US 101/Broadway Interchange Reconstruction Project

SAN MATEO COUNTY, CALIFORNIA
DISTRICT 04 – SM – 101 (PM 16.30/17.06)
EA 235840

Initial Study with Mitigated Negative Declaration/Environmental Assessment with Finding of No Significant Impact

Prepared for the
State of California Department of Transportation
In cooperation with the
San Mateo County Transportation Authority

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

March 2011

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United States Highway 101 (US 101)

SCH # 2010082077
04-SM-101, PM 16.30/17.06
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Reconstruct the US 101/Broadway Interchange in the
City of Burlingame, San Mateo County, California (Post Miles 16.30/17.06)

Initial Study with Mitigated Negative Declaration/ Environmental Assessment with Finding of No Significant Impact

Submitted Pursuant to: (State) Division 13, California Public Resources Code and
(Federal) 42 USC 4332(2)(C) and 49 USC 303

THE STATE OF CALIFORNIA
Department of Transportation

3-18-11
Date of Approval

BIJAN SARTIPI
District Director
California Department of Transportation
NEPA and CEQA Lead Agency

CALIFORNIA DEPARTMENT OF TRANSPORTATION
FINDING OF NO SIGNIFICANT IMPACT (FONSI)

FOR THE

US 101/BROADWAY INTERCHANGE RECONSTRUCTION PROJECT

The California Department of Transportation (Caltrans) has determined that the Build Alternative will have no significant impact on the human environment. This FONSI is based on the attached EA and other available reports, which have been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an EIS is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the attached EA.

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

3-18-11
Date

BIJAN SARTIPI
District Director
California Department of Transportation

Mitigated Negative Declaration (MND)

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Department), in cooperation with the San Mateo County Transportation Authority (SMCTA), proposes to reconfigure the United States Highway 101 (US 101)/Broadway interchange in the City of Burlingame, County of San Mateo, California. The purpose of the project is to improve traffic movements and access around the interchange, accommodate future traffic increases at adjacent intersections, improve operations at the southbound US 101 ramps, and increase bicyclist and pedestrian access. The length of the project is 0.76 mile.

Determination

The Department has prepared an Initial Study for this project, and following public review, has determined from this study that the proposed project would not have a significant effect on the environment for the following reasons:

The proposed project would have no effect on growth, farmlands/timberlands, community character and cohesion, environmental justice, and paleontology. In addition, the proposed project would have no significant effect on land use; community impacts (relocations); utilities/emergency services; transportation/pedestrian and bicycle facilities; visual/aesthetics; cultural resources; hydrology and floodplains; water quality and storm water runoff; geology/soils/seismicity/topography; hazardous waste/materials; air quality; noise; natural communities; plant species; animal species; threatened and endangered species; and invasive species. The proposed project would have no significantly adverse effect on wetlands and other waters, because the following mitigation measure would reduce potential effects to insignificance:

- Compensatory mitigation efforts for permanent effects to wetlands and other waters will be determined in consultation with the U.S. Army Corps of Engineers. These may include, but are not limited to, reduction in the amount of impact, options to participate in regional habitat enhancement projects, or purchase of mitigation bank credits.

BIJAN SARTIPI
District Director
District 4
California Department of Transportation

3-18-11
Date

Summary

The California Department of Transportation (Department) proposes to reconfigure the United States Highway 101 (US 101)/Broadway interchange in the City of Burlingame, California.

The Department is the lead California Environmental Quality Act (CEQA) agency for the project, and effective July 1, 2007, has been assigned environmental review and consultation responsibilities under the National Environmental Policy Act (NEPA) pursuant to 23 United States Code (USC) 327. The project is proposed in cooperation with the San Mateo County Transportation Authority (SMCTA).

The purpose of the project is to improve traffic movements and access around the interchange, accommodate future traffic increases at adjacent intersections, improve operations at the southbound US 101 ramps, and increase bicyclist and pedestrian access. The Build Alternative would construct a new seven-lane Broadway overcrossing approximately 170 feet to the north of the existing four-lane structure. Broadway would be realigned to extend straight across US 101 from the Broadway/Rollins Road intersection on the west to Bayshore Highway on the east, and the northern terminus of Airport Boulevard would be moved approximately 100 feet to the north to meet the new overcrossing. The existing on- and off-ramps would be replaced, and ramp metering equipment would be installed. The project would retain the existing pedestrian overcrossing just south of Broadway and provide additional pedestrian and bicycle improvements at the interchange. The total length of the project is 0.76 mile (from Post Mile 16.30 to 17.06).

This Initial Study/Environmental Assessment (IS/EA) addresses the proposed project's potential to have adverse impacts on the environment. Potential impacts and avoidance, minimization, and mitigation measures are summarized in Table S-1.

After comparing and weighing the benefits and impacts of all of the alternatives, including those summarized in Section 1.5, the Project Development Team has identified the Build Alternative as the preferred alternative.

Table S-1 Summary of Impacts and Avoidance, Minimization, and Mitigation Measures

Potential Impact	Impact Summary		Avoidance/Minimization/ Mitigation
	No Build Alternative	Build Alternative	
Land Use	The No Build Alternative would not support City of Burlingame plans that call for improving the US 101/Broadway interchange.	The project would support existing and planned land uses and is consistent with local and regional plans. Temporary closures of the Bay Trail and Bay Trail extension would be required during construction. The realignment of Airport Boulevard would shift the Bay Trail by approximately 150 feet to the north and remove approximately 2,400 square feet of the trail pavement and streetside landscaping. The project would not affect the long-term use of these facilities. Effects to Section 4(f) facilities would be *de minimis.*	During final design, the Department and SMCTA will develop a detailed trail closure plan to minimize disruption to trail users. The project's Transportation Management Plan will address impacts to bicycle and pedestrian access during project construction.
Community Impacts: Community Character and Cohesion	None.	The project would not displace or relocate any residents, change any existing community boundaries, physically divide an established community, or create a new barrier to movement within the project area.	None required.
Community Impacts: Relocations	None.	The project would require acquisition of full and partial parcels or temporary construction easements from commercial and industrial establishments adjacent to the right-of-way. Relocation assistance payments and counseling will be provided to businesses in accordance with the Department's Relocation Assistance Program.	None required.

Table S-1 Summary of Impacts and Avoidance, Minimization, and Mitigation Measures

Potential Impact	Impact Summary		Avoidance/Minimization/ Mitigation
	No Build Alternative	Build Alternative	
Utilities and Emergency Services	None.	The project would require relocating sewer, water, electrical, and communications lines. No short-term or long-term adverse effects to utilities would occur. The project would have no adverse effects on emergency services.	Measures would be implemented to protect three existing Pacific Gas and Electric Company (PG&E) transmission towers and their foundations during construction. Access will be maintained for emergency response vehicles. No disruption to existing emergency service access is expected.
Traffic and Transportation, Pedestrian and Bicycle Facilities	In 2035, six intersections in and near the US 101/Broadway interchange are projected to operate at level of service (LOS) E or F. These levels of service are below the City of Burlingame's planning criteria for traffic operations (LOS D or better). Two City of Burlingame projects would construct pedestrian and bicycle improvements in the project area.	In 2035, all intersections in and near the US 101/Broadway interchange are projected to operate at the City of Burlingame's planning criteria of LOS D or better. The project would improve conditions (reduce delay) at all but one study area intersection, and levels of service would remain the same or improve. At the Broadway/Carolan Avenue intersection, increased traffic flow on Broadway would increase delay by 1.5 seconds in 2035, but the intersection's level of service would not change. The project would maintain the pedestrian and bicycle connections from the City of Burlingame projects, construct additional pedestrian and bicycle facilities, and upgrade existing sidewalks to Americans With Disabilities Act (ADA) standards.	The project's Transportation Management Plan will address impacts to motor vehicle, bicycle, and pedestrian access during project construction. No further avoidance, minimization, or mitigation is required.

Table S-1 Summary of Impacts and Avoidance, Minimization, and Mitigation Measures

Potential Impact	Impact Summary		Avoidance/Minimization/ Mitigation
	No Build Alternative	Build Alternative	
Visual/ Aesthetics	None.	Tree removal would decrease the visual quality of the project viewshed, particularly at the southbound on- and off-ramps and in the northeast quadrant of the interchange; along the west side of Bayshore Highway; at the corner of Bayshore Highway and Airport Boulevard; and along the Bay Trail. The introduction of concrete retaining walls, barriers, and other roadway structures would add to the viewshed's industrial, urbanized visual environment. Demolition and other construction activities would have short-term, transient visual impacts during project construction. Lighting for nighttime construction could create a temporary source of light or glare.	Recommended measures include planting trees and other landscaping; applying architectural treatments to reduce surface reflectivity, brightness, and visual monotony of roadway structures; and using upgraded fencing and ornamental light fixtures on the Broadway overcrossing.
Cultural Resources	None.	One archaeological site was reported within the archaeological resources area of potential effects (APE). No subsurface construction activities would take place in the vicinity of the site. Subsurface excavation and pile driving is proposed in previously filled and disturbed areas, and therefore the project is not expected to affect subsurface archaeological resources. No properties in the architectural APE are eligible for the National Register of Historic Places or California Register of Historic Resources, or appear to be historical resources for the purposes of CEQA. The project would not affect a Section 4(f) historic resource.	The archaeological site would be designated an environmentally sensitive area (ESA). The specific method of establishing the ESA would be determined during final design. If cultural materials are discovered during construction, earth-moving activities will be diverted until an archaeologist can assess the find. If human remains are discovered, the procedures described in State law will be implemented.

Table S-1 Summary of Impacts and Avoidance, Minimization, and Mitigation Measures

Potential Impact	Impact Summary		Avoidance/Minimization/ Mitigation
	No Build Alternative	Build Alternative	
Hydrology and Floodplains	A drainage channel that passes beneath Bayshore Highway is currently blocked. Flooding occurs around the eastern landing of the Broadway overcrossing.	Parts of the project area are in the 100-year floodplain. The project would require minor fill in Easton Creek and between the existing southbound US 101 off-ramp and the Crowne Plaza Hotel parking lot but is not expected to affect the extent or elevation of flooding. The project will implement one or more drainage modifications to eliminate the flooding around the eastern landing of the Broadway overcrossing.	Measures proposed to avoid and minimize impacts to water quality, storm water runoff, and wetlands and other waters of the U.S. will also avoid and minimize hydrology and floodplain impacts.
Water Quality and Storm Water Runoff	None.	Project construction could result in temporary impacts to water quality and storm water runoff from increased erosion and subsequent transport of sediment to surface waters. Spills and fluid leaks from construction vehicles, equipment, or materials may also occur during construction. Groundwater would likely be encountered during construction. The project would increase impervious surface areas by 1.52 acres.	Permanent erosion control best management practices (BMPs) will be included in the project to prevent an adverse change in downstream water quality. Measures will include feasible temporary (short-term) and permanent (long-term) BMPs. Potentially feasible treatment BMPs that will be considered during final design include vegetated swales and buffer strips, and tree well filters. The required Storm Water Pollution Prevention Plan will include storm water BMPs for temporary soil stabilization and sediment control.
Geology, Soils, and Seismicity	The No Build Alternative would be subject to the same geologic, soils, and seismic hazards as the Build Alternative.	The project area could be exposed to strong earthquake shaking. Liquefaction and associated ground surface settlement could affect the proposed Broadway overcrossing's abutment foundations and roadway and result in consolidation settlement of up to 13 inches. Subsurface components of the Broadway overcrossing would be exposed to corrosive soils and groundwater.	Additional geotechnical subsurface and design investigations will be performed during final design and engineering, including site-specific evaluation of subsurface conditions at the locations of proposed foundation features. Project elements will be designed and constructed to meet seismic design requirements for ground shaking and ground motions.

Table S-1 Summary of Impacts and Avoidance, Minimization, and Mitigation Measures

Potential Impact	Impact Summary		Avoidance/Minimization/ Mitigation
	No Build Alternative	Build Alternative	
Hazardous Waste and Materials	None.	Potential hazardous materials sites within or adjacent to the project limits pose a medium to high risk that soil and/or groundwater contamination will be encountering during construction. Thermoplastic roadway paint and structure paint may contain lead, and structures that are proposed for demolition may have asbestos-containing materials in concrete, pipes, and electrical insulation. Vehicle tire and brake wear, oil, grease, and exhaust from vehicular traffic may have contaminated surface soils in the project limits with aerially deposited lead (ADL) and heavy metals.	Further investigation of potential hazardous materials sites is recommended where petroleum hydrocarbons, solvents, ADL, and heavy metals may be present in soil and/or groundwater. Existing structures that will be removed or modified will be tested for hazardous materials such as lead-based paint and asbestos. If present, these materials will be handled and disposed accordingly.
Air Quality	None	Construction activities for the proposed project would generate emissions of criteria pollutants, but emission levels would not exceed applicable thresholds. Exposure to airborne contaminants from asbestos-containing materials during demolition could affect safety and health.	Implementation of the Department's Special Provisions and Standard Specifications and other recommended measures listed in Section 2.11.4 would minimize or eliminate dust from construction activities. Existing structures that will be removed or modified will be tested for the presence of potential asbestos-containing materials. If present, these materials will be handled and disposed accordingly.

Table S-1 Summary of Impacts and Avoidance, Minimization, and Mitigation Measures

Potential Impact	Impact Summary		Avoidance/Minimization/ Mitigation
	No Build Alternative	Build Alternative	
Noise	One location studied, the tennis court at the Northpark Apartments, has existing and future noise levels that approach or exceed Federal noise abatement criteria (NAC).	Future noise levels would approach or exceed the NAC at the tennis court at the Northpark Apartments. Noise abatement at the tennis court was studied, a soundwall was determined *feasible,* and a range of soundwall heights were evaluated. However, no barrier design could reduce traffic sound levels by more than 2 A-weighted decibels (dBA), and therefore soundwall abatement was not considered *reasonable* (a 5 dBA reduction should be achieved to be reasonable). The Build Alternative would not increase future noise levels at any of the modeled locations. Construction activities would at times generate higher noise levels than existing traffic noise.	The Construction Contractor will be required to implement measures to abate construction noise, including locating stationary noise-generating construction equipment away from noise-sensitive hotels and residences, requiring all construction equipment to conform to Section 14-8.02 of the latest Standard Specifications, and instituting a construction noise monitoring program for nighttime construction during demolition.
Natural Communities	None	The project has no natural communities of concern and is dominated by urban development. The project would extend the Easton Creek culvert but would not introduce permanent barriers to fish passage. Installation of new freeway ramps, the proposed Broadway overcrossing, and realigned roadways would require removing approximately 71 trees.	A project landscaping plan will be developed during final design and will include tree planting ratios of 1:1 or greater and the use of native species where possible. Tree removal would take place before the start of the nesting season for raptors and migratory birds (February 1) to avoid impacts to birds that are protected under the Migratory Bird Treaty Act. Vegetation would be preserved in areas of the project limits where no construction is planned.

Table S-1 Summary of Impacts and Avoidance, Minimization, and Mitigation Measures

Potential Impact	Impact Summary		Avoidance/Minimization/ Mitigation
	No Build Alternative	Build Alternative	
Wetlands and Other Waters of the United States	None	Permanent impacts to 0.68 acre of waters of the U.S. would result from constructing new paved roadways, regrading slopes around the footings of the new overcrossing, extending the Easton Creek culvert, and potentially restoring the conveyance capacity of the unnamed drainage channel. Temporary impacts to 0.35 acre of waters of the U.S. would occur in construction access and staging areas as a result of sediment discharge, vegetation removal, and soil compaction.	Temporarily affected areas will be restored to approximately the original site conditions. Compensatory mitigation efforts for permanent effects to wetlands and other waters will be determined in consultation with the U.S. Army Corps of Engineers. These may include, but are not limited to, reduction in the amount of impact, options to participate in regional habitat enhancement projects, or purchase of mitigation bank credits.
Plant Species	None	No impacts would occur to special-status plant species.	None required.
Animal Species	None	Vegetation removal along the project limits would result in minimal habitat loss for nesting raptors and migratory birds, if present. Temporary pile-driving noise is expected to have a negligible effect on individual birds. Temporary impacts to Essential Fish Habitat (EFH) would result from extension of the Easton Creek culvert.	Vegetation will be removed during the nonbreeding season (September 1 to February 1). If construction activities take place during the nesting season, surveys will be conducted, and if nesting birds are found, buffers will be applied until the nesting activity is completed. The project design will incorporate Department BMPs for storm water pollution prevention (Section 2.8.4) and general construction measures (Section 2.16.4.2) to minimize project-related effects to EFH.

Table S-1 Summary of Impacts and Avoidance, Minimization, and Mitigation Measures

Potential Impact	Impact Summary		Avoidance/Minimization/ Mitigation
	No Build Alternative	Build Alternative	
Threatened and Endangered Species	None	Impacts to California seablite are not expected because the rare plant surveys did not detect the species within the biological study area (BSA). Extension of the Easton Creek culvert would take place in designated critical habitat for southern Distinct Population Segment (DPS) green sturgeon but is not likely to adversely affect the species or its critical habitat. Project construction would result in permanent (1.60 acre) and temporary (0.44 acre) effects to marginal potential habitat for California red-legged frog (CRLF) and San Francisco garter snake (SFGS). If work in the unnamed drainage channel is required, the project would temporarily affect 0.12 acre of poor to marginal habitat for California black rail, California clapper rail, and salt marsh harvest mouse, but no impacts would occur because the species are considered absent from the BSA.	In addition to the general construction measures listed in Section 2.16.4.2, the following measures would avoid or minimize impacts to specific species. A qualified botanist will conduct a focused preconstruction survey for California seablite during the blooming period (July to October) in 2013 and contact the U.S. Fish and Wildlife Service (USFWS) for guidance if the species is identified. To avoid and minimize potential effects to southern DPS green sturgeon and its designated critical habitat, in-stream work in Easton Creek and the unnamed drainage will take place during the dry season (April 15 through October 15). Cofferdams in Easton Creek will be installed during low tide and use only clean gravel or sand fill. A qualified biological monitor will be present during cofferdam installation and removal. If work in the unnamed drainage channel is required, sediment and berm removal will take place during low tide. Exclusion fencing, use of appropriate erosion control materials, a focused preconstruction survey, and biological monitoring during removal of potential habitat would avoid or minimize effects to CRLF and SFGS. Measures listed in the USFWS Biological Opinion (Appendix I) will be implemented.

Table S-1 Summary of Impacts and Avoidance, Minimization, and Mitigation Measures

Potential Impact	Impact Summary		Avoidance/Minimization/ Mitigation
	No Build Alternative	Build Alternative	
Invasive Species	None	Invasive species in the BSA include pampas grass, English ivy, and sweet fennel. Project construction activities have the potential to inadvertently spread invasive species.	Project landscaping and erosion control will avoid using species listed as noxious weeds. No disposal of soil and plant materials should be allowed from areas that support invasive species to areas dominated by native vegetation. Resident Engineers should be educated on weed identification and the importance of controlling and preventing the spread of identified invasive nonnative species. Gravel and/or fill material to be placed in relatively weed-free areas should come from weed-free sources. Certified weed-free imported materials (or rice straw in upland areas) will be used.
Cumulative Impacts	None	Proposed development is assumed in the traffic, air quality, and noise analyses performed for the proposed project. Cumulative impacts to land use, traffic, visual resources, air quality, noise, storm water runoff, and biological resources (trees, jurisdictional waters, and threatened and endangered species) are not anticipated.	None required.
Climate Change	None	The project is limited to improvements at the interchanges in the project limits, would not add capacity to US 101, and would not affect traffic flow at a regional level. The project would not result in substantial direct or indirect emissions of greenhouse gases.	None required.

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Chapter 1. Proposed Project

1.1. Introduction

The California Department of Transportation (Department), in cooperation with the San Mateo County Transportation Authority (SMCTA), proposes to reconfigure the United States Highway 101 (US 101)/Broadway interchange in the City of Burlingame, County of San Mateo, California. The existing interchange has circuitous traffic movements, substandard weaving distances, and inadequate capacity to accommodate projected traffic growth. The total length of the project is 0.76 mile (from Post Mile 16.30 to 17.06). Figure 1-1 shows the project location and vicinity.

This project is included in the Metropolitan Transportation Commission's (MTC) current Regional Transportation Plan (RTP), the *Transportation 2035 Plan for the San Francisco Bay Area* (MTC 2009a, RTP ID No. 21602). The project is also included in the 2011 Transportation Improvement Program (TIP), which was adopted by MTC on October 27, 2010 (MTC 2010; TIP ID No. SM-050028). The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) approved the 2011 TIP on December 14, 2010.

The Department is the lead California Environmental Quality Act (CEQA) agency for the project and, effective July 1, 2007, has been assigned environmental review and consultation responsibilities under the National Environmental Policy Act (NEPA) pursuant to 23 United States Code (USC) 327. Therefore, the Department is also the NEPA lead agency for the project.

1.1.1. Location and Route Description

US 101 is a major north-south corridor that extends from the Oregon border to Los Angeles. The route serves local and interregional traffic along the San Francisco Peninsula and the greater Bay Area, connecting downtown San Francisco and San Francisco International Airport (SFO) with San Jose and Silicon Valley to the south. The segment of US 101 in the project limits, also known as the Bayshore Freeway, has eight through lanes with auxiliary lanes in both directions and ramp metering lights at the Broadway on-ramps and off-ramps.

The US 101/Broadway interchange provides access to US 101 from Broadway, Rollins Road, Bayshore Highway, and Airport Boulevard in the City of Burlingame. The

interchange is a major transportation gateway to commercial and light industrial uses west of the freeway and the airport-serving hotels and businesses east of the freeway. The existing interchange is a trumpet[1] configuration composed of the four-lane Broadway overcrossing and a combination of diagonal and loop ramps (Figure 1-1).

1.1.2. Background

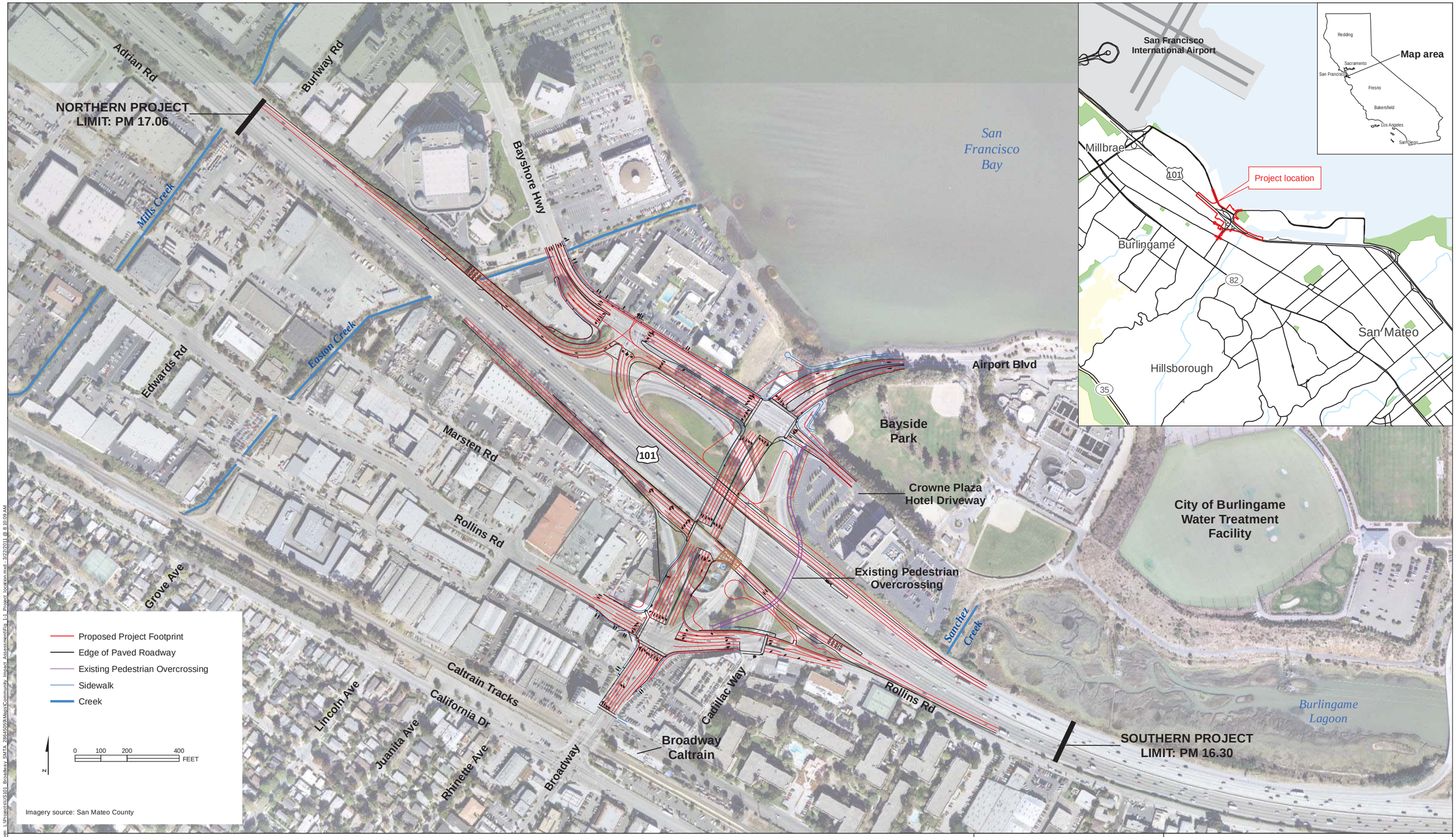
US 101 was one of the original U.S. highways established in 1929. In the project vicinity, US 101 traversed El Camino Real until the route designation was transferred to the Bayshore Highway in 1937. The current freeway alignment was completed in 1962 and designated as US 101 in 1964. The freeway was widened from six to eight lanes in 1971. US 101 serves a substantial traffic volume, measured at approximately 223,000 vehicles per day at the Broadway interchange in 2008 (annual average daily traffic [AADT]; Department 2009a).

The Broadway overcrossing was constructed in 1949, rebuilt in 1971, and seismically retrofitted in the early 1980s (Hill and Basin Research 2002). At the time the interchange was built, little development was present east of Bayshore Highway. Beginning in the early 1950s, the shoreline east of Bayshore Highway was filled in, leading to industrial/office and waterfront commercial development along San Francisco Bay (the Bay) both north and south of Broadway. Although the Broadway overcrossing's sweeping southwest-to-northeast curve still reflects the predominant travel direction at the interchange, the structure does not serve the other traffic patterns that have emerged from more recent development.

The reconstruction of the US 101/Broadway interchange was included in San Mateo County Tax Measure A, approved in June 1988 as part of planned improvements to US 101. Measure A authorized the imposition of a ½-cent sales tax and the creation of SMCTA to administer the proceeds. In November 2004, San Mateo County voters approved a 25-year extension of the ½-cent sales tax. The proposed project is part of the reauthorized Measure A expenditure plan (SMCTA 2004).

Improvements to the US 101/Broadway interchange are identified in regional and local transportation plans. The project is listed in the *Strategic Plan for 2009–2013* (SMCTA 2008), which provides a policy framework for programming and allocation

[1] For descriptions and illustrations of interchange types, see Appendix E.



US 101/BROADWAY INTERCHANGE
RECONSTRUCTION PROJECT
BURLINGAME, CA
EA 235840

FIGURE 1-1
PROJECT LOCATION AND PROPOSED PROJECT

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decisions within the structure established by the Measure A expenditure plan. The *Countywide Transportation Plan 2010* (C/CAG 2001) identifies the SMCTA Strategic Plan projects as significant highway improvements to help relieve congestion on US 101.

In 1990, the Department prepared a Project Study Report (PSR)[2] (EA 04-217-23584G) for the reconstruction of the US 101/Broadway interchange, which was approved on July 16, 1990. However, the PSR did not proceed to the next phase of project development as the City of Burlingame had concerns about the proposed alternatives.

Beginning in 2000, a new PSR was prepared based on the latest requirements and standards (Rajappan and Meyer 2005). In preparing the new PSR, the consultant re-evaluated the previous alternatives and developed a new alternative called the Buttonhook/Diamond Interchange,[3] which was approved on November 22, 2005. The Buttonhook/Diamond Interchange alternative was the basis for the Build Alternative evaluated in this document (Figure 1-1; see Section 1.3.1).

In spring 2007, construction began on 4.5 miles of auxiliary lanes in both directions of US 101 between Millbrae Avenue in Millbrae and Third Avenue in San Mateo, excluding the US 101/Broadway interchange. The US 101 Auxiliary Lanes Project reconstructed the US 101/Peninsula Avenue interchange and the Monte Diablo pedestrian/bicycle overcrossing, installed ramp metering equipment, and built soundwalls (Department and SMCTA 2003). The project also constructed a pedestrian/bicycle overcrossing (now completed; hereafter referred to as the pedestrian overcrossing) just south of the Broadway overcrossing.

1.2. Purpose and Need

1.2.1. Project Purpose

The purpose of the project is to:

- Improve traffic movements and access around the US 101/Broadway interchange;
- Accommodate future increases in traffic at intersections in and adjacent to the interchange;

[2] The PSR defines the scope, schedule and estimated cost of a project for consideration for future transportation funding. The approval of the PSR is one of the necessary steps to define alternatives and begin a detailed consideration of their merits and feasibility in the Project Report and Environmental Document.

[3] For descriptions and illustrations of interchange types, see Appendix E.

- Improve operations for vehicles entering and exiting southbound US 101 at the Broadway interchange; and
- Increase bicyclist and pedestrian access across US 101 and around the interchange.

1.2.2. Project Need

The configuration of the US 101/Broadway interchange causes poor system performance. In addition to having geometric features such as tight loop ramps that do not comply with modern design standards, the interchange lacks direct, intuitive connections among some of the areas it serves. For example:

- The point-to-point (or aerial) distance between the intersections of Bayshore Highway/Airport Boulevard east of US 101 and Broadway/Rollins Road west of US 101 is approximately 0.20 mile (Exhibit A, right). However, to get from the Bayshore Highway/Airport Boulevard intersection to the Broadway/Rollins Road intersection, a driver must enter northbound US 101 south of the Broadway interchange, weave through other vehicles exiting the freeway, and within 0.10 mile take the Broadway overcrossing to the other side of US 101—a 0.50-mile route.
- To reach Bayshore Highway from southbound US 101, a driver must take the loop ramp to exit at Rollins Road, turn right on Rollins Road, turn right again to take the Broadway overcrossing to the other side of US 101, and turn right or left onto Bayshore Highway—a 0.60-mile route (Exhibit B, right).
- Eastbound drivers on Broadway headed toward destinations southeast of the interchange must essentially make a U-turn to the right at the eastern end of the Broadway overcrossing to travel southbound on Bayshore Highway (Exhibit C, right).

Exhibit A

Exhibit B

Exhibit C

The circuitous traffic movements increase travel time for interchange users, especially during peak traffic hours. Moreover, the area east of the interchange contains several hotels, restaurants, and other businesses that serve SFO and therefore attract visitors who are unfamiliar with the

interchange and local roadway system. Area business owners have reported to the City of Burlingame that clients get lost and have difficulty reaching their destinations while trying to navigate through the interchange.

The US 101/Broadway interchange also lacks capacity to accommodate projected future traffic volumes, as described further in the following sections.

1.2.2.1. Capacity, Transportation Demand, and Safety

Level of service (LOS) is an indicator of operational conditions on a roadway or at an intersection and is defined in categories ranging from A to F. These categories can be viewed much like school grades, with A representing the best roadway conditions and F indicating substantial congestion with stop-and-go traffic. At intersections, LOS is evaluated in terms of delay caused by vehicles slowing or stopping due to a signal, a stop sign, or queue caused by congestion (Figure 1-2). At signalized intersections, LOS A indicates that vehicles are delayed by 10 seconds or less, and LOS F represents delays of more than 80 seconds. At unsignalized intersections, LOS A indicates that vehicles are delayed by less than 10 seconds, and LOS F indicates delays of more than 50 seconds. In accordance with City of Burlingame planning criteria, LOS E and F are considered unacceptable.

All intersections in and adjacent to the US 101/Broadway interchange currently operate at acceptable levels of service (URS 2010a). However, the traffic forecast and operational analysis completed for the US 101/Broadway interchange and adjacent intersections shows that three intersections are currently at the threshold of acceptable conditions (LOS D, with delays that are less than 10 seconds from the threshold for LOS E). By 2035, six intersections surrounding the US 101/Broadway interchange will operate at unacceptable levels of service:

- Broadway/US 101 northbound on-ramp/Bayshore Highway (LOS E during the morning (AM) peak hour[4]);
- Broadway/US 101 southbound off-ramp/Rollins Road (LOS F during the AM and afternoon/evening [PM] peak hours);
- Cadillac Way/US 101 southbound ramps/Rollins Road (LOS F during the AM and PM peak hours);
- Broadway/Carolan Avenue (LOS F during the AM peak hour);

[4] The AM peak hour in both directions of US 101 at the Broadway interchange is 7:00 to 8:00 AM. The PM peak hour is 5:00 PM to 6:00 PM in the northbound direction and 4:00 PM and 5:00 PM in the southbound direction (URS 2010a).

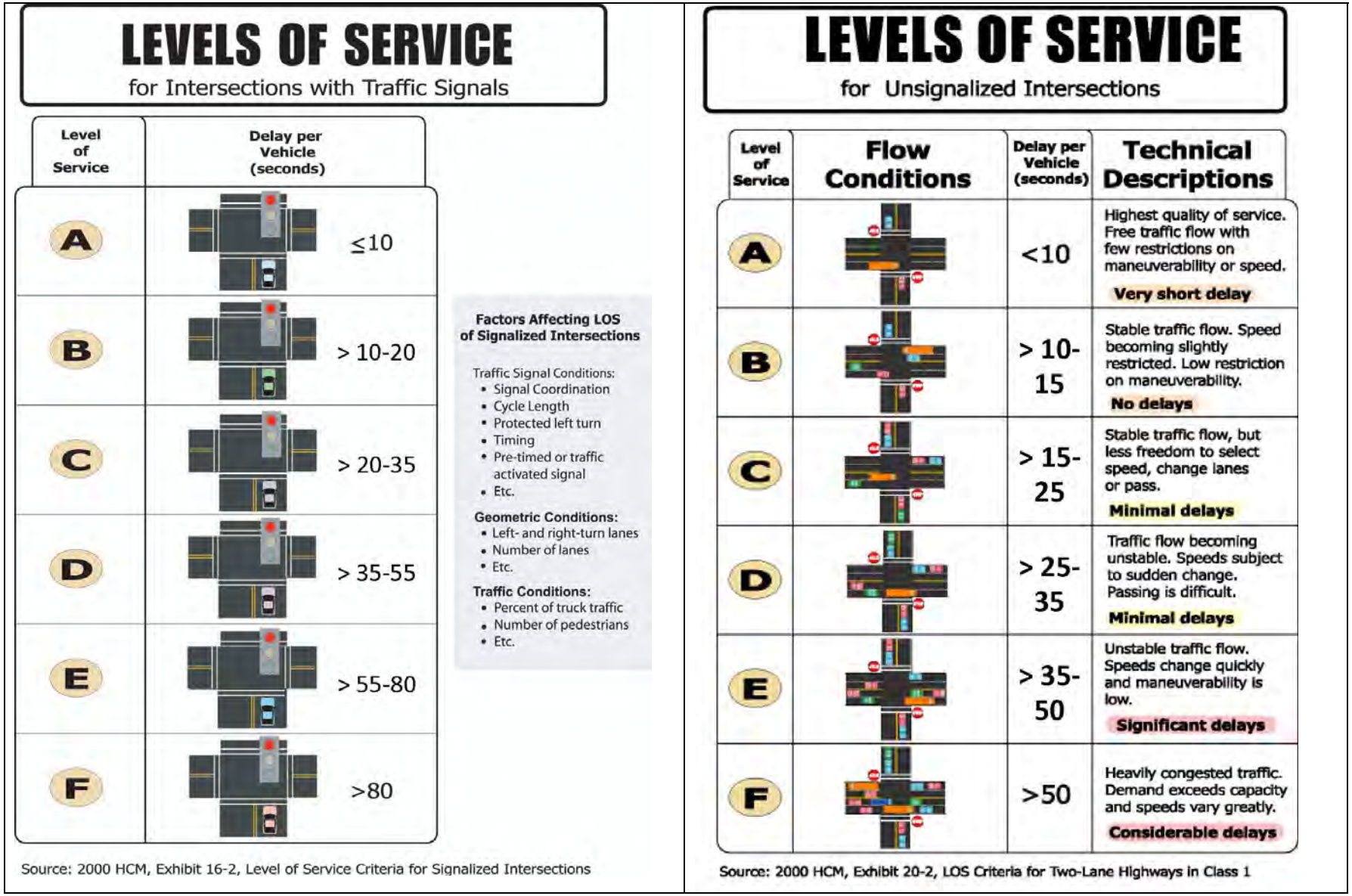

Figure 1-2 Levels of Service for Signalized and Unsignalized Intersections

- Broadway/California Drive (LOS E during the AM and PM peak hours); and
- Cadillac Way/Carolan Avenue (LOS E during the AM peak hour and LOS F during the PM peak hour).

