefore, Alternative 1 would not conflict with this goal and its related policies.
Policy LU-I.1.1	The City shall make efforts to purchase the Caltrans property and expand Arroyo Park.	
Policy LU-I.1.2	The City shall ensure that Arroyo Park is functionally linked to Quarry Lakes (in the city of Fremont) by park and open space areas along Alameda Creek.	
Policy LU-I.1.3	The City shall strive to design the park so that it buffers residential uses from SR 84 and provides recreation facilities to serve the neighborhood and the community as space allows.	
Policy LU-I.1.4	The City shall allow single-family residential to develop on the remainder of the Caltrans property, if any, that is not utilized for park or SR 84.	
COMMUNITY DESIGN ELEMENT		
Goal CD-C.1	To create distinct and attractive corridor environments along Union City's major roadways and transit lines.	Within Union City, Alternative 1 proposes landscaping on the edges and the median of the Alternative 1 alignment, light fixtures for roadway illumination, and may include fencing between the road and the separated pedestrian path in certain areas. Union City has not prepared an "overall streetscape master plan" or a "citywide sign program," as referenced in these policies, but ACTA would continue to
Policy CD-C.1.1	The City shall prepare an overall streetscape master plan for the entire city that identifies various improvements such as providing a variety of light fixture styles, accent landscaping, street furniture, decorative signage, landscape medians, and bollards.	

Goal/Policy No.	Text	Project Consistency Discussion
Policy CD-C.1.2	The City shall create a citywide sign program that places "icon" signs along major corridors to help distinguish Union City from Fremont and Hayward. The sign program shall also address standards for signs within the public right-of-way.	coordinate project design with Union City representatives to ensure that their concerns for landscaping and the aesthetics of other infrastructure components are addressed. Landscaping and a unified visual concept would help make the corridor distinct and attractive, would prevent the road from being visually monotonous, and would also serve to calm traffic and prevent speeding. Specific plans for gateway signs have not yet been proposed for this project, but future coordination between ACTA and Union City would ensure that design and location of any gateway signs and potential lighting and accent planting proposed within Union City are acceptable to the City. Therefore, Alternative 1 would not conflict with these goals and their related policies.
Policy CD-C.1.3	Whenever possible, the City shall avoid road alignments that result in long stretches that encourage speeding by motorists and that are visually monotonous.	
Goal CD-D.1	To create positive first impressions for motorists/pedestrians entering the city through enhancement of the city's gateways.	
Policy CD-D.1.1	The City shall enhance all city gateways by providing city identification signs, additional lighting, and accent planting.	
Policy CD-D.1.2	The City shall provide attractive landscaping that reduces the visual impact of sound walls near gateways into Union City.	As discussed in Section 3.1, Aesthetics, construction of the landscaped road through the project site would not constitute a degradation of visual character or quality. Therefore, Alternative 1 would not conflict with this goal and its associated policies.
Goal CD-E.3	To enhance creeks as visual and trail resources and make connections between community parks, schools, residential, and commercial destinations.	Alternative 1 is not located along the Alameda Creek Flood Control Channel or Old Alameda Creek in the vicinity of Union City. Therefore, Alternative 1 would not conflict with this goal and its associated policies.
Policy CD-E.3.1	Where feasible, the City should restore the natural edges along the city's creek system by planting natural vegetation.	
Policy CD-E.3.3	The City shall in collaboration with Alameda County Flood Control prepare a creek system master plan that identifies potential improvements to the creek system.	
TRANSPORTATION ELEMENT		
Goal TR-A.1	To establish a safe, convenient, and efficient roadway system that minimizes peak hour traffic congestion.	In conformance with this goal, one of Alternative 1's primary objectives is to reduce existing and future traffic congestion within Union City. As discussed above, Alternative 1 represents a revised version of the SR 84 road referenced in these policies. By constructing the new roadway, re-aligning the 7th Street
Policy TR-A.1.6	The City shall establish truck routes that will minimize noise impacts and safety hazards on the community. … The City shall discourage the use of Alvarado-Niles Road as a truck route.	

Goal/Policy No.	Text	Project Consistency Discussion
Policy TR-A.1.9	The City shall support the timely construction of the SR 84 extension as a partially depressed and at-grade parkway through the Station District to Mission Boulevard in order to resolve current circulation deficiencies, improve the area's regional access and visibility, and stimulate the market for region-serving retail, light industrial/service commercial, and office uses.	intersection, and extending 11th Street, Alternative 1 would address these policies. Access points to the new road way have been proposed and located as dictated by proper traffic planning methods, and have been coordinated with Union City Public Works Department representatives. Traffic signals proposed as part of the project would be equipped with audible signal devices, traffic signal timing and coordination, and signal emergency vehicle preemption. Union City would maintain the right to restrict truck access as they deem necessary. Therefore, Alternative 1 would not conflict with these goals and their associated policies.
Policy TR-A.1.10	The City shall ensure that the design of SR 84, 7th Street, and 11th Street is completed in such a manner that the industrial uses in the Station District can gain direct access to the facility with minimum disturbance to other uses in the area.	
Policy TR-A.1.13	The City shall control the number of direct access points to SR 84, Mission Boulevard, Decoto Road, Union City Boulevard, Alvarado Boulevard, Dyer Street, Whipple Road, and Alvarado-Niles Road to maintain traffic flow and minimize potential for accidents.	
Policy TR-A.1.15	All new traffic signals should be equipped with audible signal devices, traffic signal timing and coordination, and signal emergency vehicle preemption. The City shall investigate new technologies which will improve movement of pedestrians, bicyclists, public transit, and emergency vehicles.	
Goal TR-A.2	To keep the transportation system in balance with the land uses in Union City	
Policy TR-A.2.1	The City shall work with the City of Fremont, Caltrans, and the Alameda County Transportation Agency (ACTA) to complete the SR 84 extension between I-880 and Mission Boulevard.	
Goal TR-A.3	To protect neighborhood integrity and livability and improve safety by minimizing through traffic in residential neighborhoods.	Access points to the new road have been proposed at existing locations (i.e., Alvarado-Niles Road) and located to minimize through traffic in residential neighborhoods. Therefore, Alternative 1 would not conflict with this goal.
Goal TR-B.1	To provide an efficient, convenient public transportation system for residents and workers in Union City.	Alternative 1 would generally not hinder public transportation within Union City. The project proposes improvements to Alvarado-Niles Road, 7th Street, and Mission Boulevard, all of which accommodate fixed bus routes of Union City Transit. ACTA would coordinate with Union City Transit to limit impacts on bus routes during construction, and to replace any stops that may be temporarily removed during construction. Section 3.12 of this Appendix identifies increased congestion in certain areas

Goal/Policy No.	Text	Project Consistency Discussion
		of the local roadway system affecting transit service. This increased congestion would not compromise the overall efficiency and convenience of the City's transit system and, therefore, does not indicate a conflict with this goal.
Goal TR-C.1	To create an institutional framework that supports bicycle and pedestrian travel through policy development, city staff and committee actions, and capital project implementation.	See the response to Implementation YFSH-E.4 above regarding bicycle and trail features of the project and their consistency with general plan goals and policies. Alternative 1 would not conflict with these goals and their associated policies.
Policy TR-C.1.1	The City shall consider the needs of bicyclists and pedestrians in all future road construction or widening projects and development projects.	
Goal TR-C.2	To develop a comprehensive signed bicycle route network composed of Class I (paved off-street paths and multi-use trails), Class II (bicycle lanes), and Class III (shared-use roadways) facilities connecting all of Union City's neighborhoods and adjacent communities.	
Policy TR-C.2.1	The City shall develop a planned bicycle route network that conveniently and efficiently links residential neighborhoods, parks and open space areas, transit centers, schools, shopping areas, public facilities, major employment centers, and the regional bicycle network.	
Policy TR-C.2.9	The City shall encourage the development of easily accessible and safe bike paths along the SR 84 extension.	
Goal TR-C.3	To develop Union City's local trail system and integrate local trails with regional trail systems whenever possible.	
Policy TR-C.3.1	The City shall continue to improve its local trail system and ensure that all local trails meet the design requirements set forth in the bicycle and/or pedestrian design guidelines.	
Policy TR-C.3.2	The City shall support regional efforts to implement trails (such as the Bay Trail and Bay Area Ridge Trail), and shall identify opportunities to connect local trails with regional trails.	
Policy TR-C.3.3	The City shall seek opportunities to connect existing and planned trails to the bicycle route network.	

Goal/Policy No.	Text	Project Consistency Discussion
Goal TR-C.4	To create a continuous pedestrian network that meets ADA standards and allows pedestrians to safely and conveniently access parks and open space areas, transit centers, schools, shopping areas, public facilities, major employment centers, and other significant destinations.	Alternative 1 proposes ample pedestrian facilities within the roadway, including sidewalks along the new roadway and separate trail on the north side of the roadway, separated from the road by grade and fencing. There would be pedestrian improvements on all intersecting streets to ensure a safe and integrated system is provided. Pedestrian improvements would meet ADA standards, in accordance with federal law. The proposed pedestrian and bicycle facilities would not be immediately continuous with those in the City of Fremont, but by connecting to facilities along Alvarado-Niles Road, they would eventually link up with Fremont facilities. Therefore, Alternative 1 would not conflict with this goal and its associated policies.
Policy TR-C.4.5	The City shall prioritize safety in the design of sidewalk improvements along major arterials, including separating sidewalks from motor vehicle travel lanes where possible.	
Implementation TR-C.3	The City shall work with the Cities of Fremont and Hayward to ensure bicycle and pedestrian facilities are continuous between neighboring jurisdictions.	
PUBLIC FACILITIES ELEMENT		
Goal PF-E.1	To collect and dispose of stormwater in a manner that minimizes inconvenience to the public, minimizes potential water-related damage, and enhances the environment.	As discussed in Section 3.7 Hydrology and Water Quality, Alternative 1 entails major revision to the stormwater system in the Union City portion by removing the 2C Basin and New Basin, installing a diversion pipeline for the Line M Channel, and creating a comprehensive wetlands mitigation site along Old Alameda Creek. Plans for this mitigation site have not yet been finalized, but are being prepared by qualified professionals with multi-jurisdictional input to minimize the impacts on the flow and content of local stormwater, and to enhance the drainage system when compared to its current state. The project's design goal is to maintain pre-construction storm water discharge flows by metering or detaining these flows to pre-construction rates prior to discharge to a receiving water body, and operation of Alternative 1 would not generate an increase in runoff flows such that it would result in significant flooding or soil erosion impacts. Section 3.7, Hydrology and Water Quality, does identify a significant impact resulting from the increased potential for polluted runoff (Impact HWQ-3), with mitigation proposed in the form of incorporating site-specific water quality treatment devices into site drainage plans to meet water quality standards. Implementing this measure would reduce the polluted runoff impact to a less-than-significant level. Therefore, Alternative 1 would not conflict with this goal and its associated policies.
Policy PF-E.1.4	The City shall improve the quality of runoff from urban and suburban development through use of appropriate and feasible mitigation measures including, but not limited to, artificial wetlands, grassy swales, infiltration/sedimentation basins, riparian setbacks, oil/grit separators, and other best management practices.	
Policy PF-E.1.8	The City shall allow stormwater detention facilities to mitigate drainage impacts and reduce storm drainage system costs. To the extent practical, stormwater detention facilities should be designed for multiple purposes, including environmental, recreational and/or stormwater quality improvement.	

Goal/Policy No.	Text	Project Consistency Discussion
NATURAL AND HISTORICAL RESOURCES ELEMENT		
Goal NHR-A.1	To protect, restore, and enhance important biological habitats and their associated plant, wildlife, and fish species throughout Union City and to educate people as to this need.	As discussed in Section 3.3, Biological Resources, Alternative 1 entails impacts on habitat communities along the proposed roadway alignment. Mitigation has been identified in the form of habitat creation along the creek, which would enhance the value of the habitat, and limit impacts on plant and wildlife species. Therefore, Alternative 1 would not conflict with this goal and its associated policies.
Policy NHR-A.1.3	On sites that have the potential to contain critical or sensitive habitats, or special-species, or are within 100 feet of such areas, the City shall require the project applicant to survey the site by a qualified biologist at the proper time of year. A report of the findings of this survey shall be submitted to the city as part of the application process. Appropriate mitigation measures will be incorporated into the project as necessary to protect the resources.	
Policy NHR-A.1.4	On sites with the potential to contain wetland resources, the City shall require that a wetland delineation be prepared using the protocol defined by the U.S. Army Corps of Engineers.	
Policy NHR-A.1.13	The City shall continue to require a burrowing owl study on all development projects that incorporate vacant, unpaved parcels, or parcels adjacent to possible owl habitat.	As discussed in Section 3.3, Biological Resources, biological habitat and wildlife surveys conducted for project review included a reconnaissance-level survey for burrowing owls and their habitat. No owls were observed along the Alternative 1 alignment during the nesting or wintering period, and Section 3.3, Biological Resources, concluded that the project impacts on nesting, wintering, or foraging western burrowing owls would be less than significant. Because a survey was conducted and impacts were determined to be less than significant, Alternative 1 would not conflict with this policy.
Goal NHR-B.1	To protect and enhance the natural qualities of Union City's groundwater, surface water, and streams, and to ensure sufficient water supplies of good quality for all beneficial uses.	See the response to Goal PF-E.1 above. Section 3.7 identifies a significant impact resulting from the increased potential for polluted runoff (Impact HWQ-3), and mitigation is proposed that would reduce the impact to a less-than-significant level. Therefore, Alternative 1 would not conflict with this goal and its associated policies.
Policy NHR-B.1.1	The City shall work with Alameda County Flood Control in an effort to ensure protection of the natural conditions along stream and creek corridors. a. In areas already disturbed, efforts should be made to restore the natural character to the extent possible. b. The development of trails along the corridors should be encouraged, and streamside rest areas should be provided that include indigenous streamside vegetation. c. New projects for flood and erosion control should be designed to preserve the natural creekside condition where possible. Alteration	

Goal/Policy No.	Text	Project Consistency Discussion
	of streambeds and adjacent vegetation is to be permitted only as a means of erosion or flood control as permitted by the City and in such a manner as to enhance the area within the city.	
Policy NHR-B.1.2	The City shall require that an erosion control plan be prepared and approved prior to the issuance of a grading permit. This plan shall be prepared in keeping with standards for non-point source pollutants applied by the Regional Water Quality Control Board.	
Policy NHR-B.1.3	The City shall take or encourage actions to protect the Niles Cone water-bearing aquifers. Particular attention shall be paid to the use of recharge wells, salt water barriers, and importation of water necessary to maintain the water levels at surface elevations adequate to prevent salt water intrusion. Efforts should ensure maximum opportunity for surface runoff to recharge groundwater basins, including the use of checkdams, ponding, or retention basins, where compatible with policies for stream and creek protection.	
Policy NHR-B.1.4	The City shall evaluate public and private development projects, including golf courses, to determine the effects of the projects on on-site and downstream drainage patterns and associated ecological systems.	
Policy NHR-B.1.5	Within its authority, the City shall ensure that flood control facilities built in natural areas be designed to use “soft” channel structures (i.e., avoid lined channels and culverts) that maintain to the greatest extent possible natural vegetation and infiltration.	
Goal NHR-C.1	To protect, to the extent possible, the City’s significant archeological and historical resources.	As discussed in Section 3.4, Cultural Resources, the project area does not contain any known archaeological resources. Alternative 1 would incorporate mitigation measures to ensure that any previously undiscovered resources that are unearthed during project construction would be adequately managed. The project area does not contain the city’s Landmark and Historic Overlay Zone, and does not contain any historical resources. Therefore, Alternative 1 would not conflict with this goal and its associated policies.
Policy NHR-C.1.5	The City shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures and sites.	
Policy NHR-C.1.6	The City shall support efforts to protect and recover archeological resources.	
Policy NHR-C.1	The City shall maintain and publish a historical resource inventory.	
Policy NHR-C.4	The City shall apply the Landmark and Historic Overlay Zone to noteworthy resources.	
Goal NHR-D.1	To provide for a continuous system of open spaces for the preservation, enhancement and protection of open space land.	Constructing the Alternative 1 alignment would not prevent the City from implementing this potential park project. Therefore, Alternative 1

Goal/Policy No.	Text	Project Consistency Discussion
Policy NHR-D.1.16	The City shall protect open space from intrusion by public projects. Planned open space is to be protected from intrusion by massive public works projects such as freeways and utility systems wherever possible. When protection is not possible, such projects shall be designed to permit compatible recreational development.	is consistent with this goal and its related policy.

Table 3.8-2 shows one inconsistency with the Union City General Plan (Policy YFSH-E.1.3), which results from Alternative 1's encroachment into a public park in Union City, conflicting with the City's policy of increasing park area. Because impacts on this park would occur on the fringe of the park and would not substantially affect activities or facilities available for recreation at the park, and because ACTA would coordinate with the Union City Department of Public Works and Planning Department to identify appropriate compensation for any parkland that is taken by the Alternative 1 alignment, this is not a significant conflict with this policy, and this inconsistency does not represent a significant land use impact.

In addition to the specific goals and policies in Table 3.8-2, the Union City General Plan includes several references supporting the East-West Connector Project, including reference to Alternative 1 as an important component of developing the Caltrans property and to the development potential of the Station District, which the Alternative 1 alignment would access via the 11th Street extension.

The wetlands mitigation site would be constructed on land that is partially designated as OS and partially designated as PI. This aspect of the proposed project would be consistent with the OS designation, but not with the PI designation; however, the area designated as PI is part of the Caltrans property, which, as stated above, is identified in the Union City General Plan as an area with potential for development of park and residential uses. The wetlands mitigation site would be consistent with the intended park uses for this site. Therefore, constructing the wetlands mitigation site in this area would not be inconsistent with the Union City General Plan.

In summary, this impact is considered less than significant. No mitigation is required.

Impact LUP-3: Consistency with the Union City Pedestrian and Bicycle Master Plan (Beneficial)

Alternative 1 would for the most part be consistent with the Pedestrian and Bicycle Master Plan because it would implement part of the Pedestrian Improvement Corridor, as shown along the Alternative 1 alignment in Figure 5-2 of the plan, and would construct Class I and II bike paths within the project area, integrating the Alternative 1 alignment into the city's bike network shown in Figure 5-3 of the plan. Alternative 1 does not propose the full extent of the bike and pedestrian facilities anticipated in the plan because it does not propose to construct facilities west of Alvarado-Niles Road. However, the facilities constructed in Alternative 1 would connect to existing facilities in Union City and Fremont, enhancing the general network of pedestrian and bicycle circulation in the area. Therefore, there is no significant inconsistency with the Union City Pedestrian and Bicycle Master Plan, and this impact is considered beneficial. No mitigation is required.

Impact LUP-4: Consistency with the Fremont General Plan (Less than Significant)

Table 3.8-4 provides a discussion of the Alternative 1's potential conflict with the Fremont General Plan.

Table 3.8-4. Consistency of the Proposed Project with the Fremont General Plan

Goal/ Policy No.	Text	Project Consistency Discussion
LAND USE ELEMENT		
Goal LU-4	Conservation of the City's open space resources	The project proposes to construct part of a wetlands mitigation area on land within and adjacent to Old Alameda Creek that is designated Institutional Open Space in the Fremont General Plan. This use is compatible because it will serve the purpose of biological resources enhancement and will partially be used for recreational purposes. Once complete, the area will be similar in appearance to the existing area surrounding Old Alameda Creek. Therefore, the proposed project is not considered to conflict with these general plan policies.
Policy LU-4.3	Development on land designated Institutional Open Space is limited to compatible recreational and community uses.	
Policy LU-4.4	Development of recreational or other public facilities on open space lands should conserve the open space character of the site and minimize impacts on mature landscaping and environmentally sensitive areas.	
OPEN SPACE ELEMENT		
Goal OS-2	Recognition, protection, and enhancement of significant natural areas and wildlife habitats in the city, including Bay tidal, seasonal, and freshwater wetlands, and open meadows and fields	The proposed wetlands mitigation site's potential environmental impacts on biological resources in open space areas are addressed in Section 3.3, Biological Resources. Significant impacts are identified due to the removal of wetlands and encroachment on a sensitive vegetation community (willow riparian woodland and scrub); mitigation is proposed to reduce
Objective OS-2.2	Protection and enhancement of wetlands within the city.	

Goal/ Policy No.	Text	Project Consistency Discussion
Policy OS-2.2.1	The City shall take an active role in protecting wetlands. There shall be no net loss of wetlands as a result of development in Fremont.	these impacts to less-than-significant levels, including compensation within the wetlands mitigation area for the acreage of wetlands and habitat removed by the mitigation plan. By so doing, the proposed project would recognize, protect, and enhance biological resources to the greatest extent feasible. Therefore, the proposed project does not conflict with these policies.
Objective OS-2.3	Conservation of natural areas within the city	The wetlands mitigation site is not a unique natural resource area, as shown in Figure 9-3 of the Fremont General Plan. Therefore, the proposed project does not conflict with this objective of the Fremont General Plan.
Policy OS-2.3.1	Publicly owned unique natural areas remaining in the flatland area of the city (see Natural Resources Chapter, Figure 9-3) shall be managed to protect and enhance wildlife habitats to the degree feasible (See Biological Resources Section of the Natural Resources Chapter for implementation measures).	
Objective OS-2.5	A comprehensive system of trails connecting destinations within Fremont	Existing and proposed public trails in Fremont are incorporated into the Fremont Pedestrian Master Plan and the Fremont Bicycle Master Plan. The wetlands mitigation site would entail realigning one City of Fremont trail, but would maintain access to and from this trail. Therefore, the proposed project does not conflict with this objective and policies.
Policy OS-2.5.1	Develop a system of trails shown on the General Plan trails map, as funding permits. Effort shall be concentrated on trails that link major destinations and are accessible to a large number of people.	
Policy OS-2.5.2	Provide public access to major trails, with appropriate staging areas and parking where feasible. Public access points shown on the General Plan are approximate locations. … Where access is provided, (either as required or as part of project designs), site and building design adjacent to the access point or trail shall also provide for sufficient privacy and a clear boundary between public access and private uses.	
NATURAL RESOURCES ELEMENT		
Goal NR-1	Biological resources protected and enhanced	See the response to LU Goal 4 and its related policies, Goal OS-2, Objective OS-2.3, and Policy OS-2.3.1 above.
Goal NR-2	Protection and conservation of natural resources in the planning, design and management of the City’s landscape	
Goal NR-7	Development sensitive to surface water resources	

Goal/ Policy No.	Text	Project Consistency Discussion
Goal NR-13	An open space frame to the City	The portion of the wetlands mitigation site within the City of Fremont is proposed on land characterized by disturbed non-native grassland and the vegetation surrounding Old Alameda Creek, which is viewed from public recreational trails. The mitigation site would replace this with an enhanced area of riparian vegetation similar in appearance to the existing Old Alameda Creek area, which would not adversely alter the city's open space frame, as viewed from these public trails. Accordingly, the project would not have an adverse effect on City's open space frame and would preserve the area's visual character. Alternative 1 would not damage or otherwise alter any Fremont-designated "unique visual elements." Therefore, the proposed project would not conflict with this goal and objective.
Objective NR-13.1	Preservation of the visual character of the City's Open Space frame and other unique natural visual elements of Fremont. The Frame includes the Hill Face, Bay lands, Alameda Creek flood control channel and adjacent publicly owned open space areas (Ardenwood Regional Park, Alameda Creek Quarries). Other unique natural elements include Central Park and Lake Elizabeth and Landmark Trees. (See the Land Use and Open Space Chapters for many policies and implementation measures related to the Open Space Frame)	
Goal NR-14	A distinctive, positive visual image for Fremont	For a response addressing Goal NR-14, see the discussion of Goal OS-4 and its related objectives and policies, and the discussion of Goal NR-13 and its related objective above.
TRANSPORTATION ELEMENT		
Objective T-2.4	A safe and convenient bicycle network that facilitates bicycle travel for commuting to work, school, shopping and for recreation	Alternative 1 entails a slight realignment of one Fremont trail located on the southern banks of Old Alameda Creek. Because access would be maintained by the proposed realignment, this trail would not be adversely affected and Alternative 1 would not conflict with this objective and these policies.
Policy T-2.4.1	Complete the bicycle route system identified on the Planned Bicycle Route, Horse and Foot Trails map (Figure 8-13).	
Policy T-2.4.2	To increase bicycle safety, the bicycle system shall consist of on-road striped bicycle lanes and off-road bicycle trails, whenever feasible.	