The multiple traffic movements at the Broadway/US 101 southbound off-ramp/Rollins Road intersection and the Cadillac Way/US 101 southbound ramps/Rollins Road intersection constrain the number of vehicles that are able to pass through each signal cycle.

Poor operating conditions and long delays at the Broadway/US 101 southbound off-ramp/Rollins Road intersection would increasingly induce drivers to use Cadillac Way to travel between southbound US 101 and destinations west of the freeway. In the PM peak hour, this would result in LOS F conditions and delays of more than two minutes at the intersection of Cadillac Way and Carolan Avenue. Additional information about future traffic conditions is presented in Section 2.4.

Traffic Accident Surveillance and Analysis System (TASAS) data are summarized in Table 1-1 for US 101 in the project area for the period of April 1, 2005, through March 31, 2008 (Department 2009b). The data are expressed as accidents per million vehicle miles (MVM) traveled and accidents per million vehicles for ramps. The data show that 48.50 percent of accidents in the project area occur on northbound US 101 and 51.50 percent occur on southbound US 101. The total accident rate on this segment of US 101 (0.60 accidents/MVM) is less than the Statewide average for similar freeways (1.19 accidents/MVM).

The accident rates for the mainline and ramp movements listed in Table 1-1 are below the statewide average, with the exception of the northbound off-ramp to Broadway. The rate for this ramp (0.27 accidents/MVM) is slightly above the State average (0.25 accidents/MVM). According to the TASAS data, “hit object” collisions account for half of the accidents in this location, and the remaining accidents are evenly divided between sideswipe and rear-end collisions.

Table 1-1 Traffic Accident Data

Mainline							
		Actual Accident Rate/MVM			Statewide Average Accident Rate/MVM		
Route	# Accidents	Fatal	F+I	Total	Fatal	F+I	Total
US 101 (Post Mile 14.69 to 17.95)	499	0.001 [a]	0.19 [a]	0.60 [a]	0.006	0.37	1.19

Ramps									
Ramp Location	# Accidents			Accident Rates (Accidents/MVM)					
				Actual			Average		
	F	I	Total	F	F+I	Total	F	F+I	Total
NB off-ramp (before split)	0	0	4	0	0	**0.27**	0.002	0.08	0.25
NB off-ramp (segment to Broadway OC)	0	0	1	0	0	0.12	0.003	0.42	1.25
NB off-ramp (segment to Bayshore)	0	0	1	0	0	0.23	0.003	0.31	0.90
SB on-ramp from Rollins (after merge)	0	0	2	0	0	0.14	0.002	0.08	0.25
SB on-ramp (segment from Broadway OC)	0	1	3	0	0.21	0.62	0.001	0.24	0.70
SB on-ramp (segment from Rollins)	0	1	1	0	0.11	0.11	0.002	0.19	0.55
SB off-ramp (before split)	0	1	1	0	0.07	0.07	0.002	0.08	0.25
SB off-ramp (segment to Rollins)	0	0	1	0	0	0.13	0.005	0.39	1.15
SB off-ramp (segment to Broadway)	0	1	1	0	0.14	0.14	0.005	0.61	1.50
NB on-ramp from Broadway/Bayshore	0	1	7	0	0.08	0.55	0.002	0.32	0.80

Source: Department 2009b.

[a] One fatal accident on a ramp was reported during the study period, at Peninsula Avenue. The US 101/Peninsula Avenue interchange is 1.5 miles south (and outside) of the southern limits of the proposed project.

F = fatal
F+I = fatal plus injury
I = injury
MVM = million vehicle miles
NB = northbound
OC = overcrossing
SB = southbound

1.2.2.2. Roadway Deficiencies

In addition to the circuitous traffic movements described at the beginning of Section 1.2.2, the US 101/Broadway interchange has operational and structural deficiencies that compromise its performance. The short distance between the southbound on-ramp from westbound Broadway and the southbound off-ramp to eastbound Broadway (less than 200 feet) requires drivers to reduce their speed through the weaving section. At the Cadillac Way/US 101 southbound ramps/Rollins Road intersection, drivers making left turns from Rollins Road to US 101 and from US 101 to Rollins Road experience unacceptable delays during the PM peak hour (LOS E and F, respectively).

The radius of the loop ramp in the northwest quadrant of the US 101/Broadway interchange is below current design standards, which forces drivers to slow down and can cause backups on westbound Broadway during peak periods. The vertical clearance of the Broadway overcrossing is 14 feet, 6 inches, which does not meet the minimum vertical clearance requirement of 16 feet, 9 inches (Highway Design Manual, Section 309.2, Department 2009e).

A pedestrian overcrossing of US 101 was completed in November 2008 just south of Broadway. Some pedestrians and bicyclists continue to use the sidewalks of the Broadway overcrossing when it is their most direct route (Chou 2009). The Broadway overcrossing has 3-to-4-foot sidewalks on both sides (Department 2009c) and two 11-to-12-foot travel lanes (Chou 2009) in each direction. It has no striped bicycle lanes or additional shoulder width to accommodate bicyclists. The Caltrans Highway Design Manual (Section 1003.3; Department 2009d) does not specify minimum shoulder or lane widths for unstriped bikeways on streets, but requires interchanges to have either an outside lane width of 16 feet or a 12-foot lane and a 4-foot shoulder. The Broadway overcrossing, which is part of an interchange, does not conform to these widths.

1.2.2.3. Modal Interrelationships and System Linkages

The US 101/Broadway interchange is a connecting link in the local and regional transportation system. Although Broadway is not the closest US 101 interchange to SFO, drivers exiting at Broadway can use southbound Bayshore Highway to reach South McDonnell Road, which parallels US 101 to the west and provides access to SFO as well as airport-related long-term parking and rental car businesses. The interchange provides access to Bayshore Highway and Airport Boulevard and the hotels, restaurants, and other businesses that serve nearby SFO, as well as to Bayside Park and the Bay Trail east of US 101 from the residential and commercial areas to the west. The interchange also serves the Caltrain station at Broadway and California Drive, one of 30 Caltrain stations between San Francisco and Gilroy.

1.2.2.4. Independent Utility and Logical Termini

FHWA regulations (23 Code of Federal Regulations [CFR] 771.111[f]) require that the action evaluated:

- Connect logical termini and be of sufficient length to address environmental matters on a broad scope
- Have independent utility or independent significance (be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made)
- Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

The limits of the proposed project were established to fully address the geometric and safety conditions of the US 101/Broadway interchange. No subsequent transportation improvements in the area would be needed to optimize interchange operations. The

design of the Broadway overcrossing would allow for US 101 to be widened from four to five lanes in each direction if necessary in the future, although no plans for widening US 101 currently exist. The proposed project would not restrict consideration of alternatives for other reasonably foreseeable transportation improvements, including improvements to passenger rail service through Burlingame along California Avenue (discussed further in Section 2.19.3.2).

1.3. Project Description

This section describes the proposed project and the design alternatives that were developed by a multidisciplinary team to achieve the project's purpose and need while avoiding or minimizing environmental impacts. Two alternatives are evaluated in this document: Build and No Build.

The project limits are a 0.76-mile segment of US 101 between Millbrae Avenue to the north and Anza Boulevard to the south (Post Mile 16.30 to 17.06). The existing US 101/Broadway interchange is a trumpet configuration composed of the four-lane Broadway overcrossing and a combination of diagonal and loop ramps (Figure 1-1). The purpose of the project is to improve traffic movements and access around the US 101/Broadway interchange, accommodate future increases in traffic at intersections in and adjacent to the interchange, improve operations for vehicles entering and exiting southbound US 101 at the Broadway interchange; and increase bicyclist and pedestrian access across US 101 and around the interchange.

1.3.1. Build Alternative

The Build Alternative, based on the Buttonhook/Diamond Interchange evaluated in the 2005 PSR (Rajappan and Meyer 2005), would replace the existing interchange with a combination buttonhook-and-diamond configuration. Since the Buttonhook/Diamond Interchange was advanced as the Build Alternative, the design has been revised to improve the geometry, avoid the three Pacific Gas and Electric Company (PG&E) transmission towers in the northwest quadrant of the existing interchange, and avoid the pedestrian overcrossing just south of the interchange.

The Build Alternative would construct a new seven-lane Broadway overcrossing approximately 170 feet to the north of the existing four-lane structure. Broadway would be realigned to extend straight across US 101 from the Broadway/Rollins Road intersection on the west to the Bayshore Highway/Airport Boulevard intersection on the

east, eliminating the existing curvilinear alignment. The northern terminus of Airport Boulevard would be moved approximately 100 feet to the north to meet the new eastern landing of the overcrossing and maintain a four-leg intersection with Broadway, Bayshore Highway, and the access road for the Crowne Plaza Hotel. New traffic signals and streetlights would be installed as part of the project. The Build Alternative, as designed, is anticipated to take 2 to 2.5 years to construct.

1.3.1.1. Overcrossing Construction

Construction of the Broadway overcrossing would require the installation of abutments on both ends of the structure and a support column in the US 101 median. Approximately 250 piles would be driven to support the abutments and the column. The piles would be Class 140, 14 or 15 inches in diameter depending on the type used, and driven by impact hammer. Approximately 12 to 15 piles would be driven per day. Pile driving for the overcrossing is expected to last between two and four weeks. As groundwater has been encountered at a depth of approximately 4 feet in the project vicinity, dewatering at the abutment footings is anticipated. Tanker trucks would collect all extracted liquid and dispose of it at an appropriate off-site facility.

The new overcrossing's profile grade would be more than 2 feet higher than the existing structure to meet the current Department standard for vertical clearance over the freeway. Broadway, Rollins Road, the southbound US 101 off- and on-ramps, Airport Boulevard, Bayshore Highway, and the Crowne Plaza Hotel access road would also be raised to conform with the new overcrossing grade. Imported fill would be used for all project-related grade changes. Cross-sections of project roadways are shown in Sheets X-1 through X-10 in Appendix A.

1.3.1.2. Freeway On-Ramp and Off-Ramp Changes

On the west side of US 101, the existing partial cloverleaf interchange[5] with collector-distributor roads would be removed and replaced with a partial diamond interchange (Figure 1-1). The intersection of the southbound off- and on-ramps with Broadway would be elevated by up to 25 feet above the existing grade. Approximately 60 to 120 piles would be driven to permanently support the southbound off- and on-ramps. The piles would be Class 140, 14 or 15 inches in diameter depending on the type used, and driven by impact hammer. Approximately 12 to 15 piles would be driven per day. Pile driving for the southbound off- and on-ramps is expected to last approximately two weeks.

[5] For descriptions and illustrations of interchange types, see Appendix E.

On the east side of the interchange, the existing trumpet-configuration ramps would be replaced by a partial buttonhook interchange (Figure 1-1). The two-lane northbound US 101 off-ramp would pass under the new overcrossing and curve west to form a T-intersection at Bayshore Highway. Bayshore Highway would be widened from four to eight lanes between the new overcrossing and the northbound US 101 ramps.

1.3.1.3. Pedestrian and Bicycle Facilities

Both ends of the pedestrian overcrossing located approximately 100 feet south of the existing Broadway overcrossing would be reconfigured to meet the increased profile grades of Rollins Road to the west and Bayshore Highway and the Crowne Plaza Hotel access road to the east. The new Broadway overcrossing would have a 10-foot sidewalk on the north side and Class II (striped) bike lanes on both sides. The project would also provide new Class II bike lanes on Airport Boulevard and Bayshore Highway and Class III (unstriped) bikeways on Broadway west of the overcrossing and Rollins Road.

1.3.1.4. Ramp Metering Systems

Ramp metering signals and equipment would be installed at both the northbound and southbound US 101 on-ramps.

1.3.1.5. Right-of-Way Requirements

East of US 101, the realignment of Airport Boulevard at its intersection with Broadway and Bayshore Highway would require the acquisition of a gas station. West of US 101, an industrial property would be acquired to accommodate the northward realignment of Broadway just east of Rollins Road. Partial property acquisitions and temporary easements for construction access and staging could be necessary from commercial and industrial properties. No residential properties would be acquired for the proposed project.

The increased profile height of the new Broadway overcrossing would require adjacent approach roadways and parking lot driveways to be raised in elevation by 2 to 10 feet, depending on the distance from the overcrossing. Asphalt-concrete overlay would be added to increase roadway elevations, and in some locations retaining walls would be constructed to minimize encroachment onto existing properties.

1.3.1.6. Utilities and Drainage

To meet the Department’s freeway design standards, utilities that generally parallel the roadway within the proposed State right-of-way would be relocated. A number of utilities are anticipated to be affected, including PG&E electric cables and gas lines; Comcast and Sprint communication lines; and a City of Burlingame sanitary sewer,

storm sewer, and water line. Overhead utility lines along Airport Boulevard are proposed to be placed underground. The project will avoid the three PG&E transmission towers in the northwest quadrant of the existing US 101/Broadway interchange. All potentially relocated utilities are within the project footprint shown in Figure 1-1.

The existing drainage systems within the project limits consist of roadside ditches, cross culverts, longitudinal culverts, asphalt-concrete dikes, and concrete curbs with inlets to collect storm water at shoulders. The City of Burlingame also operates a pump station on the west side of US 101, which the project will not affect. The project would replace undersized culverts and install additional inlets and new longitudinal systems to meet current drainage design requirements.

An unnamed channel lies just east of the project footprint between Bayshore Highway and San Francisco Bay near Airport Boulevard (Figure 1-1). The channel occupies a drainage easement between a vacant lot and a gas station. Roadway and roadside runoff from around the eastern landing of the Broadway overcrossing and Bayshore Highway flows into the drainage channel by way of 18- and 24-inch culvert pipes under Bayshore Highway. The culvert outfall is flush with the bottom of the channel and routinely becomes clogged with sediment, restricting flows from draining into the channel. A low berm across the channel approximately 200 feet to the east of the outfall restricts the channel from draining into San Francisco Bay. Together, the clogged culvert and the berm result in localized flooding around the eastern landing of the overcrossing.

The project will implement one or more drainage modifications to eliminate the flooding around the eastern landing. One option is to restore the conveyance capacity of the unnamed drainage channel by cleaning the 24-inch culvert pipe that drains to the channel and determining if it has sufficient capacity to convey runoff. This option could also involve removing sediments from the channel to increase its capacity and removing the berm across the channel to allow flows to drain to the Bay. Another option is to install a new storm drainage system to collect runoff from the eastern landing area of the Broadway overcrossing and Bayshore Highway and to convey the runoff by gravity flow to an existing outfall at Easton Creek. The drainage modifications required to address the flooding will be developed during final design.

1.3.1.7. Creek Crossings

US 101 crosses Easton and Sanchez creeks within the project limits (Figure 1-1). Easton Creek is north of the proposed interchange. The existing 6-foot-by-6-foot double box culvert at Easton Creek on the east side of northbound US 101 would be extended by approximately 42 feet to accommodate the construction of the new northbound US 101 on-ramp. No changes would be made to Easton Creek or the culvert on the west side of US 101.

Sanchez Creek crosses US 101 in a triple box culvert south of the proposed interchange and flows into the Burlingame Lagoon. No work would take place in or near Sanchez Creek or the lagoon. Project activities near Sanchez Creek and the Burlingame Lagoon would be limited to pavement restriping within the existing paved roadway. A third waterway, Mills Creek, crosses US 101 in a culvert to the north and outside of the project limits and would not be affected by project construction (Figure 1-1). The Burlingame Lagoon and Mills Creek will be designated as environmentally sensitive areas (ESAs), and contractor access will be prohibited.

1.3.1.8. Retaining Walls and Concrete Barriers

Retaining walls would be constructed in several locations within the project footprint to minimize right-of-way impacts to existing business properties and to support the ramp approaches and roadway embankments. Approximately 375 piles would be driven to permanently support the retaining walls adjacent to the Broadway overcrossing and southbound off- and on-ramps. The piles would be Class 90, 14 or 15 inches in diameter depending on the type used, and driven by impact hammer. Approximately 12 to 15 piles would be driven per day. Pile driving for the retaining walls is expected to last between four and five weeks. Dewatering at retaining wall footings is anticipated, and tanker trucks would collect all extracted liquid and dispose of it at an appropriate off-site facility.

Retaining walls would also be constructed along the Crowne Plaza Hotel access road, Bayshore Highway, and Rollins Road. These retaining walls would be supported on spread footings and would not require pile driving.

Concrete safety barriers on spread footings would be constructed on the east side of US 101 along the proposed northbound off-ramp and on the east side of the proposed northbound on-ramp.

Soundwalls are present in the southern project limits (south of approximately Toyon Drive) along the west side of US 101 and would not be affected by the project.

1.3.1.9. Transportation Systems Management (TSM) and Transportation Demand Management (TDM) Alternatives

Transportation systems management (TSM) strategies increase the efficiency of existing facilities by accommodating a greater number of vehicle trips on a facility without increasing the number of through lanes. Transportation demand management (TDM) focuses on regional means of reducing the number of vehicle trips and vehicle miles traveled (VMT) as well as increasing vehicle occupancy. Although TSM and TDM measures alone could not satisfy the purpose and need of the project, the following TSM and TDM measures have been incorporated into the Build Alternative for this project:

- Ramp metering signals and equipment would be installed at both the northbound and southbound US 101 on-ramps to increase the efficiency of the ramp system during peak periods.
- A high-occupancy vehicle (HOV) lane would be installed on the northbound US 101 on-ramp to help encourage carpooling. An HOV lane was considered for the southbound on-ramp but eliminated from the project because constructing an additional lane would require property from residences along Rollins Road.
- The new Broadway overcrossing would have Class II (striped and designated) bike lanes along both sides. The project would also provide new Class II bike lanes on Airport Boulevard and Bayshore Highway and Class III (unstriped) bikeways on Broadway west of the overcrossing and Rollins Road. These improvements are included to facilitate nonmotorized travel.

1.3.1.10. Project Cost and Schedule

This project is included in the current RTP, the *Transportation 2035 Plan for the San Francisco Bay Area* (MTC 2009a, RTP ID No. 21602). The project is also included in the 2011 TIP (MTC 2010). The project is fully funded from Measure A tax proceeds, surplus funds from the US 101 Auxiliary Lanes Project,[6] local funds from the City of Burlingame, 2010 State Transportation Improvement Program (STIP) funds, future STIP funds and future federal earmark allocations.

[6] The proposed project is within the project limits of the US 101 Auxiliary Lanes Project, RTP ID No. 98176. The RTP identified the total project cost associated with the US 101 Auxiliary Lanes Project as $188.2 million. Construction is now complete and the actual project cost was $169 million, a cost savings of $19.2 million. This savings will more than cover the $15 million difference between the total cost identified for the US 101/Broadway project in Transportation 2035 ($59.5 million) and the Project Report ($74.5 million). The transfer of this cost savings from the US 101 Auxiliary Lanes Project to the proposed project will be reflected in the next TIP Amendment.

The preliminary estimated project costs are as follows:

Construction total:	$59,889,000
Support total:	$14,608,000
PROJECT TOTAL:	$74,497,000

Final plans, specifications, estimates, and right-of-way acquisitions are expected to be completed in January 2013. Project construction is anticipated to begin in 2014.

1.3.2. No Build Alternative

The No Build Alternative would make no improvements to the US 101/Broadway interchange. The existing constraints caused by the overcrossing and ramp configurations would continue to impair system performance. The City of Burlingame proposes improvements to bicycle and pedestrian access in the project area that would be constructed independent of the US 101/Broadway project (see Section 2.4.2.3). As a result, the No Build Alternative would meet the purpose and need of increasing bicycle and pedestrian access in the project area, although to a lesser degree than the Build Alternative (see Section 2.4.3.3). Otherwise, the No Build Alternative does not meet the purpose and need of the project because it would not improve traffic movements and access around the US 101/Broadway interchange, accommodate future increases in traffic at intersections in and adjacent to the interchange, or improve operations for vehicles entering and exiting southbound US 101.

1.3.3. Final Decision Making Process

After the public circulation period for this IS/EA, all comments were considered, and the Department selected a preferred alternative and made the final determination of the project's effect on the environment. In accordance with CEQA, as no unmitigable significant adverse impacts were identified, the Department prepared a Mitigated Negative Declaration (MND). Similarly, as the Department determined the action does not significantly affect the environment, the Department, as assigned by FHWA, issued a Finding of No Significant Impact (FONSI) in accordance with NEPA.

1.4. Identification of a Preferred Alternative

The Project Development Team identified the Build Alternative as the preferred alternative on October 14, 2010, after considering comments received from State,

regional, and local agencies, and the public. The following summarizes the reasons for choosing the Build Alternative over the No Build Alternative:

- Improvements to future traffic conditions would be greater. In 2035, six out of seven intersections adjacent to the US 101/Broadway interchange would operate at unacceptable levels of service (LOS E or F) with the No Build Alternative. With the Build Alternative, all adjacent intersections would operate at acceptable levels of service (LOS A through LOS D).
- Improvements to traffic circulation would be greater. The Build Alternative would construct a more conventional interchange that would reduce the circuitous movements and out-of-direction travel described in Section 1.2.2. It would also eliminate the five-legged intersection at Cadillac Way/US 101 southbound ramps/Rollins Road, where drivers making left turns from Rollins Road to US 101 and from US 101 to Rollins Road already experience unacceptable delays during the PM peak hour (LOS E and F, respectively). The Build Alternative would construct a partial diamond interchange on the west side of US 101, which would address two geometric constraints that can slow traffic during peak periods (the short distance between the southbound on-ramp from westbound Broadway and the southbound off-ramp to eastbound Broadway, and the nonstandard radius of the loop ramp in the northwest quadrant of the US 101/Broadway interchange).
- Improvements to bicycle and pedestrian facilities would be greater. The existing Broadway overcrossing has 3-to-4-foot sidewalks, no striped bicycle lanes, and no additional shoulder width to accommodate bicyclists. The Build Alternative includes a 10-foot sidewalk on the north side and striped bike lanes on both sides of the new Broadway overcrossing as well as striped bike lanes in many other locations within the project limits.

In conclusion, the Build Alternative would satisfy the purpose and need for the project described in Sections 1.2.1 and 1.2.2, and the No Build Alternative would not.

1.5. Alternatives Considered But Eliminated From Further Discussion Prior to Draft Environmental Document

Development of the proposed project included consideration of other interchange designs as well as options to address specific elements of the project design. The following summary describes these designs and options and why they were not advanced for further evaluation.

The 1990 PSR for the proposed project (Department 1990) identified nine build alternatives to reconstruct the US 101/Broadway interchange, address the circuitous traffic movements, accommodate future traffic increases at intersections in and adjacent to the interchange, and reduce weaving conflicts. Beginning in 2000, the PSR was updated based on the latest engineering requirements and standards (Rajappan and Meyer 2005). The following design variations were considered and eliminated.

- PSR Alternative 1, Direct Ramp with Southbound Loops, would have a similar configuration to the existing interchange except that the east landing of the Broadway overcrossing would be moved to the intersection of Airport Boulevard and Bayshore Highway. However, it would create unacceptable weaving problems from Rollins Road/Cadillac Way to US 101 and provide insufficient space for ramp metering.
- PSR Alternative 2, Narrow Diamond Interchange, would have short, straight on- and off-ramps to and from Broadway and an overcrossing that would meet the Airport Boulevard/Bayshore Highway intersection. PSR Alternative 3, Partial Cloverleaf Type “A” Interchange, and PSR Alternative 4, Partial Cloverleaf South Ramps, would have the same overcrossing configuration as PSR Alternative 2 with full or partial loops in the southeast and northwest interchange quadrants. PSR Alternatives 2, 3, and 4 were not advanced for further consideration because traffic analyses showed that ramp intersections would have unacceptable levels of service in 2025.
- PSR Alternative 5, Single Point Interchange, would have short, straight on- and off-ramps to a Broadway crossing underneath US 101. Site conditions and traffic staging for this design were unacceptable, and it would conflict with the foundations of the three existing PG&E towers in the northwest quadrant of the interchange.

Following the approval of the 2005 PSR, the Department re-evaluated PSR Alternative 6 (the Buttonhook/Diamond Interchange) as well as the following additional designs to investigate whether impacts to existing structures and facilities could be minimized:

- Build the Broadway overcrossing as separate structures (east and westbound) to avoid the PG&E towers and simplify construction staging;
- Build the overcrossing on separate structures but on a curve, which would maintain the existing overcrossing alignment and avoid the need for a temporary crossing of US 101; and

- Two variations of a single-point urban overcrossing and a single-point urban undercrossing.

All of the preliminary designs were eliminated based on constructability and design issues including encroachment on the PG&E towers, inadequate superelevation rates (the degree of banking on a roadway curve to improve driver comfort and reduce potential for skidding), potential turning radius problems for large trucks, potential for flooding, and lack of pedestrian and bicycle connectivity.

In August 2009, a value analysis (VA) study[7] was performed for the project (Value Management Strategies 2009). The VA study analyzed conceptual plans to improve the proposed design, reduce costs, eliminate design exceptions, and improve the construction schedule. The VA team developed the following six alternatives:

- VA Alternative 1 proposed to construct a northbound loop on-ramp in the southeast quadrant of the interchange to accommodate the high-volume left-turn movement at the intersection of Bayshore Highway and Airport Boulevard. It was determined that a northbound US 101 loop on-ramp would require additional right-of-way from the Crowne Plaza Hotel and have such a tight radius that it would require drivers to slow down to about 12 miles per hour (mph), which would impair traffic operations.
- VA Alternative 2 proposed to reduce the northbound off-ramp from two lanes to one lane but was determined to provide no operational improvement and little cost savings.
- VA Alternative 3 proposed the use of nonstandard alternative construction materials and methods to reduce costs.
- VA Alternative 4 proposed four variations to revise the existing parking lot entrance for the Holiday Inn and Max's Restaurant on Bayshore Highway. The entrance is directly across Bayshore Highway from the northbound US 101 on- and off-ramps. The proposed project would require a mandatory design exception for access control if the parking lot entrance remained in its existing configuration. The variations were:
    - Option 4.1, relocate the access for Holiday Inn and Max's Restaurant to Airport Boulevard.

[7] A VA study is used to evaluate whether other solutions might exist to meet project objectives. The study is conducted by a multidisciplinary team as a comprehensive, independent peer review of the proposed project alternatives. Recommendations from the VA study may be considered for inclusion in the project.

- Option 4.2, eliminate the existing access for Holiday Inn and Max's Restaurant and relocate it to the adjacent office building property.
- Option 4.3, eliminate the existing access for Holiday Inn and Max's Restaurant and relocate it to Airport Boulevard and the adjacent office building property, along San Francisco Bay.
- Option 4.4, improve the existing driveway channelization and signage for Holiday Inn and Max's Restaurant to help prevent vehicles exiting the parking lots from inadvertently entering US 101.

- VA Alternative 5 proposed to revise the profile of Broadway southbound on-ramp to accommodate the vertical clearance required to preserve the pedestrian overcrossing.

VA Alternatives 1, 2, and 3 were eliminated from further consideration because they would impact traffic operations, require additional right-of-way, and/or require nonstandard design that would be unlikely to be approved. In November 2009, the VA stakeholders determined that VA Alternative 4, Option 4.4 and VA Alternative 5 should be advanced for inclusion in the proposed project, and the Build Alternative was modified accordingly.

1.6. Permits and Approvals Needed

Table 1-2 summarizes the regulatory permits and approvals needed for the project.

Table 1-2 Regulatory Permits and Approvals

Agency	Permit or Approval	Status or Planned Action
U.S. Fish and Wildlife Service (USFWS)	Formal consultation for threatened and endangered species under Section 7 of the Federal Endangered Species Act (FESA).	● Biological Assessment submitted to the USFWS on September 9, 2010, to address species protected under Section 7 of the FESA. ● Biological Opinion issued on March 9, 2011.
NOAA's National Marine Fisheries Service (NOAA Fisheries)	Informal consultation for threatened and endangered species under Section 7 of the FESA.	● Consultation initiated on August 23, 2010, with submittal of a request for concurrence to NOAA Fisheries. ● NOAA Fisheries concurred with proposed effect finding on December 7, 2010.
U.S. Army Corps of Engineers (USACE), San Francisco District	One or more Section 404 permits, such as USACE Nationwide Permits 3 and 14, for placement of fill within waters of the U.S.	● Draft wetland delineation performed. ● USACE approval of wetland delineation requested in August 2010. ● USACE issued Preliminary Jurisdictional Determination on December 3, 2010. ● USACE permit application will be submitted during final project design.

Table 1-2 Regulatory Permits and Approvals

Agency	Permit or Approval	Status or Planned Action
Federal Highway Administration (FHWA)	Concurrence with project's conformity to Clean Air Act and other requirements.	● Air quality studies submitted for FHWA concurrence on February 1, 2011. ● FHWA issued conformity determination on March 9, 2011.
State Historic Preservation Officer (SHPO)	Concurrence on finding that the project does not affect historic resources and Section 106 requirements are satisfied.	● Cultural resources studies submitted for SHPO concurrence in December 2009. ● SHPO did not respond during the specified 30-day time period. ● The Department has assumed SHPO concurrence in accordance with the Section 106 Programmatic Agreement.
California Department of Fish and Game (CDFG)	1602 Agreement for Lake and Streambed Alteration Permit.	● Permit application will be submitted during final design.
San Francisco Bay Regional Water Quality Control Board (RWQCB)	Section 401 Water Quality Certification, National Pollutant Discharge Elimination System (NPDES) approval for work greater than one acre.	● Application for RWQCB Water Quality Certification or waiver will be submitted during final design. ● A Notice of Construction and Storm Water Pollution Prevention Plan will be prepared/submitted by construction contractor.
Bay Conservation and Development Commission (BCDC)	BCDC permit.	● Consultation initiated in May 2010 for project activities within BCDC jurisdiction. ● Permit application will be submitted during final design.
City of Burlingame	Coordination with the city.	● Various phases of project development and during final design phase.

Chapter 2. Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter addresses the environmental impacts of the proposed project as well as the identified avoidance, minimization, and mitigation measures that will be carried out as part of the project.

The environmental resource discussions presented in this chapter are based on the technical studies cited at the beginning of each discussion and listed in Appendix H. An evaluation of the proposed project consistent with CEQA checklist criteria is provided in Appendix B. Avoidance, minimization, and/or mitigation measures for each of the environmental resource areas are discussed in the following sections and summarized in Appendix F.

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

- Growth – The project would accommodate but not induce growth. The proposed project improvements are limited to the new overcrossing and ramp locations and profiles. No new lanes are proposed on US 101. The freeway capacity would remain the same. The interchange would not provide access to any area that it does not already serve. The proposed project would respond to existing and foreseeable demands of the community, rather than trigger further development beyond the project itself (URS 2009a).
- Environmental Justice – The proposed project would not cause disproportionately high and adverse effects on any minority or low-income populations. The study area population is predominantly white. The median household incomes in the City of Burlingame and in both of the Census Block Groups in the project area are above the Department of Health and Human Service poverty guideline (in 2009, $22,050 for a family of four; URS 2009a). Therefore, this project is not subject to the provisions of Executive Order (EO) 12898.

- Farmlands and Timberlands – No farmlands or timberlands exist in or near the project limits.
- Paleontology – A document review conducted for the area of the proposed project found no indication that paleontological resources are present. No evidence of paleontological resources was observed during field studies along the project alignment.

Human Environment

2.1. Land Use

The following discussion is based on the *Community Impact Assessment* (URS 2009a) for the proposed project, which was completed in November 2009.

2.1.1. Existing and Future Land Use

2.1.1.1. Affected Environment

Existing Land Use

The City of Burlingame occupies approximately 5 square miles. Two square miles are in San Francisco Bay and protected from development (City of Burlingame 2006). Otherwise, the city is primarily developed with residential, commercial, and industrial land uses.

Figure 2.1-1 shows land uses in and adjacent to the project area as designated in the *City of Burlingame General Plan* (City General Plan; City of Burlingame 1969, elements amended various years) and the *Burlingame Bayfront Specific Plan* (Bayfront Plan; City of Burlingame 2006). The City General Plan Land Use Map (last updated 2000) identifies the land use designations in the study area as commercial, industrial, parks, and residential. The waterfront east of US 101, known as the Bayfront area, is in the jurisdiction of the Bayfront Plan. The project area is within the plan's Inner Bayshore and Shoreline subareas, which are designated primarily for industrial/office and waterfront commercial uses, respectively. In general, office and industrial uses are concentrated in the northwestern quadrant of the US 101/Broadway interchange (Rollins Road, Nerli Lane, and Marsten Road); service, retail, and commercial uses are primarily in the southwestern interchange quadrant (Broadway and Rollins Road); and waterfront commercial uses such as hotels and restaurants are east of the interchange. Commercial uses on Bayshore Highway near the San Francisco Bay shoreline are oriented toward serving visitors traveling to and from nearby SFO.

The only residential land use near the project area is the Northpark Apartments at 1080 Carolan Avenue. This multibuilding complex occupies an 11-acre parcel generally bordered by Rollins Road, Cadillac Way, Carolan Avenue, and auto dealerships and residential properties to the south (all outside of the project area).

Commute Patterns

Land use patterns greatly influence the movement of people. The distance people must travel to work and shop, and the type of transport they use, affects the transportation networks of cities and larger metropolitan areas. Lengthening commute time and increasing congestion throughout much of California has brought about the concept of a "jobs/housing balance" (Department 1997). The essence of this concept is to encourage people to live as close to where they work as possible.

A basic measure of jobs-housing balance is the ratio of jobs to housing units in the area. A total of 1.00 generally indicates a jobs-housing balance. A total of more than 1.00 indicates there are more jobs than housing units and may indicate that many employees are commuting in from outside the area. A total below 1.00 indicates a greater number of housing units than jobs and may suggest that many residents are commuting to jobs outside the area.

The Association of Bay Area Governments (ABAG) projects that the City of Burlingame will have a jobs-housing balance of 1.86 in 2010 and 2.54 in 2035 (ABAG Projections 2007). The city's change in jobs-housing ratio coincides with the projected addition of 11,960 jobs between 2010 and 2035, an increase of about 50 percent (ABAG Projections 2007). The jobs-housing ratio is higher than that for San Mateo County (1.40 in 2010 and 1.70 in 2035). Burlingame's high ratio of jobs to housing suggests that many employees are commuting in from outside of the area, a trend that will continue through 2035.

Housing

The study area has an average vacancy rate of 5 percent, which is somewhat higher than the city and county averages. The 2000 U.S. Census reports that housing in the City of Burlingame is split nearly evenly between owner-occupied and rental units. The median home age in Burlingame is 50 years (Yahoo Real Estate 2009). Because Burlingame is an older developed city, most of the new housing stock in the future will come from redevelopment of land currently in use.

Development Trends

The City General Plan contains goals and policies to maintain sufficient housing stock. Policies include targeting underdeveloped parcels for redevelopment and encouraging construction of mixed commercial/residential development. Sites identified for residential reuse generally follow the transit village pattern, focusing on

US 101/BROADWAY INTERCHANGE
RECONSTRUCTION PROJECT
BURLINGAME, CA
EA 235840

FIGURE 2.1-1
LAND USE

URS Corp - Oakland CA - J.Owen L:\Projects\US101_Broadway_SMTA_28845059\Maps\Community_Impact_Assessment\Fig_3_Land_use_8_11.mxd - 10/30/2009 @ 9:09:01 AM

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the north end of Burlingame near the Bay Area Rapid Transit (BART) Millbrae station and near the Broadway and Burlingame Caltrain stations. None of the currently proposed residential development plans are in the project area, and the closest is approximately 0.25 mile away. Table 2.1-1 summarizes recent and proposed residential and commercial/institutional development projects identified by the City of Burlingame Planning Division.

Table 2.1-1 Recent and Proposed Development Projects in City of Burlingame

Project	Location	Distance from Project Area[1] (Miles)	Description	Status
Multifamily Residential				
18-unit condominium, including 2 affordable[2] units	556 El Camino Real	0.67	New 4-story structure to replace structure with 14 apartment units	Application submitted in August 2006; in review.
9-unit condominium, including 1 affordable unit	1512-1516 Floribunda Ave.	0.62	New 4-story structure to replace 1 single-family home and a 4-unit residential structure	Approved 9/12/05; constructed.
45-unit condominium, including 7 affordable units	1840 Ogden Drive	1.03	New 4-story structure to replace 1-story office building	Approved 7/24/06; construction in progress.
20-unit condominium, including 2 affordable units	1441-1445 Bellevue Ave.	0.71	New 4-story structure to replace 5 multifamily residential buildings with a total of 18 units	Approved 1/8/07; building permit not issued as of 8/24/10.
25-unit condominium, including 3 affordable units	1800 Trousdale Drive	0.96	New 7-story structure to replace 1-story office building	Approved 4/16/07; building permit not issued as of 8/24/10.
9-unit condominium, including 1 affordable unit	1226 El Camino Real	0.25	New 4-story structure to replace 4 apartment buildings with a total of 12 units	Approved 5/27/08; constructed.
Commercial/Institutional				
Office/life science campus	350 Beach Road	1.07	Multiple buildings with 730,000 square feet of floor space, parking in a 5-story structure and various lots	Application submitted in April 2010; in initial review stage.
Addition to existing commercial building	1801 Adrian Road	0.64	New 60,929-square-foot second floor addition to existing building	Application submitted in September 2009; in initial review stage.

Table 2.1-1 Recent and Proposed Development Projects in City of Burlingame

Project	Location	Distance from Project Area[1] (Miles)	Description	Status
Safeway store and 2-story retail/office building with	1450 Howard Avenue	0.95	Replacement of existing Safeway and Walgreens stores, construction of 44,982-square-foot store with 6,865-square-foot mezzanine and 2-story building with 18,739 square feet total	Application approved February 2010; building permit application in progress.
Remodel and addition to existing building for proposed office use	1427 Chapin Ave.	0.78	Demolition of several accessory structures and interior remodel of existing 2-story building, plus 2-story addition	Approved 4/24/06; constructed.
79-unit assisted living facility	1818 Trousdale Drive	1.00	New 4-story structure with below-grade parking to replace 1-story office building	Approved 7/10/06; construction in progress.
Remodel of existing building and construction of new building	1450 Rollins Road/20 Edwards Ct.	0.06	Veterinary/rehabilitation, adoption, education, and retail facility for Peninsula Humane Society and Society for the Prevention of Cruelty to Animals (SPCA)	Environmental document certified 6/18/07; construction in progress.
New retail building	260 El Camino Real	0.86	New 13,755-square-foot, 1-story structure with mezzanine level to replace gas station	Approved 1/20/09; constructed.

Source: City of Burlingame 2010.

[1] As measured from the boundaries of the project area (shown in red in Figure 2.2-1).

[2] In San Mateo County, "affordable" housing is defined as that with a contract rent or price affordable to low and moderate income households, based upon: rent not exceeding 30 percent of monthly income and monthly mortgage payment not exceeding 33 percent of gross monthly income (City General Plan p. H-39).

Land use planning on a countywide basis also emphasizes increasing the supply and density of housing in transit corridors. In 1999, the City/County Association of Governments of San Mateo County launched a Transit-Oriented Development Incentive Program to give the county and 20 participating cities incentives to build more housing near rail stations. The program allocates up to 10 percent of State TIP funds to encourage construction of transit-oriented development. The MTC adopted a Housing Incentive Program based on the San Mateo County model (C/CAG 2002; MTC 2009b).

2.1.1.2. Environmental Consequences

The proposed project would serve an existing developed urban area and would not involve unused rural land. The project would convert approximately four partial parcels and three full parcels designated for commercial and industrial land uses to transportation facilities, as described further in Section 2.2.2. Otherwise, the current land use designations in the study area would remain the same.

By reducing congestion and improving connectivity along Broadway in the vicinity of the Caltrain station, the project would support City of Burlingame and San Mateo County land use planning for transit village development.

2.1.1.3. Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is necessary.

2.1.2. Consistency with State, Regional, and Local Plans and Programs

2.1.2.1. Affected Environment

Transportation Plans/Programs

As described at the beginning of Chapter 1, the proposed project is included in the *Transportation 2035 Plan for the San Francisco Bay Area* (MTC 2009a, RTP ID No. 21602) and the 2011 TIP (MTC 2010, TIP ID No. SM-050028). Funding is described in Section 1.3.1.10.

City of Burlingame Plans

Both the City General Plan and the Bayfront Plan assume reconstruction of the US 101/Broadway interchange. The City General Plan calls for improving the interchange to provide for full directional movement and accommodate increasing traffic volume, particularly from the industrial areas of the city (Action CI[2]). The plan also calls for reducing congestion at the intersection of Rollins Road and Broadway and increasing capacity throughout the Broadway-Bayshore Area by reducing conflicts through traffic control measures, providing added lanes at critical points, and grade separating turning movements wherever feasible.

The Bayfront Plan emphasizes the need for access points to the Bayfront area to operate at acceptable levels of service. The plan identified the Broadway interchange as a major gateway into the Shoreline planning subarea, a 31-acre waterfront commercial zone that extends south from the Millbrae border to the Broadway interchange on the east side of Bayshore Highway along San Francisco Bay. The plan also lists reconstruction of the

Broadway interchange as one of the roadway improvements necessary to maintain an acceptable level of service in the Bayfront area.

The proposed project is consistent with the City General Plan and the Bayfront Plan. The configuration of the new US 101/Broadway interchange would eliminate the existing directional movement issues described in Section 1.2.2. The traffic forecast and operational analysis for the project shows that all intersections adjacent to the interchange will operate at acceptable levels of service in future year 2035 (URS 2010a; see Section 2.4.3.1). The project is expected to reduce delay at the Rollins Road/Broadway intersection by an average of 60 seconds or more compared to No Build conditions. At a major gateway into Shoreline planning subarea (the Broadway/Airport Boulevard/Crowne Plaza Hotel access road/Bayshore Highway intersection), level of service is projected to improve from LOS D under future No Build conditions to LOS C with the project (Section 2.4.3.1).

The project also would increase the number of lanes on the Broadway overcrossing, the freeway on- and off-ramps, and adjoining intersections at Airport Boulevard/Bayshore Highway/Crowne Plaza Hotel access road and at Rollins Road. The additional lanes are designed to reduce traffic backups on Broadway and other local streets that provide access to and from the interchange. This would improve congestion and delay times and support the existing waterfront commercial land uses in the Bayfront area and the commercial and industrial uses on the west side of the interchange.

San Francisco International Airport Influence Area

The area between the northern project limits and roughly 500 feet south of Easton Creek in the project area is within the Airport Influence Area for SFO (City of Burlingame 2007). Part 77 of the Federal Aviation Regulations defines several height and airspace protection parameters that apply to land use and development within Airport Influence Areas. No project structures would meet the height criteria that would require notification of or consultation with the Federal Aviation Administration.

San Francisco Bay Plan

The BCDC has legislative authority to issue permits and regulate public or private projects that affect the San Francisco Bay and adjacent wetlands and shorelands. The BCDC maintains jurisdiction over the San Francisco Bay, a shoreline band between the shoreline of San Francisco Bay and a line 100 feet landward of and parallel to the shoreline, salt ponds, some managed wetlands, and certain other waterways that are subject to tidal action. The BCDC performs its functions through the enforcement of

the San Francisco Bay Plan (Bay Plan; BCDC 2008). The BCDC's major policy goals include curbing Bay fill, promoting public access along the Bay, and supporting recreational uses along the Bay.

Two parts of the proposed project are within BCDC jurisdiction: northbound US 101 along the Burlingame Lagoon, and an area along San Francisco Bay northeast of the intersection of Airport Boulevard and Bayshore Highway. The project will require a BCDC permit. Project activities along northbound US 101 adjacent to the Burlingame Lagoon would be limited to pavement restriping. On the San Francisco Bay side, the project would shift the intersection of Airport Boulevard and Bayshore Highway to the north, realign sections of the Bay Trail (Section 2.1.4.3) and City of Burlingame sidewalk, and potentially restore the conveyance capacity of a clogged drainage channel (Section 1.3.1.6). No fill would be placed in the Bay.

The project would promote public access and support recreational uses along the Bay by restoring the affected Bay Trail segment to preconstruction condition or better, adding a 10-foot sidewalk on the north side and Class II (striped) bike lanes on both sides of the new Broadway overcrossing, and providing new Class II bike lanes on Airport Boulevard and Bayshore Highway and Class III (unstriped) bikeways on Broadway west of the overcrossing and Rollins Road. The project is consistent with the Bay Plan.

2.1.2.2. Environmental Consequences

The No Build Alternative would not support City General Plan and Bayfront Plan goals to provide for full directional movements and accommodate increasing traffic volumes at the US 101/Broadway interchange.

The proposed project is consistent with regional and local planning goals. The project would help meet the City of Burlingame's stated objectives for reducing congestion and improving connectivity in the interchange area to support surrounding land uses. The project design includes pedestrian and bicycle features that support City of Burlingame and Bay Plan objectives to increase public access to the Bay. No habitat conservation plans apply to the study area; therefore, the project would not conflict with any such plans.

2.1.2.3. Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is necessary.

2.1.3. Coastal Zone

2.1.3.1. Regulatory Setting

This project is in the coastal zone. The Coastal Zone Management Act of 1972 (CZMA) is the primary federal law enacted to preserve and protect coastal resources. The CZMA sets up a program under which coastal states are encouraged to develop coastal management programs. States with an approved coastal management plan are able to review federal permits and activities to determine if they are consistent with the state's management plan.

California has developed a coastal zone management plan and has enacted its own law, the California Coastal Act of 1976, to protect the coastline. The policies established by the California Coastal Act are similar to those for the CZMA; they include the protection and expansion of public access and recreation, the protection, enhancement and restoration of environmentally sensitive areas, protection of agricultural lands, the protection of scenic beauty, and the protection of property and life from coastal hazards. The California Coastal Commission is responsible for implementation and oversight under the California Coastal Act.

The Bay Conservation and Development Commission (BCDC), created prior to the California Coastal Act, retains oversight and planning responsibilities for development and conservation of coastal resources in the Bay Area. The regulatory authority for BCDC is the McAteer-Petris Act and the Suisun Marsh Protection Act.

2.1.3.2. Affected Environment

Two parts of the proposed project are within 100 feet of open water, marshes and mudflats of San Francisco Bay: northbound US 101 along the Burlingame Lagoon, and an area northeast of the intersection of Airport Boulevard and Bayshore Highway (Figure 1-1). Northbound US 101 is directly west of the Burlingame Lagoon, a marsh and lagoon complex that is connected to the Bay by a channel approximately 1.3 mile south of the Broadway overcrossing. Near the intersection of Airport Boulevard and Bayshore Highway, Airport Boulevard is bordered on the east by San Francisco Bay, and the parcels along the east side of Bayshore Highway back onto the Bay shoreline. As stated in Section 2.1.2.1, these areas are within BCDC jurisdiction.

2.1.3.3. Environmental Consequences

Project activities along northbound US 101 adjacent to the Burlingame Lagoon would be limited to pavement restriping. No work would take place in the lagoon, and the project would not affect Sanchez Creek or its triple box culvert under US 101.

On the San Francisco Bay side, the project would shift the intersection of Airport Boulevard and Bayshore Highway to the north. Sections of the Bay Trail and City of Burlingame sidewalk would be realigned to accommodate the new intersection. These activities are described in detail in Section 2.1.4.3. The project would also potentially restore the conveyance capacity of a clogged drainage channel between Bayshore Highway and the Bay (Section 1.3.1.6). None of the proposed project activities would place fill in the Bay.

As described in Section 2.1.2.1 (under San Francisco Bay Plan), the project is consistent with BCDC goals to curb Bay fill, promote public access along the Bay, and support recreational uses along the Bay.

The project will require a BCDC permit. The project team initiated contact with BCDC regarding the proposed project in July 2009 and provided preliminary boundary mapping and other project information in May 2010. A permit application will be submitted during the project design phase.

2.1.3.4. Avoidance, Minimization, and/or Mitigation Measures

Measures to avoid or minimize disruption to recreation users are listed in Section 2.1.4.4. No additional measures are proposed.

2.1.4. Parks and Recreation

2.1.4.1. Regulatory Setting

Section 6009(a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) amended Section 4(f) legislation at 23 USC 138 and 49 USC 303 to simplify the processing and approval of projects that have only *de minimis* impacts on lands protected by Section 4(f).

The FHWA's final rule on Section 4(f) *de minimis* findings is codified in 23 CFR 774.3 and 23 CFR 774.17.

In the first substantive revision to Section 4(f) since its enactment, SAFETEA-LU amended the law to simplify the processing and approval of projects that have only *de minimis* impacts on lands protected by Section 4(f). This revision provides that once the U.S. Department of Transportation determines that a transportation use of Section 4(f) property, after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, results in a *de minimis* impact on that property, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation

process is complete. Responsibility for compliance with Section 4(f) has been assigned to the Department pursuant to the memoranda of understanding (MOUs) under SAFETEA-LU Sections 6004 and 6005, including determinations and approval of Section 4(f) evaluations as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

2.1.4.2. Affected Environment

Senate Bill 100 of 1987 directed the ABAG to develop a plan for a trail around the Bay. The Bay Trail Plan, adopted by ABAG in July 1989, includes a proposed alignment; a set of policies to guide the future selection, design and implementation of routes; and strategies for implementation and financing. Segments of the Bay Trail are built, owned, managed, and maintained by cities, counties, park districts and other agencies with land management responsibilities, often in partnership with local nonprofit organizations, citizens groups, or businesses. When complete, the Bay Trail will be a continuous 500-mile network of trails connecting the Bay shoreline of all nine Bay Area counties. Approximately 290 miles of the alignment have been completed (ABAG 2009).

A portion of the Bay Trail lies within the project limits along the San Francisco Bay on the eastern side of Airport Boulevard (see Figure 2.1-2). This segment of the trail has been developed and maintained by the City of Burlingame and has signage as the "Bay Front Trail." For purposes of this report, the Bay Front Trail is referred to as the Bay Trail.

Within the project limits, the Bay Trail is 8 feet wide and extends from a bulb-shaped cul-de-sac/turnaround near the corner of Airport Boulevard and Bayshore Highway (referred to as the Bay Trail turnaround; see Figure 2.1-2) southeastward along Airport Boulevard. The Bay Trail turnaround, which has no recreational fixtures other than a bench, is between a gas station and San Francisco Bay. The Bay Trail in the project limits is 8 feet wide and separated from Airport Boulevard by a grass-covered median.

Adjacent to the Bay Trail and just southeast of the Bay Trail turnaround, a trailside seating area in a grove of trees with lighting, streetside landscaping, and a Bay Trail sign is also within the project limits. (This area is hereafter referred to as the Bay Trail extension; see Figure 2.1-2.) The seating area provides views of San Francisco Bay. The Bay Trail extension was developed by the City of Burlingame as part of a grant from SMCTA and the California Coastal Conservancy for improvements to the Bay Trail.

Figure 2.1-2 Section 4(f) Resources Near the Project Limits

Source: Base photo from Google Earth

Other Bay Trail segments and facilities are outside of the project limits but within the project study area. Between the Bay Trail and Airport Boulevard, approximately 200 yards east of the project limits, is a small parking lot, another seating area, and trail signage. Across Airport Boulevard is another Bay Trail segment that connects the following City of Burlingame recreational facilities, which lie just east and south of the project area:

- Bayside Park (Figures 1-1 and 2.1-2) has 22 acres divided between a lower deck, accessed from Airport Boulevard, and an upper deck, accessed from Anza Boulevard. The City of Burlingame Water Treatment Facility lies between the two decks. The lower deck of Bayside Park, which is adjacent to the proposed project area, has two full baseball diamonds, a soccer field that can be used for baseball, and a parking lot. The upper deck has a golf driving range, a group of putting greens, a soccer field, a “tot lot,” an open field for informal group activities, and a large parking lot.

- The Burlingame Lagoon (Figure 1-1) serves as a wildlife and waterfowl refuge and is bordered to the west by US 101 and to the east by Bayside Park, the City of Burlingame Water Treatment Facility, and commercial and industrial development. Another Bay Trail segment follows the east side of the lagoon and has wetland observation points and interpretive signage (City of Burlingame 2006). The lagoon area and surrounding pathways are approximately 110 acres.

The Bay Trail within the study area is also included in the San Mateo County 2001 Trails Plan (San Mateo County Parks and Recreation Commission 2001), which provides design and management guidelines for trail construction and operation in the county. No new county trails are proposed in the immediate project area.

All of the facilities described in this section are considered publicly owned parkland under the terms of Section 4(f) of the Department of Transportation Act.

2.1.4.3. Environmental Consequences

Temporary Impacts

Project construction would result in temporary impacts to recreational facilities within the project limits and study area. Closures or detours of a segment of the Bay Trail would be required for 4 to 6 weeks to preserve public safety while construction takes place along Airport Boulevard (east of Bayshore Highway). Once the realignment of Airport Boulevard is completed, the trail would be reopened. The length of the trail closure(s) would be substantially shorter in duration than the overall project construction period of 2 to 2.5 years. Any detour routes onto Airport Boulevard would be separated from traffic by a temporary barrier (such as a K-rail) to ensure the safety of trail users. The Bay Trail turnaround and extension would also need to be closed for 4 to 6 weeks during construction along Airport Boulevard.

Demolition of the gas station at the corner of Airport Boulevard and Bayshore Highway, demolition of the Broadway overcrossing and ramps, pile installation for the new overcrossing and retaining walls, realignment of Airport Boulevard, and pavement removal and installation would cause periodic noise and visual disturbance to recreationists. These effects would be most pronounced when the activities are in progress near the Bay Trail, Bay Trail turnaround, and Bay Trail extension. As stated above, temporary closures of these facilities would be required during the realignment of Airport Boulevard, which would prevent recreationists from being exposed to noise and visual disturbance during some construction periods.

Outside of the project limits, visitors to Bayside Park could also experience periodic construction noise and visual disturbance. Tall trees around the northern and western perimeter of Bayside Park would provide some visual shielding. The Crowne Plaza Hotel building and a berm to the south of the building would shield recreationists on the Bay Trail segment at the Burlingame Lagoon from most noise and visual disturbance. In addition, many project construction activities would take place at night, when the park is closed.

Permanent Impacts

The realignment of Airport Boulevard would require an approximately 150-foot section of the Bay Trail to be shifted to the north. Part of an existing grass median between the Bay Trail and roadway of Airport Boulevard, some shrubs and ornamental landscaping, and pavement would have to be removed to accommodate the realignment of Airport Boulevard and the Bay Trail. Approximately 2,400 square feet of the Bay Trail would be affected (see Figure 2.1-3).

The realigned trail section would be 10 feet wide. The realigned trail would conform with the existing trail alignment at the Bay Trail turnaround, which would not be permanently affected. The elevation of Airport Boulevard and the Bay Trail would be gradually increased by approximately 8 feet as they approach Bayshore Highway, and an earth embankment would be installed along the northern side of the road. No Bay fill would be required to support the realigned road or trail section. The realignment of the Bay Trail would not affect its long-term use.

The realignment of Airport Boulevard and the Bay Trail to the north would require permanent acquisition of an approximately 800-square-foot section at the southwestern edge of the Bay Trail extension (see Figure 2.1-3). The section that would be acquired contains pavement and low-lying landscaping and is not critical to the recreational use of the Bay Trail extension. Trees that provide shade to the seating area would not be affected. The existing seating area would remain in place and would continue to provide views of the Bay.

The project would add a paved path from the southeastern corner of Broadway, Bayshore Highway, Airport Boulevard, and the Crowne Plaza Hotel access road within the existing right-of-way to an existing path into the northwestern corner of Bayside Park (see Figure 2.1-3). The paved path would improve bicycle and pedestrian access to Bayside Park. The project would have no permanent adverse impacts to the Bay Trail, Bayside Park, or the Burlingame Lagoon.

Although the project would provide additional access to the shoreline, Bay Trail, and Bayside Park, it is not anticipated to increase the use of these facilities such that substantial physical deterioration would occur or accelerate.

Section 4(f) De Minimis Findings

The City of Burlingame owns and maintains the Bay Trail segment and Bay Trail extension in the project limits as well as Bayside Park and the Burlingame Lagoon outside of the project limits. All four facilities are publicly owned parkland and qualify for protection under Section 4(f) of the Department of Transportation Act. Impacts to these facilities constitute "use" of Section 4(f) resources. The Department has determined that the project's impacts to these facilities are minimal—that is, *de minimis* under the terms of Section 4(f)—because the transportation use of the properties, with avoidance, minimization, or enhancement measures incorporated, would not adversely affect the activities, features, and attributes that qualify the properties for protection under Section 4(f).

The Department, as assigned by FHWA, made the final determination on the *de minimis* finding after the following steps were completed:

- The City of Burlingame agreed, in writing, that the use would not adversely affect the features and attributes of the property, and that the city has been informed of the Department's intent to make a *de minimis* finding based on that agreement. The City of Burlingame's concurrence with the *de minimis* impact finding is included in Appendix I.
- The public had the opportunity to review and comment on the effects of the project on the protected activities, features, and attributes of the Section 4(f) properties during the public review period for this document (August 30, 2010, through September 29, 2010). The public review period was advertised through a mailout to nearby property owners, residents, and stakeholders; a press release; notices on the City of Burlingame and SMCTA websites; and advertisements in two local newspapers (see Section 3.3). The Department and SMCTA held a public meeting for the project on September 15, 2010. The public meeting included a presentation that addressed potential project effects on the Bay Trail and Bay Trail extension. Public comments regarding effects on the Section 4(f) properties are included and addressed in Appendix J.

The avoidance, minimization, and enhancement measures needed to make the *de minimis* finding are listed in Section 2.1.4.4.

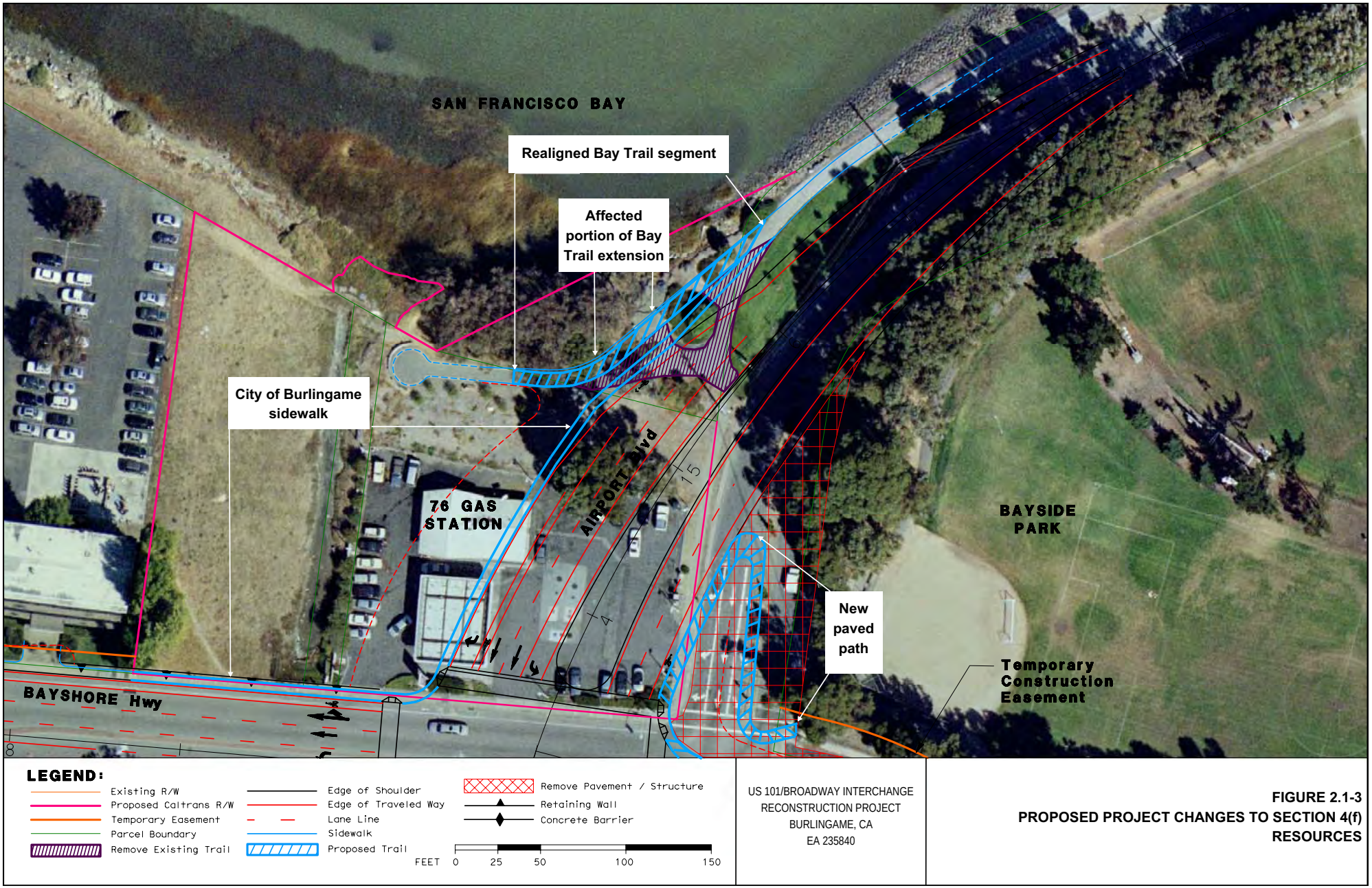

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FIGURE 2.1-3
PROPOSED PROJECT CHANGES TO SECTION 4(f) RESOURCES

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2.1.4.4. Avoidance, Minimization, and/or Enhancement Measures

Parts of the Bay Trail and Bay Trail extension will need to be temporarily closed or detoured during project construction. The Department and SMCTA will develop a trail closure plan during the final design phase and before submitting the BCDC permit application for the proposed project. The trail closure plan will:

- Minimize the number of days that the Bay Trail and Bay Trail extension will be closed to the public;
- Include a mandatory signage plan notifying Bay Trail users of closed segments or full closures. Notices will be posted at Bay Trail access points as appropriate; and
- Provide a detour or alternate route for trail users during construction. If safety concerns prevent use of another route, the trail closure will be kept to the minimum period possible.

A Transportation Management Plan (TMP) will be developed as part of the project to address impacts to motor vehicle, bicycle, and pedestrian access during project construction. The plan will maintain bicycle and pedestrian access to the maximum extent feasible as part of construction staging. The plan will include briefing local public officials and developing a public information program to notify the public of project progress and upcoming closures and detours. The public information program will include outreach to ride sharing agencies, transit operators, and neighborhood and special interest groups.

2.2. Community Impacts

This section is based on the *Community Impact Assessment* (URS 2009a) for the proposed project, which was completed in November 2009.

2.2.1. Community Character and Cohesion

2.2.1.1. Regulatory Setting

NEPA established that the Federal government use all practicable means to ensure that all Americans have safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 USC 4331[b][2]). The FHWA in its implementation of NEPA (23 USC 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse

environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under CEQA, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

2.2.1.2. Affected Environment

Demographic Profile

The entire study area for community impacts lies within the City of Burlingame. Census Block Groups that most closely correspond to the project area were examined, and population and community characteristics of the groups were compared with the totals for the City of Burlingame. The community impacts study area and the Block Groups evaluated are shown in Figure 2.2-1.

The City of Burlingame had a population of 28,158 in 2000, with the study area representing about 14 percent of the total population. The predominant age group (19 percent) in the city is between 35 and 44 years old, and just over 50 percent of the population falls between the ages of 25 and 54. By contrast, in both block groups in the study area, the predominant age group is 25 to 34, and just under 50 percent of the population (almost 62 percent) falls between the ages of 25 and 44. In general, the age composition of the study area population is somewhat younger than the composition of Burlingame as a whole.

Whites represent the majority of the population in the study area and the city—from 77 percent in the city as a whole to 60 percent in Census Tract 6054, Block Group 5 (CT6054 BG5). Census Tract 6051, Block Group 2 (CT6051 BG2) has an almost identical ethnic composition to the City of Burlingame. CT6054 BG5 has nearly twice as many Asian, other race, two or more races, and Hispanic/Latino residents than either the city or CT6051 BG2, but a lower percentage than San Mateo County.

Incomes in the City of Burlingame are well above the State average but similar to the San Mateo County average. The median household incomes within CT6051 BG2 ($59,483) and CT6054 BG5 ($60,958) are lower than for the city ($68,526) and county ($70,819) but higher than for the State ($47,493). Per capita income is

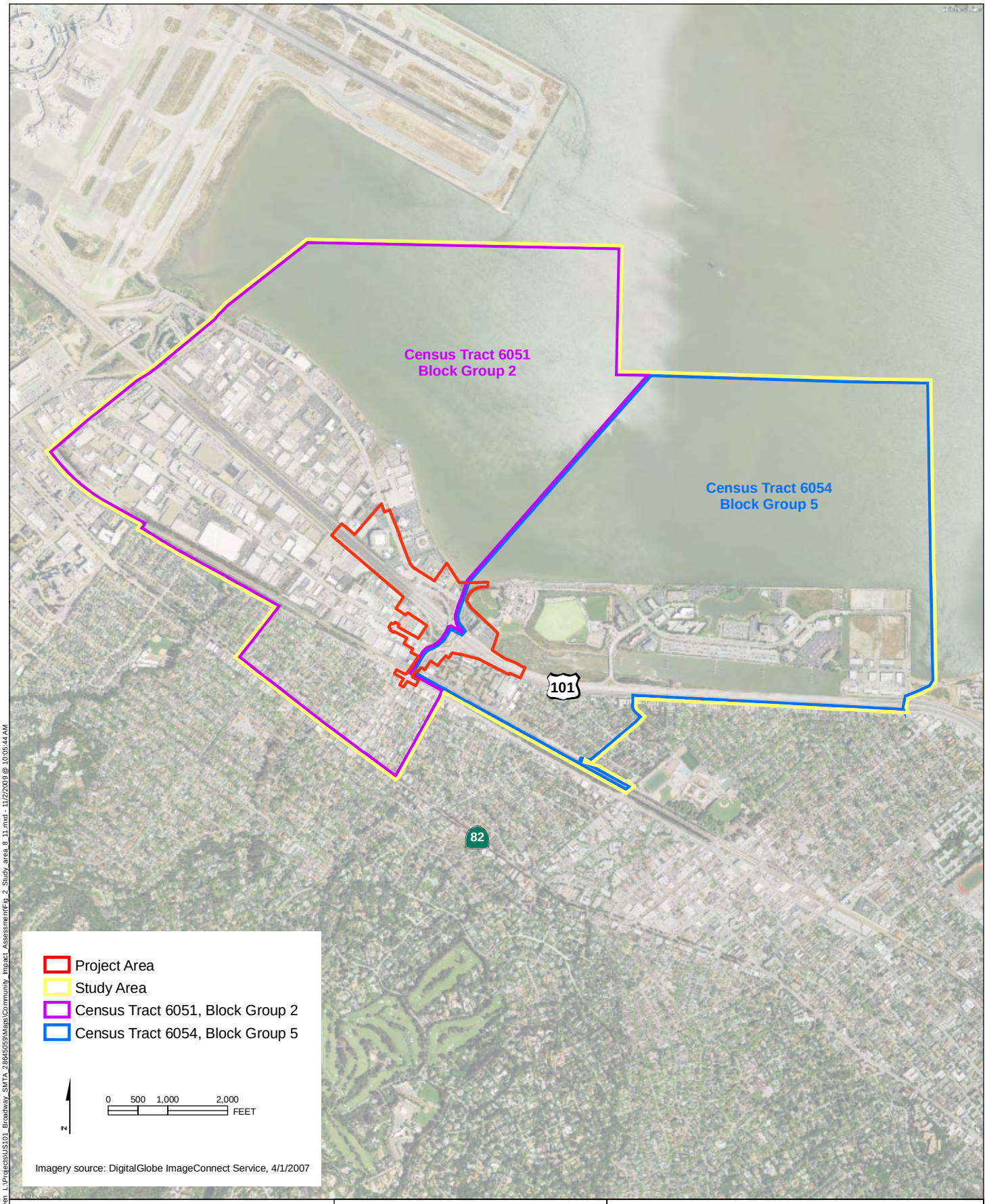

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FIGURE 2.2-1
COMMUNITY IMPACT ASSESSMENT STUDY AREA

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also less than the Burlingame average in both Block Groups but higher than the State average.

Approximately 5.7 percent of Burlingame residents were below the poverty level in 1999, whereas the State average was 14.2 percent and the San Mateo County average was 5.8 percent. Poverty rates in both Block Groups were lower than the State rate of 14.2 but higher than the city and county rate. The poverty rate in CT6054 BG5 (14.1 percent) was more than twice as high as in CT6051 BG2.

Community Profile

No residences exist in the project limits. The only residential land use near the project limits is the Northpark Apartments (see Section 2.1.1.1).

The US 101/Broadway interchange connects two economic centers in the City of Burlingame: an "auto row" and downtown area on the west, and the Bayfront area on the east.

West of the project limits is the Broadway center, which is on Broadway between California Drive and El Camino Real. The five-block district has restaurants, a large drug/variety store, and other consumer services for area residents. At California Drive, a historical arched "BROADWAY BURLINGAME" sign marks the entry to the Broadway center, and predominantly one-story buildings, established businesses (such as a candy and ice cream shop that opened in 1946), and streetside benches give the area a feeling of small-town intimacy.

Bayshore Highway and Airport Boulevard within the project limits have commercial uses including a restaurant, hotels, and a gas station.

The study area is in the Burlingame School District and the San Mateo Union High School District. No schools are within the project limits or study area. Burlingame High School, located at 1 Mangini Way, is one block southwest of CT6054 BG5 and approximately 1 mile from the project area.

2.2.1.3. Environmental Consequences

The proposed project would not displace or relocate any residents, change any existing community boundaries, physically divide an established community, or create a new barrier to movement within the project area. The proposed Broadway overcrossing will remain in the same general location and continue to connect the business and residential areas west of the US 101 with the recreation and commercial

uses to the east. The pedestrian overcrossing will remain in place, and a sidewalk and bike lanes on the Broadway overcrossing will provide additional pedestrian and bicycle access across US 101 (Section 1.3.1.3). A TMP will be developed as part of the project to address impacts to motor vehicle, bicycle, and pedestrian access during project construction, as described in Section 2.1.4.4.

2.2.1.4. Avoidance, Minimization, or Mitigation Measures

No further avoidance, minimization, or mitigation is necessary.

2.2.2. Relocations and Real Property Acquisition

2.2.2.1. Regulatory Setting

The Department's Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 CFR Part 24. The purpose of the RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Please see Appendix D for a summary of the RAP.

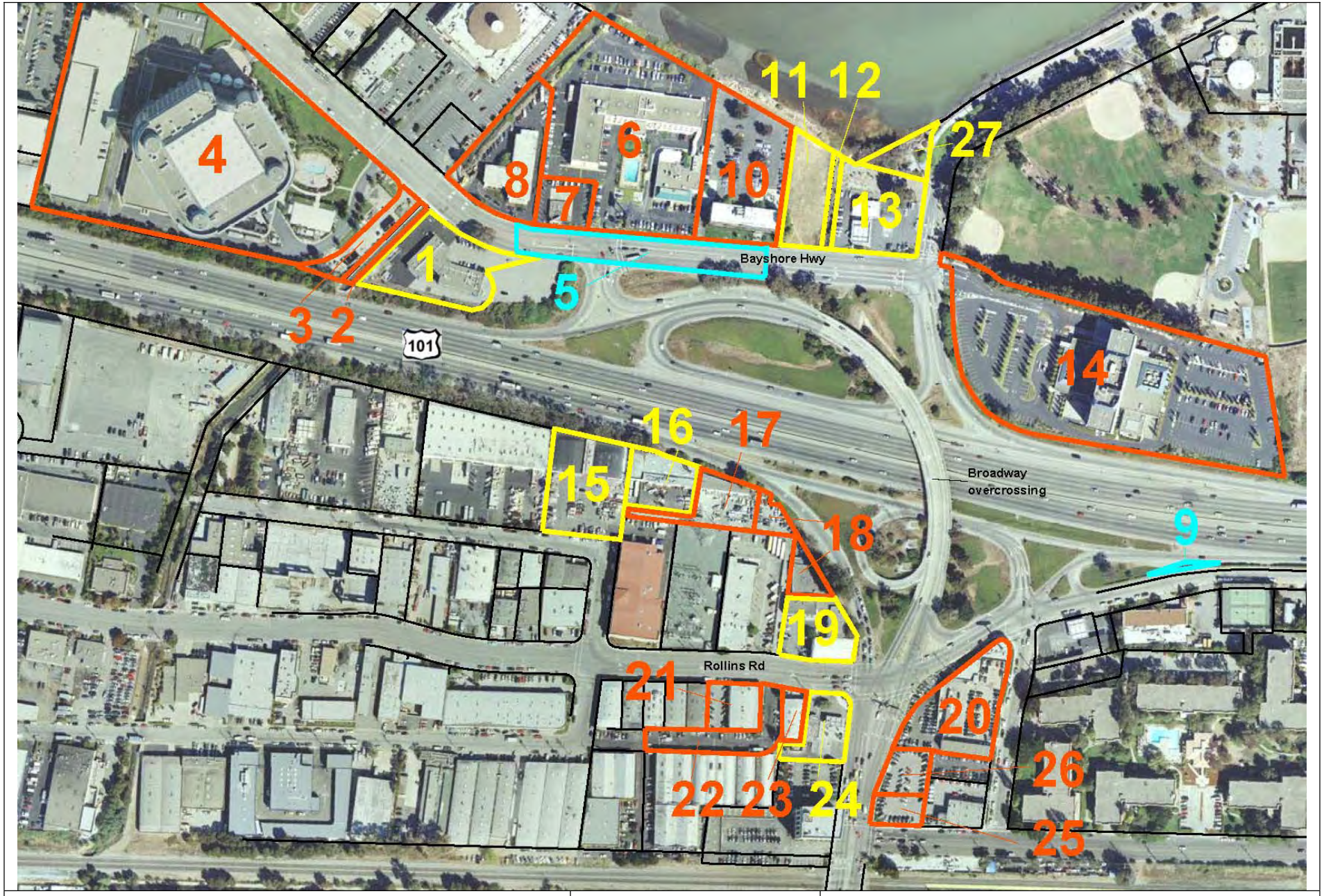
All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq.). Please see Appendix C for a copy of the Department's Title VI Policy Statement.