Section 3.9
Noise and Vibration

3.9.1 Introduction

This section describes the affected environment and regulatory setting for noise and vibration. It also describes the impacts on noise and vibration that would result from implementation of Alternative 1, and mitigation measures that would reduce these impacts. Discussion of noise impacts presented in this section includes a summary of the Noise Technical Report for the East-West Connector Project (hereafter referred to as the Noise Report) (ICF Jones & Stokes 2008), which examines the increases in vehicular noise that would result from project implementation and identifies measures necessary to reduce noise levels. Discussion of vibration impacts summarizes the results of the Vibration Technical Report for the East-West Connector Project (hereafter referred to as the Vibration Report) (Wilson, Ihrig & Associates 2008).

Noise Definitions

Noise is generally defined as unwanted sound. The response of individuals to similar noise events is diverse and influenced by the type of noise, the context of the noise in a particular setting, the time of day and type of activity during which the noise occurs, and the sensitivity of the individual. Although exposure to high noise levels causes discomfort, pain, and hearing loss, the principal human response to environmental noise at lower levels is annoyance.

Sound is emitted and perceived in waves, and a sound's loudness can be measured by measuring the waves' intensity, using decibels (dBs). The method commonly used to quantify environmental sounds consists of evaluating all the frequencies of a sound according to a weighting system that reflects human hearing, which is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. This is called A-weighting, indicated by the A-weighted decibel (dBA). A sound level of 0 dBA is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dBA, and sound levels approaching 120 dBA begin to be felt inside the human ear as discomfort.

In general, human sound perception in a community environment is such that a change in sound level of 3 dB is just barely noticeable, a change of 5 dB is more clearly noticeable, and a change of 10 dB is highly noticeable, perceived as doubling or halving the sound level. Because of the logarithmic scale of the decibel unit, sound levels cannot be added or subtracted arithmetically. A simple rule of thumb is useful in dealing with sound levels. If a sound's physical intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. For example, 60 dB plus 60 dB equals 63 dB. A perception of sound doubling in level requires about a 10-decibel increase.

Equivalent sound level (L_{eq}) is used to describe a sound's average level when measured over a particular period of time. Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously, and this descriptor is useful in estimating the general effect of environmental noise.

Maximum and minimum sound level measured over a period of time (L_{max} and L_{min}) describe the range of noise levels (loudest and quietest, respectively) measured over a period of time.

Day-Night Average Sound Level (L_{dn}) is a noise descriptor commonly used to help determine noise and land use compatibility. The L_{dn} noise metric represents a 24-hour period and applies a time-weighted factor designed to penalize noise events that occur during nighttime hours, allowing a prediction of community reaction to adverse noise conditions when people are most sensitive. Noise occurring during the daytime hours between 7:00 a.m. and 10:00 p.m. receives no penalty. Noise occurring between 10:00 p.m. and 7:00 a.m. is penalized by adding 10 dB to the measured level.

In California, the use of the **Community Noise Equivalent Level (CNEL)** descriptor is also common. CNEL is similar to L_{dn}, but adds an additional 5-dB penalty for noise occurring during evening hours between 7:00 p.m. and 10:00 p.m.

Vibration Definitions

Vibration is energy transmitted in waves through the ground that, at various levels, can cause a range of response ranging from human annoyance to structural damage. When quantified, it is typically described by its peak amplitude or peak particle velocity (PPV), and by its root-mean-square (RMS) amplitude, both measured in inches per second (in/sec). PPV is the maximum instantaneous positive or negative peak of the vibration signal, and PPV is used to assess the potential for damage to buildings and structures. The RMS value is an average value over a given time interval, and is usually used for assessing human response. Because PPV measures the energy's peak, its value is always higher than RMS.[1]

[1] Noise caused by vibration propagated through soil and building structures is called groundborne noise. Groundborne noise is generally not a concern in the presence of airborne noise. Airborne noise usually dominates the groundborne noise at locations where the cause is surface activity. Groundborne noise is typically of concern for highly sensitive buildings and uses (e.g., recording studio) or for projects which involve construction deep

Vibration waves generally dissipate with distance from the vibration source, making vibration less perceptible with increased distance. Vibration attenuates at a rate of approximately 50% for each doubling of distance from the source. Responses of human receptors and structures are influenced by a combination of factors, including soil or rock type, distance, duration, and the number of perceived events. Energy transmitted through the ground as vibration can reach levels that can cause structural damage; however, humans are very sensitive, and the vibration amplitudes that can be perceived by humans are well below the vibration amplitude that could potentially cause architectural or structural damage.

The threshold of human perception for continuous vibration is approximately 0.006 in/sec PPV. People are less aware of short-duration events than events of longer duration; transient vibration (with a duration of 30 seconds or less) is barely perceptible at 0.03 in/sec PPV, whereas short duration vibrations of 0.13 in/sec PPV are distinctly perceptible.

3.9.2 Setting

Sources of Information

As noted above, this section primarily relies on information presented in the Noise Report (ICF Jones & Stokes 2008) and the Vibration Report (Wilson, Ihrig & Associates 2008). Additional information was obtained from aerial images of the project area and its surrounding vicinity available on Google Maps (maps.google.com).

Existing Conditions

Existing conditions were determined by conducting separate noise and vibration monitoring surveys, which established baseline conditions and identified noise-and vibration-sensitive receptors in the vicinity of the Alternative 1 alignment. The noise survey involved three long-term (LT) measurement (24+ hours) nine short-term (ST) measurements (10 to 20 minutes) at representative locations along the Alternative 1 alignment, as shown in Figure 3.9-1. Noise at other locations was estimated using computer modeling, (indicated on Figure 3.9-1 by “M”), as determined by the existing volume of roadway traffic. The vibration monitoring survey encompassed 5 measurements at three points.

underground where there is little or no project airborne noise component and when airborne noise levels are less (i.e., less traffic noise). For this project, it is assumed that any source that is causing vibration (and therefore groundborne noise) would also be causing airborne noise, and therefore groundborne noise would be of minimal consequence. Therefore, groundborne noise is not specifically addressed in this EIR.

Noise Sources and Noise Levels

Because of the urban, developed nature of the project area and the overlap of the Alternative 1 alignment along existing roads, automobile and truck traffic is the predominant source of noise received by the project area. Noise in areas near the railroad tracks is dominated by train activity, including frequent BART train pass-bys (about one train every 4 minutes during daytime hours) and less-frequent—but noisier—freight and passenger trains on the UPRR lines. The Alternative 1 alignment includes a mixture of residential and industrial development, and also features three sets of railroad tracks that cross the Alternative 1 alignment and a public park near the alignment's eastern terminus. Sensitive receptors in the project area include residences and park users.

The LT and ST measurements provide a representative range of noise conditions in the project area, and are summarized in Table 3.9-1. Because soundwalls are located between many of the residences and the existing roadway, information on any acoustical shielding that may have affected the measurements is provided in the table.

Table 3.9-1. Existing Noise Levels at Measurement Locations

ID	Receiver Location	Existing Acoustical Shielding	Primary Noise Source	Existing dBA L_{dn}/L_{eq}[1]
LT-3	Undeveloped area near Clover Drive	None	Distant construction, train horns, and airplanes; birds and rustling foliage	55
LT-4	40 feet from BART tracks	8-foot wall	BART and freight trains	60
LT-5	110 feet from UPRR tracks	8-foot wall	Freight trains, distant traffic and aircraft	66
ST-18	Setback of 35509 Monterra Circle	7-foot wall	Traffic on Alvarado-Niles Road	54
ST-19	Setback of 1071 Tourmaline Terrace	12-foot berm	Distant traffic, BART	44
ST-20	Backyard of 34770 Klondike Drive	7-foot wall	Aircraft, BART	60
ST-21	End of Chesapeake Court	8-foot wall	Distant traffic, aircraft, construction, birds	48
ST-22 (park)	Dog Park off 7th Street	None	Traffic on Mission Boulevard and 7th Street	58
ST-23 (park)	Park off Wildflower Lane	10-foot wall	Traffic on Mission Boulevard, aircraft, residential noises	57
ST-24	Apartments off Mission Boulevard	7-foot wall	Traffic on Mission Boulevard, aircraft, residential noises	63
ST-25	34864 Mission Boulevard, Bldg M	6-foot wall	Traffic on Mission Boulevard	58
ST-26	Setback of 149 Black Mountain Circle	None	Traffic on Mission Boulevard	69

[1] LT measurements in L_{dn}; ST measurements in L_{eq}.

Source: ICF Jones & Stokes 2008.

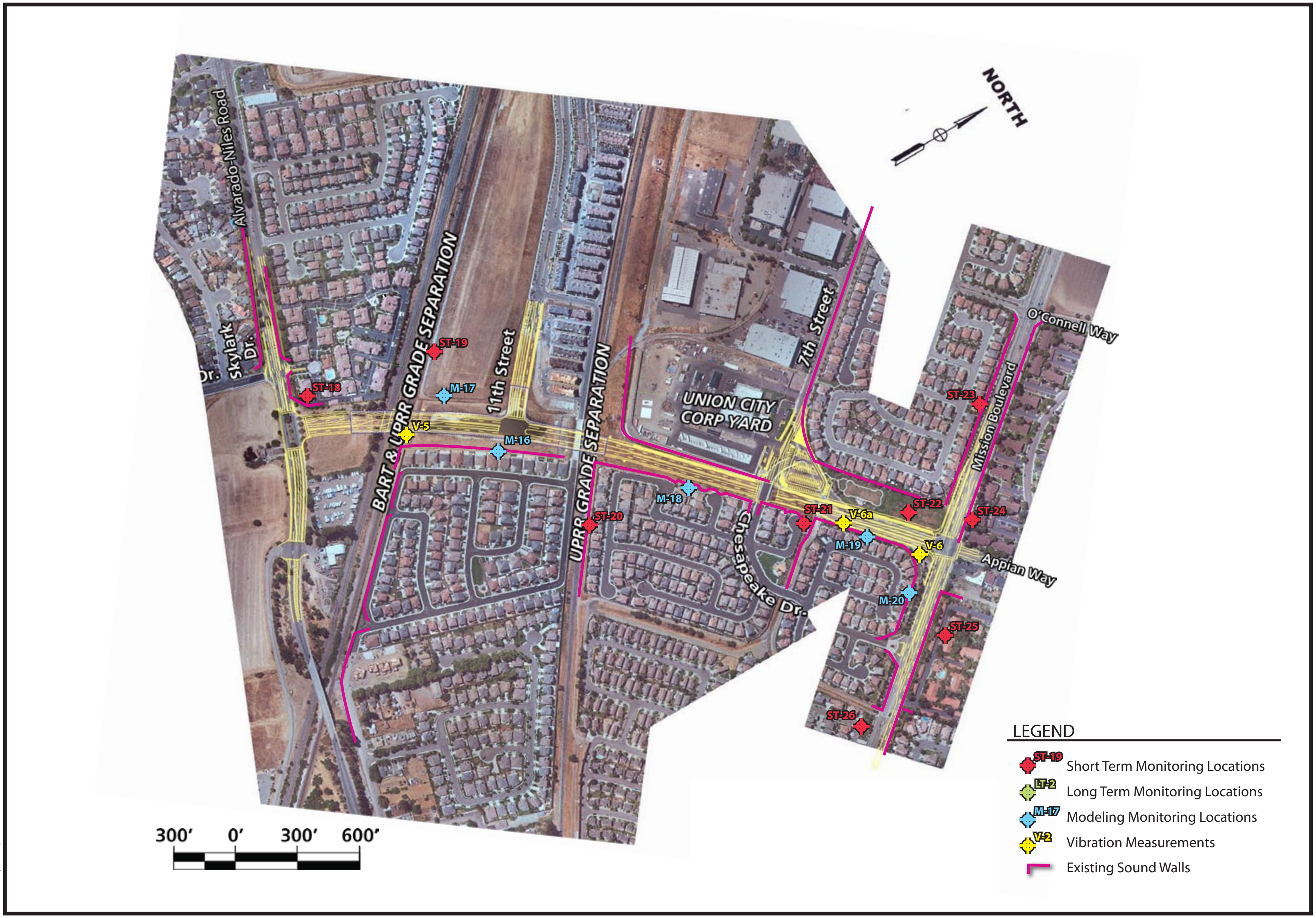

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Figure 3.9-1
Noise and Vibration Measurement Locations
ACTA East-West Connector Project, Alternative 1

The monitoring locations listed in the table are mostly residences, and are subject to the residential noise thresholds of their respective cities, as fully explained in the Regulatory Setting section, below. The non-residential monitoring locations are parks, which are subject to a different noise threshold. Union City maintains an exterior residential noise threshold of 60 dBA and a parks threshold of 70 dBA.

Train Schedules and Railroad Noise

A total of 266 BART trains pass through the project area on a typical weekday; with 188 trains during daytime hours (7:00 a.m. to 7:00 p.m.), 28 trains during evening hours (7:00 p.m. to 10:00 p.m.), and 50 trains during nighttime hours (10:00 p.m. to 7:00 a.m.). There are no BART trains scheduled between the hours of 1:15 a.m. and 4:05 a.m. Maximum noise levels generated at measurement location LT-4 during BART train pass-bys typically ranged from 65 to 75 dBA L_{max}. Approximately two train operations occurred per hour on the UPRR Oakland Subdivision tracks (adjacent to BART), including nighttime and early morning hours. Freight trains at LT-4 generated similar maximum noise levels and passed by during all hours, including late night and early morning hours, but generated higher levels at measurement site LT-5 (70 to 80 dBA L_{max}).

Vibration Sources and Vibration Levels

Common background sources of vibration in the project area include truck traffic, trains, and occasional earthquakes. There are no sources of permanent vibration located in the project area, and all vibration is considered transient. Table 3.9-2 shows measured or estimated values recorded during the vibration survey. As the table shows, there are no locations where the measured RMS exceeded the human perceptibility threshold of 0.03 in/sec. However, BART pass-bys (recorded) and UPRR pass-bys (estimated) generated higher levels at measurement site V-5; these levels would be perceptible to residents in the vicinity.

Table 3.9-2. Existing Vibration Levels at Measurement Locations

ID	Receiver Location	Primary Vibration Source	Typical RMS Range (in/sec)	Typical PPV Range[1] (in/sec)
V-4	Skylark/Osprey	Traffic on Alvarado-Niles	<0.00018	<0.0007
V-5	Gold Street	BART/UPRR[2]	0.00003–0.004	0.0025–0.009 0.063 (estimated freight)[2]
V-6	Curb Mission Boulevard	Traffic on Mission	0.0003–0.015	0.003–0.025
V-6	Property setback on Mission	Traffic on Mission	0.0006–0.007	0.003–0.009
V-6A	7th Street	Traffic on 7th Street	0.00003–0.002	0.0025–0.004

[1] The estimated PPV values are based on the observed relationships between RMS and PPV at other locations.
[2] Data measured for BART only. UPRR trains estimated as none were measured during the survey.
Source: Wilson, Ihrig & Associates 2008.

Regulatory Setting

Federal and State

Because there is no state or federal funding associated with this proposed project, there ~~There~~ are no federal or state noise or vibration regulations that apply to the project area. Although a portion of the project would be on the state highway system (Mission Boulevard), analysis of noise impacts under the requirements of 23 CFR 772 and the Caltrans Traffic Noise Analysis Protocol is not required because there is no federal or state funding associated with the project (Andrews pers. comm.).

Local

Union City General Plan, Health and Safety Element

The Health and Safety Element of the Union City General Plan includes noise policies to "protect public health and welfare by minimizing excessive noise" (City of Union City 2002). Noise exposure is considered "normally acceptable" if exterior noise levels do not exceed 60 dBA CNEL at residences or transient lodgings, and 70 dBA CNEL at playgrounds or neighborhood parks. The interior noise standard for residences is specified as 45 dBA CNEL. This element also includes policies that call for inclusion of "noise mitigation measures in the design of new roadway projects in Union City" (Policy HS-C.1.6) and states the City's desire to "minimize potential transportation noise through the proper design of street circulation, coordination of routing, and other traffic control measures" (Policy HS-C.1.5). Policy HS-C.1.7 states the same construction time limits as those specified in their noise ordinance, below.

Union City Community Noise Ordinance

Section 9.40.053 of the Union City Municipal Code addresses noise from construction. Construction operations that occur between the hours of 8:00 a.m. and 8:00 p.m. on Monday through Friday, 9:00 a.m. and 8:00 p.m. on Saturdays, and 10:00 a.m. and 6:00 p.m. on Sundays and holidays are exempt from the provisions of the Noise Ordinance, if they meet at least one of the following noise limitations.

A. No individual piece of equipment shall produce a noise level exceeding 83 dBA at a distance of 25 feet. If the device is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close to 25 feet from the equipment as possible.

B. The noise level at any point outside the property plane of the project shall not exceed 86 dBA.

Union City does not have any requirements that would limit vibration from construction or the operation of a new roadway.

3.9.3 Impact Analysis

This section describes the impact analysis relating to noise for Alternative 1. It describes the methods used to determine the impacts of Alternative 1 and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

Noise and vibration analysis for Alternative 1 was conducted by predicting noise and vibration levels generated by construction and operation of Alternative 1 and comparing predicted levels to the applicable significance threshold. Project noise and vibration conditions resulting from vehicle traffic were estimated using modeling software that predicts the levels generated by this source. Noise and vibration modeling considered a traffic mixture of automobiles and medium and heavy trucks that reflects existing conditions. Interior noise level analysis and mitigation was based on the exterior levels determined through this modeling. Project vibration conditions from construction activity and railroad pass-bys were also determined by modeling, while noise from these sources was analyzed on a qualitative level. A complete description of the noise and vibration modeling methodologies can be found in Appendices N and O.

Significance Criteria

Quantitative thresholds were established for use in this noise analysis based on the established policies of the City of Union City on Appendix G of the CEQA Guidelines (14 CCR 15000 *et seq*.). A significant impact is identified if Alternative 1 would:

- expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies;
- expose persons to or generate excessive groundborne vibration or groundborne noise levels;
- result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- be located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels; or
- be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels.

The first four guidelines are applicable to Alternative 1 and were considered in the analysis presented in this section. The latter two are not applicable because the project area is not located in the vicinity of any public airport or private airstrip. These guidelines are not addressed in this section. Groundborne noise, referenced in the second guideline above, is also not specifically addressed in this section. The reason for this exclusion is described above, under Vibration Definitions, in the first footnote to this section.

Noise Criteria—Construction

- Alternative 1 would result in a significant impact if construction occurs outside the following hours: Monday through Friday, 8 a.m. to 8 p.m.; Saturday, 9 a.m. to 8 p.m.; Sunday and holidays, 10 a.m. to 6 p.m.
- Where construction is proposed within the hours stated above, Alternative 1 would result in a significant impact if project construction emits noise exceeding 83 dBA when measured at 25 feet, or exceeding 86 dBA when measured at the nearest property line.
- Alternative 1 would result in a significant impact if increased train noise associated with temporary track locations could interfere with conversations in backyards and inside homes or cause sleep disturbance.

Noise Criteria—Operation

- Where exterior noise levels do not exceed the noise and land use compatibility thresholds (60 L_{dn} for residences and 70 L_{dn} for parks), Alternative 1 would result in a significant impact if it would cause noise levels to exceed those thresholds.
- Where exterior noise levels exceed the noise and land use compatibility thresholds (60 L_{dn} for residences and 70 L_{dn} for parks), Alternative 1 would result in a significant impact if it would increase noise levels by 3 dBA or more.
- Where interior residential noise levels do not exceed 45 L_{dn}, Alternative 1 would result in a significant impact if it would cause interior noise levels to exceed that threshold.
- Where interior residential noise levels exceed 45 L_{dn}, Alternative 1 would result in a significant impact if it would increase interior noise levels by 3 dBA.

Section 15126 of the CEQA Guidelines provides that the Environmental Setting, which consists of existing physical conditions, will normally be the baseline by which a lead agency determines whether impacts are significant. For this project, however, the Draft EIR uses a future no-project scenario as the baseline for the traffic noise analysis, rather than using existing conditions. The reason for using this alternative baseline is that project conditions can only be reasonably described under a future design year condition. An existing-plus-project condition would never occur because it would be several years before

Alternative 1 is operational. A comparison of the future-with-project condition to existing conditions overstates the impact because it includes the effect of Alternative 1 plus the effect of background growth. In order to characterize the direct impact of Alternative 1, changes in noise are evaluated by comparing project conditions to no-project conditions in the same time frame (i.e., design year conditions). To remove the effect of background growth from the direct impact assessment, project and no-project conditions must be compared in the same time frame. The traffic analysis, upon which this noise analysis relies, considers traffic operations and project impacts during two future years, 2015 and 2035. However, this noise analysis focuses on impacts in the 2035 timeframe only. It is standard to practice to evaluate traffic noise impacts under design year conditions (in this case 2035) rather than opening year conditions. This is the approach required by Caltrans and FHWA for state and federal highway projects. Predicted noise levels under opening year conditions would clearly be less than under design year conditions. Accordingly, it is not appropriate to evaluate impacts or mitigation under the opening year condition because both impacts and mitigation would be understated relative to the ultimate design condition. Impacts and mitigation identified for the design year will address any impacts and mitigation that would be identified under the opening year.

Vibration Criteria—Construction and Operation

- Alternative 1 would result in a significant impact if project construction activity or project-related vehicle traffic would result in vibration levels of 0.3 in/sec PPV or greater, as received by commercial structures.[2]
- Alternative 1 would result in a significant impact if project construction activity or project-related vehicle traffic would result in vibration levels of 0.2 in/sec PPV or greater, as received by residential structures.
- Alternative 1 would result in a significant impact if project-related changes to railroad operations result in nighttime vibration exceeding 0.083 in/sec PPV, as received by residents in the vicinity of the railroad tracks.

Project Impacts and Mitigation Measures

Alternative 1 would result in significant construction and operational impacts as a result of increases in noise and vibration. Mitigation has been identified that would reduce the impacts to less-than-significant levels. However, it may not be feasible to implement all of the identified mitigation measures for project construction, and some construction-phase impacts would remain significant and unavoidable.

[2] These criteria are based on thresholds for cosmetic building damage published in the Federal Transportation Administration Construction Vibration Guidelines (Federal Transportation Administration 2006).

Impact NOI-1: Exposure of Off-Site Noise-Sensitive Land Uses to Short-Term Construction Noise (Significant and Unavoidable)

Constructing the new roadway segment and associated roadway improvements would require the temporary use of heavy equipment such as graders, hauling trucks, and pavers that could generate high noise levels in the immediate project area. Construction of the new roadway would also require pile driving, which generates high noise levels. Construction of the wetlands mitigation site (Mitigation Measure BIO-5), as well as construction of the infiltration basin (Mitigation Measure HWQ-5), would entail operation of graders and hauling trucks. This temporary construction noise would result in a temporary increase in ambient noise levels received at residences and parks. Estimated noise levels involved with roadway and wetlands mitigation site construction are shown in Table 3.9-3.

Table 3.9-3. Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA) 50 feet from Source
Grader	85
Bulldozers	85
Truck	88
Loader	85
Roller	74
Air Compressor	81
Backhoe	80
Pneumatic Tool	85
Paver	89
Concrete Pump	82

Source: Federal Transportation Administration 2006.

Based on the types of construction activities and equipment required for Alternative 1, noise levels at 50 feet from the center of typical roadway construction activities would generally range from 80 to 85 dBA during peak periods. However, because not all of the equipment would be operating at the same time or for the entire day, the hourly average L_{eq} from project construction would be lower. Hourly average noise levels during active construction periods would typically range from 75 to 80 dBA L_{eq} at a distance of 50 feet. Some construction would occur closer than 50 feet to receptors, and noise could exceed those levels. Noise produced by construction equipment typically attenuates over distance at a rate of about 6 dB per doubling of distance; construction noise levels would be highest at receptors closest to the roadway under construction. Many of the residences located along this roadway alignment currently feature soundwalls that would attenuate this noise, typically by 5 to 10 dBA depending on the location of the source and the wall. The hourly average of construction noise levels could reach more than 10 dBA above ambient noise levels at some locations, particularly at locations adjacent to the new roadway segment, where existing ambient noise levels are low. Noise levels would be as high as 55 dBA L_{eq} inside homes (assuming the windows are shut), with maximum interior noise levels of up to 60 dBA at the closest residences. The noise levels could be high enough to interfere with conversation in backyards and possibly inside homes.

In addition to construction equipment specified in Table 3.9-3 and discussed above, the project also includes major features that would generate noise far beyond that generated during the roadway widening phase: the Alameda Creek Flood Control Channel bridge and the railroad grade separation. Construction of the proposed bridge over the Alameda Creek Flood Control Channel would require pile driving, which would potentially last 2 months. Construction of both bridges over Old Alameda Creek would require pile driving, with pile driving activity anticipated to last 5 weeks for the western location and 2 weeks for the eastern location. Impact pile driving generates a typical noise level of 101 dBA and vibratory pile driving generates a 96-dBA noise level, as perceived at a distance of 50 feet from the source. The closest residential receptors to the pile driving would be approximately 150 feet away; residences on both sides of the channel would receive pile driving noise during daytime construction, as pile driving would be limited to weekday daytime hours, generally occurring between the hours of 8 a.m. and 6 p.m., Monday through Friday.

Construction of the grade separations would require extensive excavation to prepare the below-grade roadway surface, pile driving to construct the grade separation structures, and nighttime work to construct the grade separations. Excavation and pile driving in these locations would each potentially last several weeks, and noise from these activities would be received by residences located adjacent to the new roadway alignment. A final construction schedule has not yet been prepared, but it is expected that nighttime, weekend, and holiday work—potentially spanning several weeks—would be required to construct the grade separations to avoid disrupting the freight, passenger, and transit providers' schedules. Required nighttime work would be the most extensive while building the BART grade separation, due to the limited time available during BART non-revenue hours. Residences located in the vicinity of the grade separations generally feature noise walls constructed to reduce the noise from train pass-bys. However, noise-generating activities would occur close to these residences, and nighttime noise would be received during nighttime construction.

Because construction activity could occur outside the hours allowed by the City of Union City and because noise could exceed 83 dBA at a distance of 25 feet from the source and 86 dBA (at the property line), this impact is considered to be significant.

Implementing Mitigation Measures NOI-1 and NOI-2 would reduce noise from construction activity. However, because it may not be feasible to reduce below applicable noise standards in all cases and because some construction may be required at night, this impact is considered significant and unavoidable.

Mitigation Measure NOI-1: Employ Measures to Reduce Construction Noise to Comply with Applicable Construction Noise Standards

ACTA will require the construction contractor to employ measures to reduce construction noise so that it does not violate applicable construction noise standards. Measures that can be implemented to reduce construction noise to acceptable levels include, but are not limited to, the following.

- Limit all construction activities, including loading and unloading of materials and on-site truck movements, to between 8:00 a.m. and 8:00 p.m.., Monday through Friday; 9:00 a.m. to 8:00 p.m. Saturday; and 10:00 a.m. to 6:00 p.m. Sunday and holidays, as stated in the Union City Municipal Code.
- Use available noise suppression devices and techniques, including:
  - equipping all internal combustion engine-driven equipment with mufflers, air-inlet silencers, and any other shrouds, shields, or other noise-reducing features that are in good operating condition and appropriate for the equipment;.
  - using “quiet” models of air compressors and other stationary noise sources where such technology exists;
  - using electrically powered equipment instead of pneumatic or internal combustion powered equipment, where feasible;
  - using of noise-producing signals, including horns, whistles, alarms, and bells, for safety warning purposes only;
  - locating stationary noise-generating equipment, construction parking, and maintenance areas as far as reasonable from sensitive receptors when sensitive receptors adjoin or are near the construction project area;
  - prohibiting unnecessary idling of internal combustion engines (i.e., in excess of 5 minutes);
  - placing temporary soundwalls or enclosure around stationary noise-generating equipment when located near noise sensitive areas;
  - ensuring that project-related public address or music systems are not audible at any adjacent receptor; and
  - notifying adjacent residents in advance of construction work.

Mitigation Measure NOI-2: Prepare a Community Awareness Program for Project Construction

In consultation with the representatives of Union City, ACTA will prepare and maintain a program to enhance community awareness of project construction issues, including the noise, vibration, nighttime noise, nighttime lighting, and park or trail closures. Initial information packets will be prepared and mailed to all residences within a 1,000-foot radius of project construction, with updates prepared as necessary to indicate new scheduling or processes. A project liaison will be identified who will be available to respond to community concerns regarding noise, vibration, and light.

Impact NOI-2: Exposure of Off-Site Vibration-Sensitive Land Uses to Short-Term Vibration (Less than Significant with Mitigation)

The roadway construction, pile driving, and excavation described above under Impact NOI-1 would also result in vibration on a temporary basis. Table 5-1 of the Vibration Report (Appendix O) shows the estimated construction vibration levels at various receptors along the new roadway resulting from heavy truck activity and ground compaction. These vibration levels for these activities are not predicted to exceed the established residential and commercial thresholds.

Table 3.9-4 below summarizes predicted pile driving vibration levels at residences near the two grade separations.

Table 3.9-4. Project Pile Driving Levels, New Roadway

	Distance to Construction (feet)		Expected Vibration (PPV, in/s)	
Receiver (all residences)	Nearest	Farthest	Nearest	Farthest
UPRR (Oakland) and BART Undercrossing				
Monterra Terrace	240	395	0.16	0.10
Monterra Terrace closest to BART	115	235	**0.33**	0.16
Platinum Street and Gold Street	120	245	**0.32**	0.15
UPRR (Niles) Undercrossing				
Platinum Street and Green Street	780	910	0.05	0.04
Sanburg Drive and Klondike Drive	65	185	**0.58**	**0.21**
Chesapeake Drive and Project Roadway	985	1005	0.04	0.04
Cascades Circle near Arroyo Drive	1340	1350	0.03	0.03

Bold entries indicate potential exceedance over the 0.2 in/sec PPV criterion.

The results in Table 3.9-4 indicate that pile driving for the grade separation is anticipated to result in vibration levels that exceed the 0.2 PPV thresholds for structural damage at residences. Because of the potential for the residential threshold to be exceeded at the grade separation, this impact is considered significant. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measure NOI-2: Prepare a Community Awareness Program for Project Construction

Mitigation Measure NOI-3: Conduct Structural Conditions Survey for Areas Where Pile Driving is Proposed

Prior to construction, ACTA will survey all structures within 50 feet of proposed vibratory compacting activities to document the structural composition of structures and note the presence and condition of existing cosmetic or structural cracks or defects that may be sensitive to vibratory compaction. Any sensitive conditions will be reported to the contractor conducting the vibration.

Mitigation Measure NOI-4: Limit Extent of Vibratory Compaction Activity and Vibratory Pile Driving

ACTA will restrict all soil compaction using large, truck-mounted compactors and all vibratory sheet pile driving to areas beyond 50 feet of residential structures or wood-framed buildings, and to areas 20 feet or more from commercial buildings. Wherever feasible, soil compaction within these limits will be performed with hand-operated vibratory rollers.

Mitigation Measure NOI-5: Limit Vibration Levels Received at Structures

ACTA will ensure that construction specifications include the following restrictions on vibratory compaction. Vibration at all residential and non-engineered wood frame buildings should be limited to 0.2 in/sec PPV. Vibration at commercial, concrete, and engineered buildings should be limited to 0.3 in/sec PPV. ACTA will require contractors conducting high-vibration activities to monitor their vibration levels and ensure that the stated levels are not exceeded.

Impact NOI-3: Exposure of Off-Site Noise-Sensitive Land Uses to Short-Term Increases in Railroad Noise during Construction of the Grade Separation (Significant and Unavoidable)

Constructing the grade separation would require building shooflies to divert rail traffic during construction. Final shoofly plans have not yet been prepared, and preliminary plans were used for this analysis. , the temporary shooflies would mostly be closer to homes than the existing tracks, but in some cases the shooflies would be farther away. Placing the shooflies closer to residences would increase the noise levels received at neighboring residences, including during the night.

The noise-sensitive receptors currently located closest to the subject railroad lines are within 50 to 100 feet on either side of the existing alignments, and despite the presence of 7- to 8-foot noise walls, these homes experience train noise under existing conditions. The temporary realignments of the UPRR Niles Subdivision track and UPRR Oakland Subdivision track would place the tracks approximately 15 feet from residences.

As a result of the temporary track realignment, freight train noise levels are predicted to increase temporarily by 4 to 10 dBA at these residences, and BART noise levels are predicted to increase temporarily by about 7 dBA at the closest residence. Maximum exterior noise levels of 80 to 100 dBA L_{max} would be anticipated at the closest residences, with maximum noise levels of 55 to 75 dBA L_{max} inside homes (assuming standard California construction with windows closed). Noise levels at ground level in areas that are shielded behind soundwalls would be lower. Although railroad movements are relatively infrequent and short in duration, the results of this analysis indicated that maximum noise levels generated during pass-bys are high and have the potential to interfere with conversations in backyards and inside homes.

This impact is therefore considered to be significant. Implementation of the following mitigation measures would reduce this impact. However, there is no feasible mitigation to reduce the train noise levels emitted during shoofly operation to below the established thresholds. Accordingly, this impact is considered significant and unavoidable.

Mitigation Measure NOI-2: Prepare a Community Awareness Program for Project Construction

Impact NOI-4: Exposure of Off-Site Noise-Sensitive Land Uses to Short-Term Increases in Railroad Vibration during Construction of the Grade Separation (Significant and Unavoidable)

Constructing the grade separation would require temporary shooflies to divert rail traffic during construction. Preliminary shoofly plans were used for this analysis and indicate the tracks would move closer to some residences and compared to current conditions; but in some cases the tracks would be farther away. Placing the shooflies closer to residences would increase the vibration levels received at neighboring residences and causing an excess of the identified thresholds.

Table 3.9-5 compares existing and with-project train vibration levels, assuming that BART would maintain its existing operational speed of 80 miles per hour and that UPRR would maintain its existing operational speed of 79 miles per hour.

As shown in Table 3.9-5, vibration from BART operations on the shoofly at most locations would be less than existing conditions as a result of increased distance between the track and adjacent residences. The exception would be homes near the intersection of Platinum and Gold Streets, which are predicted to experience an increase in vibration from BART shoofly operations, but not to the extent that the identified threshold of 0.083 in/sec PPV would be exceeded. For trains on the UPRR tracks, operations on shooflies for the Oakland or Niles Subdivisions would be higher at most residences, and are predicted to exceed the nighttime disturbance criterion of 0.083 in/sec PPV at several homes.

Table 3.9-5. Shoofly Vibration Levels, New Roadway

	Distance (ft)		Vibration (in/sec PPV)		Distance (feet)		Vibration (in/sec PPV)	
Location	BART Existing	BART Shoofly	BART Existing[1]	BART Shoofly[1]	UPRR Existing	UPRR Shoofly	UPRR Existing[2,3]	UPRR Shoofly[3]
BART and UPRR (Oakland Subdivision)								
Monterra Terrace closest to BART	50	112	0.029	0.013	125	90	0.040	0.055
Platinum Street and Gold Street	110	50	0.013	0.029	50	25	**0.100**	**0.174**
UPRR (Niles Subdivision)—Alternative 1 (worst case distances)								
Platinum Street and Green Street	NA	NA	NA	NA	95	65	0.052	0.077
Sanburg Drive and Klondike Drive	NA	NA	NA	NA	60	75	0.083	0.066
Residential under construction	NA	NA	NA	NA	100	75	.0050	0.066
UPRR (Niles Subdivision)—Alternative 2 (worst case distances)								
Platinum Street and Green Street	NA	NA	NA	NA	95	55	0.052	**0.090**
Sanburg Drive and Klondike Drive	NA	NA	NA	NA	60	40	0.083	**0.118**
Residential under construction	NA	NA	NA	NA	100	70	0.050	0.071
UPRR (Niles Subdivision)—Alternative 1 (worst case distances)								
Platinum Street and Green Street	NA	NA	NA	NA	95	50	0.052	**0.100**
Sanburg Drive and Klondike Drive	NA	NA	NA	NA	60	25	0.083	**0.118**
Residential under construction	NA	NA	NA	NA	100	70	0.050	0.071

Bold vibration values indicate potential exceedance over nighttime disturbance criterion of 0.083 in/sec PPV.

1 Existing and shoofly operational speed of 80 miles per hour assumed.

2 Existing vibration based on Federal Transportation Administration freight train curve, adjusted for speed.

3 Existing and shoofly operational speed of 79 miles per hour on UPRR assumed.

This impact is considered significant. Speed reduction or maintaining a greater separation distance between homes and the shooflies are not possible beyond the alternatives already presented above for the UPRR (Niles) shoofly. Implementation of the following mitigation measures would reduce this impact, but not to a less than significant level. Accordingly, this impact is considered significant and unavoidable.

Mitigation Measure NOI-2: Prepare a Community Awareness Program for Project Construction

Mitigation Measure NOI-6: Maximize Distance between Shoofly and Residences to Extent Allowed by UPRR

ACTA will maximize the distance between the shoofly and residences to the extent allowed by UPRR.

Impact NOI-5: Exposure of Noise-Sensitive Land Uses to Operational Noise from Vehicles on New Roadway (Less than Significant with Mitigation)

With implementation of Alternative 1 a new roadway would be constructed in proximity to existing residences. Table 3.9-6 summarizes traffic noise modeling results for existing conditions and 2035 conditions with and without Alternative 1.

Table 3.9-6. Traffic Noise Levels, New Roadway

ID	Receiver Location	Existing Peak-Hour dBA	2035 Peak-Hour dBA, without Project	2035 Peak-Hour dBA, with Project	Project-Related Increase	Significant Impact?
ST-18	Setback of 35509 Monterra Circle	58	59	60	1	No
ST-19	Setback of 1071 Tourmaline Terrace	55	56	57	1	No
ST-20	Backyard of 34770 Klondike Drive	56	57	57	0	No
ST-21	End of Chesapeake Court	57	57	60	3	No
ST-22 (park)	Dog Park off 7th Street	65	67	68	1	No
ST-23 (park)	Park off Wildflower Lane	61	62	62	0	No
ST-24	Apartments off Mission Boulevard	68	70	70	0	No
ST-25	34864 Mission Boulevard, Bldg M	64	65	65	0	No
ST-26	Setback of 149 Black Mountain Circle.	72	74	74	0	No
M-16	Backyard of Residence on Gold Street	55	56	58	2	No
M-17	Setback of Townhomes on Tourmaline Terrace	55	56	57	1	No
M-18	Backyard of Residence on Sandburg Drive	56	57	59	3	No
M-19	Backyard of Residence on Cascades Circle	59	60	61	1	No
M-20	Backyard of Residence on Cascades Circle	63	65	64	0	No

As Table 3.9-6 shows, project-related increases in noise levels are in the range of 0 and 3 dBA. Traffic noise at some receptors currently exceeds and will continue to exceed the 60 L_{dn} land use compatibility standards for residential uses, however, the project-related increase at those locations is not anticipated to be 3 dBA or higher. Noise increases of 3 dBA are predicted at two residential receptors (ST-21 and M-18) as a result of traffic noise on the new roadway. However, noise at these locations is predicted to remain below the 60 L_{dn} residential noise compatibility standard. Because Alternative 1 is not anticipated to increase traffic noise by 3 dBA or more and result in noise levels that would exceed the noise compatibility thresholds at any of these receptors, this impact is considered less than significant. No mitigation is required.

In addition to exterior noise increases, Alternative 1 would increase interior noise levels received by residences in the vicinity of the new roadway. Standard California residential construction typically provides about 15 dBA of exterior-to-interior noise reduction with windows partially open, and about 25 dBA of exterior-to-interior noise reduction with windows closed, assuming typical California residential construction. As a result, the interior noise standard of 45 dBA L_{dn} for residences would typically be met if the exterior noise levels do not exceed the exterior noise and land compatibility threshold of 60 dBA L_{dn}. The incorporation of forced-air mechanical ventilation systems (air conditioning) in residential units is considered sufficient to allow occupants the option of maintaining windows in the closed position, which would allow residences exposed to exterior levels of up to 70 dBA L_{dn} to achieve the interior noise standard. For residences exposed to exterior noise levels exceeding 70 dBA L_{dn}, sound-rated construction methods could be needed to reduce interior noise levels to 45 dBA L_{dn}.

As a result of Alternative 1, exterior noise levels are predicted to exceed 60 dBA L_{dn} at upper stories in the vicinity of two receptors along the south side of the new roadway between Alvarado-Niles Road and Mission Boulevard (ST-21 and M-18). Upper stories do not received the benefit of noise reduction from existing barriers so noise levels are higher than those reported in Table 3.9-6. Exterior noise levels for these homes are predicted to range from 60 to 67 dBA L_{dn}. Because exterior noise levels are not predicted to exceed 70 dBA L_{dn}, forced air ventilation would be adequate to allow windows to be kept closed at the occupant's discretion to control interior noise levels to meet the 45 dBA L_{dn} interior threshold. Additional sound rated construction methods, such as the installation of double-pane windows, would not be necessary to meet the interior threshold. However, it is not known if these residences currently have forced air mechanical ventilation systems, and a survey would need to be conducted to make this determination. This impact is therefore considered significant. Implementation of the ~~following~~ mitigation measure listed below would reduce this impact to a less-than-significant level.

In addition to this operational roadway noise, the proposed project would entail moving the existing paved trail that extends alongside Old Alameda Creek to Quarry Lakes Drive southwestward, closer to residences, to accommodate the wetlands mitigation plan (Mitigation Measure BIO-7). The newly aligned trail is shown in Figure 3.3-3. Recreational traffic would be moved closer to the residences, but recreational uses would not generate noise that would be substantial enough to be considered a significant noise impact on the adjacent residences. The trail may be used for occasional maintenance access to the mitigation site, but this traffic would not be frequent enough or substantial enough to be considered a significant impact. No mitigation is necessary to reduce impacts from this aspect of the project, but, as discussed above, the traffic noise impact is considered significant, and requires mitigation, which is discussed below.

Mitigation Measure NOI-7: Conduct Survey for Presence of Air Conditioning at Residences Adjacent to the New Roadway

ACTA will perform a survey of existing residences adjacent to the new roadway alignment to identify residences that currently do not have forced air mechanical ventilation systems. The survey will include residences located in the first row of homes along the south side of the new roadway segment between Alvarado-Niles Road and Mission Boulevard. For locations found to lack air conditioning, and which would thus be unable to maintain closed-window conditions, reasonable and feasible noise mitigation measures will be identified during the final design stage of the project in coordination with and approval from the City of Union City. Mitigation measures that reduce the project's significant impacts to less-than-significant levels will be incorporated into the project. These measures ~~Measures~~ may include, but are not limited to, providing forced air ventilation systems to residences, so that windows may be kept closed at the occupant's discretion to control noise. Where appropriate and needed to meet noise requirements, ACTA will provide funding for double-pane windows.

Impact NOI-6: Exposure of Vibration-Sensitive Land Uses to Increased Traffic (Less than Significant)

By constructing the new roadway between Alvarado Niles Road and Mission Boulevard, Alternative 1would be placing a new source of vibration in the vicinity of residential receptors. As shown in Table 5-1 of the Vibration Report, traffic-generated vibration would be at very low levels and would not generally exceed the threshold for human perception. Thus, this vibration would also not exceed the 0.2 PPV threshold for residential building damage. This impact is considered less than significant. No mitigation is required.

Section 3.10
Population and Housing

3.10.1 Introduction

This section describes the affected environment and regulatory setting for population and housing in the project area. It also describes the impacts on population and housing that would result from implementation of Alternative 1, and mitigation measures that would reduce these impacts.

3.10.1 Environmental Setting

Sources of Information

The key sources of data and information used in the preparation of this population and housing section are listed described below.

- California Department of Finance Population Estimates between January 1, 2007 and January 1, 2008 (California Department of Finance 2008).
- City of Union City General Plan (City of Union City 2002).

Existing Conditions

This section discusses the existing conditions related to population and housing relative to Alternative 1. The Alternative 1 alignment is located in Alameda County, the second largest county in the Bay Area. The population of Alameda County on January 1, 2008 was 1,543,000 (California Department of Finance 2008).

The City of Union City is 11,520 acres (18 square miles) in size. The City includes 18,642 households, of which 15,700 are inhabited by families. The total population of Union City was 72,124 residents in 2007. Between the years of 1997 and 2007, Union City saw an average growth rate of 4.43% per year (City of Union City 2002). One area that has been identified to accommodate a substantial amount of future housing in Union City is the industrial redevelopment area located near the BART station, north of the Alternative 1 alignment.

Regulatory Setting

Federal and State

There are no federal or state regulations for population and housing that apply to the project area.

Local

California Planning and Zoning Law (Government Code 65000 *et seq*.) requires each city and county to adopt a general plan for the physical development of the land within its planning area. The housing element of a local general plan must incorporate policies and programs that will allow sufficient housing to be built to meet the community's share of the region's projected housing need. These policies and programs must provide for housing for all economic sectors, including very low-, low-, and moderate-income residents.