2.2.2.2. Affected Environment

In addition to the right-of-way needed at the Bay Trail extension (see Section 2.1.4.3), the proposed project could require full or partial acquisitions or temporary construction easements (TCEs) at commercial or industrial properties, City of Burlingame property, and a vacant lot. West of US 101, the affected properties are located on or adjacent to Broadway, Rollins Road, and the southbound US 101 off-ramp. East of US 101, the affected properties are on or adjacent to Bayshore Highway and Airport Boulevard. No residential properties would be affected.

2.2.2.3. Environmental Consequences

The potentially affected parcels, based on the preliminary design, are listed in Table 2.2-1 and shown in Figure 2.2-2. The following summarizes the potential property effects of the proposed project.



Temporary construction easement
Full or partial property acquisition
City of Burlingame property relinquishment to Caltrans
1 See property descriptions in Table 2.2-1

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FIGURE 2.2-2
PROPERTIES POTENTIALLY AFFECTED
BY THE PROJECT

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Table 2.2-1 Properties Potentially Affected by the Project

Parcel ID (see Figure 2.2-2)	APN#	Street Address	Type of Property	Acquisition (Full/Partial), TCE, or Relinquishment
1	026-141-020	1299 Bayshore Highway	Office Building (multiple tenants)	Partial and TCE
2	026-112-150	City-owned parcel	Easton Creek	TCE
3		City-owned parcel	Parking Lot	TCE
4	026-112-140	1333 Bayshore Highway	Hyatt Regency	TCE
5	NA	City-owned parcel	Bayshore Highway	Relinquishment to Caltrans
6	026-142-080	1250 Bayshore Highway	Holiday Inn Express/ Max's Restaurant	TCE
7	026-142-070	1288 Bayshore Highway	Car Rental	TCE
8	026-142-110	1290 Bayshore Highway	Office Building (multiple tenants)	TCE
9	NA	City-owned parcel	Rollins Road	Relinquishment to Caltrans
10	026-142-090	1240 Bayshore Highway	Office Building: Environmental Chemical Corp.	TCE
11	026-142-020	No Address	Vacant Lot	Full
12	026-142-030	No Address	Drainage Easement	Full
13	026-142-130	1200 Bayshore Highway	76 Conoco Phillips gas station	Full
14	026-290-310	1177 Airport Boulevard	Crowne Plaza Hotel	TCE
15	026-134-190	1322 Marsten Road	Industrial: Mid Peninsula Roofing	Partial and TCE
16	026-134-030	1320 Marsten Road	Industrial: Clark's Machine Shop, Discount Signs and Neon, Western Exterminator	Partial and TCE
17	026-134-150	1244-1246 Rollins Road	Industrial: JK Marble, Pro Detail & Trim	TCE
18	026-134-160	1222 Rollins Road	Industrial: Hanson's Auto Body	TCE
19	026-134-080	1212 Rollins Road	Industrial: No tenant as of 8/10	Full
20		City-owned parcel	City land on lease to car dealer	TCE
21	026-131-080	1221 Rollins Road	Industrial: Somerset Printing	TCE
22	026-131-180	1241 Whitehorn Way	Industrial: Driveway	TCE
23	026-131-100	1213 Rollins Road	Industrial: Autohaus Schmidt	TCE
24	026-131-170	1000 Broadway	Gas Station	Partial and TCE
25	026-233-110	1049 Broadway	Commercial: Mike Harvey Honda	TCE
26	026-233-020	1041 Broadway	Commercial: Mike Harvey Honda	TCE
27	026-290-370	No Address	City of Burlingame property: Bay Trail extension	Partial; land transfer of City-owned property

Source: San Mateo County Assessor's Office, field visits.

Note: This is only a preliminary assessment. Some partial acquisitions could become full acquisitions, or no acquisitions at all. The final decision about rights-of-way, temporary construction easements, or relinquishments will be made during final design.

APN = Assessor's Parcel Number
NA = Not applicable
TCE = Temporary construction easement

West of the US 101/Broadway Interchange

The realignment of the Broadway overcrossing to the north would require removing a building on the northeastern corner of Broadway and Rollins Road (1212 Rollins Road). The building, a two-story warehouse with offices, is one of four around a common parking lot with 25 spaces. Although the buildings are adjacent to each other, they have different addresses and do not appear to be physically connected.

The building that would be removed is currently vacant and for lease. If the building is leased, coordinating with the property owner to end the new lease term during the project right-of-way process would reduce the severity of a potential relocation impact. No relocation impact would occur if the building remains unleased.

A number of other property impacts would occur west of the interchange. The southbound US 101 off-ramp would be shifted westward and increased in elevation approaching the interchange, and a retaining wall would be constructed along the ramp behind buildings on Nerli Lane and Marsten Road. This could require partial acquisitions at two industrial parcels that house four businesses. The area bordered by US 101, Broadway, California Drive, and Millbrae Avenue is dedicated to industrial and commercial land uses, and it is expected that replacement property would be available there.

The realignment of Broadway to the north and the higher overcrossing profile would require increasing the elevation of both Broadway and Rollins Road. Driveway modifications to conform to the higher roadway may be needed at six commercial and industrial parcels, requiring either partial property acquisitions or TCEs.

East of the US 101/Broadway Interchange

East of the interchange, the realignment of Airport Boulevard would require full acquisition of the 76 Conoco Phillips gas station at 1200 Bayshore Highway.

The higher profile of the new Broadway overcrossing would require increasing the elevation of Bayshore Highway as it approaches the intersection with Broadway, Airport Boulevard, and the Crowne Plaza Hotel access road. As a result, Bayshore Highway could be up to 8 to 10 feet higher than the surface of the vacant lot next to the 76 Conoco Phillips gas station. The entire lot would be acquired for the project, but as it is vacant, no relocation impacts would occur.

The increased height of the Broadway overcrossing would also require raising the elevation of the Crowne Plaza Hotel access road to meet the profile of the adjacent intersection. A TCE would be needed to adjust the driveway grade over a distance of approximately 200 feet and to construct a retaining wall along the west side of the driveway. The driveway is the single access route for the hotel; therefore, no disruption to access can occur. The project would be staged to maintain access to the hotel property at all times. Implementation of the project TMP will minimize temporary construction impacts at the Crowne Plaza Hotel property.

Along Bayshore Highway, TCEs are proposed for the four properties to the north of the vacant parcel to make grade adjustments to driveway connections.

The new northbound US 101 on-ramp lanes would require partial acquisition of a parcel containing a multi-tenant office building (1299 Bayshore Highway). The west and south sides of the parcel abut existing Department right-of-way, and approximately half of the building's parking lot is on Department property. The proposed project would reclaim part of the parking lot within existing Department right-of-way and require a sliver of additional land outside of the right-of-way. In all, approximately 46 of the lot's 77 parking spaces could be eliminated.

The proposed northbound on-ramp to US 101 from Bayshore Highway would be realigned slightly to the east, requiring a TCE in a paved area in the southwestern edge of the Hyatt Regency property. The area that would be affected is a perimeter road around the main hotel structure. The TCE is not expected to affect the use of the road.

Economic Impacts

Up to four privately owned commercial or industrial properties could be acquired for the project right-of-way. If the affected businesses cease operations or relocate outside of the City of Burlingame, a reduction in sales tax revenue could occur. Sales tax from the gas stations would likely be generated at one of the other three gas stations in the project area.

Adequate replacement property appears to be available in Burlingame for the businesses that could be displaced. The vacant lot provides minimal tax revenue to the city; therefore, acquisition of the parcel for the project is expected to have a negligible impact on local property tax revenue.

The City of Burlingame collects transient occupancy tax (TOT) from hotels in the city. Each guest room is charged a 12 percent TOT, which hotels remit to the city on a monthly basis. In 2009, the TOT was Burlingame's second largest revenue source, producing about $10 million per year (Burlingame Finance Department 2009). Project construction would not be expected to affect hotel business such that major adverse impacts to TOT revenues would occur. The project would not have any long-term adverse effects on TOT revenues.

Relocation Assistance

The need for relocation assistance will be limited to businesses. Relocation assistance payments and counseling will be provided to persons and businesses in accordance

with the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act, as amended, to ensure adequate relocation. All benefits and services would be provided equitably without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq.). The Relocation Assistance Program was developed to help displaced individuals move with as little inconvenience as possible. All rights and services provided under Public Law 91-646, Uniform Relocation Assistance and Real Property Acquisition Act of 1970 would be strictly followed to meet the need of the handicapped, elderly, and other special groups (e.g., non-English speaking people) to ensure that their relocation needs are met. Programs implemented to meet these needs include bilingual brochures on relocation services, interpreters, determination of people's needs and preferences through individual interviews, transportation services for those who do not own personal transportation or who cannot drive, information on other State and Federal assistance programs, and counseling to minimize hardships.

Caltrans Relocation Assistance Program information is included in Appendix D.

2.2.2.4. Avoidance, Minimization, or Mitigation Measures

No additional avoidance, minimization, or mitigation measures are proposed.

2.3. Utilities and Emergency Services

This section is based on the *Community Impact Assessment* (completed in November 2009; URS 2009a) and the *Draft Project Report* (completed in August 2010; URS 2010b) for the proposed project.

2.3.1. Affected Environment

2.3.1.1. Utilities

The proposed project would require relocating sewer, water, electrical, and communications lines. Utilities in the project were identified through site visits and reviews of utility plans obtained from the Department, SMCTA, City of Burlingame, City of San Mateo, Comcast, Sprint, Verizon, AT&T, Level III Communications, Qwest, Astound Broadband, and PG&E. Project area utilities include three PG&E transmission towers in the northwest quadrant of the existing US 101/Broadway interchange.

The City of Burlingame serves as its own water utility using water from the San Francisco Water Department's Crystal Springs and Sunset aqueducts. Allied Waste of

San Mateo County provides waste collection, recycling, transportation, disposal, and related services within the city. PG&E provides gas and electrical service.

2.3.1.2. Emergency Services

Central County Fire provides fire protection and emergency services for the City of Burlingame and the Town of Hillsborough. The department has a staff of approximately 80 in a total of five fire stations, three of which are in Burlingame. Station 36 at 1399 Rollins Road is in the study area, about 0.3 mile north of Broadway.

The Burlingame Police Department provides public safety services within the city limits. The department employs 42 full-time sworn police officers and 20 full-time civilian personnel (Burlingame Police Department 2009). The police station is at 1111 Trousdale Drive, approximately 1.2 miles from the project area.

Burlingame has one hospital, the Peninsula Medical Center at 1501 Trousdale Drive (about 1.2 miles northwest of the study area). Construction of a new six-story, 241-bed general acute care facility is in progress at the same address. The new Mills-Peninsula Medical Center is scheduled to open in November 2010.

2.3.2. Environmental Consequences

The project would relocate several utilities within the project limits. Table 2.3-1 lists these utilities by type, owner, and approximate length.

Table 2.3-1 Proposed Utility Relocations

Utility	Owner	Relocation Quantity (feet)
Sanitary Sewer	City of Burlingame	1,160
Electric	PG&E	2,295
Natural Gas	PG&E	200
Water	City of Burlingame	2,205
Telephone/Communications Cable	AT&T	650
TV Cable	Comcast	460
Communication	Sprint	1,060

Further utility investigation would be performed to verify all utility relocation requirements and data during the final project design phase. No short-term or long-term adverse effects to utilities would occur.

The project would have no adverse effects on emergency services. By providing additional lanes and a more direct route across US 101, the proposed interchange design has the potential to reduce response times for emergency service providers.

2.3.3. Avoidance, Minimization, or Mitigation Measures

Avoidance measures would be implemented to protect the three existing PG&E transmission towers and their foundations during construction. A longitudinal encroachment policy variance may be necessary for the high-voltage transmission lines suspended from these towers.

A TMP will be developed as part of the project to address traffic impacts from staged construction, detours, and specific traffic handling concerns such as emergency access during project construction. Access will be maintained for emergency response vehicles, and no disruption to existing emergency service access is expected.

2.4. Traffic and Transportation/Pedestrian and Bicycle Facilities

The information for this section is summarized from the *Traffic Operations Analysis Report* (completed in June 2010; URS 2010a) and *Community Impact Assessment* (completed in November 2009; URS 2009a) prepared for the project.

2.4.1. Regulatory Setting

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

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

2.4.2. Affected Environment

2.4.2.1. Roadway Network

US 101 in the project area is an eight-lane divided freeway. As described in Section 1.1.2, auxiliary lanes were recently completed in both directions of US 101 between Millbrae Avenue in Millbrae and Third Avenue in San Mateo.

Broadway is a four-lane east-west arterial in the City of Burlingame. In the project vicinity, Broadway intersects Carolan Avenue and Rollins Road to the west, crosses US 101 on a four-lane structure, and intersects Bayshore Highway and the northbound US 101 on- and off-ramps to the east (Figure 1-1). Just past the Bayshore Highway intersection, Broadway becomes Airport Boulevard.

Other streets in the project area include the following (Figure 1-1):

West of US 101

- Rollins Road, a two-lane north-south collector road that intersects Broadway, Cadillac Way, and the southbound US 101/Broadway on-ramp and off-ramp. South of Cadillac Way, Rollins Road parallels southbound US 101. North of Broadway, Rollins Road is four lanes.
- Cadillac Way, a one-block-long, two-lane street that extends between Rollins Road to the east and Carolan Avenue to the west, parallel to Broadway.
- Carolan Avenue, a two-lane street that extends between Broadway to the north and Burlingame Avenue to the south, parallel to and east of the Caltrain tracks.
- California Drive, a four-lane road that extends from Millbrae Avenue in the City of Millbrae to Peninsula Avenue in San Mateo to the south, after which it becomes North San Mateo Drive. California Drive is parallel to and west of the Caltrain tracks.

East of US 101

- Bayshore Highway, a four-lane road that extends from just north of Millbrae Avenue in the City of Millbrae to its intersection with Broadway, Airport Boulevard, and the Crowne Plaza Hotel access road to the south.
- Airport Boulevard, a two- to four-lane road that extends from its intersection with Broadway, Bayshore Highway, and the Crowne Plaza Hotel access road to the north to Coyote Point Drive in San Mateo to the south.

A pedestrian overcrossing was constructed just south of the Broadway overcrossing as part of the US 101 Auxiliary Lanes Project (Department and SMCTA 2003).

Opened for public use in November 2008, the pedestrian overcrossing extends from the intersection of Rollins Road and Broadway west of US 101 to the intersection of the Broadway off-ramp and Bayshore Highway east of US 101. The pedestrian overcrossing also serves as a Class I Bikeway—a paved multiuse trail separated from the road—and has a traveled way of 12 feet.

Other pedestrian and bicycle facilities in the project area include the following:

- The Broadway overcrossing has narrow (3-to-4-foot) sidewalks on both sides. The eastern end of the sidewalk on the north side of the overcrossing is partially blocked by a barrier rail. Both sidewalks have signs stating: "Narrow Sidewalk Area/Not ADA Accessible/Proceed with Caution." The overcrossing has no striped bike lanes.
- East of the interchange, Airport Boulevard has a shared sidewalk and bike path (the Bay Trail) on the east side only. Bayshore Highway has a sidewalk on the east side only and bike lanes on both sides between Airport Boulevard and the intersection with the eastern touchdown of the Broadway overcrossing/US 101 northbound on-ramp. To the north of the on-ramp, Bayshore Highway has sidewalks on both sides but no striped bike lanes.
- West of interchange, Broadway, Rollins Road, and Cadillac Way have sidewalks on both sides. No roadways in the project area west of the interchange have striped bike lanes.

The Burlingame Bicycle Route Map (City of Burlingame 2008) identifies Bayshore Highway, Airport Boulevard, Broadway east of California Drive, Rollins Road north of Broadway, Carolan Avenue, and California Drive as official bike routes.

2.4.2.2. Traffic Operations Analysis Study Area and Methods

The traffic forecast and operational analysis was completed for the US 101/Broadway interchange and adjacent intersections for the future year 2035 (URS 2010a). The traffic analysis evaluated the mainline of US 101, the freeway off-ramps and on-ramps, and the local street intersections that had the greatest potential to be affected by the project. Traffic on the mainline of US 101 in the project vicinity was analyzed between the Peninsula Avenue on-ramp and the East Millbrae Avenue off-ramp in the northbound direction and the East Millbrae Avenue off-ramp and the Third Avenue off-ramp in the southbound direction. Eight intersections were evaluated:[8]

[8] The intersection numbering shown in this list is used throughout the tables and figures in this section.

1. Broadway/US 101 northbound on-ramp/Bayshore Highway
2. US 101 northbound off-ramp/Airport Boulevard/Bayshore Highway
3. Broadway/US 101 southbound off-ramp/Rollins Road
4. Cadillac Way/US 101 southbound ramps/Rollins Road
5. Broadway/Carolan Avenue
6. Broadway/California Drive
7. Cadillac Way/Carolan Avenue
8. Broadway/US 101 southbound ramps (a new intersection that would be added with the project)

The future traffic forecasts for the study area were developed using the San Mateo Countywide Travel Demand Forecasting Model implemented in EMME/2 (version 9.2) software. The model includes future land use and growth projections from ABAG's Projections 2005 and the latest MTC travel demand model (BAYCAST; MTC 2008), which are less than 5 years old. Mainline operations along US 101 were analyzed using the FREQ macroscopic traffic model. Operations at the study intersections were analyzed using the Synchro and SimTraffic operational models. The operational analysis evaluated existing and future conditions.

Existing conditions represent the year 2007, based on the availability of data when the traffic study was conducted. Future conditions were projected for the year 2035. The AM and PM peak hour operational models were calibrated and validated to replicate existing conditions for freeway, ramp, and intersection volumes; bottleneck locations; and observed queues. A ratio of 2 percent heavy vehicles to 98 percent passenger cars was used at the study intersections, and a ratio of 10 percent heavy vehicles to 90 percent passenger cars was used for roadway segments.

2.4.2.3. Existing and Future (No Build Alternative) Conditions

This section describes existing and projected future (year 2035) traffic conditions in the project limits without the proposed project. Section 2.4.3 discusses projected future conditions with the project.

Level of service, an indicator of the operating performance of a roadway or intersection, is explained in Section 1.2.2.1. In accordance with City of Burlingame planning criteria, the traffic analysis used LOS D or better as a threshold for an acceptable level of performance, while LOS E or F indicated unacceptable levels at the study intersections and roadway segments.

Existing Conditions

US 101 Mainline

Both directions of US 101 at the Broadway interchange operate at LOS F during both the AM and PM peak hours.[9] The average speed on northbound US 101 between the Broadway off-ramp and on-ramp is 48 mph during the AM peak hour and 26 mph during the PM peak hour. On southbound US 101 between the Broadway off-ramp and on-ramp, the average speed is 37 mph during the AM peak hour and 28 mph during the PM peak hour. Both directions of US 101 at the interchange operate at 81 to 89 percent of capacity during AM and PM peak hours (URS 2010a).

Intersections

All intersections in the study area operate at acceptable levels of service (LOS D or better) under existing conditions, as shown in Table 2.4-1.

Table 2.4-1 Intersection Levels of Service, Existing Conditions

No.	Intersection Name	Type of Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Broadway/US 101 NB on-ramp/Bayshore Highway	Signal	16.1	B	19.3	B
2	US 101 NB off-ramp/Airport Boulevard/Bayshore Highway	Signal	31.9	C	22.1	C
3	Broadway/US 101 SB off-ramp/Rollins Road	Signal	40.9	D	45.6	D
4	Cadillac Way/US 101 SB Ramps/Rollins Road	Signal	35.1	D	45.6	D
5	Broadway/Carolan Avenue	Signal	20.8	C	24.6	C
6	Broadway/California Drive	Signal	30.9	C	41.0	D
7	Cadillac Way/Carolan Avenue	One-way stop	20.6	C	30.6	D

Source: URS 2010a
Notes: Delay represented is average delay at signalized intersections and average delay on controlled approaches at unsignalized intersections. Delay is in seconds per vehicle.

The delay at the Cadillac Way/Carolan Avenue intersection (No. 7 in Table 2.4-1) during the PM peak hour is within less than 5 seconds of the threshold for unacceptable conditions (LOS E, greater than 35 to 50 seconds for unsignalized intersections). The delays at the intersections of Broadway/US 101 SB off-ramp/Rollins Road and Cadillac Way/US 101 SB Ramps/Rollins Road (Nos. 3 and 4 in Table 2.4-1) during the PM peak hour are within less than 10 seconds of the

[9] Existing conditions, for purposes of the traffic analysis, do not include the US 101 Auxiliary Lanes Project. The lanes are included in future (2035) conditions.

threshold for unacceptable conditions (LOS E, greater than 55 to 80 seconds for signalized intersections).

Future (No Build Alternative) Conditions

US 101 Mainline

In 2035, US 101 at the Broadway interchange will continue to operate at LOS F but average freeway speed will decline because of increased congestion. For example, between the Broadway on-ramps and off-ramps during the AM peak hour, the traffic model predicts the average existing freeway speed of 48 mph in the northbound direction and 37 mph in the southbound direction will decrease to 27 mph in the northbound direction and 26 mph in the southbound direction. Both directions of US 101 at the interchange will operate at 87 to 94 percent of capacity during AM and PM peak hours.

Intersections

In 2035, six of the seven study intersections are expected to operate at unacceptable levels of service. Table 2.4-2 shows the 2035 levels of service.

Table 2.4-2 Future (2035) Intersection Levels of Service, No Build Alternative

No.	Intersection Name	Type of Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Broadway/US 101 NB on-ramp/Bayshore Highway	Signal	71.3	**E**	46.0	D
2	US 101 NB off-ramp/Airport Boulevard/Bayshore Highway	Signal	49.2	D	45.9	D
3	Broadway/US 101 SB off-ramp/Rollins Road	Signal	89.3	**F**	91.4	**F**
4	Cadillac Way/US 101 SB Ramps/Rollins Road	Signal	81.2	**F**	152.0	**F**
5	Broadway/Carolan Avenue	Signal	101.8	**F**	27.5	C
6	Broadway/California Drive	Signal	55.4	**E**	73.1	**E**
7	Cadillac Way/Carolan Avenue	One-way stop	43.4	**E**	176.6	**F**

Source: URS 2010a
Notes: Delay represented is average delay at signalized intersections and average delay on controlled approaches at unsignalized intersections. Delay is in seconds per vehicle.
Shading indicates unacceptable levels of service (LOS E or F).

The unacceptable future levels of service for the No Build Alternative shown for the intersections of Broadway/US 101 southbound off-ramp/Rollins Road and Cadillac Way/US 101 southbound ramps/Rollins Road (Nos. 3 and 4 in Table 2.4-2) are projected to result from increased traffic volumes (estimated to grow by 1 percent per year between existing conditions and 2035) combined with the capacity constraints

posed by the five-legged intersection (see Figure 2.4-1, No. 3). The multiple traffic movements at each intersection constrain the number of vehicles that are able to pass through each signal cycle. The backup of vehicles on the US 101 southbound off-ramp to the Broadway/US 101 SB off-ramp/Rollins Road intersection (No. 3 in Figure 2.4-1 and Table 2.4-2) is predicted to extend into the mainline of US 101. At the Cadillac Way/US 101 southbound ramps/Rollins Road intersection, the backup of vehicles on Rollins Road would be nearly double the length of the existing queue (the buildup of traffic waiting to pass through intersections), particularly between Broadway and Cadillac Way.

Poor operating conditions and long delays at the Broadway/US 101 southbound off-ramp/Rollins Road intersection would increasingly induce drivers to use Cadillac Way to travel between southbound US 101 and destinations west of the freeway. As shown in Figure 2.4-1, Cadillac Way is parallel to and one block south of Broadway, and directly across from a pair of US 101 southbound ramps. By using Cadillac Way, drivers would travel through one congested intersection (No. 4 in Figure 2.4-1) instead of two (Nos. 3 and 4). In the PM peak hours, however, this would result in LOS F conditions and delays of more than two minutes at the intersection of Cadillac Way and Carolan Avenue (No. 7 in Figure 2.4-1 and Table 2.4-2).

Pedestrian and Bicycle Facilities

Two City of Burlingame projects propose improvements to pedestrian and bicycle facilities in the US 101/Broadway project area. Both projects have been approved and are anticipated to be completed by 2013. The Carolan Avenue Bike Route Project would provide a dedicated Class III bike route with signs along approximately 1 mile of Carolan Avenue between Broadway and North Lane (to the south of the project area). The Broadway Pedestrian/Bicycle Bridge Connections Project would construct standard sidewalks, curb ramps, crosswalks, and signs at both ends of the pedestrian overcrossing. In addition, the project would construct a 600-foot sidewalk to connect the eastern landing of the pedestrian overcrossing to an existing Samtrans bus stop along Bayshore Highway via a crosswalk at the northbound US 101 on- and off-ramps.

2.4.3. Environmental Consequences

Section 2.4.2.3 describes future conditions under the No Build Alternative for both the US 101 mainline and study intersections. This section discusses the projected conditions with the Build Alternative.

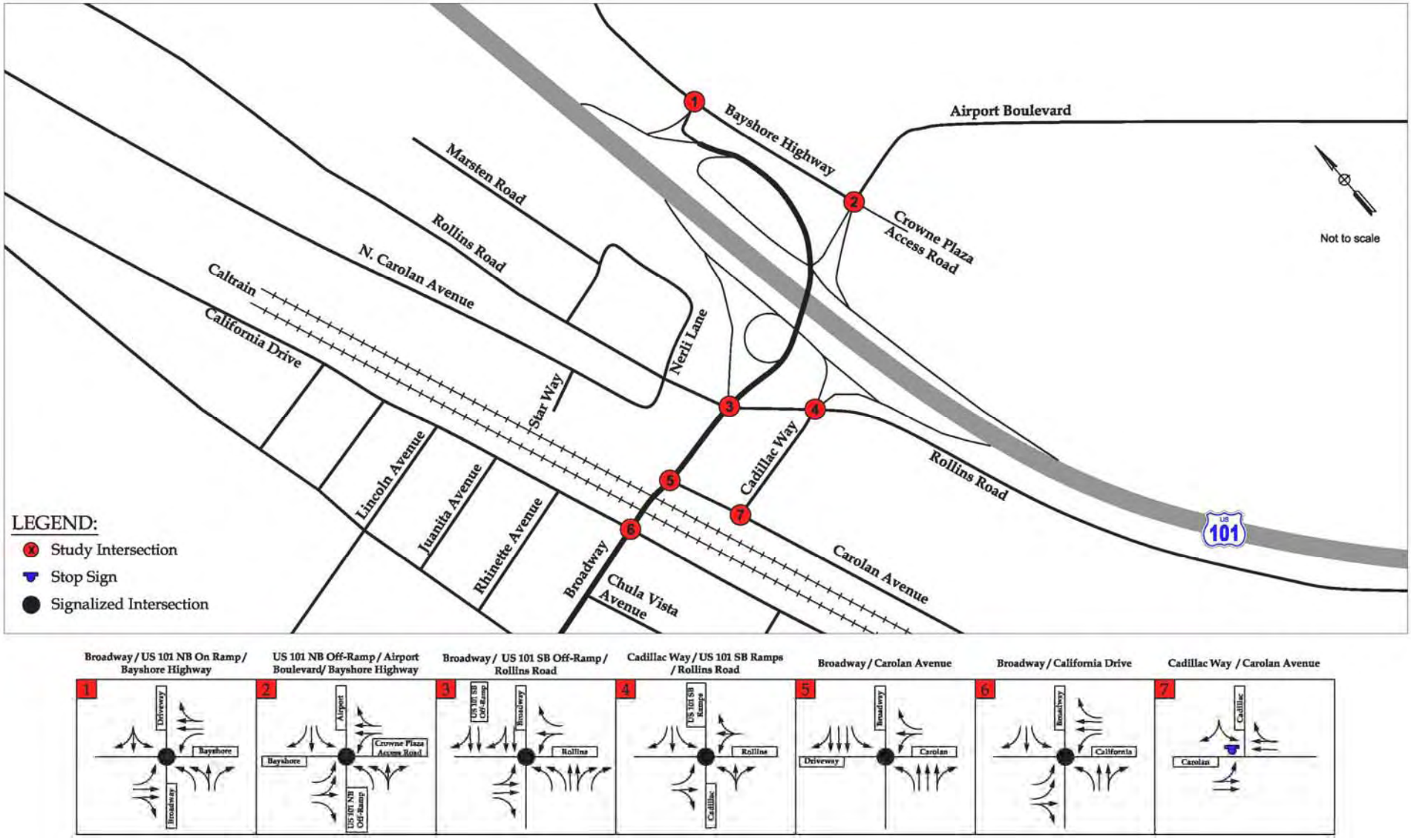

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FIGURE 2.4-1
EXISTING AND 2035 NO BUILD ALTERNATIVE LANE GEOMETRIES

2.4.3.1. Motorized Vehicle Traffic Conditions

US 101 Mainline

The project would add a second lane to the northbound US 101 off-ramp and an HOV lane on the northbound US 101 on-ramp. No adverse impacts to the freeway conditions are anticipated and no improvements to the mainline of US 101 are proposed. US 101 mainline traffic conditions were assumed to be the same as under the No Build Alternative.

Intersections

In 2035 under No Build conditions, six of the seven study intersections are projected to operate at unacceptable levels of service. With the Build Alternative, all intersections are projected to operate at acceptable average levels of service. Table 2.4-3 shows projected delay times and levels of service for each alternative.

Table 2.4-3 Future (2035) Intersection Levels of Service, No Build and Build Alternatives

No.	Intersection Name (under Build Conditions)	Type of Control	2035 No Build Conditions				2035 Build Conditions			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	US 101 NB ramps/Bayshore Highway	Signal	71.3	**E**	46.0	D	27.6	C	36.3	D
2	Broadway/Airport Boulevard/Crowne Plaza Hotel access road/Bayshore Highway	Signal	49.2	D	45.9	D	27.7	C	25.9	C
3	Broadway/Rollins Road	Signal	89.3	**F**	91.4	**F**	22.4	C	30.3	C
4	Cadillac Way/Rollins Road	Signal	81.2	**F**	152.0	**F**	12.1	B	10.3	B
5	Broadway/Carolan Avenue	Signal	101.8	**F**	27.5	C	32.9	C	29.0	C
6	Broadway/California Drive	Signal	55.4	**E**	73.1	**E**	28.5	C	37.5	D
7	Cadillac Way/Carolan Avenue	One-way stop	43.4	**E**	176.6	**F**	17.9	C	21.3	C
8	Broadway/US 101 SB Ramps	Signal	Only exists with project				15.5	B	21.9	C

Source: URS 2010a
Notes: Delay represented is average delay at signalized intersections and average delay on controlled approaches at unsignalized intersections. Delay is in seconds per vehicle.
Shading indicates unacceptable levels of service (LOS E or F).

Project-Related Intersection Changes

The project would consolidate multiple, existing on- and off-ramps and would add lanes to ramps and surface streets to accommodate future projected queuing at the

study intersections. Figure 2.4-2 shows the proposed lane and intersection configurations for the Build Alternative.

The multiple single-lane ramps that connect northbound US 101 with Airport Boulevard, Broadway, and Bayshore Highway would be replaced with a single pair of on- and off-ramps at Bayshore Highway. The northbound off-ramp would have two lanes and increase to three lanes approaching Bayshore Highway. The northbound on-ramp would have three lanes, one of them an HOV lane, extending to the ramp meter (Figure 1-1).

The existing southbound on- and off-ramps would be consolidated to a single on- and off-ramp intersection with Broadway. The off-ramp would have two lanes at the exit and increase to four lanes at the Broadway intersection. The on-ramp would have two lanes extending to the ramp meter. The project would replace the five-legged Broadway/US 101 southbound off-ramp/Rollins Road intersection (No. 3 in Table 2.4-2 and Figure 2.4-1) with separate standard four-legged intersections for Broadway/Rollins Road and Broadway/US 101 ramps (Nos. 3 and 8 in Table 2.4-3 and Figure 2.4-2).

The project would also add lanes at the intersections at Bayshore Highway, Airport Boulevard, Broadway, and Rollins Road in the project limits (Figure 1-1).

Changes in Levels of Service and Delays

The project would improve traffic flow and reduce delay at all but one of the study area intersections. The six intersections that are projected to operate at unacceptable levels of service under No Build conditions are all projected to operate at acceptable levels under future Build conditions. The shift of all three existing southbound US 101 ramps (two off-ramps and one on-ramp) to a new four-way intersection with Broadway would improve operations at the Broadway/Rollins Road and Rollins Road/Cadillac Way intersections (Nos. 3 and 4 in Table 2.4-3 and Figure 2.4-2). The decrease in congestion at these intersections would greatly reduce the number of vehicles diverting to Cadillac Way, improving levels of service and delay times at the Cadillac Way/Carolan Avenue intersection (No. 7 in Table 2.4-3 and Figure 2.4-2).

During the PM peak hour, delays at the intersection of Broadway and Carolan Avenue (No. 5 in Table 2.4-3 and Figure 2.4-2) would increase by 1.5 seconds over the No Build condition, but this minor increase in delay would not change the intersection’s LOS C rating. This effect would result from a shift of vehicles that

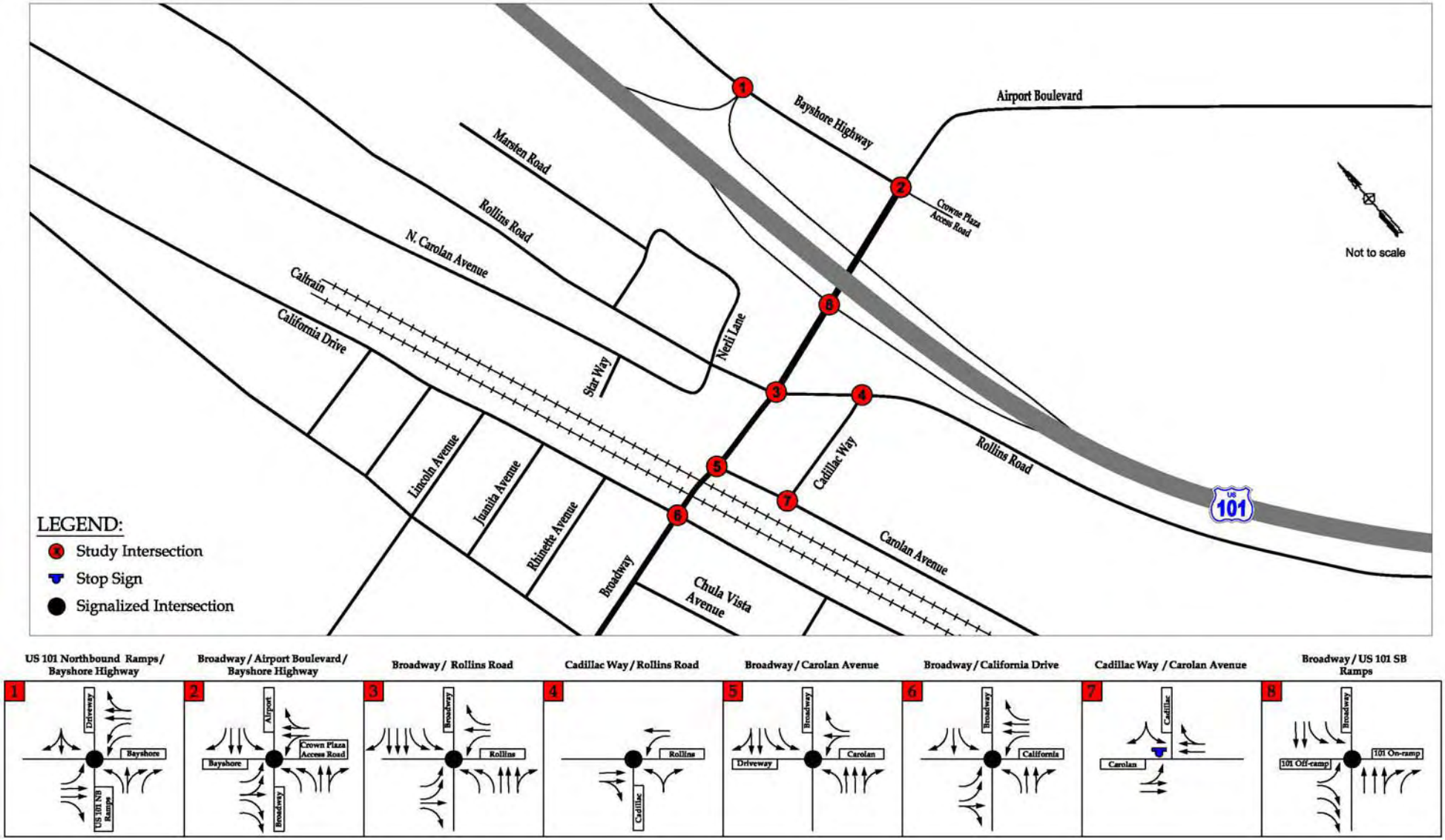

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FIGURE 2.4-2
BUILD ALTERNATIVE LANE GEOMETRIES

would otherwise use Cadillac Way (to avoid Broadway congestion under the No Build Alternative) to using Carolan Avenue and westbound Broadway.