Union City General Plan

The City of Union City General Plan includes goals and policies to guide housing and overall development throughout the City (City of Union City 2002). These policies and goals center on addressing construction needs and requirements for new housing and are not related specifically to the conditions of Alternative 1. However, the Alternative 1 alignment includes a large area of land owned by Caltrans north of Old Alameda Creek. A City goal is to purchase this land and develop additional residences in this area, and to preserve open space and recreational opportunities for residents of the City.

3.10.2 Impact Analysis

This section describes the impact analysis relating to population and housing for Alternative 1. It describes the methods used to determine the impacts of Alternative 1 and lists the significance criteria used to conclude whether an impact would be significant.

Methodology

Population and housing impacts were identified by reviewing existing and proposed housing conditions for the Alternative 1 alignment and its vicinity. This included the examination of Union City's respective housing elements in relation to how Alternative 1 would align with existing and future conditions within both Cities.

Significance Criteria

For this analysis, an impact pertaining to population and housing was considered significant under CEQA if it would result in any of the following environmental impacts, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 *et seq*.). A significant impact is identified if Alternative 1 would:

- induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure);
- displace a substantial number of existing housing, necessitating the construction of replacement housing elsewhere; or
- displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Project Impacts and Mitigation Measures

Alternative 1 was evaluated for potential housing displacement impacts, population growth inducement impacts, and consistency with relevant local plans and policies.

Impact POP-1: Indirect Inducement of Substantial Population Growth (Less than Significant)

Alternative 1 would not directly increase population or housing in the Alternative 1 alignment or its vicinity, nor would it affect the population or housing needs within the City of Union City. Alternative 1 does not propose to add housing. However, by enhancing access to proposed redevelopment areas in Union City, including the industrial redevelopment area near the Union City BART station, and by generally improving access, Alternative 1 has the potential to indirectly induce population growth in Union City.

The general plan for Union City projects that additional growth will occur in future years. Because additional growth has been projected and planned for in Union City, the improved transportation corridor would support these growth projections and accommodate planned growth, and would not add additional population or housing needs in the City. Therefore, this impact is considered less than significant. No mitigation is required.

Impact POP-2: Displacement of a Substantial Number of Existing Housing Units or People (Less than Significant)

Alternative 1 would entail displacement of one household—the Silva farmhouse located adjacent to Alvarado-Niles Road. This property is owned by Caltrans and leased as a single-family residence. As part of Alternative 1, the residents of the Silva farmhouse would be relocated, and the residence would be demolished in order to provide right-of-way for the proposed alignment. Relocation of one residence is not considered a substantial displacement of housing units or people. Because the property is currently under lease, and the Silva farmhouse residents would be relocated prior to implementation of Alternative 1, this impact is considered less than significant. No mitigation is required.

Section 3.11

Public Services, Utilities, and Recreation

3.11.1 Introduction

The section describes the affected environment and regulatory setting for public services, utilities and service systems, and recreational opportunities in the project area. It also describes the impacts on these services that would result from construction and operation of Alternative 1, and mitigation measures that would reduce these impacts.

The specific public services, utilities and service systems, and recreation opportunities addressed in this section are listed below.

- Fire
- Police
- Schools
- Natural Gas and Electric Services
- Wastewater
- Stormwater
- Solid Waste
- Parks and Recreational Facilities
- Trail Systems

3.11.2 Environmental Setting

Sources of Information

The following key sources of data and information were used to prepare this section.

- Union City General Plan Policy Document (City of Union City 2002)
- Union City Park and Recreation Master Plan (City of Union City 1999)

Existing Conditions

This section discusses the existing conditions related to public services, utilities, and recreation in the project area.

Public Services

Fire

Fire protection services in the project area are provided by City of Union City Fire Department. The City of Union City Fire Department has four stations throughout the City. Services provided by the fire department include fire prevention and suppression, paramedic-level emergency medical services, hazardous material spills response and containment, and emergency medical dispatch. There are approximately 50 employees of the City of Union City Fire Department, and they service approximately 4,500 calls per year.

Police

Police protection services in the project area are provided by the City of Union City Police Department. The City of Union City Police Department is located at 34009 Alvarado-Niles Road. The goal of the department is to provide 1.4 full-time employees for every 1,000 residents. The City currently supports 81 officers. There is no information available for response times for the City of Union City.

Schools

The New Haven Unified School District serves the City of Union City and includes seven elementary schools, three middle schools, and one high school. There are no school facilities located along the Alternative 1 alignment ~~or its vicinity~~; however, several New Haven Unified School District schools are within a 1-mile radius of the Alternative 1 alignment. These include Emanuele Elementary School (located at the intersection of Decoto Road and Mission Boulevard, approximately 1 mile northwest of Alternative 1's eastern terminus); Logan High School (located at the intersection of Alvarado-Niles Road and H Street, approximately 1 mile west of Alternative 1's western terminus); and the New Haven Adult School (located at the intersection of G Street and Sixth Street, approximately 1 mile west of Alternative 1's eastern terminus).

Utilities and Service Systems

Natural Gas and Electrical Services

Natural gas and electrical services to Union City are provided by The Pacific Gas and Electric Company (PG&E). Implementation of Alternative 1 would result in the relocation of utilities throughout the project area as new roadways are added and existing roadways are modified. Potential utility relocations include the following locations.

- Existing overhead utility lines on the west side of Mission Boulevard (between Holly Leaf Lane and Appian Way) would have to be relocated to the east side of Mission Boulevard to accommodate the inclusion of southbound to westbound right-turn pockets.
- The new roadway segment may include additional utility installations such as water, gas, electricity, and telecommunications facilities if so requested by the franchised utility providers within Union City. The locations and extent of these facilities are currently unknown and would be determined by the franchised utility providers.

Existing utilities that run along the railroad lines throughout the project area would be supported in place throughout construction activities and placed on the new grade-separated structures upon completion. Interconnect cables would also be installed to connect the traffic signals within the project area to enable signal operations to be coordinated and monitored in the future.

Wastewater

The Union Sanitary District provides wastewater collection and treatment services and disposal for Union City. There would be no wastewater generated through project construction or implementation actions.

Stormwater

Stormwater collection in Union City is provided by the storm drainage facilities. Within the project area, Line M Channel, Basin 2C, and New Basin provide the structure for the stormwater management system, and eventually drain to the Alameda Creek Flood Control Channel (see Figure 3.3-2 in Section 3.3, Biological Resources). These project features are discussed below. Following a discussion of each project feature, modifications to the existing stormwater system, as well as additional features that would be added to channel stormwater along the new roadway alignment, are discussed.

Line M Channel

The Line M Channel is a flood control drainage system (open channel and pipeline) that replaced a natural drainage. It is maintained by the Alameda

County Flood Control and Water Conservation District. It drains the hills north and west of the project area and flows into the Alameda Creek Flood Control Channel. The new roadway alignment would extend over the Line M channel 250 feet east of Chesapeake Drive as it extends westward between Chesapeake Drive and UPRR tracks (Niles Subdivision). The Line M Channel is undersized and, as a result, the area near Chesapeake Drive experiences overflow conditions during heavy storm events. Some overflow goes to the adjacent detention basins, Basin 2C and New Basin, which would be displaced by Alternative 1. Implementation of Alternative 1 would modify the Line M Channel in this area to accommodate project features and to provide additional capacity for flood control.

Detention Basins 2C and New Basin

The project alignment would extend across two existing detention basins, Basin 2C and New Basin. Basin 2C was constructed in 1999 adjacent to the Line M Channel to serve as a stormwater detention basin and as wetland mitigation for the Park Ridge Phase II and Phase III residential development project. The source of water for the basin is runoff from adjacent residential developments. Should the basin fill, overflow would enter the Line M Channel via a lower section of the berm along the channel.

The New Basin is located between Green Street and the BART tracks and was constructed in 2006 to serve as stormwater detention for the KB Homes development just south of the recently constructed Green Street bridge. During heavy storm events, some of the water from the Line M Channel is diverted into the basin. When the water elevation in the Line M Channel recedes, water is pumped out of the basin back into the Line M Channel.

Alameda Creek Flood Control Channel

The Alameda Creek Flood Channel is the major hydrologic feature in the area, and the trapezoid-shaped channel drains the entire project area.

Solid Waste

The City of Union City administers contract a contract with Allied Waste Services for the collection and disposal of residential and commercial waste and recycling. The City of Union City also contracts with Tri-CED Community Recycling. The Fremont Recycling and Transfer Station, located at 41149 Boyce Road, is the public waste disposal facility that supports both Cities. Discarded materials, such as yard and wood waste, scrap metal, cardboard, and construction debris are sorted and recycled. Materials that are not recycled are transported from this facility to a landfill. The Fremont Recycling and Transfer Station has been designed to meet increased demand for recycling and waste handling services for both Cities.

Recreation

Parks and Recreational Facilities

The City of Union City provides a diverse range of recreational opportunities and facilities. Recreational opportunities include local and regional parks that support wildlife viewing, hiking, running, biking, swimming, picnic, and barbecue facilities and children's playgrounds. A number of local and regional parks are located adjacent to, or in neighborhoods nearby, the project area. Drigon Park is the only park located adjacent to the project area as shown in Figure 2-1, in Chapter 2, Project Description.

Drigon Park

The Drigon Park is a public dog park located within Union City off of 7th Street, adjacent to the project alignment. The dog park includes a dog-bone-shaped walkway, dog tunnels, climbing platforms, and a plaza area for free play, with benches for owners to relax and enjoy watching their dogs.

Quarry Lakes Regional Park

Quarry Lakes Regional Park is managed by EBRPD and is located in the City of Fremont south of the project alignment off of Quarry Lakes Drive. This park encompasses 539 acres of land, including 6 lakes, and supports an extensive trail system, wildlife viewing, swimming areas, non-gasoline-powered boating areas, fishing, and biking.

Arroyo Park

Arroyo Park is located on Perry Road, adjacent to the Quarry Lakes Drive/Osprey Drive intersection. Arroyo Park includes basketball courts, tennis courts, two children's playgrounds, and picnic and barbeque areas.

Seven Hills and Park Ridge Parks

Seven Hills and Park Ridge Parks are located near, but not adjacent to, the project alignment, and provide a wide range of recreational opportunities. Seven Hills Park is located on Florence Street, east of the project area, and is surrounded by pine trees. The park includes basketball courts, playground equipment, and picnic and barbecue facilities. Park Ridge Park is located at the intersection of Chesapeake and Sandburg streets and includes a water fountain, large playground, and picnic facilities. Although located near the project area, features of Alternative 1 may not be viewed from either park, and both facilities would not be affected by project implementation.

Pacific State Steel and Windflower Parks are local neighborhood parks that are located near, but not adjacent to the project alignment. They are located in the Brooks and Foothill Glenn housing developments, respectively. The parks are small in nature, supporting play structures, benches, and picnic tables for the local neighborhoods to enjoy. Both parks would not be affected by project implementation.

Trail Systems

There are no existing trail systems along the Alternative 1roadway alignment. From Paseo Padre Parkway to Alvarado-Niles Road, the undeveloped area includes the Alameda Creek Flood Control Channel and Old Alameda Creek. An asphalt-paved trail maintained by the City of Fremont roughly follows the southern bank of Old Alameda Creek, connecting the Alameda Creek Flood Control Channel's northern trail to Isherwood Way. A portion of this Fremont trail system is within the wetlands mitigation site.

Regulatory Setting

Federal

There are no federal laws or regulations pertaining to public services, utilities and service systems, or recreation.

State

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. CPUC is responsible for ensuring that California utility customers have safe, reliable utility service at reasonable rates, protecting utility customers from fraud, and promoting the health of California's economy. CPUC establishes service standards and safety rules and authorizes utility rate changes as well as enforcing CEQA compliance for utility construction. CPUC also regulates the relocation of power lines by public utilities under its jurisdiction, such as PG&E.

General Utility Excavation

General excavation activities that could affect utilities are regulated through the California Occupational Health and Safety Administration Construction Safety Orders under Title 8 Section 1541 Excavation, Trenching and Earthwork. Contractors working in the vicinity of utilities, both under-and above-ground, are required by Article 2 of California Code 4216 to contact a regional notification center at least 2 days prior to excavation of any subsurface installations. The center for northern California is the Underground Service Alert. After receiving notification, the Underground Service Alert will notify utilities that may have buried lines within 1,000 feet of the excavation. The excavator is required to probe and expose underground facilities by hand prior to using power equipment for trenching and excavation.

California Integrated Waste Management Act

In 1989, Assembly Bill 939(AB 939), known as the Integrated Waste Management Act, was passed into law. Enactment of AB 939 established the California Integrated Waste Management Board, and set forth aggressive solid waste diversion requirements. Under AB 939, every city and county in California is required to reduce the volume of waste sent to landfills by 50%, through recycling, reuse, composting, and other means. AB 939 requires counties to prepare a Countywide Integrated Waste Management Plan. An adequate Countywide Integrated Waste Management Plan contains a summary plan that identifies goals and objectives, waste management issues and problems in the incorporated and unincorporated areas of the county, waste management programs and infrastructure, existing and proposed solid waste facilities, and specific steps to achieve the goals outlined in the components of the Countywide Integrated Waste Management Plan.

Local

City of Union City General Plan

The City of Union City 2002 General Plan (City of Union City 2002) includes the following relevant polices for resources related to public services, utilities and service systems and recreation.

Policy PF-E.1.1: The City shall require the maintenance of all drainage facilities, including detention basins and both natural and manmade channels, to ensure that their full carrying capacity is not impaired.

Policy PF-E.1.2: The City shall encourage the use of natural stormwater drainage systems in a manner that preserves and enhances natural features.

Policy PF-F.1.6: The City shall strive to maintain the diversion of 50 percent of all waste generated citywide for recycling and strive to increase the diversion of waste for recycling to 75 percent by 2010.

Policy PF-F.1.8: The City shall encourage the recycling of construction debris.

Union City Park and Recreation Master Plan

The Union City Park and Recreation Master Plan was developed in 1999 (City of Union City 1999) to guide future park, trail, and open space planning. The master plan provides an inventory of existing facilities as a foundation for future resource planning. Goals and policies are included to maintain existing park, trail, and recreational facilities, and to guide growth, maintenance, and a management of a diverse range of facilities offered for the greater population. City parks located in the project area or its vicinity include Drigon Park, Arroyo Park, Seven Hills Park, Pacific State Steel Park, Pride Ridge Park, and Windflower Park.

3.11.3 Impact Analysis

This section describes the impact analysis relating to publics services, utilities, and recreation for Alternative 1. It describes the methods used to determine the impacts of Alternative 1 and lists the significance criteria used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

The analysis of potential impacts on public services, utilities, and recreation is based on a review of policies included in the general plans for Union City and the Parks Master Plan for Union City. In addition, Alternative 1 was analyzed in terms of its potential to change existing demand on public recreational opportunities, or cause demand to exceed capacities of existing utilities and public service systems that currently support the project area.

Significance Criteria

For this analysis, an impact pertaining to public services, utilities, and recreation was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 *et seq*.). A significant impact is identified if Alternative 1 would:

- require the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services, including fire protection, police protection, schools, parks, or other public facilities;
- exceed wastewater treatment requirements of the San Francisco Bay RWQCB;
- require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- require water supplies to serve Alternative 1 in addition to existing entitlements and resources;

- result in a determination by the wastewater treatment provider that serves or may serve Alternative 1 that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs;
- not comply with federal, state and local statutes and regulations related to solid waste;
- increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical impact on the environment.

Project Impacts and Mitigation Measures

Impacts that would occur as a result of project implementation are described below. Because Alternative 1 would not result in the production of wastewater, either through construction activities or following project implementation, there would be no exceedance of wastewater treatment requirements. Alternative 1 would also not require the construction of new water or wastewater treatment facilities, or change the level of current service by the wastewater treatment provider for the project area. Finally, construction and operational activities of Alternative 1 would not require additional water within the project area, and therefore would not affect water supplies to or from the project area. Because the project would not affect these resources, these impacts are not further discussed in the impacts section.

Alternative 1 would not result in the need for additional services or the expansion of existing facilities for any of the public services provided within the project area, including fire and police protection, schools, parks or other public facilities. Implementation of Alternative 1 would improve access throughout the project area through the expansion and improvement of existing roadways, and addition of new roadways to improve the flow of traffic throughout the project area. Alternative 1 would not increase the population within Union City, and would not change or affect any existing facilities located in the project area. Therefore, there would be no impact on public services. Because Alternative 1 would not affect these resources, these impacts are not further discussed in the impacts section. Potential impacts on police and fire emergency access are addressed in Section 3.12, Transportation and Traffic. Increased risk of wildland fires that may occur as a result of construction activities on open lands are discussed in Section 3.6, Hazards and Hazardous Materials.

In accordance with the California Integrated Waste Management Act and the Alameda County Integrated Waste Management Plan, the City of Union City requires construction projects to complete a Waste Management Plan prior to the onset of construction activities. The plan would include the estimated volume or weight of each debris material to be generated, the maximum volume or weight of such materials that can feasibly be diverted via reuse or recycling, the vendors or facilities that the applicant proposes to use to collect or receive that material, and the estimated volume or weight of materials that would be placed in a landfill. Within 30 days after the completion of any covered project, a Waste Management Plan Compliance Report would be submitted to the City, documenting that diversion requirements have been met. Alternative 1 would comply with these guidelines established by Union City, and therefore there would be no impact on solid waste regulations. Specific information regarding the placement of solid waste generated by project implementation is discussed below under Impact PSR-2.

Impact PSR-1: Interruptions to Stormwater Drainage System during Construction (Less than Significant with Mitigation)

Implementation of Alternative 1 would improve stormwater drainage throughout the project area. Along the project alignment, existing storm drains and drainage inlets may be relocated and modified to accommodate roadway widening and intersection modifications. Covers and lids for existing underground utility facilities would also be adjusted. Where possible, existing utilities and pipelines that run along the various railroad lines would be supported in place during construction and placed on the new grade-separated structures upon completion.

Currently, the Line M Channel is undersized and, as a result, the area near Chesapeake Drive experiences overflow conditions during heavy storm events. Alternative 1 includes modifying the Line M Channel in this area to accommodate the project features and to provide the additional capacity needed for flood control. East of Chesapeake Drive, a drainage bifurcation structure would be installed to split the Line M Channel flow so that 50% continues to the downstream segment of the Line M Channel and 50% is diverted to a new 84-inch pipeline. The existing Line M Channel, between Chesapeake Drive and UPRR Niles Subdivision just west of the Union City Corporation Yard, would be filled in and replaced by two ~~8~~10-foot by 5-foot box culverts along the north side of the new roadway, just south of the Union City Corporation Yard. The new diversion pipeline would be an 84-inch buried pipeline extending along the south side of the new roadway to Old Alameda Creek. The pipeline would be buried approximately 10 feet deep (measured from the flow line to the finished grade) at the diversion point and would drop to 30 feet deep by the time it reaches Old Alameda Creek. The outfall structure would be likely comprised of a 36-inch outfall pipe and 110-square-foot rock slope protection area.

A separate roadway drainage system would be constructed on the north side of the new roadway between Chesapeake Drive and Alvarado-Niles Road. Stormwater runoff from the new roadway would be collected and conveyed through the use of underground conduits to outfall structures at several locations adjacent to the roadway and into infiltration basins. These basins would provide primary treatment for runoff before it infiltrates into the ground or, during a large storm event, enters Old Alameda Creek. The outfall structures and infiltration basins would be located on existing nonnative grassland areas adjacent to the new roadway between the Old Alameda Creek Flood Control Channel and Alvarado-Niles Road. Infiltration basins would allow water to percolate into the ground. There would be an overflow pipe from the infiltration basins to Old Alameda Creek to provide drainage relief for unusual storm events or to supplement the infiltration at the basin. Alternative 1 would be designed to ensure that drainage and stormwater infrastructure is built to handle flooding and stormwater runoff adequately. Therefore, this impact is considered less than significant as related to infrastructure demand, and no mitigation is required. Potential water quality issues with stormwater runoff are addressed in Section 3.7 Hydrology and Water Quality.

Construction activities associated with implementing the new stormwater system could affect utility lines (underground and aerial lines, including existing water, electric, gas, telephone, and cable television lines). As described above, conflicts and service interruptions with existing utility lines would be avoided to the extent feasible; however, this may not always be possible. Therefore, this impact is considered significant. The following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure PSR-1: Conduct an Investigation of Utility Line Locations and Maintain Utility Services

A detailed study identifying the locations of utilities along the project alignment will be conducted during the design phase of Alternative 1. For areas with the potential for adverse impacts on utility services, the following measures will be implemented.

- Utility excavation or encroachment permits will be required from the appropriate agencies. These permits include measures to minimize utility disruption. ACTA and its contractors will comply with permit conditions. Such conditions will be included in construction contract specifications.
- Utility locations will be verified through a field survey (potholing) and use of the Underground Service Alert services.
- Detailed specifications will be prepared as part of the design plans to include procedures for the excavation, support, and fill of areas around utility cables and pipelines. All affected utility services will be notified of the project construction plans and schedule. Arrangements will be made with these entities regarding the protection, relocation, or temporary disconnection of services.
- Residents and businesses within and adjacent to the project area will be notified of planned utility service disruption 2 to 4 days in advance, in conformance with the Union City and state standards.
- Disconnected cables and lines will be reconnected promptly.
- The proposed project will observe all relevant California Department of Public Health standards for utility modification and construction.

- The proposed project will observe all relevant ACWD Standard Specifications for Water Main Extension.
- The project will observe the California Department of Health Services (DHS) standards, which require:
  - a 10-foot horizontal separation between parallel sewer and water mains, and
  - a 1-foot vertical separation between perpendicular water and sewer line crossings.

In the event that separation requirements cannot be maintained, the project proponent will obtain a DHS variance through provisions of water encasement or other means deemed suitable by the department.

Impact PSR-2: Adverse Effects on the Capacity of Solid Waste Landfills (Less than Significant)

Alternative 1 would generate solid waste, including asphalt and other materials removed during roadway construction and intersection modifications. This material would be recycled to the extent practicable. Some items, such as signal hardware, may be delivered back to the City. Surplus material would become property of the contractor and be disposed of at the Fremont Recycling and Transfer Station. At the station, discarded materials, such as yard and wood waste, scrap metal, cardboard, and construction debris would be sorted and recycled. This facility is permitted to receive up to 2,400 tons of waste per day and operates under a 30-year service contract with the City of Fremont. Material that is delivered to the facility, but not recycled, would be directed to one of two landfills also under contract with the City of Fremont to receive all waste from the transfer station. The Tri-Cities Recycling and Disposal Facility is projected to receive waste through 2010. When this facility reaches its waste acceptance limits, waste materials would then be sent to the Altamont Landfill. The City of Fremont has a 20-year contract for waste disposal at the Altamont Landfill (Pianin pers. comm.).

Alternative 1 would also excavate and haul off site ~~approximately 200,000~~an undetermined amount ~~cubic yards~~ of dirt, including for roadway construction, the Line M Channel diversion pipeline installation south of Alvarado-Niles Road, and the wetlands mitigation site construction. The excavated material would be reused to the greatest extent possible to build roadway embankments and berms. Surplus material would become the property of the contractor and it would likely be reused on other projects requiring embankment material. Excess soil material may also be accommodated at a local landfill, such as the Tri-Cities Recycling and Disposal Facility, that requires a large quantity of dirt to be used as a landfill final cover layer when the facility is formally closed.

Because the Fremont Recycling and Transfer Station has been designed to meet demands for construction debris, and all materials generated through implementation of the project would not exceed the limits of this facility, this impact is considered less than significant. No mitigation would be required.

Impact PSR-3: Change in Demand for Neighborhood Parks, Regional Parks, or Recreational Facilities (Beneficial)

Implementation of Alternative 1 would not result in an increase in the local population, or change existing conditions in order to support a greater population in the project area or its vicinity. Access to local recreational opportunities in the project area would improve because more direct access would be provided to Drigon Park; however, the number of visitors using the park or other local recreational facilities would not be expected to change as a result of project implementation. Alternative 1 would improve the bike and pedestrian network because the new roadway would have sidewalks and bike lanes, and would be in accordance with the goals of the City of Union City Parks Master Plan in further connecting trails throughout the City.

Implementation of Alternative 1 would include bike lanes along the entire length of the project alignment, from Alvarado Road on the west to Mission Boulevard on the east. Along the new roadway alignment, bike lanes or outside shoulders would be provided in each direction. Additionally, there would be a Class I bike and pedestrian trail on the north side of the road that would be physically separated from the roadway by a landscaped buffer or other barrier and would connect with the existing trails in the area. When completed, the path would be maintained by Union City.

The proposed wetland mitigation plan would also include a trail that would border the planned mitigation site in an appropriate manner to both protect wildlife enhancements while allowing recreational viewing of wildlife. The exact alignment of this trail has not been determined, as the wetland mitigation plan has not been finalized, but it would connect to the existing trail network surrounding this planned mitigation site.

Because Alternative 1 would not create an increased demand for recreational facilities but would provide additional recreational facilities, this impact is considered beneficial. No mitigation is required.

Impact PSR-4: Adverse Physical Effects on Existing Recreational Facilities (Less than Significant)

Implementation of Alternative 1 would require minor right-of-way extensions into Drigon Park, amounting to approximately 15,627 square feet. Drigon Park was planned and developed with setbacks taking into consideration the future presence of SR 84, and Alternative 1's encroachment would be less than was previously planned. The Alternative 1 encroachment would include the removal of some vegetation at the edge of the park, but would entail no modification of any physical features inside the park, including the existing fence and surrounding pathway. ACTA would continue to coordinate with the Union City Department of Public Works and Planning Department as project design progresses, and would identify appropriate compensation for any parkland that is taken by the project alignment. The park would also be located at the end of a cul-de-sac off of the reconfigured 7th Avenue. Existing parking would be affected by Alternative 1 through the removal of some parking spaces located adjacent to the park. However, additional parking would be provided across the street on 7th Avenue to compensate for this loss. Therefore, the impact on Drigon Park is considered less than significant. No mitigation would be required.

The proposed wetlands mitigation site would entail realignment of a portion of one paved Fremont trail that is currently located on the southern bank of Old Alameda Creek. The trail would be realigned further southwest, along the edge of the proposed wetlands mitigation site. The trail may be temporarily closed while it is realigned, but will be opened following completion of this work. Many other trails in the vicinity would remain open, and this temporary closure would not significantly hinder access or recreational opportunities in the vicinity of the site. Alternative 1 would not result in temporary construction-related closure of any other recreational trails or bicycle facilities in the vicinity of the alignment; therefore, this impact would be less than significant and no mitigation is required.

Section 3.12
Transportation and Traffic

3.12.1 Introduction

This chapter describes existing transportation infrastructure and services in the project area, reviews applicable laws and regulations, and assesses potential impacts of Alternative 1 based on stated significance criteria. Mitigation measures are identified for potentially significant impacts, where they are feasible; and significant unavoidable impacts have been identified where mitigation is not feasible.

3.12.2 Setting

Sources of Information

The key sources of data and information used in the preparation of this section are listed and briefly described below.

- 2002 Union City General Plan Policy Document (City of Union City 2002), environmental and regulatory setting information.
- Technical Memorandum, Existing Conditions Intersection Level of Service Analysis Results (Dowling Associates 2008a), methodology and existing conditions analysis (Appendix P).
- Technical Memorandum, I-880–SR 238 East-West Connector Traffic Forecasts (Dowling Associates 2008b), methodology for travel demand forecasting (Appendix Q).
- Operational analysis of roadways under future no project and Alternative 1 conditions based on level of service (LOS) reports provided by Dowling and Associates.

Transportation Study Area

The transportation study area consists of roadways potentially affected by Alternative 1, and is shown in Figure 1-1 of Appendix E.

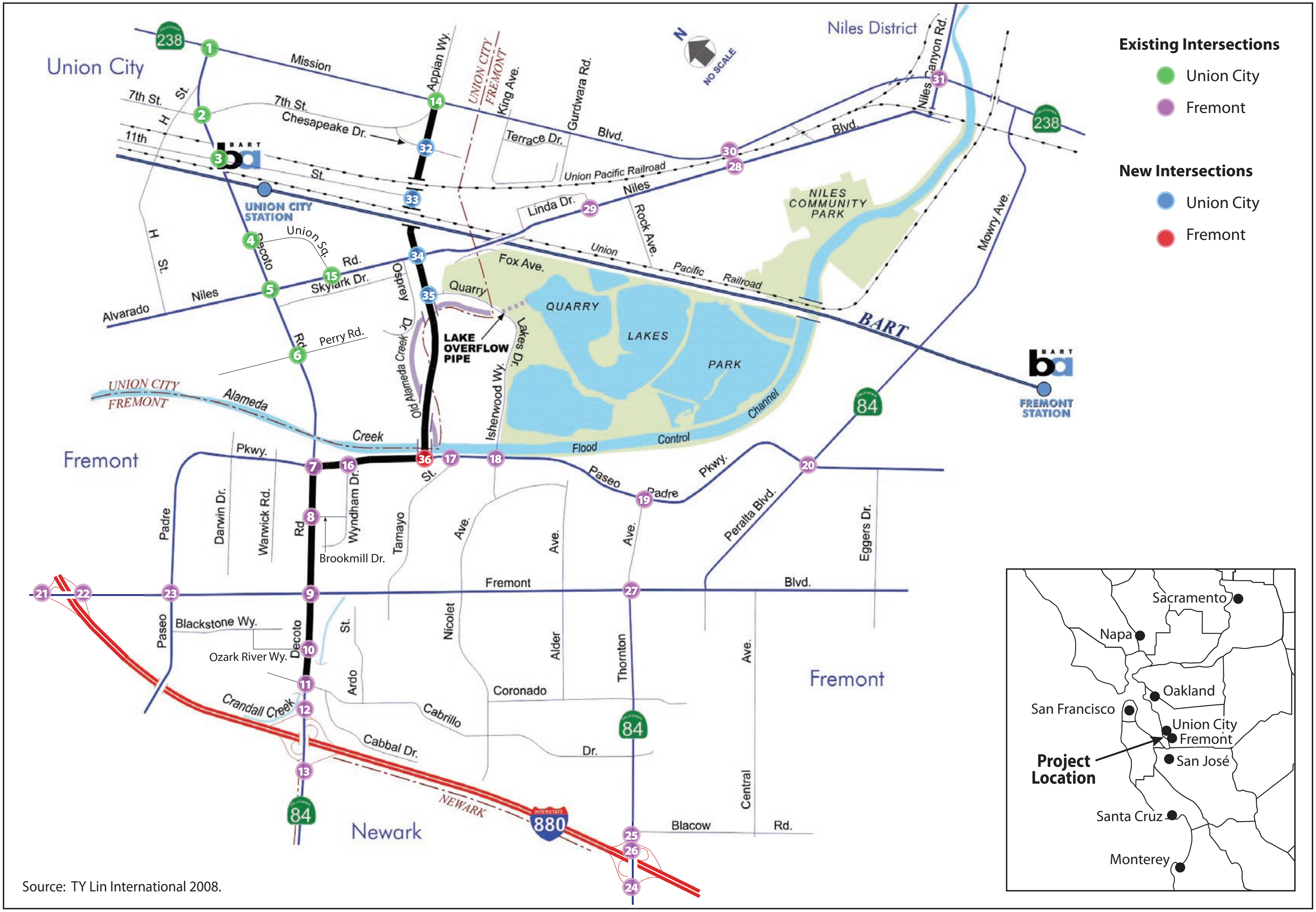
The transportation study area discussed in this section was initially defined for analysis of the East-West Connector Project (see Section 3.12 of the Draft EIR), and was defined in collaboration with the California Department of Transportation (Caltrans) and the cities of Fremont and Union City. Because the East-West Connector Project and Alternative 1 would affect the same roads and intersections, the same transportation study area as defined for the East-West Connector Project is also used for Alternative 1 analysis. This also enables a point-by-point comparison of the East-West Connector Project impacts with those of Alternative 1. On November 19, 2008, a Supplemental Technical Memorandum for: I-880 – SR238 East-West Connector Traffic Forecasts – Truncated Alternative was prepared to discuss the traffic forecasting methodology and results for Alternative 1.

The transportation study area is bounded by Whipple Road to the north, Mowry Avenue to the south, Interstate 880 (I-880) to the west, and Mission Boulevard to the east (Figure 3.12-1[1]). Table 3.12-1 summarizes the 31 existing intersections and three new intersections that would result from the project that were identified for evaluation. The analysis intersections are all located within the cities of Union City and Fremont. I-880 ramps are under the jurisdiction of Caltrans. All other intersections are under the jurisdiction of the cities in which they are located.

Table 3.12-1. Analysis Intersections

Intersection		Location	Jurisdiction
Existing Intersections			
1	Decoto Road/Mission Boulevard	Union City	Union City
2	Decoto Road/7th Street	Union City	Union City
3	Decoto Road/11th Street	Union City	Union City
4	Decoto Road/Union Square	Union City	Union City
5	Decoto Road/Alvarado-Niles Road	Union City	Union City
6	Decoto Road/Perry Road	Union City	Union City
7	Decoto Road/Paseo Padre Parkway	Fremont	Fremont
8	Decoto Road/Brookmill Drive	Fremont	Fremont
9	Decoto Road/Fremont Boulevard	Fremont	Fremont
10	Decoto Road/Ozark River Way	Fremont	Fremont
11	Decoto Road/Canal Terrace-Cabrillo Drive	Fremont	Fremont
12	Decoto Road/I-880 northbound ramps	Fremont	Caltrans
13	Decoto Road/I-880 southbound ramps	Fremont	Caltrans

[1] Please note that Figure 3.12-1 is the same as that included in Section 3.12 of the EIR for the proposed project. Though the image in Figure 3.12-1 as included in this Appendix E section shows the entire proposed project alignment, this is not meant to imply that Alternative 1 is proposing the entire proposed project alignment.



Source: TY Lin International 2008.

00703.07 NOP (5-08)

ICF Jones & Stokes
an ICF International Company

Figure 3.12-1
Traffic Analysis Intersections
ACTA East-West Connector Project, Alternative 1

Intersection		Location	Jurisdiction
14	Mission Boulevard/Appian Way-7th Street	Union City	Union City
15	Alvarado-Niles Road/Mann Avenue-Union Square	Union City	Union City
16	Paseo Padre Parkway/Wyndham Drive	Fremont	Fremont
17	Paseo Padre Parkway/Tamayo Street	Fremont	Fremont
18	Paseo Padre Parkway/Isherwood Way	Fremont	Fremont
19	Paseo Padre Parkway/Thornton Avenue	Fremont	Fremont
20	Paseo Padre Parkway/Peralta Boulevard	Fremont	Fremont
21	Fremont Boulevard/I-880 southbound ramps-Deep Creek Road	Fremont	Caltrans
22	Fremont Boulevard/I-880 northbound ramps	Fremont	Caltrans
23	Fremont Boulevard/Paseo Padre Parkway	Fremont	Fremont
24	Thornton Avenue/I-880 southbound ramps	Fremont	Caltrans
25	Thornton Avenue/I-880 northbound ramps	Fremont	Caltrans
26	Thornton Avenue/I-880 northbound ramp-Blacow Road	Fremont	Caltrans
27	Thornton Avenue/Fremont Boulevard	Fremont	Fremont
28	Niles Boulevard/Nursery Avenue	Fremont	Fremont
29	Niles Boulevard/Linda Drive	Fremont	Fremont
30	Mission Boulevard/Nursery Avenue	Fremont	Fremont
31	Mission Boulevard/Niles Canyon Road-Niles Boulevard	Fremont	Fremont
New Intersections Under Alternative 1			
32	New Roadway/7th Street	Union City	Union City
33	New Roadway/11th Street	Union City	Union City
34	New Roadway/Alvarado-Niles Road	Union City	Union City

Note: Intersection locations are shown in Figure 3.12-1.

Existing Conditions

This section presents the existing transportation facilities, services, and operating conditions within the transportation study area.

State Highways

The following freeways provide regional access to the Alternative 1 alignment.

- I-880 connects Fremont to much of the rest of the East Bay, extending from Oakland to San Jose. It extends generally northwest-southeast, through the western portion of the project area.
- I-680 connects Fremont to the Livermore/Amador Valley and then to Contra Costa County, the Central Valley and Sacramento. It extends generally north-south to the east of the project area.
- The SR 84 freeway extends from I-880 west to the Fremont border and the Dumbarton Bridge leading to San Mateo and Santa Clara Counties.

In addition, the following State Routes function as arterial roadways in the project area.

- SR 84 extends to the south from I-880, through the southern portion of the project area. From the east this route connects the Livermore Valley through Niles Canyon, proceeds west on Mowry to Peralta, follows Peralta to Fremont Boulevard, connects to Thornton, and proceeds west to I-880.
- SR 238 follows Mission Boulevard between Hayward to the north and I-680 to the south.

The Average Annual Daily Traffic (AADT) for the state highways within the project area is summarized in Table 3.12-2.

Table 3.12-2. State Highway Average Annual Daily Traffic (2007)

State Highway	Location	AADT
I-880	Mowry Avenue	188,000
	Decoto Road	205,000
	Fremont Boulevard	201,000
I-680	SR 238 interchange	142,000
SR 238	Nursery Avenue	24,800
	Decoto Road	30,000
SR 84	I-880 interchange	74,000
	Fremont Boulevard/Peralta Boulevard	25,000
	SR 238	21,500

Source: California Department of Transportation 2008.

Local Roadways

Table 3.12-3 summarizes the existing operating conditions of the 31 analysis intersections, as measured by level of service (LOS), and based on traffic counts that were collected in November 2007. LOS is the primary measurement used to determine the operating quality of a roadway segment or intersection. In general, LOS is measured by the ratio of traffic volume to capacity (V/C) or by the average delay experienced by vehicles on the facility. The quality of traffic operation is graded into one of six LOS designations, A, B, C, D, E, or F. LOS A represents the best range of operating conditions and LOS F represents the worst. LOS is discussed in more detail later in this chapter, under Methodology.

Table 3.12-3. Existing Intersection Level of Service

	Intersection	Location	Traffic Control	Peak Hour	LOS[1]	Average Delay (sec/veh)[1]
1	Decoto Road/ Mission Boulevard	Union City	Signal	AM	C	23
				PM	C	32
2	Decoto Road/ 7th Street	Union City	Signal	AM	C	33
				PM	C	31
3	Decoto Road/ 11th Street	Union City	Signal	AM	D	38
				PM	D	49
4	Decoto Road/ Union Square	Union City	Signal	AM	D	36
				PM	D	44
5	Decoto Road/ Alvarado-Niles Road	Union City	Signal	AM	**F**	**157**
				PM	**F**	**179**
6	6. Decoto Road/ Perry Road	Union City	Signal	AM	C	26
				PM	C	33
7	Decoto Road/ Paseo Padre Parkway	Fremont	Signal	AM	D	55
				PM	**E**	**61**
8	Decoto Road/ Brookmill Drive	Fremont	Westbound Stop-control	AM	**F**	**226**
				PM	**F**	**791**
9	Decoto Road/ Fremont Boulevard	Fremont	Signal	AM	**E**	**80**
				PM	**E**	**59**
10	Decoto Road/ Ozark River Way	Fremont	Signal	AM	A	7
				PM	A	8
11	Decoto Road/ Canal Terrace-Cabrillo Drive	Fremont	Signal	AM	C	23
				PM	B	19
12	Decoto Road/ I-880 northbound ramps	Fremont	Signal	AM	D	44
				PM	**F**	**86**
13	Decoto Road/ I-880 southbound ramps	Fremont	Signal	AM	A	5
				PM	**E**	**68**

	Intersection	Location	Traffic Control	Peak Hour	LOS[1]	Average Delay (sec/veh)[1]
14	Mission Boulevard/ Appian Way-7th Street	Union City	Signal	AM	C	25
				PM	C	23
15	Alvarado-Niles Road/ Mann Avenue-Union Square	Union City	Signal	AM	C	23
				PM	C	25
16	Paseo Padre Parkway/ Wyndham Drive	Fremont	Northbound/ Southbound Stop-control	AM	**F**	**238**
				PM	**F**	**226**
17	Paseo Padre Parkway/ Tamayo Street	Fremont	Northbound Stop-control	AM	**F**	**61**
				PM	**F**	**52**
18	Paseo Padre Parkway/ Isherwood Way	Fremont	Signal	AM	B	19
				PM	B	20
19	Paseo Padre Parkway/ Thornton Avenue	Fremont	Signal	AM	C	25
				PM	C	26
20	Paseo Padre Parkway/ Peralta Boulevard	Fremont	Signal	AM	D	40
				PM	**E**	**61**
21	Fremont Boulevard/ I-880 southbound ramps-Deep Creek Road	Fremont	Signal	AM	C	33
				PM	C	25
22	Fremont Boulevard/ I-880 northbound ramps	Fremont	Signal	AM	B	14
				PM	B	15
23	Fremont Boulevard/ Paseo Padre Parkway	Fremont	Signal	AM	C	31
				PM	C	31
24	Thornton Avenue/ I-880 southbound ramps	Fremont	Signal	AM	A	8
				PM	B	15
25	Thornton Avenue/ I-880 northbound ramps	Fremont	Signal	AM	A	6
				PM	B	12
26	Thornton Avenue/ I-880 northbound ramp-Blacow Road	Fremont	Signal	AM	B	18
				PM	C	27
27	Thornton Avenue/ Fremont Boulevard	Fremont	Signal	AM	C	30
				PM	C	32
28	Niles Boulevard/ Nursery Avenue	Fremont	Signal	AM	C	27
				PM	B	15
29	Niles Boulevard/ Linda Drive	Fremont	Southbound Stop-control	AM	C	20
				PM	C	21
30	Mission Boulevard/ Nursery Avenue	Fremont	Signal	AM	C	30
				PM	C	32
31	Mission Boulevard/Niles Canyon Road-Niles Boulevard	Fremont	Signal	AM	D	54
				PM	D	49

[1] At signalized intersections, LOS and average delay reflect the average of all vehicles that move through the intersection. At stop-controlled intersections, LOS average delay reflects the average of all vehicles on the stop-controlled leg(s) of the intersection. LOS that exceeds the threshold of LOS D is **shaded**.

Local agencies adopt LOS thresholds that define the level of congestion considered acceptable for roadways under each of their respective jurisdictions. The following LOS thresholds have been adopted by Fremont and Union City.

- Fremont seeks to maintain LOS D or better at major intersections, except where the achievement of such an LOS is demonstrated to conflict with environmental, historic, or aesthetic objectives; where regional traffic is a significant cause of congestion; or where substantial transportation improvements have been required and further mitigation is not feasible because of identified constraints (City of Fremont 1991).
- Union City seeks to maintain LOS D at all signalized intersections on arterial and collector streets, with the exception of intersections along I-880, Mission Boulevard, Decoto Road, and the proposed SR 84/Decoto Road corridor (City of Union City 2002).

Based on these guidelines, LOS D was defined as the acceptable threshold for all analysis intersections. In Table 3.12-3, intersections currently operating below the LOS D threshold are shaded.

The table shows that under existing conditions, the following nine intersections are operating at LOS E or LOS F during one or both of the analysis peak hours.

- (5) Decoto Road/Alvarado-Niles Road (LOS F in AM and PM peaks)
- (7) Decoto Road/Paseo Padre Parkway (LOS E in PM peak)
- (8) Decoto Road/Brookmill Drive (LOS F in AM and PM peaks)
- (9) Decoto Road/Fremont Boulevard (LOS E in AM and PM peaks)
- (12) Decoto Road/I-880 northbound ramps (LOS F in PM peak)
- (13) Decoto Road/I-880 southbound ramps (LOS E in PM peak)
- (16) Paseo Padre Parkway/Wyndham Drive (LOS F in AM and PM peaks)
- (17) Paseo Padre Parkway/Tamayo Street (LOS F in AM and PM peaks)
- (20) Paseo Padre Parkway/Peralta Boulevard (LOS E in PM peak)

The intersection of Decoto Road/Alvarado-Niles Road is located in Union City; and since it is located along the Decoto Road corridor, is exempt by policy from the LOS D threshold. The remaining eight intersections currently operating at LOS E or LOS F are located in Fremont.

Transit

The cities of Fremont and Union City are served by several transit systems, described in the following sections.

Bay Area Rapid Transit District

Bay Area Rapid Transit (BART) provides intra-regional commuter rail service connecting Fremont and Union City to the rest of Alameda County, Contra Costa County, and San Francisco. Union City and Fremont each have a BART station located within their boundaries, and are served by the orange line (Fremont–Richmond) and the green line (Fremont–Daly City). The Union City Station is located in the northwest portion of the study area, at 10 Union Square, just east of Decoto Road. The Fremont Station is located in the northeast portion of the study area, at 2000 BART Way, northeast of the intersection of Peralta Boulevard/Mowry Avenue/Paseo Padre Parkway (Bay Area Rapid Transit District 2008). The Alternative 1 alignment would cross two sets of BART tracks at the east end (Figure 2-1 in Chapter 2 of Appendix E).

Alameda Contra Costa Transit

Alameda Contra Costa Transit (AC Transit) provides regional and local bus service for Fremont and regional bus service for Union City. Numerous AC Transit routes run throughout both cities, with each BART station also serving as major AC Transit hub. AC Transit routes run on most major roadways in the study area, including Decoto Road, Thornton Avenue, Peralta Boulevard/Mowry Avenue, Mission Boulevard, Paseo Padre Parkway, and Fremont Boulevard (Alameda Contra Costa Transit 2008).

Santa Clara Valley Transportation Authority

Santa Clara Valley Transportation Authority (VTA) also provides transit service in both cities. Four VTA routes serve Fremont, but they all run outside the study area, between the Fremont BART Station and destinations to the east and the south. The VTA's Dumbarton Express (SR 971) serves Union City, providing connection between the Union City BART Station and Palo Alto. This route extends through the study area along Decoto Road (Santa Clara Valley Transportation Authority 2008).

Union City Transit

Union City also has a citywide bus system, called Union City Transit. The Union City BART station serves as a hub for five Union City Transit routes that run along roadways within the study area. The Union City Transit routes run on Decoto Road, Mission Boulevard, 7th Street, and Alvarado-Niles Road, in the Union City portion of the study area (City of Union City 2008).

Paratransit

Several paratransit providers operate in the study area. Service is offered to senior and disabled riders who are unable to use fixed-route transit services.