2.4.3.2. Construction Impacts

Project construction would be staged to maintain through traffic on US 101 and the project area surface roads, although detours and limited short-term, temporary closures could be necessary on freeway ramps and other roadways in the project limits.

2.4.3.3. Pedestrian and Bicycle Facilities

Access to and from the project's transportation facilities including the Broadway overcrossing, existing pedestrian overcrossing, and other project area roadways would be designed with consideration of low-mobility groups and in conformance with ADA. Design features would include ramped curbs at intersections and accessible locations for public transit stops.

The project would upgrade existing sidewalks in the project limits to meet ADA standards and California Code of Regulations Title 24 requirements. The project would also add ADA-accessible sidewalks to the north side of the Broadway overcrossing and the east side of Rollins Road. Bicycle lanes would be added within the project limits as described in Section 1.3.1.3. If applicable, additional nonmotorized and pedestrian features may be considered during the final design phase.

Temporary closures of the pedestrian overcrossing will be required to reconfigure the structure's approach landings at Rollins Road to the west and Bayshore Highway and the Crowne Plaza Hotel access road to the east. The TMP described in Section 2.4.4 would address impacts to the pedestrian overcrossing and bicycle and pedestrian access during project construction. The plan will maintain bicycle and pedestrian access across US 101, either on the pedestrian overcrossing or on the new Broadway overcrossing, to the maximum extent feasible as part of construction staging.

The proposed project is not expected to affect the bicycle lane striping or signage that will be installed for the City of Burlingame's Carolan Avenue Bike Route Project. Several components of the City of Burlingame's Broadway Pedestrian/Bicycle Bridge Connections Project would be reconstructed to accommodate the alignment of the new Broadway overcrossing and the higher grade of adjacent roadways and sidewalks, including at the landings of the existing pedestrian overcrossing. The US 101/Broadway project design maintains the pedestrian and bicycle connections from

the City of Burlingame project, including a sidewalk and crosswalk linking the eastern landing of the pedestrian overcrossing with the Samtrans bus stop on the west side of Bayshore Highway. The US 101/Broadway project also includes additional features, such as a sidewalk and Class II bike lanes on the new Broadway overcrossing, that will increase pedestrian and bicycle access in the project vicinity consistent with the City of Burlingame's project. In addition, a concrete median would be added on Rollins Road to increase safety for pedestrians crossing the road at Cadillac Way.

2.4.4. Avoidance, Minimization, and/or Mitigation Measures

The proposed project would improve overall traffic operations within the project limits. Levels of service would improve or remain the same. Replacement of the existing overcrossing and ramps would slightly increase delay at one intersection (Broadway and Carolan Avenue) as a result of the improved flow and volume of traffic along Broadway. The change would not affect level of service and is not considered a substantial adverse impact, as it represents only 1.5 seconds of additional delay in 2035. Delay at all other study intersections would decrease, in some cases to the extent that the level of service would improve.

Impacts to traffic circulation and pedestrian and bicycle access during project construction would be minimized by implementation of the TMP. A detailed TMP will be prepared during the final design phase to minimize delay and inconvenience to the traveling public, in accordance with Department requirements and guidelines. The TMP will address traffic impacts from stage construction, detours, and specific traffic handling concerns such as emergency access during project construction. Detours and lane closures that increase traffic queuing to unacceptable levels in the vicinity of the at-grade Caltrain crossing will be avoided. The TMP would include briefing local public officials and developing a public information program to notify the public of project progress and upcoming closures and detours. The public information program would include outreach to ride sharing agencies, transit operators, and neighborhood and special interest groups. Impacts to pedestrians and bicyclists, as well as access to local developments, would all be carefully considered in the staging plans.

No additional avoidance, minimization, and/or mitigation measures are required.

2.5. Visual/Aesthetics

This section describes the visual setting of the project area as presented in the *Visual Impact Assessment* (William Kanemoto and Associates 2009), which was completed in December 2009.

2.5.1. Regulatory Setting

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

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

2.5.2. Affected Environment

High-density urban development, including light and heavy industry, commercial establishments, utility corridors, and SFO dominate most immediate views from the US 101 corridor in the project vicinity. Mature trees and hedges along US 101 provide intermittent screening. Scenic views to the east include fleeting glimpses of San Francisco Bay between intensive bayside development. To the west are scenic distant views of the east-facing slope of the Coast Range, characterized by a mosaic of wooded hillside, open grassland, and residential development. Elevations in the project area range from near sea level along US 101 and the Bay shoreline to approximately 1,000 feet along the coastal hills to the west. US 101 in the project limits is not designated as a California Scenic Highway.

The project viewshed is generally defined as a 1/8-mile zone around the proposed US 101/Broadway interchange, where the proposed project features could be visually dominant and project-related visual impacts could occur. The project viewshed is situated within seven distinct landscape units, generally corresponding to different land uses with different levels of visual quality (measured by vividness, intactness

and unity) and viewer sensitivity. These landscape units are depicted in Figure 2.5-1 and described below.

- **Landscape Unit 1 – US 101 Corridor.** US 101 is the primary visual feature within this landscape unit, with views of asphalt, vehicles, and concrete barriers. Existing trees within the interchange and at the highway shoulders contribute some vividness and visual screening, resulting in moderate visual quality. Sensitive viewers in this unit consist of motorists on US 101.
- **Landscape Unit 2 – Broadway Interchange.** This unit consists of the curved overcrossing, ramps, and the landscape elements in and around them. East of US 101, trees adjoin the existing overcrossing, and five large eucalyptus trees line Bayshore Highway to the northeast. West of the highway, eucalyptus and acacia trees screen industrial land uses along the southbound off-ramp and the tall PG&E transmission towers that loom over the interchange. The tree canopy gives this unit moderate visual quality. Pedestrians and bicyclists traveling between the Broadway shopping area and the Bay on the existing Broadway overcrossing and pedestrian overcrossing are considered the most visually sensitive viewers in this unit.
- **Landscape Unit 3 – Bayshore Open Space.** This unit has high-quality views of San Francisco Bay, mature trees along the south side of Airport Boulevard, and open grass areas within Bayside Park. Views to the proposed project would be largely limited to the immediate area along Airport Boulevard and Bayshore Highway. Sensitive viewers in this unit consist of recreational and scenery-oriented viewers using the Bay Trail and Bayside Park.
- **Landscape Unit 4 – Bayshore Highway Airport Commercial.** Hotel towers are interspersed with older single-story commercial development, occasional mature trees and landscaping, transmission towers, signs, and parking lots. Trees along the west side of Bayshore provide screening and an attractive streetscape element, resulting in an overall moderate visual quality. Despite the hotel-visitor orientation of the area, the focus of visual attention is directed strongly away from US 101 and interchange and toward the Bay, the Bay Trail, and Bayside Park to the east.
- **Landscape Unit 5 – Northpark Apartments.** The Northpark Apartment complex, one block south of Broadway and approximately 200 feet west of the existing Rollins Road southbound on-ramp, is the nearest residential housing to the proposed project. Views of the interchange and ramps are limited to east-facing views from second- and third-story units, and most views are partially or

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FIGURE 2.5-1
PROJECT VIEWSHED, LANDSCAPE UNITS, AND KEY VIEWPOINTS

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fully screened by mature trees within the complex or by buildings along Rollins Road and Broadway. The on-site tree canopy provides this unit with moderate visual quality. Residents of the complex are considered sensitive viewers, but only a small number of residents would have limited, screened views of the project.

- **Landscape Unit 6 – Auto Row.** From west of the overcrossing to the Caltrain railroad tracks, this unit is dominated by car dealerships, vehicles, concrete and asphalt, and mostly lacks street trees or other visual amenities. Trees within the interchange to the east and more distant views of the Broadway shopping district to the west provide some visual relief, although views within the unit are of low quality. The area supports high numbers of motorists entering and exiting downtown Burlingame, as well as pedestrians and bicyclists accessing the Bay via the Broadway overcrossing and pedestrian overcrossing.
- **Landscape Unit 7 – Rollins Light Industrial.** This landscape unit lies to the north of Broadway and is characterized by light industrial development. The area lacks landscaping and other visual amenities, resulting in a low overall visual quality. Views of the proposed project would be negligible.

2.5.3. Environmental Consequences

Visual impacts were defined based on FHWA visual impact assessment methodology (FHWA 1988). Changes in visual quality of the setting, as identified by the attributes of vividness, intactness and unity in combination with viewer sensitivity and exposure, were used to rate change or impact:

- Low – Minor adverse change to the existing visual resource, with low viewer response to change in the visual environment. May or may not require mitigation.
- Moderate – Moderate adverse change to the visual resource with moderate viewer response. Impact can be mitigated within 5 years using conventional practices.
- Moderately High – Moderate adverse visual resource change with high viewer response or high adverse visual resource change with moderate viewer response. Extraordinary mitigation practices may be required. Landscape treatment required will generally take longer than 5 years to mitigate.
- High – A high level of adverse change to the resource or a high level of viewer response to visual change such that architectural design and landscape treatment cannot mitigate the impacts. Viewer response level is high. An alternative project design may be required to avoid highly adverse impacts.

2.5.3.1. Permanent Impacts

For each landscape unit, representative views were selected to depict existing characteristics of the viewshed and the potential for project-related changes to visual quality. Simulations are provided for the views where the project would result in the greatest visual change. The following discusses each view and potential effects from the project. The perspectives of the representative views are shown in Figure 2.5-1. Section 2.5.4 summarizes landscaping and other project measures to address project impacts.

Landscape Unit 1 – US 101 Corridor

The project would increase the visual dominance of new structures and remove much of the tree canopy in and around the interchange. This would represent a substantial change in the visual character of views from US 101. Figure 2.5-2 (Key Viewpoint 1) shows the existing and proposed US 101/Broadway interchange as seen by southbound motorists on US 101. The following summarizes the project-related changes.

Key Viewpoint 1 Summary	
Orientation	Looking south.
Existing Visual Quality	Moderate.
Proposed Project Features and Effects	New overcrossing, ramps, retaining walls; tree removal.
Change to Visual Quality	Moderate. Change in visual quality within Landscape Unit 1 would range from moderate to moderately high.
Viewer Response	Moderate.
Resulting Visual Impact	Moderate to moderately high.
Resulting Visual Impact with Recommended Measures	Positive in the long term.

The view is oriented toward the southeast, where the most prominent project-related change – tree removal – would be most evident. Tree removal would also affect the adjacent Bayshore Highway streetscape (Landscape Unit 4, Bayshore Highway Airport Commercial) and the west side of the interchange (Landscape Unit 2, Broadway Interchange), as discussed below.

The project would shift the Broadway overcrossing to the north and change the current curved structure to one that is straight and east-west oriented. The new overcrossing would also be widened from approximately 65 feet to 110 feet. From the perspective of motorists on US 101, however, the general size and orientation of the new structure would appear substantially similar. New concrete barriers would be introduced between the northbound off-ramp and the US 101 mainline for a distance of approximately 1,000 feet (Figure 2.5-2, simulated view), between the northbound

Existing view

Simulated view

	US 101/BROADWAY INTERCHANGE RECONSTRUCTION PROJECT BURLINGAME, CA EA 235840	**FIGURE 2.5-2** VIEW FROM US 101, LOOKING SOUTHEAST

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Existing view

Simulated view

US 101/BROADWAY INTERCHANGE
RECONSTRUCTION PROJECT
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EA 235840

FIGURE 2.5-3
VIEW FROM ROLLINS ROAD AT CADILLAC WAY, LOOKING NORTHEAST

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View eastward toward San Francisco Bay from existing Broadway overcrossing

View northeast toward Bay from existing pedestrian overcrossing

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FIGURE 2.5-4
VIEWS TOWARD BAY FROM EXISTING BROADWAY OVERCROSSING AND PEDESTRIAN OVERCROSSING

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US 101/BROADWAY INTERCHANGE
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FIGURE 2.5-5
SIMULATED VIEW TOWARD BAY FROM PROPOSED BROADWAY OVERCROSSING

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Existing view

Simulated view

US 101/BROADWAY INTERCHANGE
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FIGURE 2.5-6
VIEW WESTWARD FROM BAY TRAIL, ALONG AIRPORT BOULEVARD

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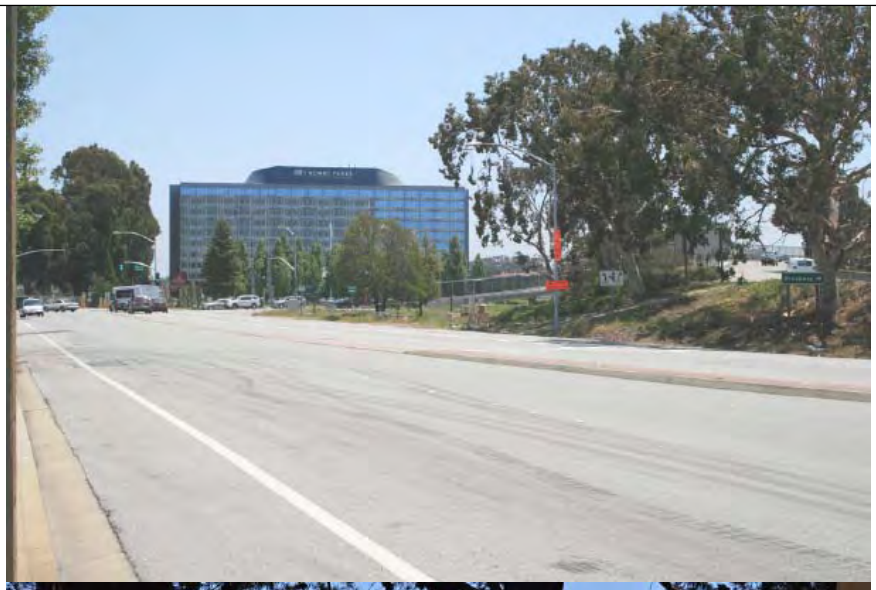

Key Viewpoint 5: Bayshore Highway, looking south

Key Viewpoint 6: View toward proposed project area from Northpark Apartments, looking northeast

Key Viewpoint 7: View toward proposed project area from Auto Row, looking east from Carolan Avenue

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FIGURE 2.5-7
VIEWS FROM BAYSHORE HIGHWAY, NORTHPARK APARTMENTS, AND AUTO ROW

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on-ramp and US 101 travel lanes for a distance of approximately 600 feet, and along the east side of the northbound on-ramp for a distance of approximately 800 feet. The barriers would contribute incrementally to the increased visual dominance of pavement and hardscape structures in the project vicinity.

The principal visual change from project structures would result from new retaining walls along the new southbound off- and on-ramps, which are west of, and outside of, the view shown in Figure 2.5-2. The ramps would rise to a height of approximately 25 feet above existing grade to meet Broadway. To support the ramps, retaining walls would be constructed from the beginning of the southbound off-ramp, meet the abutment beneath the new overcrossing, and continue to the end of the southbound on-ramp, for an overall distance of approximately 1,200 feet. This wall would primarily affect views for southbound highway motorists near the interchange.

The project's greatest impact in the highway viewshed would result from removal of existing vegetation, including approximately 71 trees (eucalyptus, *Casuarina* [horsetail], *Myoporum*, willow, and acacia) throughout the project limits. Existing trees in the interchange provide visual screening. The simulated view in Figure 2.5-2 shows areas of tree removal along the northbound on- and off-ramps and Bayshore Highway. Other areas of tree removal not visible in Figure 2.5-2 are within the loop ramps west of US 101, along the southbound off-ramp shoulder, and behind the gas station at the corner of Airport Boulevard and Bayshore Highway. Although some of the trees that would be removed appear to be in compromised health and lack visual unity, several are tall and visually prominent. Along with shrubs and open grass areas, these trees dominate the visual image of the interchange.

Landscape Unit 2 – Broadway Interchange

The project would not have a substantially adverse change with respect to views from the Broadway overcrossing or pedestrian overcrossing structures. As depicted in Figure 2.5-3, views are dominated by urban features including chain-link fencing, compromised landscaping, nearby concrete barriers, and traffic on Rollins Road and Broadway. The loss of tree canopy would change the overall visual quality rating at this location from moderate to moderately high.

West of the Interchange. Figure 2.5-3 (Key Viewpoint 2) depicts a view of motorists, bicyclists, and pedestrians on Rollins Road at Cadillac Way as they approach the interchange and pedestrian overcrossing to access the Bay east of US 101. It also represents a pedestrian's view traveling from the southwest interchange

quadrant (e.g., the Northpark Apartments area) toward the Bay using the Broadway overcrossing or pedestrian overcrossing (Landscape Unit 5, Northpark Apartments). Because views from the apartment complex area are heavily screened, this location was considered the worst-case project change for viewers in the southwest interchange quadrant.

Key Viewpoint 2 Summary	
Orientation	Looking northeast.
Existing Visual Quality	Visual quality from Viewpoint 2 is moderately low; however, overall visual quality of Landscape Unit 2, which this viewpoint represents in part, is moderate.
Proposed Project Features and Effects	New overcrossing, ramps, retaining walls, earth embankments; tree removal; reconfiguration of pedestrian overcrossing connector to meet new sidewalk along Rollins Road.
Change to Visual Quality	Change to visual quality from this viewpoint would be moderate; however, change to visual quality within Landscape Unit 2 in general would range from moderate to moderately high.
Viewer Response	Moderate.
Resulting Visual Impact	Moderate from this viewpoint. Change to visual quality within Landscape Unit 2 in general would range from moderate to moderately high.
Resulting Visual Impact with Recommended Measures	Positive in the long term.

The project would change views in the southwest interchange quadrant by removing tall trees and introducing a retaining wall and earth embankment west of the new elevated southbound on-ramp. The existing PG&E transmission towers, now located north of the existing interchange, would become somewhat more visible in the foreground of a new 25-foot-tall retaining wall on the south side of Broadway. Views of the retaining walls, embankment, and towers would be screened by the pedestrian overcrossing and its abutments. The access to the pedestrian overcrossing would be moved south on Rollins Road from its existing location near Broadway closer to Cadillac Way. Pedestrians and bicyclists would access the pedestrian overcrossing from a new sidewalk along the east side of Rollins Road.

East of the Interchange. Key Viewpoint 3 was selected to represent existing and proposed views to the Bay from the project area. Pedestrians and bicyclists accessing the Bay via both the existing Broadway overcrossing and the pedestrian overcrossing are an important user and viewer group. Figure 2.5-4 shows the tall chain-link safety fencing along the curved Broadway overcrossing and pedestrian overcrossing that screens views of the Bay. A gas station at Bayshore Highway and Airport Boulevard and three large eucalyptus trees to the east also partially obstruct Bay views.

Key Viewpoint 3 Summary	
Orientation	Looking east.
Existing Visual Quality	Visual quality from the existing viewpoints is moderate; existing scenic views of the Bay are very limited and highly filtered by chain-link fencing.
Proposed Project Features and Effects	New overcrossing, ramps, retaining walls, earth embankments; tree removal; realignment of overcrossing to a straight east-west orientation.
Change to Visual Quality	The project would improve the visual quality for motorists and bicyclists on the new Broadway overcrossing.
Viewer Response	Moderate.
Resulting Visual Impact	Improved.
Resulting Visual Impact with Recommended Mitigation	Visual quality of views would be enhanced in the long term by recommended replacement landscaping on new earth embankments. No additional mitigation needed to enhance scenic vistas.

As shown in Figure 2.5-5, the straight east-west orientation of the proposed Broadway overcrossing would provide unobstructed views of the Bay. Removal of the gas station and the trees behind it to accommodate the realignment of Airport Boulevard would also increase views toward the east. The realignment of Airport Boulevard would create a new area of open space at the entrance to Bayside Park that could be available for landscaping. These changes would improve visual quality for motorists and for the bicyclists who use the Class II bike lane on the south side of the Broadway overcrossing. Views of the Bay would also improve for pedestrians who use the sidewalk on the north side of the Broadway overcrossing, to the north and outside of the view shown in Figure 2.5-5.

Landscaped embankments would support the Broadway/Bayshore Highway/Airport Boulevard/Crowne Plaza Hotel access road intersection, the eastern landing of the pedestrian overcrossing, a portion of the hotel access road, and the new paved path into Bayside Park. Figure 2.5-5 depicts earth embankments that would support the Crowne Plaza Hotel access road and new sidewalks on both sides of the access road. Farther south, out of the view shown in Figure 2.5-5, the pedestrian overcrossing would connect with the sidewalk on the west side of the access road; beyond that, a retaining wall would support the west side of the access road as it enters the Crowne Plaza Hotel parking lot. This wall would be up to 7 feet high near the Broadway/Bayshore Highway/Airport Boulevard/Crowne Plaza Hotel access road intersection and taper down to 2 feet high over a total length of approximately 120 feet. The retaining wall, which would face the hotel parking lot, would not block views of the hotel and would not be visible to motorists on the access road or from

most locations outside of the hotel property. Parked cars and existing trees in the hotel parking lot would screen views of the wall from southbound traffic on US 101 and from some vantage points on the property. The retaining wall would be given an aesthetic surface treatment that will be selected in coordination with hotel management. The new earth embankments, elevated intersection, access road, and retaining wall would visually alter but not adversely affect the approach and entrance to the hotel.

Landscape Unit 3 – Bayshore Open Space

Figure 2.5-6 (Key Viewpoint 4) depicts the project's effect on views for Bay Trail users, the principal affected user group in this unit. Loss of landscaping, including the large eucalyptus trees at the gas station, and introduction of a concrete retaining wall in the foreground would represent a moderately high decline in visual quality from the perspective of trail users. The proposed undergrounding of overhead utility lines and removal of utility poles along Airport Boulevard would improve visual quality.

Key Viewpoint 4 Summary	
Orientation	Looking west (landward).
Existing Visual Quality	Visual quality from Viewpoint 4, looking landward, is moderately high; however, overall visual quality of Landscape Unit 3, which this viewpoint represents in part, is generally high.
Proposed Project Features and Effects	New overcrossing; new elevated intersection of Airport Boulevard and Bayshore Highway and associated retaining wall; realigned Airport Boulevard and associated earth embankment; removal of large eucalyptus trees at service station; removal of the service station; minor realignment of Bay Trail and alteration of landscaping.
Change to Visual Quality	Change to visual quality from this viewpoint would be moderate.
Viewer Response	High.
Resulting Visual Impact	Moderately high.
Resulting Visual Impact with Recommended Measures	Improved.

Views toward the developed, landward areas to the west would change substantially. Airport Boulevard would be realigned to the north. Existing views of the gas station at Bayshore Highway and Airport Boulevard, including the three large eucalyptus trees on the parcel's eastern boundary, would be replaced by views of the approximately 10-foot-tall retaining wall along Bayshore Highway and earth embankment along Airport Boulevard supporting the new elevated intersection. A few small trees, a section of lawn, and shrubs along Airport Boulevard and the Bay Trail would also be removed. The

existing seating and viewing area would remain. The Bay Trail itself would be realigned slightly to the north to accommodate the new project footprint.

Landscape Unit 4 – Bayshore Highway Airport Commercial

Key Viewpoint 5 in Figure 2.5-7 depicts the existing Bayshore Highway streetscape as viewed by motorists and by visitors entering and leaving hotels. Widening of Bayshore Highway from four lanes (plus turn lanes) to eight lanes would increase the scale and dominance of the paved roadway in this viewshed. In addition, removal of five mature eucalyptus trees would contribute to the increase in dominance of paving and traffic and represent the loss of a vivid landscape feature that helps to screen the interchange.

Key Viewpoint 5 Summary	
Orientation	Looking north on Bayshore Highway.
Existing Visual Quality	Moderate.
Proposed Project Features and Effects	Widening of Bayshore Highway from four lanes to eight; new elevated approach to intersection of Airport Boulevard and Bayshore Highway; new overcrossing; removal of large eucalyptus trees west of Bayshore Highway and other trees within interchange; removal of existing service station and large eucalyptus trees on that property; reconstruction of eastern pedestrian overcrossing connector.
Change to Visual Quality	Moderate.
Viewer Response	Moderate.
Resulting Visual Impact	Moderate.
Resulting Visual Impact with Recommended Measures	Improved.

Landscape Unit 5 – Northpark Apartments

Key Viewpoint 6 in Figure 2.5-7 shows views of the proposed project area from the Northpark Apartments. Existing views of the interchange are limited to east-facing upper-story windows of two apartment buildings. The project features, which would be located roughly 200 feet north of the existing pedestrian overcrossing in the foreground, would be more distant from the apartments than the existing interchange, and the views would be highly filtered by the existing on-site tree canopy. Finally, existing views of the interchange from the apartments are of low visual quality. The project would have minor impacts or improve views, since visible structures would be more distant and less prominent.

Key Viewpoint 6 Summary	
Orientation	Looking northeast from North Park Apartments.
Existing Visual Quality	Low.
Proposed Project Features and Effects	Removal of existing Broadway overcrossing and construction of new overcrossing north of the existing structure; new elevated southbound on-ramp; tree removal in interchange; new sidewalk along Rollins Road.
Change to Visual Quality	Low to moderate.
Viewer Response	High.
Resulting Visual Impact	Moderate.
Resulting Visual Impact with Recommended Measures	Improved.

Landscape Unit 6 – Auto Row

Key Viewpoint 7 in Figure 2.5-7 is an eastward view of Broadway and Auto Row, as seen by motorists entering and leaving downtown Burlingame and visitors to auto dealerships. The existing visual quality within the Auto Row landscape unit is moderately low except for the existing tree canopy within the interchange. By widening Broadway, increasing the road's elevation toward the interchange, and removing the trees within the interchange, the project would increase dominance of the roadway and decrease visual quality. While the visual change would be pronounced, the visual quality would remain moderate.

Key Viewpoint 7 Summary	
Orientation	Looking east from Carolan Avenue and Broadway.
Existing Visual Quality	Moderately low.
Proposed Project Features and Effects	Removal of existing Broadway overcrossing and construction of new overcrossing to the north; removal of all trees within interchange and adjoining southbound off-ramp; widening of Broadway and construction of new elevated intersection of Rollins Road and Broadway.
Change to Visual Quality	Moderate.
Viewer Response	Moderate.
Resulting Visual Impact	Moderately low.
Resulting Visual Impact with Recommended Measures	Neutral.

Landscape Unit 7 – Rollins Light Industrial

No viewpoint was considered necessary for analysis because the project area is not visible from most of the Rollins Road area north of Broadway. Changes to visual quality along US 101 and at the interchange are described under Landscape Units 1 and 2, above. Visual changes along Broadway just south of the Rollins Light Industrial unit are described under Landscape Unit 6, above.

2.5.3.2. Construction Impacts

Demolition of existing Broadway interchange structures, construction of the proposed project, and unsightly material or equipment storage in visually sensitive areas (particularly adjacent to the Bay Trail) would have short-term, transient impacts for the duration of project construction, which could last for 2 to 2.5 years. Replacement landscaping installation and standard Department construction practices would be implemented to restore the construction area.

Lighting for nighttime construction activities would create a temporary source of light or glare in and directly adjacent to the project limits. Temporary lighting installations include site lighting for construction staging areas and portable generator-mounted lighting for paving and other construction activities. The construction contractor would be required to direct lighting away from residential areas as much as possible.

No long-term construction impacts would occur.

2.5.3.3. Impact Summary

The project would not have a substantial adverse effect on a scenic vista or substantially damage resources within a State scenic highway. Tree removal and introduction of concrete roadway structures would decrease the visual quality of the project viewshed, but these effects would be minimized by implementation of the measures listed in Section 2.5.4. Construction contractor requirements would minimize light and glare impacts from nighttime construction activities.

2.5.4. Avoidance, Minimization, and/or Mitigation Measures

2.5.4.1. Context Sensitive Solutions

The Department’s planning, design, operation, and maintenance of transportation systems include consideration of “context sensitive solutions” (CSS). The CSS process is intended to integrate and balance community, aesthetic, historic, and environmental values with transportation safety, maintenance, and performance goals.

The project proposes upgraded fencing and ornamental light fixtures for the Broadway overcrossing, consistent with City of Burlingame Goal F-6 (“Develop a sense of place by creating a unifying gateway treatment at entrances and throughout the area”). Ornamental light fixtures would also be considered where appropriate for Broadway, Bayshore Highway, and Airport Boulevard in the project limits.

Community input about aesthetic features of the project such as replacement landscaping and surface treatments for concrete structures was solicited as part of the public review process. Input on these features will also be sought from the City of Burlingame and, if applicable, BCDC.

2.5.4.2. Minimization Measures

The measures listed in Table 2.5-1 would be considered to minimize visual impacts from the proposed project.

Table 2.5-1 Visual Minimization Measures

Project Feature	Measure
Replacement Planting	Replacement tree planting would help to create a coherent, recognizable gateway identity at the new interchange, re-establishing vividness and intactness of the city entry image through use of locally appropriate trees of tall stature (potentially including coastal redwoods, coastal live oaks, cork oaks, or similar species). Replacement tree planting would restore and enhance the interchange gateway/entry statement in the long term. Clinging vines would soften the appearance of concrete retaining walls.
Structure Design Measures	Structure design measures would maintain design consistency within the project limits and maintain visual consistency and coherence within the wider US 101 corridor. Architectural treatments, particularly surface texture treatment, for major structures including the overcrossing parapet and all visible retaining walls would reduce surface reflectivity, brightness, and visual monotony associated with untextured concrete walls. Surface texture treatments that visually relate to those on the existing pedestrian overcrossing should be considered. Upgraded fencing and ornamental light fixtures (examples shown in Figure 2.5-2) will be considered for the Broadway overcrossing. This would improve the aesthetic quality of the overcrossing compared to the existing condition. Ornamental light fixtures will also be considered where appropriate for Broadway, Bayshore Highway, and Airport Boulevard in the project limits.
Locations of Special Interest	Replacement tree planting is recommended in the following locations: • At the southbound on- and off-ramps and in the northeast quadrant of the interchange. • Along the west side of Bayshore Highway. • At the gas station at the corner of Bayshore Highway and Airport Boulevard, which is proposed to be acquired and removed for the project. • Along the Bay Trail. Other landscaping would be considered for the area between the project and the Bay Trail to replace lost trees, shrubs and lawn in the area northeast of Airport Boulevard, to soften the new earth embankment north of Airport Boulevard, to screen and soften the visual foreground of the new retaining wall along Bayshore Highway, and to enhance the landside trail environment.

2.6. Cultural Resources

This section summarizes the *Archaeological Survey Report* (URS 2009b), *Historic Property Survey Report* (URS 2009c), and *Historic Resources Evaluation Report* (JRP 2009) prepared for the proposed project. All three technical studies were completed in December 2009.

2.6.1. Regulatory Setting

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

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places (NRHP). Section 106 of NHPA requires Federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, SHPO, and the Department went into effect for Department projects, both State and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

The Archaeological Resources Protection Act applies when a project may involve archaeological resources located on Federal or tribal land. The act requires that a permit be obtained before excavation of an archaeological resource on such land can take place.

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

Historical resources are considered under CEQA as well as PRC Section 5024.1, which established the California Register of Historical Resources (CRHR). PRC

Section 5024 requires state agencies to identify and protect state-owned resources that meet NRHP listing criteria. It further specifically requires the Department to inventory state-owned structures in its rights-of-way.

2.6.2. Affected Environment

The study areas for cultural resources investigations are referred to as areas of potential effect (APEs). The archaeological APE includes the existing and proposed right-of-way for the project and additional areas for temporary construction easements, staging, and access. The architectural APE includes the archaeological APE as well as parcels with buildings or structures adjacent to the existing and proposed right-of-way that could be affected by project construction or operation. As the proposed project would affect roadways within the City of Burlingame right-of-way, the APEs also include the existing and proposed city right-of-way.

2.6.2.1. Records/Archival Review and Archaeological Field Survey Results

An archival search was completed at the California Historic Resources Inventory System, Northwest Information Center (CHRIS/NWIC) at California State University, Sonoma, for the project right-of-way and a 0.25-mile radius. Reports for all known cultural resource studies within a 1-mile radius were reviewed. A field survey and reviews of historical maps and General Land Office plats were also conducted. All accessible portions of the archaeological APE were subject to a pedestrian survey.

One previously recorded archaeological site was identified within the archaeological APE (CA-SMA-317). No new resources or sites were identified or recorded a result of the records search, map review, or pedestrian survey.

2.6.2.2. Native American Consultation

A records search of the Sacred Lands File was requested from the Native American Heritage Commission (NAHC). No sacred lands were identified in the project's APEs. The NAHC provided the names and contact information for seven individuals or organizations that may have knowledge of cultural resources in the project area. Letters requesting comments regarding any concerns or issues pertinent to the project and follow-up e-mails were sent to each contact. Two telephone calls and one e-mail comment were received. Representatives of both the Indian Canyon Mutsun Band of Costanoan and the Amah/Mutsun Tribal Band telephoned and requested that they be contacted in the event of an archaeological discovery. A representative of the Ohlone

Indian Tribe requested in an e-mail that a Native American monitor be on-site during construction activities.

2.6.2.3. Potential for Presence of Subsurface Resources

The ground surface in the project area has already been extensively modified, and most excavation will be in fill. Therefore, the probability of encountering subsurface archaeological deposits is considered low. No cultural resources were found during previous archaeological testing in the interchange (Basin Research 2002).

One previously recorded archaeological site was reported within the archaeological APE (CA-SMA-317). Project activities in the vicinity of CA-SMA-317 would be limited to restriping and would involve no ground disturbance.

2.6.2.4. Historic Resources Records and Field Inventory Results

The records review identified three resources within the architectural APE that were previously evaluated and determined ineligible for the NRHP and the CRHR: the Broadway overcrossing, the Transmission Canal culvert, and the Peninsula Commute Service crossing. A pedestrian survey of the historic resources APE identified 10 resources that are exempt from evaluation under the Section 106 PA Attachment 4, and eight historic-era resources that required additional evaluation. Caltrans Professionally Qualified Staff determined that all resources within the APE are ineligible for listing in the NRHP. Further, no resources within the APE are eligible for the CRHR, or appear to be historical resources for the purposes of CEQA.

2.6.3. Environmental Consequences

One previously recorded archaeological site was reported within the archaeological resources APE (CA-SMA-317). As no subsurface construction activities would take place in the vicinity of the site, and no surface deposits relating to the site were identified during the field survey, the project is not expected to affect CA-SMA-317.

Throughout the project area, the ground surface has been highly modified with artificial fill soils. Subsurface construction activities would exceed the depths of artificial fill only where piles would be driven to support the Broadway overcrossing, the southbound US 101 off-ramp and on-ramp, and adjacent retaining walls.[10] The piles would reach maximum depths of 60 to 70 feet, through a sequence of layers

[10] Proposed retaining walls along the Crowne Plaza Hotel access road, Bayshore Highway, and Rollins Road would be supported on spread footings rather than piles.

composed of fill, Bay Mud, and then Pleistocene alluvium at 30 to 40 feet. Bay Mud is not anticipated to contain substantial archaeological deposits, and Pleistocene sediments exceed the age of known human occupation in the Bay Area. Therefore, the project is not expected to affect subsurface archaeological resources.

No properties in the architectural APE are eligible for the NRHP or CRHR, or appear to be historical resources for the purposes of CEQA. The project would not affect, or use, any Section 4(f) historic resource.

The cultural resources finding for this project is No Adverse Effect. The cultural resources studies, and the determination of No Adverse Effect, were submitted to the SHPO. Because no response was received from SHPO during the specified 30-day time period, the Department has assumed SHPO concurrence, in accordance with the PA.

2.6.4. Avoidance, Minimization, and/or Mitigation Measures

For the purposes of this project, CA-SMA-317 will be treated as a potential historic property eligible for inclusion in the NRHP. To ensure avoidance of CA-SMA-317, the site will be designated an ESA. The specific method of establishing the ESA will be determined during final design. With the protection afforded by the ESA, no monitoring is proposed. With the exception of these measures, no further archeological work is required.

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

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

Physical Environment

2.7. Hydrology and Floodplain

The following summarizes the findings of the *Location Hydraulic Study Report* (WRECO 2009a) for the proposed project, which was completed in November 2009.

2.7.1. Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all Federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The FHWA requirements for compliance are outlined in 23 CFR 650 Subpart A.

In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values impacted by the project.

The base floodplain is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

2.7.2. Affected Environment

The project area is within the Easton and Sanchez Creek watersheds, which drain an area of 3.3 square miles. Surface water in the project limits consists of Easton Creek, Sanchez Creek, and an unnamed channel at Bayshore Highway near Airport Boulevard (Bayshore Station 9+75; see Figure 1-1). Mills Creek and the Burlingame Lagoon are nearby but outside of the project limits.