Paratransit provides curb-to-curb transportation services to those residents who qualify. Union City Paratransit serves Union City with limited service to areas of adjacent cities. East Bay Paratransit provides regional service. Both Union City Paratransit and East Bay Paratransit provide service that meets the requirements of the Americans with Disabilities Act (ADA). The City of Fremont also operates a local non-ADA compliant paratransit program. (City of Fremont 2008a; Lee pers.comm.)

Bicycle and Pedestrian Traffic

Bicycle and pedestrian facilities present along the Alternative 1 alignment are limited.

Rail

In addition to the BART tracks, there are two railroad corridors within the transportation study area—one set of Union Pacific Railroad (UPRR) Oakland Subdivision tracks and one set of UPRR Niles Subdivision tracks (Figure 2-1 in Chapter 2 of Appendix E). Local freight and passenger trains operate on the UPRR Oakland Subdivision line. Regional and local freight and passenger rail operate on the UPRR Niles Subdivision line. Freight trains are operated by UPRR, and passenger trains by Amtrak. Amtrak operates two intercity rail services along the line—the Coast Starlight, travelling between Seattle and Los Angeles, and the Capitol Corridor, travelling between Sacramento and San Jose. There is a plan to construct an intermodal station in Union City adjacent the BART Station to provide connections to Amtrak, the Altamont Commuter Express, and the planned Dumbarton Rail, which would provide service to the Peninsula and connect to the Caltrain system.

Airports

~~Two~~ Three commercial general aviation airports are located within 20 miles of the Alternative 1 alignment, ~~one~~ in Hayward, Livermore, and ~~the other in~~ San Jose. A fourth airport, the Moffett Federal Airfield, is in Mountain View. The nearest major commercial aviation facilities are located about 20 miles south in San Jose and 25 miles north in Oakland. The Oakland Airport is also served with a shuttle from the nearest BART station (City of Fremont 1991).

Regulatory Setting

Traffic analysis in the State of California is guided by policies and standards set at the state level by Caltrans and by local jurisdictions. Since Alternative 1 is located in the City of Union City, the proposed road would be governed by the adopted transportation policies of Union City. Other roadways in the transportation study area are located within the City of Fremont, and are governed by Fremont policies, as listed below.

City of Fremont General Plan

The City of Fremont General Plan (City of Fremont 1991) includes the following relevant polices for resources related to transportation.

Goal T 1: Efficient use of roadway system to provide convenient travel, reduce congestion, and improve air quality.

- **Objective T 1.1**: Completion and maintenance of the designated road network.
    - **Policy T 1.1.3**: Maintain roadways in good condition.
    - **Implementation 4**: Preserve a transportation corridor under study from I-880 and Decoto Road to Mission Boulevard to meet the future transportation needs of Fremont residents.
- **Objective T 1.2**: Smooth traffic flow on most arterials and collectors.
    - **Policy T 1.2.1**: Maintain a Level of Service "D," with a target Volume to Capacity ratio of .85 at major intersections, except where the achievement of such a level of service can be demonstrated to conflict with environmental, historic or aesthetic objectives or where regional traffic is a significant cause of congestion or where substantial transportation improvements have been required and further mitigation is not feasible because of identified constraints. Level of Service "D" may not be achieved within the Central Business District and the Industrial Planning Area.
    - **Implementation 1**: Identify intersections where a LOS below standard may be permissible and show them on the Circulation Diagram.
    - **Implementation 2**: Identify intersections where regional or inter-city traffic does not permit the City to adhere to the Level of Service standard.
- **Objective T 1.5**: Participation in efforts to reduce regional traffic congestion
    - **Policy T 1.5.1**: Coordinate local transportation planning with regional and other local plans.
    - **Policy T 1.5.2**: Work with other jurisdictions to develop solutions to regional congestion.

City of Union City General Plan

The City of Union City 2002 General Plan (City of Union City 2002) includes the following relevant polices for resources related to transportation.

Goal TR-A.1: To establish a safe, convenient, and efficient roadway system that minimizes peak hour traffic congestion.

- **Policy TR-A.1.2**: The City shall monitor traffic flow problems and shall, to the extent feasible, improve capacity through improvements such as traffic signals, intersection widening, lane configurations, and basic traffic controls.
- **Policy TR-A 1.3**: The City shall continue to implement its policy that traffic LOS will not fail to meet mid-range LOS D at all signalized intersections on arterial and collector streets, with the exception of intersections on major regional routes, including I-880, Mission Boulevard (SR 238) and the SR 84/Decoto Road corridor.
- **Policy TR-A.1.9**: The City shall support the timely construction of the SR 84 extension as a partially depressed and at-grade parkway through the Station District to Mission Boulevard in order to resolve current circulation deficiencies, improve the area's regional access and visibility, and stimulate the market for region-serving retail, light industrial/service commercial, and office uses.
- **Policy TR-A.1.10**: The City shall ensure that the design of SR 84, 7th Street, and 11th Street is completed in such a manner that the industrial uses in the Station District can gain direct access to the facility with minimum disturbance to other uses in the area.
- **Policy TR-A.1.11**: The City shall develop contingency plans for early development of an east-west link through the Station District should the SR 84 construction be delayed.
- **Policy TR-A.1.14**: The City shall allow for gaps in the medians to provide safe street crossings to access transit stops when determined safe by the City Engineer.
- **Policy TR-A.1.15**: All new traffic signals should be equipped with audible signal devices, traffic signal timing and coordination, and signal emergency vehicle preemption. The City shall investigate new technologies which will improve movement of pedestrians, bicyclists, public transit and emergency vehicles.

Goal TR-A.2: To keep the transportation system in balance with the land uses in Union City.

- **Policy TR-A.2.1**: The City shall work with the City of Fremont, Caltrans, and the ACTA to complete the SR 84 extension between I-880 and Mission Boulevard.

Goal TR-A.3: To protect neighborhood integrity and livability and improve safety by minimizing through traffic in residential neighborhoods.

Goal TR-B.1: To provide an efficient, convenient public transportation system for residents and workers in Union City.

- **Policy TR-B.2.13**: The City shall ensure that the design of 11th Street and the proposed SR 84 extension support the land uses in the Station District.

Goal TR-C.1: To create an institutional framework that supports bicycle and pedestrian travel through policy development, city staff and committee actions, and capital project implementation.

- **Policy TR-C.1.1**: The City shall consider the needs of bicyclists and pedestrians in all future road construction or widening projects and development projects (reference policies CD-A.1.2, LU-A.6.4).
- **Policy TR-C.1.5**: The City shall develop bicycle and pedestrian design guidelines to be used in the development of all new bicycle and pedestrian facilities.

Goal TR-C.2: To develop a comprehensive signed bicycle route network composed of Class I (paved off-street paths and multi-use trails), Class II (bicycle lanes), and Class III (shared-use roadways) facilities connecting all of Union City's neighborhoods and adjacent communities.

- **Policy TR-C.2.3**: The City shall integrate, wherever possible, its planned bicycle route network with the Alameda Countywide Bicycle network and existing bicycle facilities in Fremont and Hayward.
- **Policy TR-C.2.9**: The City shall encourage the development of easily accessible and safe bike paths along the SR 84 extension.

Goal TR-C.4: To create a continuous pedestrian network that meets Americans with Disabilities Act (ADA) standards and allows pedestrians to safely and conveniently access parks and open space areas, transit centers, schools, shopping areas, public facilities, major employment centers, and other significant destinations.

- **Policy TR-C.4.1**: The City shall examine all signalized intersections and prioritize improvements at these locations, including crosswalk striping, pedestrian actuation, pedestrian countdown signals, signal re-timing, and audible pedestrian signals.

3.12.3 Impact Analysis

This section describes the impact analysis relating to transportation and traffic for Alternative 1. It describes the methods used to determine the impacts of Alternative 1 and lists the thresholds used to identify whether or not an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are identified where they are feasible. Significant and unavoidable impacts, for which mitigation is not feasible, are also identified.

Methodology

This section summarizes the methodologies that were applied to assess the potential construction and operational impacts of Alternative 1.

Construction Impacts

Construction impacts are those that would occur in the course of project construction. Potential construction impacts to roadway, rail, or non-motorized safety and operations were qualitatively assessed. An impact was identified if construction of the project would result in a short-term, temporary increase in construction-related truck and auto traffic, decreases in roadway capacity, potential safety hazards, or disruption of travel for vehicular, rail, or non-motorized travelers.

Operational Impacts

Operational impacts are those that would occur after project construction is completed, which are attributed to the actual operations of the completed project. Potential operation impacts were considered for roadways, transit, bicycle travel, pedestrian travel, and air travel.

Roadway Operations

In order to assess operational impacts on roadway operations, travel patterns that would occur with and without Alternative 1 were evaluated using the procedures described in the following sections.

Travel Demand Forecasting

The Alameda Countywide Travel Demand Model (model), developed by the Alameda County Congestion Management Agency, was used to develop the future traffic volume forecasts. The model uses the 2005 Association of Bay Area Government's projections of land use and sociodemographic data for horizon years 2005, 2015, and 2035. The model forecasts daily traffic volumes, divided into AM peak hour, PM peak hour, PM peak 2-hour, and PM peak 4-hour volumes. The methodology applied for travel demand forecasting is described in detail in the technical memorandum for the East-West Connector Project , I-880–SR 238 East-West Connector Traffic Forecasts (Dowling Associates 2008b) (Appendix Q). A draft memorandum that identified the proposed forecasting methodology was issued on August 30, 2007. The project team met with staff from Fremont and Union City on September 19, 2007, to discuss the approach and study area limits. A final memorandum identifying the agreed-upon forecasting methodology, project area, and the specific study intersections was issued on November 16, 2007 (Dowling Associates 2008b). On November 19, 2008, a Supplemental Technical Memorandum for: I-880 – SR238 East-West Connector Traffic Forecasts – Truncated Alternative was prepared to discuss the traffic forecasting methodology and results for Alternative 1 (refer to Appendix Q of the Draft EIR). The primary elements of the forecasting process are described below.

Localized Validation

Localized validation consists of refining the broader regional model to reflect conditions on the existing roadways in the project area. This step is usually implemented for project-specific forecasting efforts because regional models generally focus on major facilities such as freeways and expressways; and less attention is given to forecasts for arterials and local streets. The roadway network and regional land use were adjusted to reflect 2007 conditions, to match the year the traffic counts were conducted. The model was then run, and the model output volumes on the project area roadways were compared to the traffic counts on those roadways. Where significant differences were identified between model volumes and traffic counts, adjustments were made to one or more of the model network inputs. The adjusted model was run again, and new volumes were compared to the traffic counts. The process was repeated until the model volumes matched traffic counts within established targets.

Traffic Forecasts

Once the model was validated against existing conditions, it could be used to forecast traffic under future scenarios. The future no project model was developed by inputting the added regional development projected to occur by each of the future analysis years (2015 when project construction is expected to be complete and 2035 based on industry standard of projecting 20-25 years out). For the modeled roadway network, future planned roadway improvement projects (verified by the project team with staff of Caltrans and the Cities of Fremont and Union City staff) were also assumed to be in place, including the Route 84 (historic parkway) project. The proposed Route 84 project was not included in this scenario. Thus, the traffic volumes forecasted under the future no project scenarios reflect conditions that include future growth in regional development and future planned roadway projects that are independent of Alternative 1.

The future Alternative 1 model was developed by adding the Alternative 1 traffic to the no project roadway network. Thus, the traffic volumes forecasted under Alternative 1 scenarios also reflect conditions that include future regional growth, but with Alternative 1 in place.

Intersection Volumes

The future model volumes (2015 and 2035) were compared to 2007 model volumes, to establish a growth rate from 2007 to the analysis year at each intersection. The growth factor was then applied to the 2007 traffic counts, to project future year turning movement volumes at each analysis intersection.

Transportation Measures of Effectiveness

The output of the travel demand forecasting process includes projections of traffic volumes on roadways and through intersections, as well as projections of the average travel times and typical delay experienced by vehicles traveling on those facilities. This output can be used to develop measures of effectiveness at either system-wide or location-specific levels. Common system-wide measures of effectiveness include the following (Yee pers. comm.).

- **Travel time—**Travel time is the time it would take to travel from a pre-determined origin to a pre-determined destination in and around a specified area. Average speed is an inverse measure of effectiveness to travel time. The higher the average system-wide speeds, the lower the average travel times. However, travel time is not a guideline included as Goals in the transportation elements of the General Plans of the two cities.
- **Duration of peak congestion hours—**Duration of peak congestion hours are the length of time of the morning peak hour and the evening peak hour during which traffic is delayed due to a lack of capacity in the transportation system. However, change in peak congestion hours is not a guideline included as Goals in the transportation elements of the General Plans of the two cities.
- **Daily (or annual) congestion delay hours—**The delay hours are time lost due to traffic congestion. Delay can contribute to air quality degradation and loss of productivity. In 2007, the Metropolitan Transportation Commission determined that the cost of each hour of recurring delay as $19.10 per vehicle or $31.26 per truck. However, change in daily (or annual) congestion delay hours is not a guideline included as Goals in the transportation elements of the General Plans of the two cities.
- **Level of Service—**At the location-specific level, LOS is the most commonly used measure of effectiveness (introduced in the Setting section of this chapter, and described in more detail in the following section). Most local jurisdictions, including the Cities of Union City and Fremont, measure roadway operations according to the LOS of individual intersections. As discussed earlier in this chapter, the acceptable level of operations is defined by LOS thresholds that are defined in the cities' General Plan policies.

It should be noted that LOS determination provides an assessment of traffic operations at a localized level but does not necessarily convey a complete picture of system-wide operations. For example, an individual driver may experience a higher level of delay at an individual intersection, but could still experience an overall decrease in travel time for the overall trip. Likewise, while an individual driver may experience a higher level of delay at an individual intersection, there could still be an overall reduction in overall congestion delay at a project area.

Because Alternative 1 affects a large geographical area, analysis included assessment of both localized LOS at intersections and system-wide measures such as travel times and cumulative delay. Together, these measures provide a more complete picture of the overall effect of Alternative 1, and can be collectively considered in overall decisions made with respect to Alternative 1.

Level of Service

As discussed in the previous section, potential intersection impacts were assessed by performing intersection LOS analysis, based on the forecasted 2015 and 2035 intersection traffic volumes under the no project and Alternative 1 scenarios. LOS on transportation facilities is analyzed and measured according to procedures provided in the Highway Capacity Manual (Transportation Research Board 2000). The quality of traffic operation is graded into one of six LOS designations, A, B, C, D, E, or F. LOS A and B represent the best traffic operation. LOS C and D represent intermediate operation, and LOS E represents traffic that is at or approaching capacity. LOS F generally describes congested operations that occur when the volume of traffic arriving at a point is greater than the facility's capacity. In general, intersection LOS is measured by the average delay experienced by vehicles that travel through it. The procedures applied to signalized and stop-controlled intersections are described as follows.

Signalized Intersections

For signalized intersections, LOS is measured by the average delay (seconds per vehicle) experienced by vehicles that travel through the intersection, with LOS designation based upon the delay. Table 3.12-4 summarizes LOS descriptions and thresholds for signalized intersections.

Table 3.12-4. Level of Service Thresholds at Signalized Intersections

LOS	Average Delay (seconds/vehicle)	Description
A	≤ 10	**Very Low Delay:** This LOS occurs when progression is extremely favorable and most vehicles arrive during a green phase. Most vehicles do not stop at all.
B	> 10 and ≤ 20	**Minimal Delay:** This LOS generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay.
C	> 20 and ≤ 35	**Acceptable Delay:** Delay increases due to only fair progression, longer cycle lengths, or both. Individual cycle failures (to service all waiting vehicles) may begin to appear at this LOS. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	> 35 and ≤ 55	**Approaching Unstable Operation/Significant Delay:** The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55 and ≤ 80	**Unstable Operation/Substantial Delay:** These high delay values generally indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	> 80	**Excessive Delay:** This LOS, considered unacceptable to most drivers, often occurs with over-saturation (when arrival traffic volumes exceed the capacity of the intersection). It may also occur at nearly saturated conditions with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

Source: Transportation Research Board 2000.

Stop-Controlled Intersections

For stop-controlled intersections, the LOS is measured by the average delay experienced by vehicles on the stop-controlled approaches. This methodology determines LOS by calculating an average total delay per vehicle for each stop-controlled movement. An LOS designation is assigned based upon the average control delay of all stop-controlled movements. Table 3.12-5 summarizes LOS thresholds for stop-controlled intersections.

Table 3.12-5. Level of Service Thresholds at Stop-Controlled Intersections

LOS	Average Delay (seconds/vehicle)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Source: Transportation Research Board 2000.

Transit Operations

The effect of Alternative 1 on transit operations was qualitatively evaluated. Elements considered were the potential of construction or operations of Alternative 1 to interfere with accessibility to transit, or to decrease safety or impede mobility of transit operations, as compared to no project conditions.

Non-Motorized Operations

The effect of Alternative 1 on bicycle and pedestrian operations was qualitatively evaluated. Elements considered were the potential of Alternative 1 construction or operations to decrease safety or impede mobility of pedestrian or bicycle operations, or to create gaps in the non-motorized transportation system, as compared to no project conditions.

Significance Criteria

According to State CEQA Guidelines Appendix G (14 CCR 15000 *et seq*.), a project could result in a significant impact if it would:

- cause an increase in traffic that is substantial in relation to the existing traffic volumes and capacity of the roadway system (e.g., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);
- fail to meet, either individually or cumulatively, a LOS standard established by local jurisdictions for designated roadways or highways (as described

under the Regulatory Setting section, a standard of LOS D has been established by both Fremont and Union City);

- result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- result in inadequate emergency access;
- result in inadequate parking capacity; or
- conflict with adopted policies supporting alternative transportation.

For the purposes of this analysis, traffic increases (as presented under the first two bullets above) are considered significant if they result in violation of the local jurisdiction's adopted LOS standard. As stated in their respective adopted policies, both Union City and Fremont have identified LOS D as the desirable level of operations. In coordination with the local jurisdictions, it was determined that traffic increases would be considered significant if:

- traffic operations are LOS D or better under the no project scenario, and analysis shows that Alternative 1 would cause operations to reduce to LOS E or LOS F; or
- traffic operations are LOS E or F under the no project scenario, and analysis shows that Alternative 1 would cause a further increase in average delay greater than 4 seconds (Odumade pers. comm.; Malloy pers. comm.).

As stated in Policy TR-A 1.3 of the Union City General Plan (see Regulatory Setting) , the new roadway in Union City (Alvarado-Niles Road to Mission Boulevard) is exempt from this standard (City of Union City 2002).

Section 15126 of the CEQA Guidelines provides that the environmental setting, which consists of existing physical conditions (at the time the notice of preparation [NOP] to prepare an EIR is distributed), will normally be the baseline by which a lead agency determines whether impacts are significant. When the project being analyzed is a transportation project that would not be constructed and operational for several years into the future, it is common professional practice for traffic, air quality, and noise analyses to use future conditions without the project as the baseline to compare future conditions with the project. It is also important to analyze future cumulative traffic conditions, because it takes into account future regional traffic growth that is expected to occur regardless of whether or not the project is built. If this future cumulative traffic were not included, potential future traffic impacts would be underestimated. However, under future cumulative conditions, it is also important to differentiate the impacts that would result from regional background growth and the impacts that would directly result from the project. In order to characterize the direct impact of the project and to remove the effect of background growth from the direct impact assessment, changes in transportation are evaluated by comparing future conditions with Alternative 1 in place to future conditions expected without Alternative 1 in place, using the same future years. For this analysis of

Alternative 1, the future years used are 2015 when project construction is expected to be complete and 2035 based on the industry standard of projecting 20 to 25 years out.

Project Impacts and Mitigation Measures

Construction Impacts

Impact TRA-1: Temporary Increase in Construction-Related Truck and Auto Traffic, Decrease in Roadway Capacity, and Disruption Of Vehicular And Non-Motorized Travel During Construction (Less than Significant with Mitigation)

Demolition and construction activities associated with various elements of Alternative 1 would generate truck and other vehicular traffic from construction worker commutes, transport and staging of construction equipment, transport of construction materials to the construction site, and hauling materials away from the site. The exact locations and extents of construction impacts will not be known until detailed construction timing and phasing plans are developed, but, because no construction is planned within Fremont, it is anticipated that these construction impacts would mainly be limited to roadways within the jurisdiction of Union City. However, certain impacts associated with regional construction access and maintenance of adequate emergency access could apply to facilities of both cities. Potential construction impacts on roadway operations include the following.

- A temporary increase in traffic associated with construction worker commutes, delivery of construction materials, hauling of demolished and/or excavated materials, and general deliveries would increase travel demand on roadways.
- Temporary roadway lanes closures or narrowings in areas directly abutting construction activities would reduce capacity of roadways.
- Temporary roadway closures associated with the construction of transportation infrastructure and the Line M Channel diversion pipeline would reduce the capacity of the roadway system, and/or require detours that increase travel times.
- Temporary lane or road closures could require route detours or reduced service for transit routes that run adjacent to project elements that are under construction.
- During project construction, parking demand would increase from construction workers and from construction equipment that is not in use. In addition, parking spaces located adjacent to construction activities could be temporarily closed.

- Temporary sidewalk, lane, or road closures could occur adjacent to project elements that are under construction, which could interfere with bicycle or pedestrian circulation in the project vicinity.
- Heavy and slow-moving construction vehicles would mix with general-purpose vehicular and non-motorized traffic in the area.

Construction of Alternative 1 would result in a temporary increase in traffic volumes and a decrease in roadway capacity as a result of temporary lane closures. The following impacts could result from Alternative 1.

- Reduced roadway capacity and an increase in construction-related congestion could result in temporary localized increases in traffic congestion that fail to meet LOS standards.
- Construction activities could disrupt transit service in the project vicinity. Impacts may include temporary route detours, reduced or no service to certain destinations, or service delays.
- Construction activities would increase parking demand in the project vicinity and could result in parking demand exceeding the available supply.
- Construction activities would disrupt pedestrian and bicycle travel. Impacts include temporary sidewalk, trail, or roadway closures that would create gaps in pedestrian or bicycle routes and interfere with safe travel.
- Construction activities would increase the mix of heavy construction vehicles with general purpose traffic. Impacts include increase in safety hazards due to a higher proportion of heavy trucks.

This impact is considered significant. The following mitigation measure would reduce this impact to a less than significant level.

Mitigation Measure TRA-1: Develop and Implement a Traffic Control Plan for Project Construction

In accordance with the City of Union City policies on street closures and traffic diversion for arterial and collector roadways, the construction contractor will prepare a traffic control plan (to be approved by the City engineers) before construction. The traffic control plan will include:

- a street layout showing the location of construction activity and surrounding streets to be used as detour routes, including special signage;
- a tentative start date and construction duration period for each phase of construction;
- the name, address, and emergency contact number for those responsible for maintaining the traffic control devices during the course of construction; and
- written approval to implement traffic control from other agencies, as needed.

Additionally, the traffic control plan will address the following stipulations required of Alternative 1.