Easton Creek is north of the interchange and crosses US 101 in a 6-by-6-foot double box culvert. East of US 101, a concrete-lined channel conveys Easton Creek into another culvert beneath Bayshore Highway, which directs flows into an earthen channel that empties into San Francisco Bay. Sanchez Creek crosses US 101 in an 8-

by-10-foot triple box culvert south of the US 101/Broadway interchange and flows into the Burlingame Lagoon through an underground storm drain system. Roadway and shoulder runoff around the eastern landing of the Broadway overcrossing between US 101 and Bayshore Highway drains into a culvert pipe beneath Bayshore Highway that outfalls into the channel. The channel is unlined, and a low berm approximately 200 feet to the east prevents the channel from flowing into San Francisco Bay.

A review of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) National Flood Insurance Program Flood Insurance Rate Map (FIRM) for the City of Burlingame (Community Panel Number 065019 0002 C) indicates that the project is partially located within the 100-year floodplain, as shown in Figure 2.7-1. The base flood elevation in the project vicinity is 6.9 feet relative to the National Geodetic Vertical Datum of 1929 (FEMA 1981).

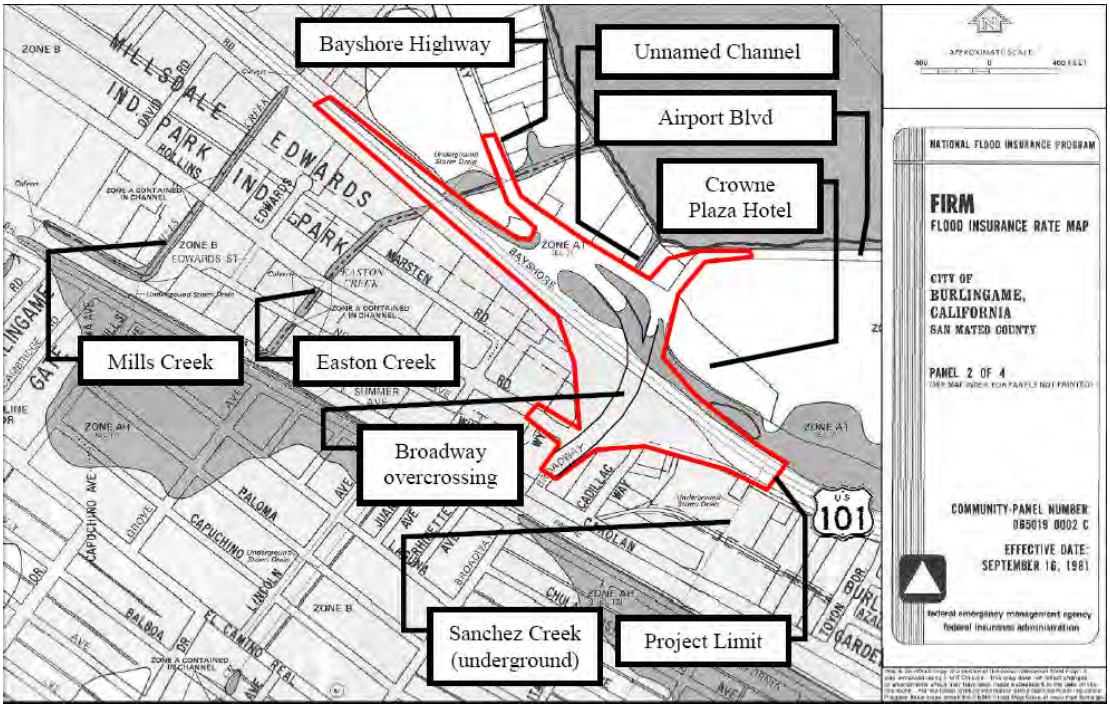

Figure 2.7-1 FEMA Flood Insurance Rate Map for Proposed Project Limits

Note: Shaded areas indicate extent of 100-year floodplain.

Based on a review of the FEMA FIRM and consultation with Department and City of Burlingame staff, high tides in San Francisco Bay cause flooding between the Crowne Plaza Hotel parking lot and the off-ramp from northbound US 101, and blockage of the unnamed channel causes flooding at the eastern landing of the

Broadway overcrossing. The blockage results from sediment accumulation where the pipe beneath Bayshore Highway outfalls at the bottom of the channel, and from the low berm that prevents water and sediment in the channel from flowing into the Bay.

A third location, the northbound US 101 on-ramp from Bayshore Highway, has also historically experienced flooding from Easton Creek. The City of Burlingame is completing a project designed to decrease creek flows and eliminate local flooding from Easton Creek (discussed further in Section 2.19.3.5).

2.7.3. Environmental Consequences

2.7.3.1. Longitudinal Encroachment

As defined by FHWA, a longitudinal encroachment is an action within the limits of the base floodplain that is longitudinal to the normal direction of the floodplain. All project features would be perpendicular to the direction of flow of the creeks in the project area. The Broadway overcrossing would be elevated and replace an existing overcrossing structure. As the project would not cause longitudinal encroachments into the base floodplain, no alternatives to avoid longitudinal encroachments were considered.

2.7.3.2. Risks of the Action

The project would not affect Easton Creek west of US 101, Sanchez Creek, Mills Creek, or the Burlingame Lagoon. The project would affect Easton Creek on the east side of US 101, the unnamed channel, and the floodplain between the existing US 101 off-ramp and the Crowne Plaza Hotel parking lot.

The existing 6-by-6-foot double box culvert at Easton Creek on the east side of US 101 would be extended by approximately 42 feet to the east to accommodate the construction of the new northbound US 101 on-ramp. The culvert extension would require minor fill in the floodplain of Easton Creek. Independent of the proposed project, the City of Burlingame is implementing improvements to address flooding in Easton Creek. With these improvements in place, fill from the proposed project would not affect the extent or elevation of flooding in the vicinity of Easton Creek.

The project would implement one or more drainage modifications to eliminate flooding around the eastern landing of the Broadway overcrossing. One option is to restore the conveyance capacity of the unnamed drainage channel by cleaning the 24-inch culvert pipe that drains to the channel and determining if it has sufficient capacity to convey runoff. This option could also involve removing sediments from

the channel to increase its capacity and removing the berm across the channel to allow flows to drain to the Bay. Another option is to install a new storm drainage system to collect runoff from the eastern landing of the Broadway overcrossing and Bayshore Highway and to convey the runoff by gravity flow to an existing outfall at Easton Creek. The drainage modifications required to address the flooding will be developed during final design.

The project would also place fill in the floodplain between the existing southbound US 101 off-ramp and the Crowne Plaza Hotel parking lot. The fill would not affect the extent or elevation of flooding because the water volume that would be displaced is insignificant compared to the source of the flood flow, which is San Francisco Bay.

Under the No Build Alternative, flooding at the eastern landing of the Broadway overcrossing could continue unless the City of Burlingame implements future drainage modifications in that area.

The proposed project would not create flooding that could disrupt a transportation facility needed for emergency access or create a significant risk to life or property as a result of floodplain encroachment. The project would not result in a significant floodplain encroachment.

2.7.3.3. Natural and Beneficial Floodplain Values

The project area provides natural and beneficial floodplain values to fish, wildlife, and water quality. The project would implement construction best management practices (BMPs) to minimize impacts to water bodies. No special mitigation measures are necessary to minimize impacts or restore and preserve natural and beneficial floodplain values.

2.7.3.4. Incompatible Floodplain Development

The proposed project would not support incompatible floodplain development because it would not provide access to any areas that are not already served by the interchange.

2.7.4. Avoidance, Minimization, and/or Mitigation Measures

The proposed project has been designed to avoid and minimize encroachments and impacts to the maximum extent practicable. With implementation of the avoidance and minimization measures described in Sections 2.8.4 and 2.14.4.1, the project would avoid impacts on natural and beneficial floodplain values. Measures to address

the increase in impervious surfaces that would result from the project are described in Section 2.8.4. No additional avoidance, minimization, and/or mitigation measures are required.

2.8. Water Quality and Storm Water Runoff

This section is based on the *Water Quality Study* (WRECO 2010) for the proposed project, which was completed in July 2009. Hydrology and floodplains are discussed in Section 2.7.

2.8.1. Regulatory Setting

2.8.1.1. Federal Requirements: Clean Water Act

In 1972, the Federal Water Pollution Control Act was amended, making the discharge of pollutants to the waters of the United States from any point source unlawful, unless the discharge is in compliance with a NPDES permit. The Federal Water Pollution Control Act was subsequently amended in 1977 and was renamed the Clean Water Act (CWA). The CWA, as amended in 1987, directed that storm water discharges are point source discharges. The 1987 CWA amendment established a framework for regulating municipal and industrial storm water discharges under the NDPES program. Important CWA sections are as follows:

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

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

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

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

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

State Water Resources Control Board and Regional Water Quality Control Boards

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

- **NPDES Program**

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

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

- **Municipal Separate Storm Sewer System Program**

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

- **Construction Activity Permitting**

  Section H.2, Construction Program Management of the Department's NPDES permit states: "The Construction Management Program shall be in compliance with requirement of the NPDES General Permit for Construction Activities (Construction General Permit)". Construction General Permit (Order No. 2009-009-DWQ, adopted on September 2, 2009, became effective on July 1, 2010. The permit will regulate storm water discharges from construction sites that result in a disturbed soil area (DSA) of 1 acre or greater, and/or are part of a common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre must comply with the provisions of the General Construction Permit.

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

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

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

2.8.1.3. Local Requirements

The San Francisco Bay RWQCB has issued the San Mateo Countywide Storm Water Pollution Prevention Program NPDES Permit for projects and facilities within the County of San Mateo.

The San Mateo County General Plan (1986, elements amended various years), the City General Plan (City of Burlingame 1969, elements amended various years), and the Bayfront Plan (City of Burlingame 2006) include policies, procedures, and actions that provide development guidance specific to water resources. These include erosion control measures for construction, grading, and filling—especially near watercourses—to minimize impacts from erosion and sedimentation.

2.8.2. Affected Environment

2.8.2.1. Surface Water Resources

As described in Section 2.7.2, surface water in the project limits consists of Easton Creek, Sanchez Creek, and an unnamed channel at Bayshore Highway near Airport Boulevard. Mills Creek and the Burlingame Lagoon are nearby but outside of the project limits (Figure 1-1).

Water flows in the general area are highly seasonal; more than 90 percent of annual runoff occurs during the winter rainy season. Within the project vicinity, drainage is primarily by sheet flow east toward the Bay, or through the local drainage systems and creeks. Sanchez Creek, Easton Creek, and the Burlingame Lagoon are all classified as waters of the United States and/or waters of the State. Potentially jurisdictional waters in the project area are discussed in Section 2.14.

Water Supply

The City of Burlingame receives its drinking water from connections to the City of San Francisco's Crystal Springs and Sunset Aqueducts. Groundwater and surface water in the project area are not used as sources of municipal water supply.

Existing Surface Water Quality

TMDL requirements limit the amount of a given pollutant that a water body can receive without violating water quality standards and designated uses. None of the surface waters in the project limits are in the SWRCB's list of waterways that do not meet water quality standards, known as the CWA Section 303(d) List of Water Quality Limited Segments, or the 303(d) List. All of the waterways, however, drain to San Francisco Bay, which is on the 303(d) List. TMDLs have been established for chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxin compounds, exotic species, furan compounds, mercury, and polychlorinated biphenyls (PCBs) in San Francisco Bay.

2.8.2.2. Groundwater Resources

The proposed project is located within the Westside Groundwater Basin of the San Francisco Bay Hydraulic Region. Sources of recharge include rainfall, irrigation water infiltration, and leakage from water and sewer pipes. Groundwater has been encountered at a shallow depth of approximately 4 feet. Numerous wells are in the area. Samples from approximately 40 percent of the wells documented bicarbonate waters, and nitrate-nitrogen concentrations commonly exceeded USEPA guidelines.

Past releases of fuels, solvents, and other contaminants to groundwater have been recorded for facilities in the project area (see Section 2.10.2).

2.8.3. Environmental Consequences

2.8.3.1. Short-Term (Construction) Impacts

Project construction would have the potential to result in temporary impacts to water quality and storm water runoff from increased erosion and subsequent transport of sediment to surface waters. Soil erosion could increase the amount of suspended and dissolved solids, and pollutants in the storm water generated from construction activities such as excavation, materials stockpiling (e.g., soil, gravel), utility relocation, construction of new roadway/structures, paving and milling, and concrete curing.

Spills and fluid leaks from construction vehicles, equipment, or materials may also occur during construction. If such materials were to enter waterways or adversely affect vegetation or wildlife habitat, water quality may be adversely affected. The magnitude of such an impact would depend on the amount and type of material released.

Because of the relatively shallow depth of groundwater in the project area (4 feet below existing grade), releases and spills may impact groundwater quality. Groundwater would likely be encountered during construction. Preliminary design indicates that activities such as installation of retaining walls and concrete barrier footings would require excavation or disturbance to a depth of 4 feet; however, construction of the Broadway overpass girder structure and pile footings would be anticipated to require deeper ground disturbance. Dewatering is anticipated to be required for the installation of the overcrossing and the extension of the Easton Creek culvert. A dewatering permit from the RWQCB may be required for any dewatering or excavation below the groundwater depth.

2.8.3.2. Long-Term (Permanent) Impacts

The existing box culvert in Easton Creek would be extended to accommodate the proposed northbound on-ramp. Although the extension would place fill in the creek, permanent impacts from the extension are anticipated to be minimal. Easton Creek flows are conveyed in a concrete-lined channel downstream of the proposed culvert extension. The culvert extension is not anticipated to permanently increase flow velocity.

In general, heavy metals associated with vehicle tire and brake wear, oil, grease, and exhaust emissions are the primary toxic pollutants associated with transportation corridors. Although the project would not result in an overall increase in traffic

volumes, it would create 1.52 acres of new impervious area, which would increase the volume and velocity of storm water flow to downstream waterways. However, this additional impervious area would be insignificant relative to the total combined Easton Creek and Sanchez Creek watershed area (2,112 acres, or 3.3 square miles).

Increases in the rate of storm water discharges to waterways can result in changes in erosion known as hydromodification. According to the San Mateo Countywide Storm Water Pollution Prevention Program *Hydromodification Management Plan* (STOPPP 2005), the project would be exempt from hydromodification requirements because it falls within two exempt zones (a low gradient zone and a hardened channel zone).

No permanent impacts to groundwater would result from the proposed project (WRECO 2010). The proposed project is anticipated to have a minimal permanent impact to storm water runoff and water quality.

2.8.4. Avoidance, Minimization, and/or Mitigation Measures

Disturbed soil areas would be minimized, and existing vegetation would be maintained to the maximum extent practicable. Work during the rainy season would be limited to the extent practicable to avoid impacts to storm water runoff. Surface waters within the project limits are classified as waters of the U.S. and/or waters of the State; therefore, concurrence and/or permits from the USACE, CDFG, and RWQCB would be required prior to construction (see Section 2.14). These concurrences and permits may require implementation of temporary and permanent BMPs, mitigation, and restoration efforts. Because the project occurs within 100 feet of the San Francisco Bay shoreline, a BCDC consistency determination may also be required prior to construction.

In addition to the measures discussed above, the Department has been issued a Statewide NPDES permit for construction activities, and each project must comply with the conditions of that permit. A SWPPP is required for this project. The SWPPP would include storm water BMPs applicable to construction of the proposed project. These BMPs are expected to include measures for temporary soil stabilization and sediment control. Additionally, permanent erosion control BMPs would be addressed as part of the project design process. The statewide Caltrans SWMP identified short-term (construction) and long-term (permanent) BMPs, which were reviewed for the preliminary recommendation of project specific measures summarized in the following subsections. BMPs fall into four categories: Design Pollution Prevention, Treatment, Construction Site, and Maintenance.

2.8.4.1. Short-Term (Construction) BMPs

Earth-moving activities are anticipated to be necessary during construction. Stabilized construction entrances/exits would be used to prevent the tracking of mud and dirt off-site. Temporary BMPs would be implemented during project construction to comply with the NPDES conditions and would meet Caltrans Best Available Technology/Best Conventional Technology for construction projects. Compliance with the NPDES conditions and adherence to the City of Burlingame and San Mateo County requirements would reduce or eliminate potentially adverse construction-related effects. The most effective BMPs that can be used to minimize erosion include:

- Preserving existing vegetation;
- Avoiding or minimizing work during the rainy season and during any rainfall events or immediately following precipitation when the ground surface is wet;
- Limiting the amount and length of exposure of graded soil and soil stockpiles; and
- Protecting exposed spoils though the use of mulches or erosion control blankets/mats.

Approved erosion control BMPs are described in the *Caltrans Construction Site Best Management Practices Manual* (Department 2003). Temporary erosion control and water quality measures would be defined in detail in the project SWPPP and designated as line items in the plans, specifications, and estimates (PS&Es). Table 2.8-1 lists the minimum requirements to be implemented during project construction.

Table 2.8-1 Minimum Requirements for Temporary BMPs

Category	Minimum Requirement(s)
Soil Stabilization Practices	Preservation of Existing Vegetation Temporary Fence (Type ESA) Hydraulic Mulch
Sediment Control Practices	Silt Fence Fiber Rolls Storm Drain Inlet Protection Sediment/Desilting Basin Sediment Trap
Tracking Control	Stabilized Construction Entrance/Exit Street Sweeping and Vacuuming
Wind Erosion Control	Wind Erosion Control

Table 2.8-1 Minimum Requirements for Temporary BMPs

Category	Minimum Requirement(s)
Non-Storm Water Control	Dewatering Paving and Grinding Operations Illicit Connection/Illegal Discharge Detection and Reporting Vehicle and Equipment Cleaning, Fueling, and Maintenance Pile Driving Operations Concrete Curing and Finishing Material and Equipment Use Over Water Structure Demolition/Removal Over or Adjacent to Water
Waste Management & Materials Pollution Control	Concrete Waste Management Material Delivery and Storage Material Use Solid Waste Management Spill Prevention and Control Sanitary/Septic Waste Management Stockpile Management

Source: Department 2003

2.8.4.2. Long-Term (Permanent) BMPs

Permanent (post-construction) BMPs include the minimization of land disturbance and impervious surfaces, treatment of runoff, and energy dissipation devices. Permanent BMPs included with the project would reduce the suspended particulate loads (and thus pollutants associated with the particulates) entering waterways after construction is completed. This category of water quality control measures can be identified as including both Design Pollution Prevention BMPs and Treatment BMPs.

The proposed project would not be required to consider permanent treatment BMPs within the Department's right-of-way because the project would result in less than 1 acre of net increase in impervious area or rework of existing impervious area. However, the project would be required to consider storm water treatment in accordance with County of San Mateo requirements, as the project would result in the net increase or rework of more than 10,000 square feet of impervious area.

2.8.4.3. BMPs Considered Feasible

Treatment of storm water runoff for the proposed project would be implemented to the Maximum Extent Practicable. However, the project is located in a developed area with existing constraints that limit the extent and location of treatment BMPs. The following treatment BMPs are considered the most feasible for the proposed project:

- Vegetated swales and buffer strips; and
- Tree well filters.

2.9. Geology, Soils, and Seismicity

This section is a brief summary of the geotechnical assessments performed for the proposed project. A *Geotechnical Impact Report* completed in May 2009 summarizes the initial assessment of geologic conditions in the project area and potential impacts (URS 2009d). Preliminary foundation reports completed in July 2009 address subsurface conditions at the overcrossing and proposed retaining wall locations (URS 2009e and f).

2.9.1. Regulatory Setting

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

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

2.9.2. Affected Environment

2.9.2.1. Site Geology

The US 101/Broadway interchange is located on the western margin of the San Francisco Bay block within the central portion of the Coast Ranges geomorphic province of California. Northwest-to-southeast-trending valleys and ridges characterize the regional morphology of the Coast Ranges province. These topographic features are controlled by folds and faults that resulted from the collision of the Farallon and North American plates and subsequent strike-slip faulting along the San Andreas fault system. The San Francisco Bay block is a relatively stable seismic block bordered by the San Andreas and Hayward faults to the west and east, respectively.

The project site is located just east and northeast of the historic San Francisco Bay margin and has various surface and subsurface geologic and soil conditions. The former tidal flats have been covered with artificial fill that overlays the majority of

the project area, from about Rollins Road to the edge of the Bay. Artificial fill has been placed in areas of estuarine deposits. Alluvial fan deposits consisting of sand, silt, clayey silt, and gravel are south and southwest of Rollins Road. The depth to bedrock in the project area is unknown but is estimated to range from 150 to 200 feet.

Geotechnical borings performed in 1970 and 2002 for the improvements to the Broadway overcrossing and pedestrian overcrossing indicate a subsurface alluvial soil profile consisting of 3 to 10 feet of fill underlain by Bay Mud and alluvium. The fill consists of silty to clayey sand and lean clay with gravel. The thickness of the Bay Mud ranged from about 2 feet to as much as 14 feet and consisted of soft to very soft, dark gray to black organic clay with peat layers and occasional shells and thin sand interbeds. Alluvium underlying the Bay Mud consists of complexly interbedded medium dense to dense silty to clayey sand and silt and soft to very stiff clay. Fine to medium gravel interbeds were also common throughout the alluvium. Due to the proximity to the Bay, groundwater is expected to be at or near the surface and may be subject to tidal fluctuations and surface runoff.

2.9.2.2. Geologic Hazards

As the project area is on relatively flat ground, landsliding would not present a hazard. Subsidence from groundwater or petroleum extraction is not known to occur in the project area. Potential geologic hazards in the project area are described below.

Surface Fault Rupture

The US 101/Broadway interchange is about 2.5 miles east of the San Andreas fault, which has an MCE magnitude of 8.0 (Mualchin 1996). Other faults near the project area include the San Gregorio-Palo Colorado fault (9.5 miles southwest), the Hayward fault (16 miles northeast), and the west branch of the Monte Vista fault (14 miles southeast). The project area is not in the vicinity of any Alquist-Priolo Earthquake Fault Zones and does not cross any mapped faults. Surface rupture of the project area due to faulting is not expected to occur.

Earthquake Shaking

The short distance to the San Andreas fault and other active faults creates a high risk for ground shaking from fault movement. The San Andreas fault is the largest active fault in California and is responsible for the largest known earthquake in Northern California, the 1906 moment magnitude[11] (**M**) 7.9 San Francisco earthquake (Wallace

[11] Moment magnitude is a measure of the total amount of energy of an earthquake, considering (among other factors) the area of a fault's rupture surface and the distance the earth moves along the fault. Each

1990). In the Bay Area, the main trace of the San Andreas fault forms a linear depression along the Peninsula, occupied by the Crystal Springs and San Andreas Lake reservoirs. In the project area, the fault would have a peak bedrock acceleration of 0.6 g.[12]

Liquefaction and Lateral Spreading

Liquefaction is a phenomenon whereby sediments temporarily lose shear strength and collapse. The soil type most susceptible to liquefaction is loose, cohesionless, granular soil below the water table and within about 50 feet of the ground surface. Lateral spreading occurs when a layer liquefies at depth and causes horizontal movement or displacement of the overburden mass toward a free face such as a stream bank or excavation, or toward an open body of water.

U.S. Geological Survey (USGS) and ABAG maps show the project area as having "very high" liquefaction susceptibility (Witter et al. 2006; ABAG 2004). Borings completed in the project area indicate that the fill soils consist of silty to clayey sand and lean clay. The underlying Bay mud is generally clayey and not subject to liquefaction but contains occasional loose to medium dense silty sand layers. The underlying Holocene alluvium also contains silty sand interbeds. Since these granular sediments are generally below the groundwater and could be loose, they may be subject to liquefaction and associated ground surface settlement. The potential for lateral spreading at this site appears to be low.

Settlement

Settlement can occur when soil is loaded by a structure or by the placement of fill on top of soil; when soil pore pressures gradually dissipate from vertical loading; and from earthquake shaking (known in this case as compaction settlement). The clayey fill soils and Bay mud found in the project area range from very soft to stiff and are subject to settlement due to loading.

Corrosion

According to the geotechnical investigation for the pedestrian overcrossing (Parikh Consultants 2005), soils in the project area are corrosive, and groundwater contains chlorinated solvents that could corrode metal pipes.

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whole-number increase (e.g., 4.8 to 5.8 to 6.8) represents a tenfold increase in the size of the ground motion.

[12] g = Acceleration due to earth's gravity, a measure of how hard the ground shakes in a specific geographical area. 0.6 g would be associated with a severe earthquake.

2.9.3. Environmental Consequences

The project area is not in the vicinity of any Alquist-Priolo Earthquake Fault Zones and does not cross any mapped faults. The proposed project would not expose people or structures to potential substantial adverse effects from fault rupture.

The proposed project is in a seismically active area and has a reasonably high potential to experience strong earthquake shaking in the future. The potential exists for people or structures to be exposed to substantial adverse effects from seismic ground shaking. This risk is also present with the existing condition and the No Build Alternative.

Borings conducted in the project area identified soils that may be subject to liquefaction and associated ground surface settlement and could affect the proposed overcrossing's abutment foundations and roadway. At the abutments of the proposed Broadway overcrossing, approach embankments with retaining walls up to 25 feet high would be constructed to accommodate the increased overcrossing height. Due to the presence of fill soils underlain by Bay mud and alluvium, these areas could experience consolidation settlement of up to 13 inches.

2.9.4. Avoidance, Minimization, and/or Mitigation Measures

Additional geotechnical subsurface and design investigations will be performed during the final design and engineering phase for the project. The investigations will include site-specific evaluation of subsurface conditions at the locations of proposed foundation features during final design. Project elements will be designed and constructed to meet seismic design requirements for ground shaking and ground motions, as determined for the project location and site conditions (liquefaction, settlement, and corrosion). No further avoidance, minimization, and/or mitigation is needed.

2.10. Hazardous Waste and Materials

The following discussion is based on the *Initial Site Assessment* (URS 2009g) for the proposed project, which was completed in May 2009.

2.10.1. Regulatory Setting

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

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

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

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

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

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

2.10.2. Affected Environment

The *Initial Site Assessment* (URS 2009g) for the proposed project included the following:

- An Environmental Data Resources, Inc. (EDR) environmental information database search for the project limits and surrounding areas within approximately 1 mile;

- A review of the project plans, historical aerial photographs, topographic maps, and Sanborn® maps (historical fire insurance maps) covering the project limits and adjacent areas;
- A site and adjacent area field review of the existing and proposed right-of-way and adjoining properties; and
- A review of available files at the San Mateo County Environmental Heath Department and the Central County Fire Department to obtain additional information on sites identified in the EDR search.

The assessment did not include soil or groundwater sampling or sampling for asbestos, radon, lead-based paint, or lead in drinking water.

2.10.3. Environmental Consequences

The assessment identified 15 potential hazardous materials sites within the existing or proposed State right-of-way. These sites include gas stations, auto repair facilities, and industrial and commercial properties. Based on a review of existing data, additional investigation is recommended at 10 of these properties. Ten other potential hazardous materials sites have been reported outside, but within 1 mile, of the project limits. Additional investigation is recommended for one of these sites that is upgradient from, and outside of, the project limits and may have affected subsurface conditions within the proposed construction area. The 11 sites for which additional investigation is recommended are described in Table 2.10-1.

Six additional sites within 1 mile of the project limits were identified as warranting further evaluation only if the project limits change and additional right-of-way is required within 100 feet of these sites. These sites include three gas stations, a commercial facility, an auto repair facility, and a solid waste landfill.

Corrective actions have been conducted or are ongoing at most of the hazardous materials sites identified within or adjacent to the project limits, and natural remediation and composition of hydrocarbon and other contaminants may have occurred since previous remediation actions. However, the risk of encountering contamination from these sites during project construction, or of acquiring properties with continued contamination, remains medium to high.

Table 2.10-1 Potential Hazardous Materials Sites

Owner or Occupant/Address	Description	Further Investigation Recommended
	In the Proposed Right-of-Way	
City of Burlingame Drainage Easement, Bayshore Highway (Figure 2.2-2, #12)	A retaining wall would be built along the Bayshore Highway side of the parcel. Spills in the vicinity would flow to this drainage. This property is adjacent to US 101 and therefore may contain aerially deposited lead (ADL).	Develop work plan, including soil sampling, to investigate for potential petroleum hydrocarbons and ADL.
76 Conoco Phillips, 1200 Bayshore Highway (Figure 2.2-2, #13)	Full acquisition of the parcel is proposed for the realigned Bayshore Highway /Broadway/Airport Blvd. intersection. The gas station was listed in the CORTESE database and several leaking underground storage tank (UST)-related databases. After a waste oil UST was removed in 1988, monitoring wells were installed at the property to evaluate groundwater quality. Groundwater monitoring was conducted from 1989–1996, 1999–2001, and 2003–present. Risk assessments and corrective actions were also conducted at the property from 1990–1995 and in 2003. A risk-based case closure was requested in 2004. Petroleum hydrocarbons above regulatory limits were detected in groundwater in 2005 and as free phase in one monitoring well in 2007. Previous investigations identified petroleum hydrocarbons in groundwater.	Develop work plan, including soil and groundwater sampling, to investigate for potential releases of petroleum hydrocarbons.
Various: Office Building, 1299 Bayshore Highway (Figure 2.2-2, #1)	The widened Bayshore Highway and realigned northbound US 101 on-ramp would traverse the southern half of the parcel. A non-PCB-containing transformer, meter, and a sewer discharge monitoring station are on the west side of the property. This property is adjacent to US 101 and therefore may contain ADL.	Develop work plan, including soil sampling, to investigate for ADL.
Unknown, 1322 Marsten Road (Figure 2.2-2, #15)	The proposed southbound US 101 off-ramp would cross the easternmost edge of the property, a retaining wall is proposed along the new off-ramp lanes. This property is listed in the HAZNET database as City of Burlingame Garage and is reported to generate small quantities of hazardous waste. No violations were found. This property is adjacent to US 101 and therefore may contain ADL.	Develop work plan, including soil sampling, to investigate for ADL.
Western Exterminator and Nerli Construction, 1320 Marsten Road (Figure 2.2-2, #16)	The proposed southbound US 101 off-ramp would cross the easternmost edge of the property; a retaining wall would be constructed along the new off-ramp lanes. UST leaks and petroleum hydrocarbon-impacted soils were reported from 1991–1994. Subsurface investigations, corrective actions, and groundwater monitoring were subsequently conducted. Although petroleum hydrocarbons at concentrations above regulatory limits remain underneath the property, a risk-based case closure was requested and granted in 2000. Because the closure may not apply or absolve the Department of future costs, additional investigation may be warranted.	Develop work plan, including soil and groundwater sampling, to investigate for petroleum hydrocarbons and ADL.

Table 2.10-1 Potential Hazardous Materials Sites

Owner or Occupant/Address	Description	Further Investigation Recommended
Hanson Autobody Auto Repair, 1222 Rollins Road (Figure 2.2-2, #18)	The proposed project includes construction of a retaining wall along the new southbound US 101 off-ramp lanes at the easternmost end of the property. The facility is listed in the CORTESE database because of solvents in groundwater. Several minor issues related to deficient hazardous substances storage, hazardous waste management, previous use as a paint booth, and poor housekeeping were documented from 1971–2007. Previous investigations concluded that groundwater north of the site is impacted with petroleum hydrocarbons; groundwater investigation north of the property was recommended. This property is adjacent to US 101 and therefore may contain ADL.	Develop work plan, including soil and groundwater sampling, to investigate for solvents, petroleum hydrocarbons, and for ADL.
Hanson Autobody Auto Repair, 1244 Rollins Road (Figure 2.2-2, #17)	The proposed project would construct a retaining wall along the new southbound US 101 off-ramp at the eastern end of the property. Previous investigations concluded that groundwater north of the site is impacted with petroleum hydrocarbons and recommended additional investigation north of the property. Tire and petroleum hydrocarbons were observed stored at the site. The 1959 Sanborn Map indicated an aboveground oil-storage tank at this property. This property is adjacent to US 101 and may contain ADL.	Develop work plan, including soil and groundwater sampling, to investigate for petroleum hydrocarbons and for ADL.
Autohaus Schmid, 1213 Rollins Road (Figure 2.2-2, #23)	The project would widen Rollins Road into the east (front) side of this property, and retaining walls may be constructed along the driveways. A leak from an on-site UST was reported in 1999. Although a cleanup was completed and the case closed in 2001, subsequent investigations reported petroleum hydrocarbons in the groundwater and recommended further investigation for presence of solvents and petroleum hydrocarbons.	Develop work plan, including soil and groundwater sampling, to investigate for petroleum hydrocarbons and solvents.
Gas station, 1000 Broadway (Figure 2.2-2, #24)	The project would widen Rollins Road into the east (front) side of this property, and retaining walls may be constructed along the driveways. The gas station has been listed as a Leaking Underground Storage Tank (LUST) cleanup facility. A gasoline leak was reported in 1985, but the case was closed in 1994. A new gasoline leak was reported in 2001. Subsurface investigations, remedial actions, and groundwater monitoring were performed at the property until at least 2009 (Stantec 2009). The case is open.	Develop work plan, including soil and groundwater sampling, to investigate for petroleum hydrocarbons.

Table 2.10-1 Potential Hazardous Materials Sites

Owner or Occupant/Address	Description	Further Investigation Recommended
Mike Harvey Honda, 1041 and 1049 Broadway (Figure 2.2-2, #25, 26)	The project may require a temporary construction easement at this property. The facility is listed in CORTESE and UST-related databases. A leak was reported in 1991 during a UST removal at the property. Subsurface investigations, remedial actions, and groundwater monitoring were performed at the property until 1992, when the monitoring program was finalized due to decreasing petroleum hydrocarbons concentrations in the groundwater. Follow-up surveys revealed the presence of subsurface chlorinated compounds. Analytical data from 1996 documented chlorinated compounds in the groundwater and are believed to have originated upgradient from off-site. The case was closed in 1997. Because the closure may not apply or absolve the Department of future costs, additional investigation may be warranted.	Develop work plan, including soil and groundwater sampling, to investigate for chlorinated solvents. Sampling may not be required if this area is only used as a TCE; however, samples should be collected downgradient of this property within the project area.
Outside of the Proposed Right-of-Way		
76 Conoco Phillips, 1147 Rollins Road (Appendix A, Layout L-3)	The property is across the street (to the west and upgradient) from the existing southbound ramps to/from Rollins Road, which would be closed and the pavement removed as part of the project. Outside shoulder widening would take place on the east side of Rollins Road, and the street would be regraded to conform to the higher elevation of the nearby Broadway intersection. The property is listed as a LUST facility, cleanup site, and case open-site assessment. Several fuel and waste oil leaks were reported to have impacted soil and groundwater underneath the property from 1991–2002, during UST removal activities. Subsurface investigations, corrective actions, and groundwater monitoring were conducted at the property. Information from 2008 reveals the presence of petroleum hydrocarbons in groundwater above regulatory limits underneath the property (with the highest concentrations at the northwest corner) and outside the footprint of the gas station. Previous investigations concluded that the groundwater under the southern part of the proposed interchange is likely impacted with petroleum hydrocarbons from UST releases at 1000 Broadway, 1147 Rollins Road, and 1213 Rollins Road.	If right-of-way acquisition or dewatering is planned downgradient of this property, develop work plan to collect groundwater samples to evaluate whether the known releases would affect project construction activities.

In addition to the facilities and sites listed above, demolition or construction activities could increase risk of exposure to airborne contaminants from materials in roadway structures, building, and surface soils. Thermoplastic paint used for roadway striping in the project limits and paint on structures that would be demolished as part of the project may contain lead. Asbestos-containing materials may be present in concrete, pipes, electrical insulation, and other features of structures that would be demolished as part of the project. Vehicle tire and brake wear, oil, grease, and exhaust from

vehicular traffic on US 101, Broadway, Bayshore Highway, and other roads within the project limits may have contaminated surface soils in the immediate vicinity with aerially deposited lead (ADL) and other heavy metals. Exposure to airborne contaminants from these materials could affect safety and health.

Gasoline, diesel fuel, oil, and lubricants for construction equipment are typically used, handled, and stored by contractors on roadway construction projects. In all construction projects, there is a potential for the accidental release of fuels or lubricants from construction equipment or vehicles. No specific risks related to such a release have been identified for the proposed project. Contractors are required to handle hazardous materials in accordance with applicable laws, including health and safety requirements. No acutely hazardous materials would be used or stored within the project limits during project construction.

The project would not create a significant new hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. The project would not expose an existing or proposed school within 0.25 mile to risks associated with hazardous materials, as the nearest school is approximately 1 mile away. Project construction would require temporary closures and/or detours of interchange ramps and portions of surface streets but would maintain access across US 101; therefore, substantial impacts to emergency response or evacuation would be avoided.