- Provide access for emergency vehicles at all times.
- Avoid creating additional delay at intersections currently operating at or approaching congested conditions, either by choosing routes that avoid these locations, or restricting construction-related trips to and from the site to ~~constructing during~~ nonpeak times of day.
- Maintain access for driveways and private roads, except for brief periods of construction, in which case property owners will be notified.
- Provide adequate off-street parking areas at designated staging areas for construction-related vehicles.
- Maintain pedestrian and bicycle access and circulation during Alternative 1 construction where safe to do so. If construction encroaches on a sidewalk or recreation trail, a safe detour will be provided for pedestrians at the nearest crosswalk. If construction encroaches on a bike lane, warning signs will be posted that indicate bicycles and vehicles are sharing the roadway.
- Provide detours as necessary throughout project construction to maintain safe access to the Quarry Lakes Regional Recreation Area.
- Control traffic with flag persons wearing Occupational Safety and Health Administration–approved vests and using a Stop/Slow paddle to warn motorists of construction activity.
- Maintain access to transit services and ensure that public transit vehicles are detoured.
- Post standard construction warning signs in advance of the construction area and at any intersection that provides access to the construction area.
- Notify police and fire departments of both Cities of construction locations to ensure that alternative evacuation and emergency routes are designed to maintain response times during construction periods, if necessary during lane closures.
- Provide written notification to contractors regarding appropriate routes to and from construction sites, and weight and speed limits for local roads used to access construction sites. Submit a copy of all such written notifications to the City of Fremont and City of Union City planning departments.
- Repair or restore the road rights-of-way to their original condition or better upon completion of the work.

Impact TRA-2: Intermittent Interruption of Rail Service during Construction (Significant and Unavoidable)

During grade separation construction, Alternative 1 would construct temporary shooflies to allow continued transit, passenger, and freight rail operations. The transfer of rail operations to and from the temporary shooflies would have temporary impacts to UPRR or BART operations. The tie-in and transfer of rail operations for each track would require disruption of service in order to install or remove the track tie-ins at either end of the shooflies. Each set of tie-ins (both ends) would require 1 to 2 days or 24-hour construction for each set of tracks. UPRR tie-ins could be constructed with minimal impact to existing rail operations.

This impact is considered significant. The following mitigation measures would reduce this impact, but not to a less than significant level. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure TRA-2: Provide Temporary Bus Service during All Interruptions in BART Service
ACTA will coordinate with BART officials to provide bus bridges (buses to shuttle BART passengers) between the Fremont and Union City BART stations. Buses will be scheduled to coincide with the normal BART train schedule, and will be available whenever an interruption in BART service is necessary.

Mitigation Measure TRA-3: Limit Interruption of BART Service to Weekends
ACTA will ensure that interruptions of BART service are limited to the weekends. BART ridership is lower on weekends than it is on weekdays, and limiting service interruption to weekends would minimize the number of affected passengers. ACTA will coordinate with BART officials to determine the schedule for construction work and service interruption.

Mitigation Measure TRA-4: Prepare a Rider Awareness Program Addressing BART Service Interruptions
ACTA, in consultation with BART officials, will prepare a rider awareness program to notify BART passengers of the dates and times of closures and of the availability of bus service during the interruption.

Operational Impacts

2015 Operational Impacts

Impact TRA-3: Improvement in Operations at 13 Intersections and Minor Reduction in Operations at 2 Intersections under Alternative 1 Conditions Compared to No Project Conditions in 2015 (Less than Significant/Beneficial)

Table 3.12-6 summarizes the projected LOS at the analysis intersections in 2015, under no project and Alternative 1 conditions. The table shows that under 2015 no project conditions, 14 analysis intersections are projected to operate at LOS D or better, which is within both Cities’ threshold of LOS D. The other 17 analysis intersections are projected to fail to meet LOS D during one or both of the peak hours.

Under 2015 conditions, Alternative 1 is expected to improve operations at the following 13 intersections that are projected to exceed LOS D under the no project scenario.

- (2) Decoto Road/7th Street—LOS E in PM peak under no project improved to LOS D under Alternative 1 (however, Alternative 1 would result in reduction of LOS in AM peak, as described under Impact TRA-4).
- (3) Decoto Road/11th Street—LOS F in PM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 is projected to decrease average delay (however, Alternative 1 would result in reduction of LOS in AM peak, as described under Impact TRA-4).
- (4) Decoto Road/Union Square—LOS F in PM peak under no project improved to LOS D.
- (7) Decoto Road/Paseo Padre Parkway—LOS F in AM peak under no project improved to LOS E (however, Alternative 1 would result in reduction of LOS in PM peak, as described under Impact TRA-4).
- (8) Decoto Road/Brookmill Drive—LOS F in AM and PM peaks under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 is projected to decrease average delay in each peak.
- (9) Decoto Road/Fremont Boulevard—LOS E in AM peak under no project improved to LOS D (however, Alternative 1 would result in reduction of LOS in PM peak, as described under Impact TRA-4).
- (12) Decoto Road/I-880 northbound ramps—LOS E in PM peak under no project improved to LOS C.
- (13) Decoto Road/I-880 southbound ramps—LOS E in AM peak under no project improved to LOS C (however, Alternative 1 would result in reduction of LOS in PM peak, as described under Impact TRA-4).
- (16) Paseo Padre Parkway/Wyndham Drive—LOS F in PM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 is projected to decrease average delay (however, Alternative 1 would result in reduction of LOS in AM peak, as described under Impact TRA-4).
- (17) Paseo Padre Parkway/Tamayo Street—LOS F in PM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 is projected to decrease average delay (however, Alternative 1 would result in reduction of LOS in AM peak, as described under Impact TRA-4).
- (18) Paseo Padre Parkway/Isherwood Way—LOS F in PM peak under no project is expected to remain LOS F with Alternative 1 in place but Alternative 1 is projected to decrease average delay (however, Alternative 1 would result in reduction of LOS in AM peak, as described under Impact TRA-4).
- (28) Niles Boulevard/Nursery Avenue—LOS E in PM peak under no project improved to LOS D.

- (31) Mission Boulevard/Niles Canyon Road-Niles Boulevard—LOS E in AM peak under no project is expected to remain LOS E with Alternative 1 in place but Alternative 1 is projected to decrease average delay. LOS E in PM peak under no project improved to LOS D.

Although the LOS would still fail to meet locally adopted standards at some intersections listed above, the project is expected to improve operations at these locations. Therefore, this impact is considered less than significant. No mitigation is required.

In addition, under 2015 conditions Alternative 1 is expected to increase average delay by less than the 4-second threshold at the following two locations.

- (5) Decoto Road/Alvarado-Niles Road—LOS F with 231 second average delay in AM peak under no project will remain LOS F with 231 second average delay (however, the project would result in reduction of LOS in PM peak).
- (20) Paseo Padre Parkway/Peralta Boulevard— LOS E with 75 second average delay in AM peak under no project reduced to LOS E with 76 second average delay (however, the project would result in reduction of LOS in PM peak).

Although Alternative 1 is expected to reduce operations at these locations, the increase in average delay is projected to be less than the 4-second significance threshold. Therefore, this impact is considered less than significant. No mitigation is required.

Table 3.12-6. Intersection Level of Service—2015 No Project and Alternative 1

	Intersection	Location	Traffic Control	Peak Hour	LOS Stan-dard	Existing (2008) LOS[1]	Existing (2008) Average Delay	2015 No project LOS[1]	2015 No project Average Delay	2015 Alternative 1 LOS[1]	2015 Alternative 1 Average Delay	Significant Impact Identified
1	Decoto Road/ Mission Boulevard	Union City	Signal	AM	D	C	23	D	41	D	36	No
				PM	D	C	32	C	33	C	26	No
2	Decoto Road/ 7th Street	Union City	Signal	AM	D	C	33	D	39	**E**	**66**	**Yes**
				PM	D	C	31	**E**	**61**	D	50	No
3	Decoto Road/ 11th Street	Union City	Signal	AM	D	D	38	D	50	**E**	**78**	**Yes**
				PM	D	D	49	**F**	**121**	F	83	No
4	Decoto Road/ Union Square	Union City	Signal	AM	D	D	36	D	37	D	36	No
				PM	D	D	44	**F**	**80**	D	51	No
5	Decoto Road/ Alvarado-Niles Road	Union City	Signal	AM	D	**F**	**157**	**F**	**231**	F	231	No
				PM	D	**F**	**179**	**F**	**200**	**F**	**249**	**Yes**
6	Decoto Road/ Perry Road	Union City	Signal	AM	D	C	26	C	31	B	17	No
				PM	D	C	33	C	31	C	34	No
7	Decoto Road/ Paseo Padre Parkway	Fremont	Signal	AM	D	D	55	**F**	**86**	E	57	No
				PM	D	**E**	**61**	**E**	**60**	**E**	**68**	**Yes**
8	Decoto Road/ Brookmill Drive	Fremont	Westbound Stop-control	AM	D	**F**	**226**	**F**	**710**	F	345	No
				PM	D	**F**	**791**	**F**	**687**	F	96	No
9	Decoto Road/ Fremont Boulevard	Fremont	Signal	AM	D	**E**	**80**	**E**	**80**	D	54	No
				PM	D	**E**	**59**	**E**	**65**	**F**	**83**	**Yes**
10	Decoto Road/ Ozark River Way	Fremont	Signal	AM	D	A	7	A	9	B	11	No
				PM	D	A	8	A	8	A	8	No
11	Decoto Road/ Canal Terrace-Cabrillo Drive	Fremont	Signal	AM	D	C	23	C	32	C	29	No
				PM	D	B	19	C	21	B	18	No
12	Decoto Road/ I-880 northbound ramps	Fremont	Signal	AM	D	D	44	D	43	D	42	No
				PM	D	**F**	**86**	**E**	**60**	C	24	No

	Intersection	Location	Traffic Control	Peak Hour	LOS Standard	Existing (2008) LOS[1]	Existing (2008) Average Delay	2015 No project LOS[1]	2015 No project Average Delay	2015 Alternative 1 LOS[1]	2015 Alternative 1 Average Delay	Significant Impact Identified
13	Decoto Road/ I-880 southbound ramps	Fremont	Signal	AM	D	A	5	**E**	**69**	C	31	No
				PM	D	**E**	**68**	**E**	**65**	**F**	**104**	**Yes**
14	Mission Boulevard/ Appian Way-7th Street	Union City	Signal	AM	D	C	25	D	36	C	31	No
				PM	D	C	23	C	26	**E**	**69**	**Yes**
15	Alvarado-Niles Road/ Mann Avenue-Union Square	Union City	Signal	AM	D	C	23	D	39	C	33	No
				PM	D	C	25	D	38	D	37	No
16	Paseo Padre Parkway/ Wyndham Drive	Fremont	Northbound/ Southbound Stop-control	AM	D	**F**	**238**	**F**	**ECL[3]**	**F**	**ECL[3]**	**Yes**
				PM	D	**F**	**226**	**F**	**957**	F	532	No
17	Paseo Padre Parkway/ Tamayo Street	Fremont	Northbound Stop-control	AM	D	**F**	**61**	**F**	**537**	**F**	**637**	**Yes**
				PM	D	**F**	**52**	**F**	**169**	F	145	No
18	Paseo Padre Parkway/ Isherwood Way	Fremont	Signal	AM	D	B	19	**F**	**89**	**F**	**160**	**Yes**
				PM	D	B	20	**F**	**109**	F	84	No
19	Paseo Padre Parkway/ Thornton Avenue	Fremont	Signal	AM	D	C	25	**E**	**58**	**F**	**87**	**Yes**
				PM	D	C	26	C	29	C	32	No
20	Paseo Padre Parkway/ Peralta Boulevard	Fremont	Signal	AM	D	D	40	**E**	**75**	E	76	No
				PM	D	**E**	**61**	**F**	**126**	**F**	**146**	**Yes**
21	Fremont Boulevard/ I-880 southbound ramps-Deep Creek Road	Fremont	Signal	AM	D	C	33	**F**	**81**	**F**	**94**	**Yes**
				PM	D	C	25	D	37	C	24	No
22	Fremont Boulevard/ I-880 northbound ramps	Fremont	Signal	AM	D	B	14	C	20	B	19	No
				PM	D	B	15	B	17	B	17	No
23	Fremont Boulevard/ Paseo Padre Parkway	Fremont	Signal	AM	D	C	31	D	54	D	44	No
				PM	D	C	31	D	43	D	43	No
24	Thornton Avenue/ I-880 southbound ramps	Fremont	Signal	AM	D	A	8	C	21	B	20	No
				PM	D	B	15	C	23	C	26	No

	Intersection	Location	Traffic Control	Peak Hour	LOS Standard	Existing (2008)		2015 No project		2015 Alternative 1		Significant Impact Identified
						LOS[1]	Average Delay	LOS[1]	Average Delay	LOS[1]	Average Delay	
25	Thornton Avenue/ I-880 northbound ramps	Fremont	Signal	AM	D	A	6	B	10	B	10	No
				PM	D	B	12	B	15	B	17	No
26	Thornton Avenue/ I-880 northbound ramp-Blacow Road	Fremont	Signal	AM	D	B	18	D	54	**F**	**100**	**Yes**
				PM	D	C	27	D	40	**E**	**56**	**Yes**
27	Thornton Avenue/ Fremont Boulevard	Fremont	Signal	AM	D	C	30	D	37	D	35	No
				PM	D	C	32	D	45	**E**	**60**	**Yes**
28	Niles Boulevard/ Nursery Avenue	Fremont	Signal	AM	D	C	27	D	48	D	39	No
				PM	D	B	15	**E**	**72**	D	47	No
29	Niles Boulevard/ Linda Drive	Fremont	Southbound Stop-control	AM	D	C	20	C	20	C	24	No
				PM	D	C	21	C	21	D	26	No
30	Mission Boulevard/ Nursery Avenue	Fremont	Signal	AM	D	C	30	D	49	**E**	**67**	**Yes**
				PM	D	C	32	D	38	C	27	No
31	Mission Boulevard/ Niles Canyon Road-Niles Boulevard	Fremont	Signal	AM	D	D	54	**E**	**74**	E	61	No
				PM	D	D	49	**E**	**67**	D	52	No
32	New Roadway/ 7th Street	Union City	Signal	AM	D	(2)	(2)	(2)	(2)	B	16	No
				PM	D	(2)	(2)	(2)	(2)	B	16	No
33	New Roadway/ 11th Street	Union City	Signal	AM	D	(2)	(2)	(2)	(2)	A	5	No
				PM	D	(2)	(2)	(2)	(2)	A	9	No
34	New Roadway/ Alvarado-Niles Road	Union City	Signal	AM	D	(2)	(2)	(2)	(2)	B	15	No
				PM	D	(2)	(2)	(2)	(2)	B	12	No

Notes:

1 At signalized intersections, LOS and average delay reflect the average of all vehicles that move through the intersection. At stop-controlled intersections, LOS average delay reflects the average of all vehicles on the stop-controlled leg(s) of the intersection. Under the existing and no project scenarios, LOS that exceeds the threshold of LOS D is **shaded**. Under Alternative 1 scenario, LOS that exceeds the significance threshold defined (and thus reflects a significant Project impact) is **shaded.**

2 Intersection only exists under Alternative 1 scenario.

3 ECL = Exceeds calculable limits. This indicates that the estimated delay is very high and is beyond what can be calculated using standard LOS calculation methods.

Impact TRA-4: Reduction in Operations at 16 Intersections under Alternative 1 Conditions Compared to No Project Conditions in 2015 (Significant and Unavoidable)

Under 2015 conditions, Alternative 1 would further reduce operations at the following 10 locations that are projected to fail to meet LOS D under the no project scenario. This is because Alternative 1 would cause shifts in area traffic patterns that would increase traffic volumes at these locations.

- (5) Decoto Road/Alvarado-Niles Road—LOS F in PM peak under no project; Alternative 1 would further increase delay.
- (7) Decoto Road/Paseo Padre Parkway—LOS E in PM peak under no project; Alternative 1 would further increase delay but intersection would remain at LOS E.
- (9) Decoto Road/Fremont Boulevard—LOS E in PM peak under no project; Alternative 1 would further increase delay and reduce operations to LOS F.
- (13) Decoto Road/I-880 southbound ramps—LOS E in PM peak under no project; Alternative 1 would further increase delay and reduce operations to LOS F.
- (16) Paseo Padre Parkway/Wyndham Drive—LOS F in AM peak under no project; Alternative 1 would further increase delay.
- (17) Paseo Padre Parkway/Tamayo Street—LOS F in AM peak under no project; Alternative 1 would further increase delay.
- (18) Paseo Padre Parkway/Isherwood Way—LOS F in AM peak under no project; Alternative 1 would further increase delay.
- (19) Paseo Padre Parkway/Thornton Avenue—LOS E in AM peak under no project; Alternative 1 would further increase delay and reduce operations to LOS F.
- (20) Paseo Padre Parkway/Peralta Boulevard—LOS F in PM peak under no project; Alternative 1 would further increase delay.
- (21) Fremont Boulevard/I-880 southbound ramps-Deep Creek Road—LOS F in AM peak under no project; Alternative 1 would further increase delay.

Because Alternative 1 is expected to further reduce operations already projected to fail to meet LOS thresholds under no project conditions, the impact at these locations is considered significant.

Under 2015 conditions, Alternative 1 is expected to reduce operations to below LOS D at the following 6 locations that are projected to operate within standards under the no project scenario. This is because Alternative 1 is expected to cause shifts in area traffic patterns that would increase traffic volumes at these locations.

- (2) Decoto Road/7th Street—LOS E in AM peak under Alternative 1, compared to LOS D under no project.

- (3) Decoto Road/11th Street—LOS E in AM peak under Alternative 1, compared to LOS D under no project.
- (14) Mission Boulevard/Appian Way-7th Street—LOS E in PM peak under Alternative 1, compared to LOS C under no project.
- (26) Thornton Avenue/I-880 northbound ramp-Blacow Road—LOS F in AM peak under Alternative 1, compared to LOS D under no project; LOS E in PM peak under Alternative 1 , compared to LOS D under no project.
- (27) Thornton Avenue/Fremont Boulevard—LOS E in PM peak under Alternative 1, compared to LOS D under no project.
- (30) Mission Boulevard/Nursery Avenue—LOS E in AM peak under Alternative 1, compared to LOS D under no project.

Because Alternative 1 is expected to result in operations at these locations that exceed the cities' threshold of LOS D, the impact at these locations is considered significant. Table 3.12-7 summarizes the intersection mitigation that was considered for Alternative 1.

The table shows that many of the impact locations could only be improved to acceptable levels of service by implementing measures that require right-of-way acquisition within developed areas or that are otherwise physically constrained, and these measures were deemed infeasible and are not listed below as mitigation measures. Other measures were deemed infeasible and are not listed below as mitigation measures because they would divert traffic in ways that would increase impacts at other locations or result in otherwise undesirable traffic conditions. ~~The table shows that some minor capacity improvement may improve operations at one location; however, no feasible, practical mitigation is available to reduce these intersection impacts to a less than significant level.~~ Conditions at one intersection (Mission Boulevard and Nursery Avenue) would be improved by relocating a crosswalk, as identified in Mitigation Measure TRA-5. This improvement would not reduce the project's impact at this intersection to a less-than-significant level. To fully mitigate for the reduction in operations at this intersection and the others for which impacts are identified, there would be a need to acquire additional right-of-way, which would impact and potentially displace adjacent residences or businesses. Therefore, ~~no mitigation is proposed at these intersections and~~ this impact is considered significant and unavoidable.

Mitigation Measure TRA-5: Relocate the Crosswalk at Mission Boulevard and Nursery Avenue

ACTA, in coordination with the City of Fremont and Caltrans, will relocate the crosswalk at the intersection of Mission Boulevard and Nursery Avenue to the east leg of the intersection, allowing pedestrian traffic to cross Mission Boulevard with the heavier vehicular movement and enabling more efficient use of green time for vehicles. Implementing this measure would improve operations at the respective intersection, but not to the degree that the impact would be reduced to a less-than-significant level.

Table 3.12-7. Assessment of Potential Intersection Mitigation

Intersection	Mitigation Considered	Assessment of Potential Mitigation
Decoto/11th	Add a separate eastbound right-turn lane Add a separate northbound right-turn lane with an overlap phase Add a second northbound left-turn lane Add a separate southbound right-turn lane	Limited right-of-way on Decoto. Limited right-of-way on 11th. Adding a second northbound left-turn lane appears to be possible. However, it does not mitigate the impact to a less-than-significant level, which would result in the same impact conclusion as if no mitigation had been done. Also, if more of the northbound left-turn traffic is able to pass through that movement in the PM peak hour, it would increase the volume on the westbound approach at Decoto/Union Square. Because the delay calculations are a weighted average, this increase in volume (on movements with low delays) would actually reduce the overall calculated delay for Decoto/Union Square rather than increase it. Measures to mitigate the significant impact at this location are not considered feasible for the reasons stated above.
Decoto/Perry	Add a separate eastbound right-turn lane Add a separate westbound right-turn lane	A separate eastbound right turn lane would only have limited stacking capacity. It would also be very close to the existing frontage road on the south side of Decoto Road requiring vehicles heading westbound on the frontage road to make U-turns. Adding a separate westbound right-turn lane appears to be possible but would remove existing landscaping. Addition of right-turn lanes would improve operations at this location; however, this measure would not improve operations sufficient to meet the LOS D standard. Additional measures to fully mitigate the significant impact at this location are not considered feasible for the reasons stated above.
Decoto/Paseo Padre	Add a third northbound through lane, or Add a third eastbound through lane	Limited right-of-way on Paseo Padre. Adding a third eastbound through lane would require additional right-of-way from an approved development project in the City of Fremont. However, this would likely increase volumes on downstream intersections, thus requiring additional mitigation. Measures to mitigate the significant impact at this location are not considered feasible for the reasons stated above.
Decoto/Fremont	Add a second southbound left-turn lane	Adding a second southbound left-turn lane is possible but would likely increase volumes on downstream intersections, thus requiring additional mitigation. Measures to mitigate the significant impact at this location are not considered feasible for the reason stated above.

Intersection	Mitigation Considered	Assessment of Potential Mitigation
Decoto/Southbound 880 Ramps	Add a separate eastbound right-turn lane	Adding a separate eastbound right-turn lane is possible but would likely lead to additional traffic heading eastbound on Decoto and create additional congestion downstream. Measures to mitigate the significant impact at this location are not considered feasible for the reason stated above.
Mission/Appian Way	Add a second eastbound left-turn lane	Limited right-of-way on Mission. Measures to mitigate the significant impact at this location are not considered feasible for the reason stated above.
Paseo Padre/Isherwood	Add separate southbound right-turn lane Add separate eastbound right-turn lane Add two westbound lanes, make lanes L, L, T-R Prohibit pedestrians from crossing north leg	Adding a separate southbound right-turn lane would result in narrow lane widths or require the acquisition of additional right-of-way. Adding a separate eastbound right-turn lane would result in narrow lane widths and the elimination of on-street parking for houses fronting the street on the west approach. Widening westbound lanes would require widening of the Isherwood bridge structure and result in additional impacts on the environment. Prohibiting pedestrians from crossing the north leg is possible inconsistent with the project objective. Measures to mitigate the significant impact at this location are not considered feasible for the reasons stated above.
Alvarado-Niles/Nursery	Add a second westbound lane, make lanes L, L-T-R Prohibit pedestrians from crossing south leg	Adding a separate northbound right-turn lane is possible but would require modification to the existing grade crossing and would require approval from the California Public Utilities Commission. As Sullivan is a grade-separated alternative route, some of the increased traffic may be shifted to Sullivan as congestion builds up. Prohibiting pedestrians from crossing the south leg is possible. Measures to mitigate the significant impact at this location are not considered feasible for the reasons stated above.
Mission/Nursery	Add a separate southbound right-turn lane Move crosswalk to ~~south~~ east leg of intersection	Limited right-of-way on Mission and Nursery. Moving the crosswalk to the ~~south~~ east leg of intersection is possible and would allow pedestrians to cross with the heavier vehicular movement, enabling more efficient use of the available green time for vehicles. Relocation of the crosswalk and adjustment of signal timing is recommended as a mitigation measure at this location. However, while this measure would improve operations, it would not improve operations sufficient to meet the LOS D standard. Additional measures to fully mitigate the significant impact at this location are not considered feasible for the reasons stated above.