CEQA requires evaluation of safety hazards resulting from projects within an airport land use plan, within 2 miles of a public airport, or in the vicinity of a private airstrip. The project limits are less than 2 miles from SFO, and the area between the northern project limits and roughly 500 feet south of Easton Creek within the project area is within the Airport Influence Area for SFO (City of Burlingame 2007). The project would replace an existing interchange and would not result in a safety hazard due to its proximity to an airport.

2.10.4. Avoidance, Minimization, and/or Mitigation Measures

Further investigation of the sites identified in Table 2.10-1 is recommended due to the potential presence of petroleum hydrocarbons, solvents, and ADL in soil and/or groundwater. The following measures would be included in the project to identify the presence and extent of potential hazardous materials.

- For project excavations that extend to groundwater, groundwater sampling, analysis, and characterization would take place before construction commences.

Treatment and disposal options for extracted groundwater would be determined before dewatering.

- If soil excavation is planned near properties where petroleum hydrocarbon-impacted soils may be present, the soil would be sampled, tested, and characterized.
- If soil excavation is planned near properties where chlorinated compounds may be present, the soil and groundwater would be sampled, tested, and characterized for chlorinated compounds.
- During final design, surface soils would be tested for ADL and heavy metals. The results of the testing would be used to determine the soil management options and any special soils handling requirements for the construction contractor, including implementing a health and safety plan.
- Structures that would be removed or modified by the project would be tested for hazardous materials such as lead-based paint and asbestos by a qualified and licensed inspector. If such materials are identified, measures would be employed to ensure the materials are removed and disposed of in an appropriate manner.
- Contaminated soil, groundwater, and other hazardous materials would be properly characterized and disposed of at an appropriate facility per applicable regulations.

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

2.11. Air Quality

This section summarizes the Air Quality Impact Assessment (URS 2011a) and Mobile Source Air Toxics (URS 2011b) technical reports completed for the project in January 2011.

2.11.1. Regulatory Setting

The Clean Air Act as amended in 1990 is the Federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the Federal level,

these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter, lead, and sulfur dioxide (SO_2).

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

Regional level conformity in California is concerned with how well the region is meeting the standards set for CO, NO_2, O_3, and particulate matter. California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as the MTC for the Bay Area, and the appropriate Federal agencies, such as the FHWA, make the determination that the RTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for CO and/or 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. A “hot spot” analysis is a dispersion modeling analysis, using CALINE4, to predict a project’s potential for violating the NAAQS for CO. In the case of particulate matter, a “hot spot” analysis is qualitative. 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.

2.11.2. Affected Environment

The proposed project is located in the San Francisco Bay Area Air Basin (SFBAAB; BAAQMD 2010a). The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range splits, resulting in a western coast gap (the Golden Gate) and an eastern coast gap (the Carquinez Strait), which allow air to flow in and out of the SFBAAB and the Central Valley.

The climate is dominated by the strength and location of a semi-permanent, subtropical high pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. In the winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential. During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno gap.

Temperatures along the Peninsula have a narrow range due to moderating marine air. Temperatures in summer average in the mid-70s, with lows in the mid-50s. Winter highs are in the mid to high 50s, with lows in the low to mid 40s.

The air pollution potential is lowest for the parts of the subregion that are closest to the Bay, due largely to good ventilation and fewer pollutants from upwind sources. Light winds in the evenings and early mornings occasionally cause elevated pollutant levels. This subregion contains a variety of industrial air pollution sources, but traffic and congestion along US 101 are the major source of local air pollution. Table 2.11-1 shows the applicable standards and attainment status of criteria pollutants in the project area.

Table 2.11-1 State and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		National Standards[2]	
		Concentration	Attainment Status	Concentration[3]	Attainment Status
Ozone (O_3)	8 Hour	0.070 ppm (137 µg/m^3)	N[9]	0.075 ppm (147 µg/m^3)	N[4]
	1 Hour	0.09 ppm (180 µg/m^3)	N		See Footnote 5
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	A	9 ppm (10 mg/m^3)	A[6]
	1 Hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	A
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	A	0.100 ppm (see footnote 11)	U
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	NA	0.053 ppm (100 µg/m^3)	A
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm (105 µg/m^3)	A	NA	NA
	3 Hours	NA	NA	0.5 ppm (1300 µg/m^3)[12]	
	1 Hour	0.25 ppm (655 µg/m^3)	A	0.075 ppm (196 µg/m^3)[12]	A
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	N[7]	NA	NA
	24 Hour	50 µg/m^3	N	150 µg/m^3	U
Particulate Matter - Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	N[7]	15 µg/m^3	A
	24 Hour	NA	NA	35 µg/m^3 See Footnote 10	N
Sulfates	24 Hour	25 µg/m^3	A	NA	NA
Lead	Calendar Quarter	NA	NA	1.5 µg/m^3	A
	30 Day Average	1.5 µg/m^3	A	NA	NA
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	U	NA	NA
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 µg/m^3)	NIA	NA	NA
Visibility Reducing particles	8 Hour (10:00 to 18:00 PST)	See Footnote 10	U	NA	NA

Notes: A=Attainment, N=Nonattainment, NIA= No Information Available, U=Unclassified; mg/m^3=milligrams per cubic meter; ppm=parts per million; µg/m^3=micrograms per cubic meter, NA=Not Applicable, PST=Pacific Standard Time

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM_{10} annual standard), then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average. The Lake Tahoe CO standard is 6.0 ppm, a level one-half the national standard and two-thirds the state standard.
2. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th-highest daily concentrations is 0.075 ppm or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m^3. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m^3. Except for the National particulate standards, annual standards are met if the annual average falls below the standard at every site. The National annual standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.
3. National air quality standards are set by USEPA at levels determined to be protective of public health with an adequate margin of safety.
4. In June 2004, the Bay Area was designated as a marginal nonattainment area of the National 8-hour ozone standard. US EPA lowered the national 8-hour ozone standard from 0.080 to 0.075 ppm (i.e. 75 ppb) effective May 27, 2008. EPA will issue final designations based upon the new 0.075 ppm ozone standard by March 2010.
5. The National 1-hour ozone standard was revoked by USEPA on June 15, 2005.
6. In April 1998, the Bay Area was redesignated to attainment for the National 8-hour carbon monoxide standard.
7. In June 2002, CARB established new annual standards for $PM_{2.5}$ and PM_{10}.
8. Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.
9. The 8-hour State ozone standard was approved by CARB on April 28, 2005, and became effective on May 17, 2006.
10. USEPA lowered the 24-hour $PM_{2.5}$ standard from 65 µg/m^3 to 35 µg/m^3 in 2006. USEPA designated the Bay Area as nonattainment of the $PM_{2.5}$ standard on October 8, 2009. The effective date of the designation is December 14, 2009 and the Air District has three years to develop a plan, called a State Implementation Plan (SIP), that demonstrates the Bay Area will achieve the revised standard by December 14, 2014. The SIP for the new $PM^{2.5}$ standard must be submitted to the USEPA by December 14, 2012.
11. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).
12. On June 2, 2010, the USEPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The EPA also revoked both the existing 24-hour SO_2 standard of 0.14 ppm and the annual primary SO_2 standard of 0.030 ppm, effective August 23, 2010.

Source: CARB 2010; BAAQMD 2010b

2.11.3. Environmental Consequences

2.11.3.1. Permanent Impacts

Air quality issues relate to a range of different pollutants and their individual regulatory standards. The evaluation of air quality impacts addressed in this section focuses on the project's conformity with the regional air quality framework and the project's potential to result in an adverse impact to the region's compliance with the relevant standards.

State Implementation Plan Conformity

This project will involve Federal transportation funds; therefore, the transportation conformity regulation, referred to as the Transportation Conformity Rule, applies. A version of the USEPA's Transportation Conformity Rule has been incorporated into the Bay Area portion of the SIP. For the San Francisco Bay Area, each updated version of the RTP and TIP is evaluated in a regional conformity analysis by MTC, to support a request for approval by FHWA.

Project Design and Funding in RTP and TIP

The project is included in MTC's most recent RTP, *the Transportation 2035 Plan for the San Francisco Bay Area* (MTC 2009a). It is listed as RTP ID No. 21602, "Reconstruct U.S. 101/Broadway interchange." The project is also included in the 2011 TIP (MTC 2010; TIP ID No. SM-050028), as "City of Burlingame: US 101/Broadway Interchange; Reconstruct and reconfigure interchange. Replace existing bridge with a wider bridge structure." The following summarizes the regional transportation planning and conformity approvals related to this project.

MTC initiated its regional conformity analysis for the 2011 TIP in August 2010 with a consultation request to partner agencies, discussing the approach to the air quality assessment. The process included public consultation and was developed in compliance with FHWA regulations and guidance on financial constraint. MTC's evaluation for the 2011 TIP determined that the regional emissions analysis was below the applicable budgets in the SIP. The regional air quality evaluation for the 2011 TIP was submitted to FHWA and FTA on November 12, 2010. The evaluation used the latest available socioeconomic and land use forecasts from ABAG Projections 2009 and the latest MTC travel demand model (BAYCAST-90) (MTC 2010), which are less than 5 years old. As noted above, the 2011 TIP was approved by FHWA/FTA on December 14, 2010.

The proposed project is fully funded and is in the *Transportation 2035 Plan for the San Francisco Bay Area* 2009 Regional Transportation Plan (page 116), which was found to conform by MTC on April 22, 2009, and FHWA and FTA adopted the air quality conformity finding on May 29, 2009. The project is also included in MTC's financially constrained 2011 Transportation Improvement Program, page 312. The MTC's 2011 Transportation Improvement Program was found to conform by FHWA and FTA on December 14, 2010. The design concept and scope of the proposed project is consistent with the project description in the 2009 RTP, the 2011 TIP, and the assumptions in the MTC's regional emissions analysis.

The project is in conformity with the SIP and will not otherwise interfere with timely implementation of any Transportation Control Measures (TCM) in the applicable SIP.

Evaluation of Potential for Traffic-Related CO Impacts

Traffic-related CO effects were evaluated to determine whether the project would cause or contribute to any new localized CO violations. The CO impacts analysis followed the procedures in *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol; Garza, Graney, and Sperling 1998), using screening criteria for projects in attainment or unclassified areas. The analysis consisted of two steps: a screening step to determine whether the project would affect CO levels at nearby intersections based on changes in levels of service, and a more detailed analysis to determine whether project-related increases in traffic volumes would affect local CO levels.

According to the traffic analysis (URS 2010a), six of the seven study area intersections would have unacceptable future levels of service (LOS E and F) under the No Build Alternative (Table 2.4-3). The proposed project would improve operating conditions such that all study area intersections would operate at LOS D or better. The predicted improvements to intersection operating conditions would reduce congestion and therefore reduce CO emissions.

According to the CO Protocol, projects that could increase traffic volumes by 5 percent or 1,000 vehicles per hour or more should undergo additional analysis to determine if CO impacts could occur. A modeling analysis for CO impacts was completed for the intersections that would be most affected by the Build and No Build alternatives. Traffic volumes obtained from the traffic analysis (URS 2010a) were used to model future CO levels near the intersections with the largest traffic volumes. The CALINE4 model was used for the analysis, following the CO Protocol guidelines.

A project is considered to have significant impacts if it results in CO concentrations that exceed the State 1-hour average standard of 20 parts per million (ppm), the Federal 1-hour average standard of 35 ppm, and/or the 8-hour State and Federal average standard of 9.0 ppm. As shown in Table 2.11-2, the maximum predicted concentrations (including background) at the study intersections are below the State and Federal standards for both the No Build and Build alternatives. The proposed project would not cause or contribute to any new localized CO violations, or increase the frequency of an existing CO violation, through at least the project study year and RTP planning year of 2035.

Table 2.11-2 CALINE4 CO Modeling Results

Intersection	CO 1-hour Concentration (ppm)		CO 8-hour Concentration (ppm)	
	No Build	Build	No Build	Build
Airport Boulevard/Bayshore Highway	3.7	3.6	1.9	1.8
Broadway/ US 101 Off-Ramp/ Rollins Road	3.8	3.8	2.0	2.0
Broadway/Carolan Avenue	3.7	3.8	1.9	2.0

Notes:
1. NAAQS for 1-hour CO is 35 ppm and CAAQS for 1-hour CO is 20 ppm. NAAQS and CAAQS for 8-hour CO is 9 ppm.
2. 1-hour and 8-hour background concentrations were obtained from Redwood City station located at 897 Barron Ave., Redwood City, CA 94063.
3. 1-hour background concentration was recorded in 2009 and was found to be 3.5 ppm.
4. 8-hour background concentration was recorded in 2009 and was found to be 1.76 ppm.
5. A persistence factor of 0.7 was used to convert 1-hour CO concentration to 8-hour CO concentration.

Particulate Matter "Hot Spot" Analysis

A qualitative particulate matter hot spot analysis is required for transportation projects that are funded or approved by the FHWA or the FTA and are in Federal nonattainment or maintenance areas for particulate matter less than 10 micrometers in diameter (PM_{10}) or particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$). This project is unclassified for the Federal PM_{10} standards, so a qualitative PM_{10} hot spot analysis is not required for project-level conformity purposes.

The USEPA designated the SFBAAB as a Federal nonattainment area for the new 35 $\mu g/m^3$ $PM_{2.5}$ standard, effective December 14, 2009. The BAAQMD must submit an implementation plan for the new Federal standard to the USEPA by December 2012. Even though there is no implementation plan for $PM_{2.5}$, a $PM_{2.5}$ hot spot analysis is required for any project that is determined to be a Project of Air Quality Concern (POAQC) as defined in Title 40 CFR Part 93, because the air basin has been classified as nonattainment under the Federal $PM_{2.5}$ standard.

The following five types or categories of projects are defined as POAQCs in 40 CFR Section 93.123(b)(1):

1. New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;
2. Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
3. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
4. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
5. Projects in or affecting locations, areas, or categories of sites which are identified in the PM_{10} or $PM_{2.5}$ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The proposed project does not fall into any of the POAQC categories for the following reasons:

1. The project is not a new or expanded highway project that would result in a significant number of, or increase in the number of, diesel vehicles. The project is an interchange replacement and does not include additional lanes on US 101. The project would not increase the volume of traffic on US 101 or the percentage of diesel vehicle traffic on US 101 compared to No Build conditions (URS 2010a).
2. The percentage of diesel vehicles at project area intersections is 2 percent and would not increase as a result of the project. The project would improve operations and substantially reduce vehicle delays at study area intersections, as shown in Table 2.4-3.
3. The project is not a new bus or rail terminal or transfer point.
4. The project is not an expansion of an existing bus or rail terminal or transfer point.
5. There is no state implementation plan for $PM_{2.5}$, therefore the project area is not identified in an implementation plan as an area of potential violation. The nearest known violations of the $PM_{2.5}$ and PM_{10} standards were recorded in 2007 in

Redwood City, about 10 miles southeast of the US 101/Broadway interchange (URS 2011a).

In December 2010, SMCTA, as the project sponsor, submitted a Project Assessment Form for $PM_{2.5}$ Interagency Consultation to MTC to initiate consultation with the Air Quality Conformity Task Force for a project-level $PM_{2.5}$ conformity determination. On January 31, 2011, the Air Quality Conformity Task Force determined that the project is not a POAQC. The Department and SMCTA also invited the public to review and comment on the conformity process. The public was informed of the conformity process through notices published in the *San Mateo County Times* and *Daily Journal* on January 24, 2011, and posted on the Caltrans, SMCTA, and City of Burlingame websites. No comments on the conformity process or determination were received during the public review period, which ended on February 8, 2011.

Therefore, the proposed project meets the Clean Air Act requirements and 40 CFR 93.116 without any explicit hot spot analysis. The proposed project would not create a new, or worsen an existing, $PM_{2.5}$ violation.

Re-entrained road dust for a $PM_{2.5}$ nonattainment area must only be considered in a hot spot analysis if the USEPA or the State air agency has made a finding that these emissions are a significant contributor to the $PM_{2.5}$ air quality problem. According to the BAAQMD 2010 Clean Air Plan, geological dust (which includes road dust, construction dust and windblown dust) accounts for 19 percent of $PM_{2.5}$, a relatively modest fraction (BAAQMD 2010c). Therefore, road dust emissions have not been identified as a significant contributor to $PM_{2.5}$ nonattainment and would not need to be considered in a hot spot analysis.

Particulate $PM_{2.5}$ and PM_{10} emissions would also be generated during construction activities. For purposes of the hot spot analysis and project conformity, construction-related particulate emissions are considered temporary if they occur only during the construction phase of the project and last 5 years or less at any individual location. As noted in Section 1.3.1, the construction period would be less than 5 years, and therefore a construction-related $PM_{2.5}$ and PM_{10} hot spot analysis is not required.

For the reasons described above, a future new or worsened $PM_{2.5}$ violation of NAAQS is not anticipated, and therefore the proposed project meets the conformity hot spot requirements in 40 CFR 93.116 and 40 CFR 93.123 for PM_{10} and $PM_{2.5}$.

Ozone

The BAAQMD adopted the 2010 Clean Air Plan to plan for and achieve compliance with the Federal and State ozone standards (BAAQMD 2010c). This project would not interfere with the Clean Air Plan and would provide transportation benefits that reduce pollutant emissions, including precursors to the formation of ozone, by improving traffic operations and efficiency. This project is included in the Bay Area region's RTP (MTC 2009a), which has undergone regional evaluation for conformity with Federal air quality standards, including ozone. The project also includes pedestrian and bicycle access improvements, which are measures that are consistent with the 2010 Clean Air Plan.

Mobile Source Air Toxics

In addition to the criteria air pollutants for which standards exist, the USEPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources. Mobile source air toxics (MSATs) are a subset of the air toxics defined by the Clean Air Act. 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 impurities in oil or gasoline.

This section includes a basic analysis of the likely MSAT emission impacts of the proposed project. In the FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The methodologies for forecasting health impacts include emissions modeling, dispersion modeling, exposure modeling, and then final determination of health impacts—each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70-year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results

produced by the USEPA's MOBILE6.2 model, the California EPA's EMFAC2007 model, and the USEPA's DraftMOVES2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter emissions and significantly overestimates benzene emissions.

Because of these limitations in the methodologies for forecasting health impacts, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis (FHWA 2009).

For the Build Alternative and No Build Alternative, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The future (2035) VMT for the Build Alternative is estimated to be higher than for the No Build Alternative, because the Build Alternative is expected to improve operations at the interchange and adjacent intersections by increasing vehicle throughput compared with the No Build Alternative (Table 2.11-3).

Table 2.11-3 Vehicle Miles Traveled and Vehicle Hours Traveled for No Build and Build Alternatives (Future Year 2035)

Scenario	Vehicle Miles Traveled (AM Peak)	Vehicle Miles Traveled (PM Peak)	Vehicle Hours Traveled (AM Peak)	Vehicle Hours Traveled (PM Peak)
No Build Alternative	2,334	2,387	499	618
Build Alternative	3,010	3,316	648	806

The increase in VMT means that MSAT levels in the study area are likely to be higher with the Build Alternative than the No Build Alternative, although the increase could be partly offset due to reductions in congestion and increases in speeds (which are associated with lower MSAT emissions). In 2035 under the No Build condition, six of the seven study intersections adjacent to the interchange are projected to operate at unacceptable levels of service (LOS E and LOS F), and with the Build Alternative, all intersections are projected to operate at acceptable levels of service (LOS A through LOS D; Table 2.4-3). Intersection delays are projected to decrease

by one minute or more at three intersections and two minutes or more at two intersections, compared with the No Build condition (Table 2.4-3). In 2035, the project would increase vehicle speeds along Broadway within the project limits: during the AM peak hour, for example, traffic would move at an average of 10 mph compared with 3 mph for the No Build condition.

In any case, emissions will likely be lower than current levels in the design year (2035) as a result of the USEPA's national control programs, which are projected to reduce annual MSAT emissions by 72 percent from 1999 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the USEPA-projected reductions are so significant that MSAT emissions in the study area are likely to be lower in the future as well.

In summary, although the Build Alternative is expected to have higher future (2035) MSAT emissions than the No Build Alternative due to an increase in VMT, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that future MSAT emissions in the study area are likely to decrease overall.

Naturally Occurring Asbestos and Structural Asbestos

The US 101/Broadway interchange is not within a mapped area of naturally occurring asbestos (California Geological Survey 2000). The closest area with mapped naturally occurring asbestos is near the Highway 92/Interstate 280 interchange, more than 5 miles south of the project area.

The existing Broadway overcrossing and other structures that would be demolished or modified for the proposed project may contain asbestos. Construction of the Broadway overcrossing and ramps was completed in 1949. No construction specifications exist that would allow identification of the exact components of the structure that may contain asbestos. Based on a review of as-built drawings of the overcrossing, structural information from Department bridge maintenance reports (in Hill and Basin Research 2002), and knowledge of typical asbestos-containing materials in bridges from this period, asbestos could be present in the concrete, electrical insulation, expansion joint material, sheet packing in girder joints, and textured paint of the Broadway overcrossing.

The project would acquire and remove some existing industrial and commercial structures within the proposed right-of-way. Structures may contain asbestos in building materials, but this cannot be determined until right-of-way acquisition.

Exposure to airborne contaminants from asbestos materials during demolition could affect safety and health.

Climate Change

The project focuses on improving traffic operations at the US 101/Broadway interchange. Current traffic operations are limited at the interchange ramps and intersections. The project would improve traffic operations at congested intersection and ramp locations, reducing or avoiding traffic queues that currently affect US 101 operations between East Millbrae Avenue to the north and Anza Boulevard to the south. Reductions in delays will also reduce emissions of pollutants, including carbon dioxide. The project is also included in the 2009 RTP and 2011 TIP, which contain adopted strategies for greenhouse gas emissions from transportation sources. Specifically, TIP reference number 230550, "Transportation Climate Action Campaign," is an adopted five-year program for the Bay Area region involving outreach and education, promotion of safe routes to school and transit, and funding for transit priorities. The adopted TIP also demonstrates that the region will remain below all approved "vehicle emission budgets" through the 2035 study year.

The project design incorporates facilities that will improve access to alternative modes of transportation. This project focuses on improving the traffic operations at the interchange ramps. The project is limited to improvements at the interchanges within the project limits, would not add capacity to US 101, and would not affect traffic flow at a regional level (compared to the No Build Alternative).

No Build and Build CO_2 emissions were estimated using the EMFAC2007 model and the EMFAC mode. The vehicle miles traveled (VMT) per day and per year for 2035 would increase for the Build scenario compared to the No Build scenario. However, the average speeds would increase for the Build scenario compared to the No Build scenario, resulting in lower CO_2 emissions for Build versus No Build. The speeds used in the emissions model and shown in Table 2.11-4 represent the worst-case peak hour speeds along the Broadway corridor within the project limits. The VMT, associated speeds, and CO_2 emissions are presented in Table 2.11-4.

Table 2.11-4 Daily and Annual CO_2 Emissions for the No Build and Build Alternatives (2035)

Alternative	Peak Hour Speeds (mph)	Daily VMT	Annual VMT	Daily CO_2 emissions (pounds/day)	Annual CO_2 emissions (tonnes/yr)
No Build	3	23,871	8,712,550	66,172.94	10,955.79
Build	10	33,160	12,103,400	62,285.39	10,312.15

Note: The EMFAC 2007 model (EMFAC mode) was run using a temperature of 69°F and a relative humidity of 84 percent in San Mateo County for year 2035.

It should be noted that the numbers in Table 2.11-4 are not necessarily an accurate reflection of the true CO_2 emissions, because CO_2 emissions depend on other factors that are not part of the model such as the fuel mix, the rate of acceleration, and the aerodynamics and efficiency of vehicles. EMFAC model emission rates are only for direct engine-out CO_2 emissions, not full fuel cycle; fuel cycle emission rates can vary dramatically depending on the amount of additives such as ethanol and the source of the fuel components. The CO_2 emissions presented in Table 2.11-4 are only useful for a comparison between the No Build and Build scenarios and should not be considered independently.

2.11.3.2. Construction Impacts

Construction activities associated with the proposed project would generate emissions of criteria pollutants throughout the construction period, estimated at approximately 2 to 2.5 years. Construction is a source of dust emissions that can have temporary impacts on local air quality, such as exceedances of State air quality standards for PM_{10} and $PM_{2.5}$. Dust emissions would result from earth moving and heavy equipment use during land clearing, ground excavation, cut and fill operations, and project construction. Dust emissions would vary from day to day depending on the level of activity, the specific operations, and the prevailing weather.

Construction activities would also result in short-term emission of other criteria pollutants and toxic air contaminants from equipment exhaust. Exhaust emissions from construction equipment varies depending on the number and type of equipment used. The primary pollutants associated with exhaust emissions from construction equipment are ozone precursors (reactive organic gases [ROG] and nitrogen oxides [NO_x]), CO, PM_{10}, and $PM_{2.5}$. Ozone is derived from NO_x and VOCs in the presence of sunlight and heat.

The proposed project would involve standard construction techniques and require large-scale construction equipment and labor-intensive activities. General site activities would include:

- Site preparation and mobilization of equipment and temporary construction facilities to the site;
- Clearing, utility relocation, and grading;
- Roadway construction and placement of base material and asphalt;
- Curb, gutter, and sidewalk construction;
- Installation of intersection controls; and
- Demobilization of equipment and temporary facilities.

The BAAQMD considers construction activities to be typically short-term or temporary in duration; however, project-generated emissions could represent a significant impact with respect to air quality and/or global climate change. Therefore, BAAQMD requires projects to quantify their construction emissions and compare the total daily average emissions to significance thresholds.

If daily average emissions of construction-related criteria air pollutants or precursors would not exceed any of the construction significance thresholds, the project would result in a less-than-significant impact to air quality. If daily average emissions of construction-related criteria air pollutants or precursors would exceed any applicable significance thresholds, the proposed project would result in a significant impact to air quality and would require mitigation measures for emission reductions (BAAQMD 2010a). Standard construction air quality control measures are described in Section 2.11.4.

The expected emissions resulting from project construction were analyzed using the Urban Emission Model (URBEMIS2007), with conservative assumptions regarding the duration and scope of construction. The model assumptions reflect the preliminary plan to divide project construction into seven stages over the course of 2 to 2.5 years to minimize disruption to local traffic operations. The project's construction-related emissions were estimated as shown in Table 2.11-5.

Table 2.11-5 Construction-Related Emission Estimates for the Build Alternative

	ROG	NO_x	CO	SO_2	PM_{10} Dust	PM_{10} Exhaust	$PM_{2.5}$ Dust	$PM_{2.5}$ Exhaust	CO_2
	Tons per year, unmitigated								
2014	0.31	2.07	1.33	0	11.11	0.12	2.32	0.11	252.43
2015	0.32	2.09	1.41	0	15.40	0.11	3.22	0.10	284.64
2016	0.33	2.01	1.46	0	8.84	0.12	1.85	0.11	281.99
	Pounds per day, unmitigated								
2014	4.29	33.20	22.37	0.01	252.41	1.70	52.71	1.57	4,146.82
2015	4.63	23.75	23.75	0.01	252.41	1.24	52.71	1.14	3,135.14
2016	6.17	39.09	39.09	0.01	252.41	2.03	52.71	1.86	5,465.27
BAAQMD CEQA Threshold (lbs/day)	54	54	NA	NA	BMP	82	BMP	54	NA

BMP: The BAAQMD Adopted Air Quality CEQA Thresholds of Significance (June 2, 2010) do not establish numerical thresholds for certain types of emissions; rather, they call for implementing Best Management Practices (BMPs) as control measures. Control measures are presented in Section 2.11.4.
NA: Not available.

As shown in Table 2.11-5, the project's construction-related emissions would not exceed the BAAQMD CEQA thresholds of significance for construction-related activities. Since the daily average emissions of construction-related criteria air pollutants or precursors would not exceed any applicable threshold of significance listed, the project would not result in a significant cumulative impact.

Climate Change

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. An analysis of the expected project construction-related GHG emissions was conducted using conservative assumptions regarding duration and scope of construction, as described above. Construction-related GHG emissions are presented as CO_2 emissions in Table 2.11-5.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. Measures to reduce construction emissions are listed in Section 2.11.4 and include maintenance of construction equipment and vehicles, limiting of construction vehicle idling time, and scheduling and routing of construction traffic to reduce engine emissions.

CEQA Conclusion

While construction will result in a slight increase in GHG emissions during construction, it is anticipated that any increase in GHG emissions due to construction will be offset by the improvement in operational GHG emissions. While it is Caltrans' determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct impact and its contribution on the cumulative scale to climate change, Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in Section 2.11.4.

2.11.4. Avoidance, Minimization, and/or Mitigation Measures

Project-related air quality impacts would be limited to the construction period. The Department's Special Provisions and Standard Specifications include the requirement to minimize or eliminate dust through the application of water or dust palliatives. Implementation of the measures below could further minimize air quality emissions during construction. Appropriate measures from among the following will be considered during development of PS&Es for the project construction contract.

- Water all active construction areas 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 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.

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

In addition, pollutant emissions in construction equipment exhaust can be mitigated by the following:

- Keeping engines properly tuned;
- Limiting idling; and
- Avoiding unnecessary concurrent use of equipment.

To avoid or minimize potential impacts from naturally occurring asbestos and structural asbestos, the following measure would be implemented:

- During final project design, a qualified and licensed asbestos inspector should evaluate and sample existing structures scheduled for demolition or modification for the presence of potential asbestos-containing materials. If present, these materials will be handled and disposed accordingly.

Climate change is analyzed in Chapter 2 under "Climate Change (CEQA)." Neither USEPA nor FHWA has promulgated explicit guidance or methodology to conduct project-level greenhouse gas (GHG) analysis. As stated on FHWA's climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations should be integrated throughout the transportation decision-making process – from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project level decision-making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

Because there have been more requirements set forth in California legislation and executive orders regarding climate change, the issue is addressed in the CEQA chapter of this environmental document and may be used to inform the NEPA decision. The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours traveled.

2.12. Noise

The following summarizes the *Noise Study Report* (Illingworth & Rodkin 2009), which was completed in September 2009.

2.12.1. Regulatory Setting

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

2.12.1.1. California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible.

2.12.1.2. National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and the Department, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). Table 2.12-1 lists the noise abatement criteria for use in the NEPA 23 CFR 772 analysis.

Table 2.12-1 Federal Noise Abatement Criteria

Activity Category	Noise Abatement Criteria, Hourly A- Weighted Noise Level, dBA $L_{eq}(h)$[1,2]	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above
D	–	Undeveloped lands.
E	52 Interior	Residence, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

[1] Noisiest hour is expressed as the energy average of the A-weighted noise level occurring during a one-hour period, or $L_{eq[h]}$.
[2] Note that criteria is applied as 'approach or exceed' the thresholds, which has been defined as one dBA. For Category B, the "approaching the NAC" is therefore 66 dBA, as applied in this study.

Figure 2.12-1 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

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

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

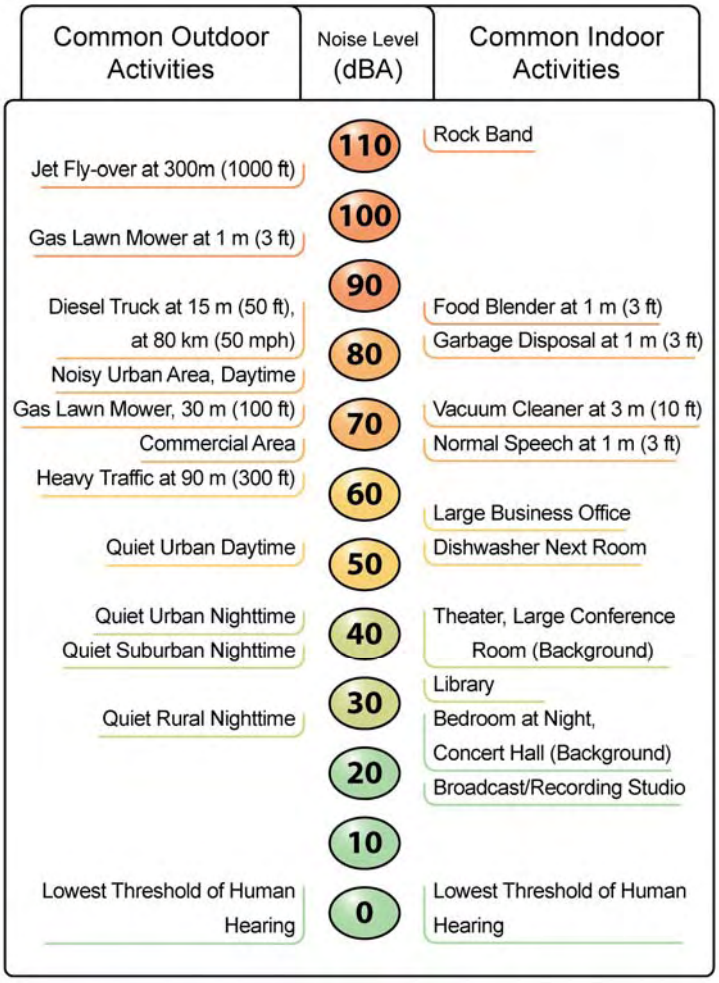


Figure 2.12-1 Noise Levels of Common Activities

The Department's *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5 dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents' acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies input, newly constructed development versus development pre-dating 1978 and the cost per benefited residence.

2.12.2. Affected Environment

For purposes of this analysis, areas of frequent human usage are considered to occur at exterior locations where people are exposed to traffic noise for at least 1 hour on a regular basis. Land uses that could be subject to traffic and construction noise impacts from the proposed project include a tennis court and pool areas at the Northpark Apartment complex, pool areas at adjacent hotels, and playfields at Bayside Park. These land uses fall within the definition of activity Category B of the NAC (Table 2.12-1). The definition of approaching the NAC is considered 1 dBA below the NAC, and therefore 66 dBA is the applicable criterion for evaluating noise abatement for this study. The study area for noise impacts included the land uses adjacent to the US 101/Broadway interchange and the US 101 mainline and ramps in the project limits. The study area has no Category C land uses that would have frequent human use that would benefit from a lower noise level.

Noise measurements were conducted in May 2009 to determine the existing noise conditions at representative receptor locations in the project area. Both long-term (24 hours) and short-term (two consecutive 10-minute increments) measurements were collected. Measurements were taken at locations that are primarily affected by traffic noise and consisted of defined outdoor activity areas considered to be acoustically equivalent to the Category B activity uses. Traffic conditions were also documented during each measurement. The locations of the measurements are shown in the layout sheets in Appendix A.

Following established methods for a traffic noise study, the short-term and long-term measurements together with the measured traffic conditions, vehicle mix, and site-specific geographical information were then used to determine future noise levels in the project area. Calculated and measured noise levels were compared to assess any differences, to calibrate or validate the FHWA's Traffic Noise Model (TNM) for use in determining noise levels with and without the project, and to consider any applicable noise abatement measures.

Existing noise levels were estimated to range from 58 to 72 dBA $L_{eq(h)}$ at six representative receiver locations. One location—the tennis court at the Northpark Apartments—has an estimated noise level approaching or exceeding the NAC (i.e., already at or above 66 dBA without the project). This location is discussed further in Section 2.12.3.

2.12.3. Environmental Consequences

2.12.3.1. Permanent Impacts

Modeling of future year (2035) traffic conditions indicates that noise levels are not expected to approach or exceed the NAC at any locations other than the tennis court at the Northpark Apartments. As shown in Table 2.12-2, four of the six locations would have the same noise levels with and without the project, two locations would have a slight decrease in noise with the project, and all locations would have approximately the same noise levels in the future as under existing conditions. Noise levels at the tennis court would exceed the NAC under the 2035 No Build and Build scenarios; therefore, noise abatement was evaluated for this location.

Table 2.12-2 Loudest Hour Noise Levels and Impacts, $L_{eq(hr)}$ dBA

Receiver ID	Description	Existing	2035 No Build	2035 Build	Impact[1]
ST-1	Tennis court at Northpark Apartments, on roof of parking garage along Rollins Road	72	72	72	A/E
ST-2	Pool area at Northpark Apartments	58	58	58	None
ST-3	Bayside Park, adjacent to Crowne Plaza Hotel parking lot	62	62	62	None
ST-4	Bayside Park, adjacent to Airport Boulevard	59	59	58	None
ST-5	Pool area at Hyatt Regency, along Bayshore Highway east of US 101	61	61	61	None
ST-6	Pool area at Holiday Inn, across from northbound US 101 on- and off-ramps	61	61	60	None

Source: Adapted from Illingworth & Rodkin 2009

[1] A/E = The noise level with the project approaches or exceeds the NAC (66 dBA). Noise abatement must be considered.

None = The project would not increase noise levels by 12 dBA or result in future noise levels that approach or exceed the NAC (66 dBA). Abatement consideration is not required.

Among the noise abatement measures identified in the *Traffic Noise Analysis Protocol*, only a soundwall was determined to be potentially suitable. According to Department and FHWA policies, a soundwall must provide a minimum 5 dBA noise reduction to be considered feasible. Under Department policies, soundwalls should interrupt the line-of-sight between a truck stack (of average height) and a receiver. Caltrans soundwalls are typically constructed to meet the criteria in Chapter 1100 of the Highway Design Manual (Department 2007). The manual states that soundwalls should not be higher than 14 feet above the pavement when located within 15 feet of the edge of traveled way and 16 feet above the ground when located more than 15 feet from the edge of traveled way.