Source: T.Y. Lin International, background engineering information

2035 Operational Impacts

Impact TRA-5: Improvement in Operations at 25 Intersections under Alternative 1 Conditions Compared to No Project Conditions in 2035 (Less than Significant/Beneficial)

Table 3.12-8 summarizes the projected LOS at the analysis intersections in 2035, under no project and Alternative 1 conditions. The table shows that under 2035 no project conditions, 3 analysis intersections are projected to operate at LOS D or better, which is within both Cities' threshold of LOS D. The other 28 analysis intersections are projected to fail to meet LOS D during one or both of the peak hours.

Under 2035 conditions, Alternative 1 is expected to improve operations at the following 25 intersections that are projected to exceed LOS D under the no project scenario.

- (1) Decoto Road/Mission Boulevard—LOS F in AM peak and LOS E in PM peak under no project improved to LOS D in AM peak and LOS C in PM peak.
- (2) Decoto Road/7th Street—LOS F in AM and PM peaks under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay in both peaks.
- (3) Decoto Road/11th Street—LOS F in AM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay (however, Alternative 1 would result in reduction of LOS in PM peak, as described under Impact TRA-6).
- (4) Decoto Road/Union Square—LOS F in AM peak under no project improved to LOS D in AM peak with Alternative 1 in place. LOS E in PM peak under no project is expected to remain LOS E with Alternative 1 in place, but Alternative 1 would decrease average delay.
- (5) Decoto Road/Alvarado-Niles Road—LOS F in AM and PM peaks under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay in both peaks.
- (6) Decoto Road/Perry Road—LOS F in AM peak under no project improved to LOS D (however, Alternative 1 would result in reduction of LOS in PM peak, as described under Impact TRA-6).
- (7) Decoto Road/Paseo Padre Parkway— LOS F in AM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay (however, Alternative 1 would result in reduction of LOS in PM peak, as described under Impact TRA-6).
- (8) Decoto Road/Brookmill Drive—LOS F in PM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay (however, Alternative 1 would result in reduction of LOS in AM peak, as described under Impact TRA-6).

- (11) Decoto Road/Canal Terrace-Cabrillo Drive—LOS F in AM peak under no project improved to LOS D with Alternative 1 in place.
- (12) Decoto Road/I-880 northbound ramps—LOS E in AM peak under no project improved to LOS D with Alternative 1 in place.
- (13) Decoto Road/I-880 southbound ramps—LOS F in AM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay (however, Alternative 1 would result in reduction of LOS in PM peak, as described under Impact TRA-6).
- (14) Mission Boulevard/Appian Way-7th Street—LOS F in AM peak under no project improved to LOS D with Alternative 1 in place (however, Alternative 1 would result in reduction of LOS in PM peak, as described under Impact TRA-6).
- (15) Alvarado-Niles Road/Mann Avenue-Union Square— LOS F in PM peak under no project improved to LOS E with Alternative 1 in place (however, Alternative 1 would result in reduction of LOS in AM peak, as described under Impact TRA-6).
- (17) Paseo Padre Parkway/Tamayo Street—LOS F in AM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay (however, Alternative 1 would result in reduction of LOS in PM peak, as described under Impact TRA-6).
- (18) Paseo Padre Parkway/Isherwood Way—LOS F in PM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay (however, Alternative 1 would result in reduction of LOS in AM peak, as described under Impact TRA-6).
- (19) Paseo Padre Parkway/Thornton Avenue—LOS F in AM peak and LOS E in PM peak under no project improved to LOS E in AM peak and LOS D in PM peak.
- (21) Fremont Boulevard/I-880 southbound ramps-Deep Creek Road—LOS F in AM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay. LOS E in PM peak under no project improved to LOS D.
- (22) Fremont Boulevard/I-880 northbound ramps—LOS E in AM peak under no project improved to LOS C.
- (23) Fremont Boulevard/Paseo Padre Parkway—LOS F in AM and PM peaks under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay in both peaks.
- (26) Thornton Avenue/I-880 northbound ramp-Blacow Road—LOS F in AM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay. LOS F in PM peak under no project improved to LOS E.
- (27) Thornton Avenue/Fremont Boulevard—LOS F in AM peak under no project improved to LOS D. LOS F in PM peak under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay.

- (28) Niles Boulevard/Nursery Avenue—LOS E in AM peak under no project improved to LOS C (however, Alternative 1 would result in reduction of LOS in PM peak, as described under Impact TRA-6).
- (29) Niles Boulevard/Linda Drive—LOS F in PM peak under no project improved to LOS C (however, Alternative 1 would result in reduction of LOS in AM peak, as described under Impact TRA-6).
- (30) Mission Boulevard/Nursery Avenue—LOS F in PM peak under no project improved to LOS E (however, Alternative 1 would result in reduction of LOS in AM peak, as described under Impact TRA-6).
- (31) Mission Boulevard/Niles Canyon Road-Niles Boulevard—LOS F in AM and PM peaks under no project is expected to remain LOS F with Alternative 1 in place, but Alternative 1 would decrease average delay in both peaks.

Although the LOS would still fail to meet locally adopted standards at some intersections listed above, Alternative 1 is expected to improve operations at these locations. Therefore, this impact is considered less than significant. No mitigation is required.

Table 3.12-8. Intersection Level of Service—2035 No Project and Alternative 1

						Existing (2008)		2035 No project		2035 Alternative 1		
	Intersection	Location	Traffic Control	Peak Hour	LOS Stand -ard	LOS[1]	Average Delay	LOS[1]	Average Delay	LOS[1]	Average Delay	Significant Impact Identified
1	Decoto Road/ Mission Boulevard	Union City	Signal	AM	D	C	23	**F**	**138**	D	53	No
				PM	D	C	32	**E**	**57**	C	28	No
2	Decoto Road/ 7th Street	Union City	Signal	AM	D	C	33	**F**	**257**	F	193	No
				PM	D	C	31	**F**	**184**	F	91	No
3	Decoto Road/ 11th Street	Union City	Signal	AM	D	D	38	**F**	**245**	F	201	No
				PM	D	D	49	**F**	**128**	**F**	**174**	**Yes**
4	Decoto Road/ Union Square	Union City	Signal	AM	D	D	36	**F**	**109**	D	38	No
				PM	D	D	44	**E**	**73**	E	66	No
5	Decoto Road/ Alvarado-Niles Road	Union City	Signal	AM	D	**F**	**157**	**F**	**266**	F	216	No
				PM	D	**F**	**179**	**F**	**320**	F	257	No
6	Decoto Road/ Perry Road	Union City	Signal	AM	D	C	26	**F**	**81**	D	44	No
				PM	D	C	33	**E**	**64**	**F**	**84**	**Yes**
7	Decoto Road/ Paseo Padre Parkway	Fremont	Signal	AM	D	D	55	**F**	**90**	F	88	No
				PM	D	**E**	**61**	**F**	**82**	**F**	**96**	**Yes**
8	Decoto Road/ Brookmill Drive	Fremont	Westbound Stop-control	AM	D	**F**	**226**	**F**	**321**	**F**	**>50**	**Yes**
				PM	D	**F**	**791**	**F**	**183**	F	144	No
9	Decoto Road/ Fremont Boulevard	Fremont	Signal	AM	D	**E**	**80**	**F**	**134**	**F**	**152**	**Yes**
				PM	D	**E**	**59**	**F**	**119**	**F**	**165**	**Yes**
10	Decoto Road/ Ozark River Way	Fremont	Signal	AM	D	A	7	B	13	B	11	No
				PM	D	A	8	A	8	A	9	No
11	Decoto Road/ Canal Terrace-Cabrillo Drive	Fremont	Signal	AM	D	C	23	**F**	**85**	D	52	No
				PM	D	B	19	C	33	C	31	No
12	Decoto Road/ I-880 northbound ramps	Fremont	Signal	AM	D	D	44	**E**	**58**	D	51	No
				PM	D	**F**	**86**	D	47	C	35	No

	Intersection	Location	Traffic Control	Peak Hour	LOS Stand-ard	Existing (2008) LOS[1]	Existing (2008) Average Delay	2035 No project LOS[1]	2035 No project Average Delay	2035 Alternative 1 LOS[1]	2035 Alternative 1 Average Delay	Significant Impact Identified
13	Decoto Road/ I-880 southbound ramps	Fremont	Signal	AM	D	A	5	**F**	**108**	F	105	No
				PM	D	**E**	**68**	**F**	**136**	**F**	**166**	**Yes**
14	Mission Boulevard/ Appian Way-7th Street	Union City	Signal	AM	D	C	25	**F**	**257**	D	46	No
				PM	D	C	23	**F**	**86**	**F**	**112**	**Yes**
15	Alvarado-Niles Road/ Mann Avenue-Union Square	Union City	Signal	AM	D	C	23	**F**	**184**	**F**	**212**	**Yes**
				PM	D	C	25	**F**	**188**	E	69	No
16	Paseo Padre Parkway/ Wyndham Drive	Fremont	Northbound/ Southbound Stop-control	AM	D	**F**	**238**	**F**	**645**	**F**	**ECL[3]**	**Yes**
				PM	D	**F**	**226**	**F**	**ECL[3]**	**F**	**ECL[3]**	**Yes**
17	Paseo Padre Parkway/ Tamayo Street	Fremont	Northbound Stop-control	AM	D	**F**	**61**	**F**	**ECL[3]**	F	**ECL[3]**	No
				PM	D	**F**	**52**	**F**	**ECL[3]**	**F**	**ECL[3]**	**Yes**
18	Paseo Padre Parkway/ Isherwood Way	Fremont	Signal	AM	D	B	19	**F**	**126**	**F**	**303**	**Yes**
				PM	D	B	20	**F**	**237**	F	166	No
19	Paseo Padre Parkway/ Thornton Avenue	Fremont	Signal	AM	D	C	25	**F**	**116**	E	73	No
				PM	D	C	26	**E**	**74**	D	47	No
20	Paseo Padre Parkway/ Peralta Boulevard	Fremont	Signal	AM	D	D	40	**F**	**251**	F	223	No
				PM	D	**E**	**61**	**F**	**251**	F	214	No
21	Fremont Boulevard/ I-880 southbound ramps-Deep Creek Road	Fremont	Signal	AM	D	C	33	**F**	**206**	F	114	No
				PM	D	C	25	**E**	**74**	D	46	No
22	Fremont Boulevard/ I-880 northbound ramps	Fremont	Signal	AM	D	B	14	**E**	**57**	C	32	No
				PM	D	B	15	C	24	C	29	No
23	Fremont Boulevard/ Paseo Padre Parkway	Fremont	Signal	AM	D	C	31	**F**	**163**	F	114	No
				PM	D	C	31	**F**	**90**	F	87	No
24	Thornton Avenue/ I-880 southbound ramps	Fremont	Signal	AM	D	A	8	C	24	C	22	No
				PM	D	B	15	C	24	C	24	No

	Intersection	Location	Traffic Control	Peak Hour	LOS Stand-ard	Existing (2008)		2035 No project		2035 Alternative 1		Significant Impact Identified
						LOS[1]	Average Delay	LOS[1]	Average Delay	LOS[1]	Average Delay	
25	Thornton Avenue/ I-880 northbound ramps	Fremont	Signal	AM	D	A	6	A	9	A	10	No
				PM	D	B	12	D	37	C	28	No
26	Thornton Avenue/ I-880 northbound ramp-Blacow Road	Fremont	Signal	AM	D	B	18	**F**	**201**	F	139	No
				PM	D	C	27	**F**	**101**	E	71	No
27	Thornton Avenue/ Fremont Boulevard	Fremont	Signal	AM	D	C	30	**F**	**83**	D	54	No
				PM	D	C	32	**F**	**138**	F	99	No
28	Niles Boulevard/ Nursery Avenue	Fremont	Signal	AM	D	C	27	**E**	**65**	C	23	No
				PM	D	B	15	**F**	**151**	**F**	**197**	**Yes**
29	Niles Boulevard/ Linda Drive	Fremont	Southbound Stop-control	AM	D	C	20	**E**	**40**	**E**	**45**	**Yes**
				PM	D	C	21	**F**	**53**	C	25	No
30	Mission Boulevard/ Nursery Avenue	Fremont	Signal	AM	D	C	30	**F**	**111**	**F**	**123**	**Yes**
				PM	D	C	32	**F**	**81**	E	70	No
31	Mission Boulevard/ Niles Canyon Road-Niles Boulevard	Fremont	Signal	AM	D	D	54	**F**	**355**	F	310	No
				PM	D	D	49	**F**	**191**	F	103	No
32	New Roadway/ 7th Street	Union City	Signal	AM	D	(2)	(2)	(2)	(2)	C	22	No
				PM	D	(2)	(2)	(2)	(2)	B	17	No
33	New Roadway/ 11th Street	Union City	Signal	AM	D	(2)	(2)	(2)	(2)	B	12	No
				PM	D	(2)	(2)	(2)	(2)	C	24	No
34	New Roadway/ Alvarado-Niles Road	Union City	Signal	AM	D	(2)	(2)	(2)	(2)	C	30	No
				PM	D	(2)	(2)	(2)	(2)	D	35	No

Notes:

1 At signalized intersections, LOS and average delay reflect the average of all vehicles that move through the intersection. At stop-controlled intersections, LOS average delay reflects the average of all vehicles on the stop-controlled leg(s) of the intersection. Under the Existing and no project scenarios, LOS that exceeds the threshold of LOS D is **shaded**. Under Alternative 1 scenario, LOS that exceeds the significance threshold defined (and thus reflects a significant Project impact) is **shaded**.

2 Intersection only exists under Alternative 1 scenario.

3 ECL = Exceeds calculable limits. This indicates that the estimated delay is very high and is beyond what can be calculated using standard LOS calculation methods.

Impact TRA-6: Reduction in Operations at 14 Intersections under Alternative 1 Conditions Compared to No Project Conditions in 2035 (Significant and Unavoidable)

Under 2035 conditions, Alternative 1 is expected to reduce operations at the following 14 locations that would fail to meet LOS D under the no project scenario. This is because Alternative 1 is expected to cause shifts in area traffic patterns that would increase traffic volumes at these locations.

- (3) Decoto Road/11th Street—LOS F in PM peak under no project; Alternative 1 would further increase delay.
- (6) Decoto Road/Perry Road—LOS E in PM peak under no project; Alternative 1 would further increase delay and reduce operations to LOS F.
- (7) Decoto Road/Paseo Padre Parkway— LOS F in PM peak under no project; Alternative 1 would further increase delay.
- (8) Decoto Road/Brookmill Drive—LOS F in AM peak under no project; Alternative 1 would further increase delay.
- (9) Decoto Road/Fremont Boulevard—LOS F in AM and PM peaks under no project; Alternative 1 would further increase delay in both peaks.
- (13) Decoto Road/I-880 southbound ramps—LOS F in PM peak under no project; Alternative 1 would further increase delay.
- (14) Mission Boulevard/Appian Way-7th Street—LOS F in PM peak under no project; Alternative 1 would further increase delay.
- (15) Alvarado-Niles Road/Mann Avenue-Union Square— LOS F in AM peak under no project; Alternative 1 would further increase delay.
- (16) Paseo Padre Parkway/Wyndham Drive— LOS F in AM and PM peaks under no project; Alternative 1 would further increase delay in both peaks.
- (17) Paseo Padre Parkway/Tamayo Street— LOS F in PM peak under no project; Alternative 1 would further increase delay.
- (18) Paseo Padre Parkway/Isherwood Way— LOS F in AM peak under no project; Alternative 1 would further increase delay.
- (28) Niles Boulevard/Nursery Avenue—LOS F in PM peak under no project; Alternative 1 would further increase delay.
- (29) Niles Boulevard/Linda Drive— LOS E in AM peak under no project; Alternative 1 would further increase delay but is expected to remain at LOS E.
- (30) Mission Boulevard/Nursery Avenue—LOS F in AM peak under no project; Alternative 1 would further increase delay.

Because Alternative 1 is expected to further reduce operations already projected to fail to meet LOS thresholds under no project conditions, the impact at these locations is considered significant.

Table 3.12-7 summarizes the intersection mitigation that was considered for Alternative 1.

The table shows that some minor capacity improvement may improve operations at one location; however, no feasible, practical mitigation is available to reduce these intersection impacts to a less than significant level. The table also shows that a minor modifications of a crosswalk may improve operations at one specific location (Mission Boulevard and Nursery Avenue), and this measure has been incorporated into Mitigation Measure TRA-5. This measure would improve operations at that location, but would not reduce the project's impacts at the respective intersection or any other intersections to a less-than-significant level. To fully mitigate for the reduction in operations, there would be a need to acquire additional right of way, which would impact and potentially displace adjacent residences or businesses. Therefore, ~~no mitigation is proposed at these intersections and~~ this impact is considered significant and unavoidable.

Beneficial Impacts of Alternative 1

Under CEQA, impacts are defined as only the measures on which the project is expected to have an adverse effect. However, transportation analysis completed for Alternative 1 also indicated several areas in which Alternative 1 is identified to have a beneficial impact. The projected beneficial impacts of Alternative 1 on roadway, transit, bicycle, and pedestrian operations are described in the following sections.

Enhancement of System-Wide Roadway Operations

Although vehicles may experience higher delay at specific locations (as identified previously under the Operational Impacts section), Alternative 1 is expected to improve system-wide travel times, and decrease overall hours of vehicle delay. The extents to which these system-wide improvements are expected to occur are discussed in the following sections.

System-Wide Travel Times

Tables 3.12-9 and 3.12-10 summarize projected 2035 travel times between major destinations under no project and Alternative 1 conditions, in the AM peak and PM peak hours respectively. A comparison of travel time for Alternative 1, the proposed project, and no project conditions is depicted in Figure 3.12-2 in Section 3.12 of the EIR for the proposed project. The tables provided below show that Alternative 1 is expected to result in major travel time improvements between destinations within the study area. During the AM peak hour, Alternative 1 is expected to provide travel time improvement of 2% to 15% over no project conditions within four corridors. Alternative 1 is expected to increase travel time along one corridor, and have no effect on one.

Table 3.12-9. Travel Time Comparison – Year 2035 AM Peak Hour, Alternative 1

From	To	Peak Direction	Travel Time (minutes) No Project	Travel Time (minutes) Alternative 1	Difference Minutes	Difference Percent
Mission/Mowry	SR 84 west of I-880	WB	52	45	-7	-13%
Mission/Mowry	Fremont/Decoto	WB	39	33	-6	-15%
Mission/Niles Canyon	SR 84 west of I-880	WB	65	59	-6	-9%
Mission/Nursery	SR 84 west of I-880	WB	65	64	-1	-2%
Mission/Whipple	SR 84 west of I-880	SB	67	60	-7	-10%
Mission/ Whipple	Fremont/Thorton	SB	53	55	+2	+4%
Mission/ Whipple	Fremont/Mowry	SB	62	62	0	0%

Source: Dowling 2008c

Table 3.12-10. Travel Time Comparison – Year 2035 PM Peak Hour, Alternative 1

From	To	Peak Direction	Travel Time (minutes) No Project	Travel Time (minutes) Alternative 1	Difference Minutes	Difference Percent
SR 84 west of I-880	Mission/Mowry	EB	54	48	-6	-11%
Fremont/Decoto	Mission/Mowry	EB	30	24	-6	-20%
SR 84 west of I-880	Mission/Niles Canyon	EB	59	56	-3	-5%
SR 84 west of I-880	Mission/Nursery	EB	59	58	-1	-2%
SR 84 west of I-880	Mission/Whipple	NB	52	54	+2	+4%
Fremont/Thorton	Mission/ Whipple	NB	43	40	-3	-7%
Fremont/Mowry	Mission/ Whipple	NB	46	43	-3	-7%

Source: Dowling 2008c

During the PM peak hour, Alternative 1 is expected to provide travel time reductions of 2% to 20% over no project conditions along five corridors, and increase travel time along one corridor by 4%.

Although there are three corridors that are expected to experience a slight increase (4%) or no change in travel time as a result of Alternative 1, there are 11 corridors that are expected to experience a decrease in travel time. The overall improvement in travel time is considered a beneficial effect of Alternative 1 on overall roadway operations.

System-Wide Vehicle Hours of Delay

Table 3.12-11 summarizes the system-wide hours of vehicle delay that are projected in 2035 during the AM and PM peak hours, under no project and Alternative 1 conditions. The table shows that Alternative 1 is expected to result in an increase in system-wide delay of 7% in the AM peak, but a decrease of 18% in the PM peak, compared to Alternative 1 conditions. The net reduction in system-wide delay is considered a beneficial impact of Alternative 1 on overall roadway operations.

Table 3.12-11. Daily System-Wide Delay Comparison – Year 2035

	Total Vehicle Hours of Delay		Difference	
Peak Period	No Project	Alternative 1	Hours	Percent
AM Peak Hour	67,449	72,455	+5,006	+7%
PM Peak Hour	47,551	39,008	-8,543	-18%
Source: Dowling 2008c				

Improved Transit Operations

Overall, the system-wide reductions in delay and ~~increase~~ decrease in travel times that are projected to result from Alternative 1 (described in the previous section) are expected to benefit in turn the system-wide efficiency of transit operations. Although buses may experience higher delay at specific locations (as identified previously under the Operational Impacts section), expected improvements in the system-wide efficiency of roadway operations would also improve overall efficiency of buses that operate on those roadways.

In addition, Union City Transit buses are parked at a depot on 7th Street, just north of the Alternative 1 alignment, so Union City Transit anticipates that buses would use the new roadway to travel to the beginning points of their routes, and back from the end points of their routes, which would improve the overall efficiency of their operations. These are considered beneficial impacts of Alternative 1 on overall transit operations.

Enhancement of Pedestrian Facilities

Alternative 1 would enhance pedestrian facilities in the project area by constructing new sidewalks along the new roadway, including a sidewalk that would be separated and elevated from the roadway. Thus, Alternative 1 would enhance pedestrian safety and mobility, and would result in a beneficial impact on pedestrian circulation.

Enhancement of Bicycle Facilities

Alternative 1 would enhance bicycle facilities by providing Class I bike paths along the new roadway, and enhancing bike lanes along Alvarado-Niles Road. Thus, Alternative 1 would provide bike lanes along its entire length, generally improving bicycle safety and mobility and resulting in a beneficial impact on the City-wide system.