A preliminary noise abatement analysis was conducted to determine whether constructing a soundwall along southbound US 101 would reduce the traffic noise at the tennis court. The soundwall that was modeled extended along the western edge of the length of the US 101 southbound on-ramp from Broadway. Four soundwall heights ranging from 8 to 14 feet were considered, but none reduced the noise level at the tennis court by more than 2 dBA. The modeling results indicated that a soundwall would not provide a feasible noise reduction because the tennis court is on the parking garage roof rather than at ground level. Even the tallest soundwall (14 feet) would barely interrupt the line of sight from a receiver at the tennis court to a truck stack. A 14-foot noise barrier would just interrupt the line of sight to the near lanes of US 101 and would not shield the far lanes. Based on the NAC, a soundwall in this location is not feasible.

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. As shown in Table 2.12-2, the project would not increase noise levels above existing conditions in any of the modeled locations. The traffic noise impacts of the proposed project are considered less than significant under CEQA.

The area between the northern project limits and roughly 500 feet south of Easton Creek within the project area is within the Airport Influence Area for SFO (City of Burlingame 2007). People living or working in the project area would not be exposed to new excessive noise levels as a result of the project's proximity to SFO.

2.12.3.2. Temporary Impacts

Project construction activities that would generate noise include demolition, clearing and grubbing, earthwork, construction of the Broadway overcrossing (including pile driving), reconfiguration of ramps, and paving. The highest noise levels would result from activities such as structure demolition or pile driving.

Highway construction activities typically occur for relatively short periods of time as construction proceeds along the project's alignment. Construction noise is mostly a concern where impulse-related noise levels from construction activities are concentrated for extended periods of time, where noise levels from individual pieces of equipment are substantially higher than ambient conditions, or when construction activities occur during noise-sensitive hours such as nighttime. For example, the proposed project would require demolition of the existing Broadway overcrossing. This activity will require temporary closures of US 101 and therefore must be

performed at night. Demolition could take several weeks, depending on the construction contactor's phasing or sequencing of the work.

Construction of the proposed project would take place during the day and night. Throughout the majority of the construction period, noise levels from construction would be lower than typical average daytime or nighttime noise levels from traffic along US 101. Most construction activities would take place at the Broadway overcrossing, more than 300 feet from nearby receivers, and produce noise levels between 63 and 79 dBA $L_{eq(h)}$. During pile driving or periods when impact tools are used, hourly average noise levels could range from 68 to 79 dBA $L_{eq(h)}$. These construction periods would generate noise levels that exceed typical daytime and nighttime traffic noise.

The reconfiguration of ramps and local roadways could bring construction activities within 100 feet from sensitive receivers. Pile driving in these areas is not expected, but construction noise levels could range from 73 to 79 dBA $L_{eq(h)}$ and exceed ambient hourly average daytime and nighttime noise levels. As most project construction would take place at the Broadway overcrossing, activities within 100 feet of sensitive receivers are expected to be limited.

Typically, work taking place within the Department's right-of-way is not subject to local noise ordinances; however, the Department will work with the contractor to meet local requirements where feasible. The City of Burlingame allows construction operations between the hours of 7:00 AM and 7:00 PM Monday through Friday, between the hours of 9:00 AM and 6:00 PM on Saturday, and between the hours of 10:00 AM and 6:00 PM on Sundays and holidays. Construction activities outside of the allowable hours are prohibited in the Municipal Code, unless a waiver is obtained.

2.12.4. Avoidance, Minimization, and/or Abatement Measures

To abate potential noise impacts from project construction, the following measures will be implemented through requirements set for the construction contractor:

- Prohibit unnecessary idling of internal combustion engines within 100 feet of residences.
- Avoid staging of construction equipment within 200 feet of hotels and residences and locate stationary noise-generating construction equipment, such as air

compressors, portable power generators, or self-powered lighting systems away from noise-sensitive residences.

- Require all construction equipment to conform to Section 14-8.02, Noise Control, of the latest Standard Specifications.
- Demolition involving impact tools (e.g., hoe-rams) will be necessary at night. The Department will require the contractor to implement a construction noise monitoring program and if feasible provide additional mitigation as necessary (in the form of noise control blankets or other temporary noise barriers, etc.) for affected receivers.

Biological Environment

2.13. Natural Communities

This section is summarized from the *Natural Environment Study* (URS 2010c) for the proposed project, which was completed in April 2010.

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors, fish passage, and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act (FESA) are discussed in the Threatened and Endangered Species section (Section 2.17). Wetlands and other waters are discussed in Section 2.14.

2.13.1. Affected Environment

A biological study area (BSA) was established to evaluate the effects of the proposed project on natural communities and other biological resources. The BSA extends beyond the project footprint to include all of the land surface that could be affected by project construction activities, including paved roadway surfaces; landscaped and disturbed upland habitat around the Broadway overcrossing, along the shoulders of US 101, and adjacent to the Bay Trail and Bayshore Highway; wetlands and waters (including culverted waters); and developed land including buildings and other structures. Paved roadways and developed land account for 75 percent of the BSA's 50.48 acres, and landscaped and disturbed upland habitats account for 20 percent.

2.13.1.1. Vegetation Communities

Other than vegetation associated with wetlands and waters (Section 2.14), none of the natural communities in the BSA are considered uncommon or communities of special concern. The BSA is highly urbanized with predominantly commercial or industrial land uses. Most upland vegetation consists of ruderal, landscaped, or nonnative species. Undeveloped areas and roadsides contain California annual grassland, which primarily consists of exotic grasses. Portions of roadsides, streambanks, and ditches

in the BSA are dominated by landscaped iceplant, a nonnative species that provides minimal habitat value.

A tree survey identified 150 trees over 6 inches diameter at breast height (dbh[13]) in the BSA. Only one individual, a planted 17-inch dbh coast redwood (*Sequoia sempervirens*), was identified as a native species. The remaining trees are planted nonnative species, composed primarily of eucalyptus and acacia varieties including Tasmanian blue gum eucalyptus (*Eucalyptus globulus*), black wood acacia (*Acacia melanoxylon*), silver wattle (*Acacia dealbata*), and Sydney golden wattle (*Acacia longifolia*). Less than 10 individuals each of myoporum (*Myoporum laetum*), horsetail tree (*Casuarina equisetifolia*), and paper bark tree (*Malaleuca quinquenervia*) were identified. Tasmanian blue gum and a similar yet unidentified species dominate the tree strata in the BSA. The average size of blue gum stems in the BSA is 17 inches dbh, and the largest individual tree in the BSA is a blue gum exceeding 40 inches dbh. Eucalyptus species also dominate the BSA in terms of height; the only other trees that approach the eucalyptus in height are the horsetails.

The majority of the trees within the BSA are within existing or proposed State right-of-way. The City of Burlingame has an ordinance defining "protected trees" as trees with a 48 inch or greater diameter at 54 inches (4.5 feet) above ground level. While local tree ordinances do not apply to the State right-of-way, the Department may use them as guidance.

No habitat conservation plans apply to the BSA.

2.13.1.2. Fish Passage

California Senate Bill 857 requires the Department to survey highway system culverts on coastal streams where migratory fish are currently or were historically present and take related actions to systematically review and remediate barriers to fish passage related to transportation projects. A reconnaissance-level fish passage assessment was prepared for Easton Creek (Appendix B in URS 2010c). Easton Creek in the BSA is conveyed in an underground culvert and a concrete channel with little vegetation. The assessment concluded that the US 101 crossing of Easton Creek does not pose a barrier to fish passage and therefore a detailed fish passage assessment was not required.

[13] Diameter at breast height is the tree diameter taken at 4.5 feet above natural grade.

The unnamed drainage channel between Bayshore Highway and San Francisco Bay near Airport Boulevard (Figure 1-1; Section 1.3.1.6) is not a natural stream and has no existing or historical fish-bearing upstream reach. Therefore, California Senate Bill 857 does not apply to the channel.

2.13.2. Environmental Consequences

2.13.2.1. Vegetation Communities

Roadway realignment, grade elevation, and the construction of retaining walls, abutments, and embankments in the project area would result in 5.03 acres of permanent impacts to vegetation. Vegetation clearing, soil compaction in construction access and staging areas, and equipment storage would result in 3.59 acres of temporary impacts to vegetation. As described above, the BSA is dominated by urban development; neither habitat fragmentation nor impacts to fish passage and wildlife corridors would result from changes in upland habitat. Replacement landscaping would be implemented as part of the project and would minimize impacts to natural communities.

Installation of new freeway ramps, the proposed Broadway overcrossing, and realigned roadways would require removing approximately 71 trees over 6 inches dbh. The majority of trees (estimated at 39) would be removed along southbound US 101 between Easton Creek and the US 101/Broadway interchange, to accommodate the new southbound off-ramp lanes. As noted in Section 2.5.3, other areas of tree removal would include the eastern and western sides of the Broadway overcrossing and the Bayshore Highway area (including behind the gas station at the corner of Bayshore Highway and Airport Boulevard).

2.13.2.2. Fish Passage

As described in Section 1.3.1.7, the proposed project would extend the existing 6-by-6-foot double box culvert for Easton Creek by 42 feet to the east to accommodate the realigned northbound US 101 on-ramp. A temporary creek diversion system will be installed to allow construction of the culvert extension. Other than this short-term diversion of creek flow for culvert extension, the project will not introduce barriers to fish passage in Easton Creek.

2.13.3. Avoidance, Minimization, and/or Mitigation Measures

A project landscaping plan will be developed during final design. The plan will include areas that were previously covered in pavement and areas that were temporarily

disturbed during construction, where feasible. The landscaping plan will include tree planting ratios of 1:1 or greater and the use of native species where possible.

Tree removal would take place before the start of the nesting season for raptors and migratory birds (February 1) to avoid impacts to birds that are protected under the Migratory Bird Treaty Act (MBTA). Vegetation would be preserved in areas of the project limits where no construction is planned.

2.14. Wetlands and Other Waters of the United States

This section is based on the *Jurisdictional Delineation* (completed in August 2010; URS 2010e) and *Natural Environment Study* (completed in April 2010; URS 2010c) for the proposed project.

2.14.1. Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the Federal level, the Clean Water Act (33 USC 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the USACE with oversight by the USEPA.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of Federal agencies with regard to wetlands. Essentially, this executive order states that a Federal agency such as the FHWA cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there

is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

At the State level, wetlands and waters are regulated primarily by the CDFG, the SWRCB, and the RWQCB. In certain circumstances, the Coastal Commission (or BCDC) may also be involved. Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify the CDFG before beginning construction. If the CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the Clean Water Act. See Section 2.8 for additional details.

2.14.2. Affected Environment

The following information is from the *Jurisdictional Delineation* (URS 2010e), which was submitted to the USACE in August 2010 for a jurisdictional determination. The USACE issued a Preliminary Jurisdictional Determination in December 2010 (USACE 2010a).

Approximately 1.60 acres of potentially jurisdictional waters of the U.S. were identified and mapped in the BSA during the wetland delineation (Table 2.14-1). These features consist of wetlands, other waters of the U.S., and culverts. Surveys identified two tidally influenced drainages that flow through portions of the BSA: Easton Creek and Sanchez Creek. These perennial drainages contain standing or flowing water year-round and are associated with perennial estuarine wetlands that were observed to contain standing water during high tide. Surveys also identified the unnamed channel between Bayshore Highway and San Francisco Bay near Airport Boulevard and the roadside ditches along both sides of US 101 as potentially jurisdictional waters.

Table 2.14-1 Summary of Potentially Jurisdictional Waters of the U.S. in the BSA

Feature	Area	
	Acres	Square feet
Wetlands		
Wetlands and wetland waters of the U.S.	0.89	38,824.98
Nonwetland waters		
Other waters of the U.S	0.39	16,839.71
Culverted waters of the U.S.	0.32	13,811.75
Total	**1.60**	**69,476.44**

Wetlands in the BSA were classified as perennial estuarine wetlands as they occurred along tidally influenced lower floodplains and roadside ditches. Areas of perennial estuarine wetland that were covered predominantly in pickleweed were classified as salt marsh wetlands. One small area of seasonal inundation that was covered primarily in cattail was classified as seasonal cattail wetland.

Potentially jurisdictional features that may provide poor to marginal habitat for special-status species are discussed in Section 2.17.

The wetland delineation did not identify any waters of the State that are not under federal jurisdiction.

2.14.3. Environmental Consequences

2.14.3.1. Permanent and Temporary Impacts

The project would have permanent and temporary impacts to jurisdictional wetlands and other waters of the U.S. in the BSA. Permanent impacts to 0.68 acre of waters of the U.S. would result from constructing new paved roadways, regrading slopes around the footings of the new overcrossing, extending the Easton Creek culvert, and potentially restoring the conveyance capacity of the unnamed drainage channel. Temporary impacts to 0.35 acre of waters of the U.S. would occur in construction access and staging areas as a result of sediment discharge, vegetation removal, and soil compaction.

Table 2.14-2 lists the areas of anticipated temporary and permanent impacts to potentially jurisdictional wetlands and other waters of the United States. Figures 2.14-1 and 2.14-2 show the individual impact acreages by impact type (permanent or temporary) and feature ID.

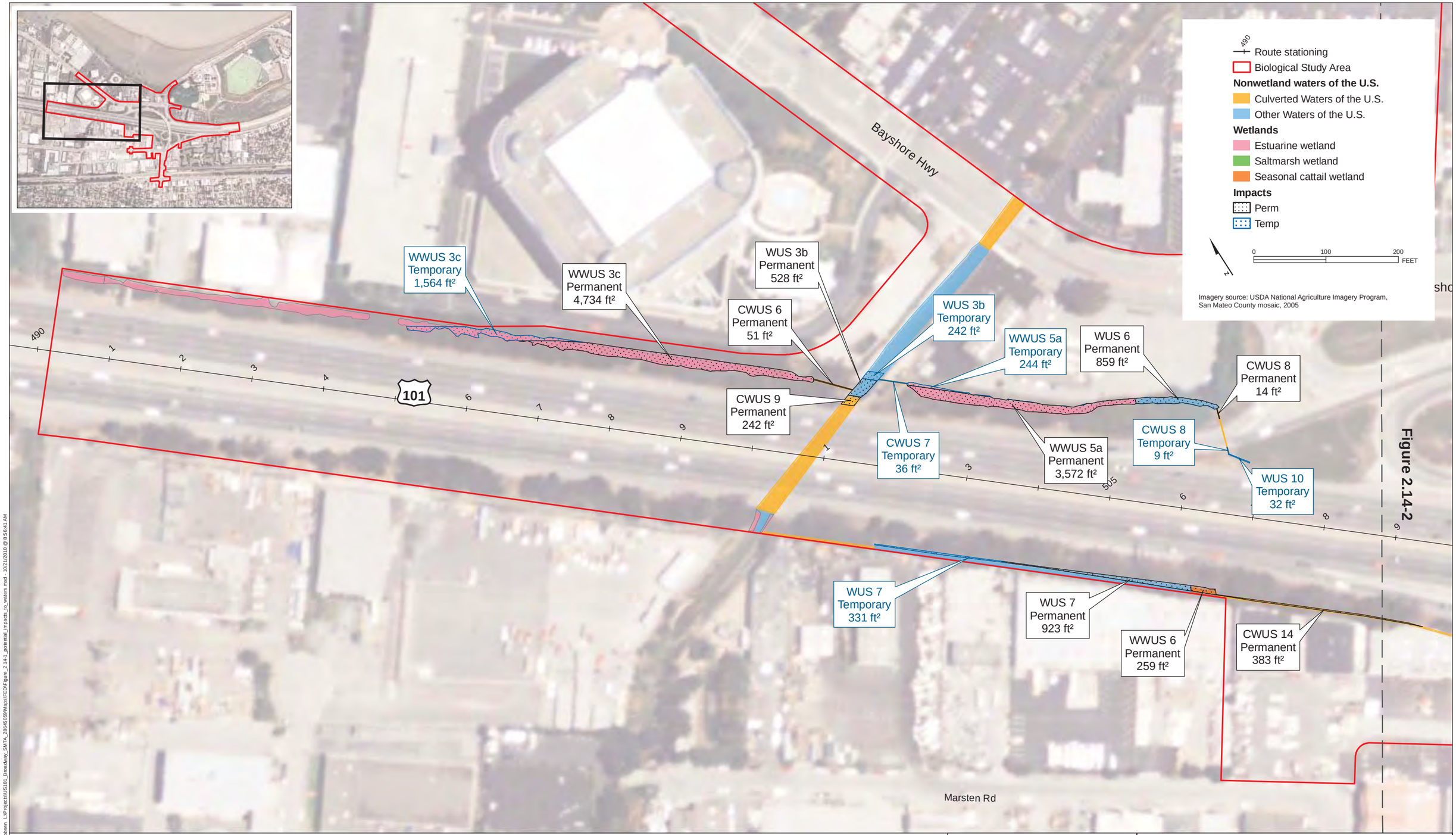
Table 2.14-2 Summary of Impacts to Waters of the U.S. by Feature

Feature ID[1]	Impact (square feet)		
	Temporary	Permanent	Total
WWUS 1	0.00	5,066.79	5,066.79
WWUS 3c	1,564.44	4,734.45	6,298.89
WWUS 5	244.23	3,571.64	3,815.87
WWUS 5a	0.00	5,451.08	5,451.08
WWUS 5b	5,578.79	3,015.78	8,594.57
WWUS 6	0.00	258.68	258.68
WWUS 7	3,292.55	401.86	3,694.41
WWUS 7b	355.26	204.14	559.40
Subtotal Wetlands	**11,035.27**	**22,704.42**	**33,739.69**
WUS 3b	241.76	527.56	769.32
WUS 5a	0.00	1,683.38	1,683.38
WUS 5b	493.41	165.78	659.19
WUS 6	0.00	858.99	858.99
WUS 7	330.87	923.33	1,254.20
WUS 8	2,262.28	1,557.31	3,819.59
WUS 9	696.89	202.06	898.95
WUS 10	31.58	0.00	31.58
Subtotal Nonwetland Waters	**4,056.79**	**5,918.41**	**9,975.20**
CWUS 1	9.06	0.00	9.06
CWUS 3a	0.00	103.62	103.62
CWUS 3b	0.00	61.89	61.89
CWUS 3c	0.00	1.77	1.77
CWUS 6	0.00	51.29	51.29
CWUS 7	36.40	0.00	36.40
CWUS 8	8.97	14.15	23.12
CWUS 9	0.00	242.17	242.17
CWUS 12	222.41	25.37	247.77
CWUS 14	0.00	383.17	383.17
Subtotal Culverted Waters	**276.84**	**883.43**	**1,160.26**
Total (square feet)	**15,368.90**	**29,506.26**	**44,875.16**
Total (acres)	**0.35**	**0.68**	**1.03**

[1] See Figures 2.14-1 and 2.14-2.

2.14.3.2. Impacts on Functions and Values

Jurisdictional waters in the BSA function as perennial, intermittent, and ephemeral drainages and roadside ditches. The project would alleviate flooding near the eastern landing of the Broadway overcrossing and Bayshore Highway and would not have substantial adverse impacts on drainage or flood control capacity values.



US 101/BROADWAY INTERCHANGE
RECONSTRUCTION PROJECT
BURLINGAME, CA
EA 235840

Figure 2.14-1
IMPACTS TO POTENTIALLY JURISDICTIONAL FEATURES

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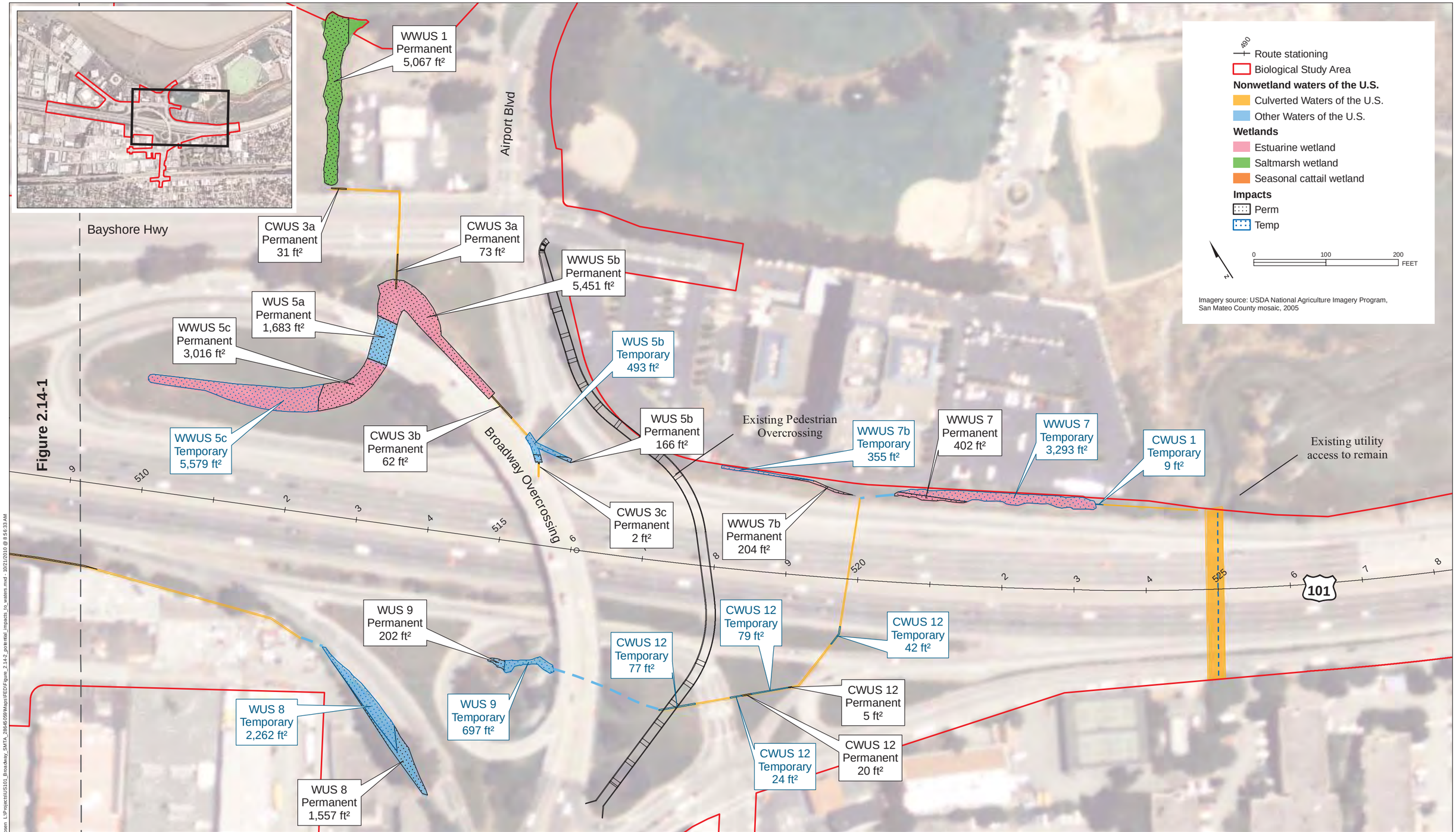

Figure 2.14-1

US 101/BROADWAY INTERCHANGE
RECONSTRUCTION PROJECT
BURLINGAME, CA
EA 235840

Figure 2.14-2
IMPACTS TO POTENTIALLY JURISDICTIONAL FEATURES

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2.14.3.1. Wetlands Avoidance and Least Environmentally Damaging Practicable Alternative

CWA Section 404(b)(1) (Alternatives Analysis) is a specific evaluation to determine the Least Environmentally Damaging Practicable Alternative (LEDPA) to wetlands and waters of the U.S. while meeting the project purpose. A Section 404 Permit can only be issued for the LEDPA.

The No Build Alternative would avoid impacts to wetlands and waters of the U.S. but would not satisfy the project's purpose and need. The other alternatives for the proposed project (discussed in Section 1.5) were evaluated and were determined either to not satisfy the purpose and need for the project or to have major adverse impacts to traffic, property, and/or utilities that would not be associated with the Build Alternative.

The Build Alternative has been modified to minimize impacts to these resources. The northern project limits were revised from PM 17.00 to PM 17.06 to avoid construction in the vicinity of Mills Creek. The project limits were also adjusted to minimize the project footprint at the Burlingame Lagoon on the northbound shoulder of US 101. Mills Creek and the Burlingame Lagoon would be designated as ESAs, and contractor access would be prohibited. The Build Alternative has therefore been identified as the LEDPA.

2.14.4. Avoidance, Minimization, and/or Mitigation Measures

2.14.4.1. Avoidance and Minimization

The Department's Standard Specifications require the Contractor to submit a SWPPP. This plan must meet the standards and objectives to minimize water pollution impacts set forth in Section 7-1.01G of the Department Standard Specifications. The SWPPP must also comply with the goals and restrictions identified in the RWQCB's Basin Plan. Any additional measures included in the Section 401 certification, Section 1602 Agreement, or Section 404 permit would be implemented. The contractor would also comply with the following standards/objectives, at times referred to as BMPs, including but not limited to:

- Where work areas encroach on live or dry streams, lakes, or wetlands, RWQCB-approved physical barriers adequate to prevent the flow or discharge of sediment into these systems would be constructed and maintained between working areas and streams, lakes, and wetlands.
- Discharge of sediment into streams would be held to a minimum during construction of the barriers.

- Discharge would be contained through the use of RWQCB-approved measures that would keep sediment from entering jurisdictional waters beyond the project limits.
- All off-road construction equipment should be cleaned of potential noxious weed sources (mud and vegetation) before entering the project area and after entering a potentially infested area before moving on to another area. The contractor would employ whatever cleaning methods (typically spraying with a high-pressure water hose) are necessary to ensure that equipment is free of noxious weeds.
- Equipment would be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools is not required. Equipment washing stations would be placed in areas that afford easy containment and monitoring (preferably outside of the project area), and that do not drain into sensitive (riparian, wetland, etc.) areas.

Upon completion of the project, all temporarily affected areas would be restored to approximately the original site conditions. Native salt marsh vegetation along the unnamed drainage channel will be removed and restored. Options for restoration may include preserving the native plants in a nursery and replanting them after construction is complete, or replanting using plugs from the surrounding remaining vegetation. The specific method and design of channel improvements and replanting options will be further defined during final design and will include coordination with appropriate agency staff.

2.14.4.2. Mitigation

If the minimization and avoidance measures listed in Section 2.14.4.1 are not sufficient to ensure that the adverse effects to the aquatic environment are minimal, other forms of mitigation (rectifying or compensating) may also be used.

Compensatory mitigation at a minimum 1:1 ratio is required for all permanent wetland impacts unless the USACE District Engineer determines and states in writing that other forms of mitigation are more appropriate. Compensation for permanent impacts to jurisdictional wetlands potentially includes one or a combination of the following measures:

- Purchase of wetland creation credits from a USACE-approved mitigation bank;
- Purchase of wetland preservation or enhancement credits from a USACE-approved mitigation bank;
- Onsite restoration or enhancement of wetlands and other waters; or

- Onsite creation of wetlands and other waters.

The mitigation must be available and feasible considering costs, technology, and logistics in light of overall project purposes.

A Compensatory Mitigation Proposal will be submitted to the USACE prior to construction. Proposed compensation includes restoring and revegetating all temporarily affected wetlands. Additional compensatory mitigation efforts will be determined in consultation with USACE. These may include, but are not limited to, reduction in the amount of impact, options to participate in regional habitat enhancement projects, or purchase of mitigation bank credits.

The BCDC may also require compensatory mitigation for any affected wetlands and the placement of Bay fill within its jurisdiction. This will be determined as part of the BCDC permitting process.

2.14.5. Only Practicable Finding

As described in Section 2.14.1, E.O. 11990, the Executive Order for the Protection of Wetlands, states that a federal agency such as FHWA cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

The Department has been assigned environmental review and consultation responsibilities under NEPA pursuant to 23 USC 327. The Department has evaluated alternatives to the construction. The No Build Alternative would not satisfy the purpose and need for the project, as discussed in Section 1.3.2. The Department also evaluated other build alternatives, discussed in Section 1.5, and determined that they would have major constructability constraints and/or unacceptable impacts to traffic, property, and/or utilities. In addition, none of the other build alternatives would fully avoid impacts to wetlands and other waters of the United States.

The Build Alternative has been modified to minimize harm to wetlands. The northern project limits were revised from PM 17.00 to PM 17.06 to avoid construction in the vicinity of Mills Creek. The project limits were also adjusted to minimize the project footprint at the Burlingame Lagoon on the northbound shoulder of US 101. Mills Creek and the Burlingame Lagoon would be designated as ESAs, and contractor access would be prohibited.

Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

2.15. Plant Species

This section is based on the *Natural Environment Study* (URS 2010c) for the proposed project, which was completed in April 2010.

2.15.1. Regulatory Setting

The USFWS and CDFG share regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the FESA and/or the California Endangered Species Act (CESA). See Section 2.17 for detailed information regarding these species.

This section of the document discusses all the other special-status plant species, including CDFG fully protected species and species of special concern, USFWS candidate species, and non-listed California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 USC 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code Section 1900-1913, and the California Environmental Quality Act, PRC Sections 2100-21177.

2.15.2. Affected Environment

Lands in the BSA are highly disturbed, generally urbanized, and dominated by nonnative or landscape species, as described in Section 2.13.1.

A California Natural Diversity Data Base (CNDDB) query indicated that no rare or sensitive plants have been reported in the BSA (CDFG 2010). The CNPS online Inventory of Rare and Endangered Plants (CNPS 2009) and the USFWS species list (see Appendix I) were also consulted. Based on the geographic range of various

potential sensitive species and existing habitats in the BSA, 17 special-status plant species were evaluated for potential to occur in the BSA. One federally listed endangered plant, California seablite (*Suaeda californica*), was also evaluated, as described in Section 2.17.

The entire BSA was surveyed for rare plant species and potential habitat that could support special-status plants. The floristic-level survey took place on March 31 and April 1, 2009. The 17 special-status plants identified in the record searches would have been identifiable (e.g., blooming or vegetative) had they been present at the time of the field survey. No special-status plants or plant communities of special concern were identified in the BSA.

2.15.3. Environmental Consequences

No plant communities of special concern exist within the study area. No adverse impacts would occur to special-status plant species.

2.15.4. Avoidance, Minimization, and/or Mitigation Measures

No avoidance and minimization measures are necessary.

2.16. Animal Species

This section is based on the *Natural Environment Study* (URS 2010c) for the proposed project, which was completed in April 2010.

2.16.1. Regulatory Setting

Many State and Federal laws regulate impacts to wildlife. The USFWS, the National Marine Fisheries Service (NOAA Fisheries), and the CDFG are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under CESA or FESA. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.17. All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act;

- Migratory Bird Treaty Act; and
- Fish and Wildlife Coordination Act.

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act;
- Sections 1600–1603 of the Fish and Game Code; and
- Section 4150 and 4152 of the Fish and Game Code.

2.16.2. Affected Environment

Wildlife species common to urban habitats and degraded ruderal vegetation communities are expected to inhabit the BSA. These species could include red foxes (*Vulpes vulpes*), feral cats (*Felis catus*), raccoons (*Procyon lotor*), ground squirrels (*Spermophilus beecheyi*), Norway rats (*Rattus norvegicus*), western fence lizards (*Sceloporus occidentalis*), and various salamanders. Signs of raccoons and feral cats were observed during surveys.

A wide variety of shorebirds and waterfowl use aquatic resources in and adjacent to the BSA for migratory stopovers, overwintering grounds, or year-round residence. Wildlife observed during field surveys were primarily shorebirds and waterfowl and included mallards (*Anas platyrhynchos*), western gull (*Larus occidentalis*), snowy egrets (*Egretta thula*), great blue herons (*Ardea herodias*), ravens (*Corvus corax*), and scrub jays (*Aphelocoma californica*).

Special-status birds and essential fish habitat are described in more detail below.

2.16.2.1. Special-Status Birds

The only special-status birds with potential to occur in the BSA are Alameda song sparrow (*Melospiza melodia pusillula*), nesting raptors protected under California Fish and Game Code Section 3503.5, and migratory birds protected under the MBTA.

Suitable habitat for the Alameda song sparrow, a State species of concern, is present outside of the BSA in the Burlingame Lagoon. There are no CNDDB (CDFG 2010) records for the Alameda song sparrow within a 3-mile radius of the BSA. Neither suitable habitat nor individuals were observed during field surveys of the BSA. Threats to the Alameda song sparrow and other nesting birds include any factors that would lead to nesting failure. Loud construction activities such as pile driving in the vicinity

of nesting habitat can disturb the species and lead to nest abandonment by masking communication between individuals.

The trees and shrubs in the BSA may provide nesting, foraging, and roosting habitat for nesting raptors protected under California Fish and Game Code Section 3503.5, including the white-tailed kite (*Elanus leucurus*), American peregrine falcon (*Falco peregrinus anatum*), and northern harrier (*Circus cyaneus*). In addition, the white-tailed kite and American peregrine falcon are California fully protected species, and the northern harrier is a California species of special concern. Other potential nesting raptors in the BSA include the red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), and sharp-shinned hawk (*Accipiter striatus*). Threats to all of these species include habitat fragmentation, nesting failure due to disturbance, and loss of foraging habitat.

The MBTA makes it unlawful at any time, by any means, or in any manner, to pursue, hunt, take, capture, or kill migratory birds. The law applies to the removal of nests (such as swallow nests on bridges) occupied by migratory birds during the breeding season. Many species of migratory birds may inhabit the BSA at a time, including migratory shorebirds and waterfowl, cliff swallows, barn swallows, and double-crested cormorants.

During field surveys, two mallard ducks were observed in Easton Creek between US 101 and Bayshore Highway. In addition, double-crested cormorants have been documented nesting on electric transmission towers throughout the Bay Area, and could potentially use the transmission towers within the BSA as rookery (nesting) sites. Foraging shorebirds can be expected to use mudflats and salt marshes surrounding the BSA to forage, while waterfowl—both dabbling and diving ducks—may be present in any of the creeks and drainages in the BSA.

Also during field surveys, birds were heard calling in the tall canopies of the eucalyptus and horsetail trees but were not seen. No nests were detected in the branches of the trees in the BSA. Several nests were observed under the Broadway overcrossing, although it was not clear which species were nesting there.

2.16.2.2. Essential Fish Habitat

The Magnuson-Stevens Fisheries Conservation and Management Act defines Essential Fish Habitat (EFH) as waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity. The south-central portion of San Francisco Bay (from the Bay Bridge to the San Mateo Bridge) serves as habitat for commercially important fish and sharks that are federally managed under two

fisheries management plans (FMPs) with designated EFH: the Pacific Groundfish FMP and the Coastal Pelagic FMP (NOAA Fisheries 2008). San Francisco Bay is also designated as a Habitat Area of Particular Concern (HAPC) for various species within the Pacific Groundfish and Coastal Pelagic FMPs because it serves as important breeding and rearing grounds for these fish stocks. Submerged aquatic vegetation such as eelgrass is also considered a HAPC.

Easton Creek is the only area of the BSA that is identified as EFH. Recent eelgrass mapping (Merkel & Associates 2010) indicates that the maximum documented extent of eelgrass is more than 1,640 feet from the proposed work area for the Easton Creek culvert extension.

2.16.3. Environmental Consequences

2.16.3.1. Special-Status Birds

The project would have no direct impacts on the Alameda song sparrow because suitable habitat for the species is absent from the BSA. No individuals were observed in potentially suitable habitat outside of the BSA in the Burlingame Lagoon.

Temporary pile-driving noise is expected to have a negligible effect on individual birds, including the Alameda song sparrow and any potential nesting habitat in the Burlingame Lagoon. Ambient highway noise levels (defined as up to 83 decibels[14]) are not known to harm this species or other birds or to cause nesting failure. Pile driving and other loud construction activities are anticipated to have maximum noise levels of 95 decibels at a distance of 100 feet from the source. Construction noise decreases at a rate of 6 decibels per doubling of distance from the noise source, and shielding by terrain or structures can provide an additional 5 to 10 decibels of noise reduction (Illingworth and Rodkin 2009). Accordingly, pile driving noise will diminish to ambient highway noise levels within 400 feet or less of the pile driving locations. The closest pile-driving location is approximately 700 feet from potential Alameda song sparrow habitat in the Burlingame Lagoon (Department 2009f).

No permanent impacts to individual special-status and other nesting raptors are anticipated with implementation of the avoidance and minimization measures proposed in Section 2.16.4.1. Vegetation would be removed during

[14] A decibel is a unit for measuring sound pressure levels. In general, highway noise levels are typically 70 to 80 decibels during heavy traffic periods (Appendix B of Caltrans 2009). Here, 83 decibels represents the maximum instantaneous intensity of a single sound event—a peak in highway noise (Appendix B of Caltrans 2009).

nonbreeding/nesting period, and if that cannot be achieved, surveys and buffers would be applied until the nesting activity is completed. The potential loss of foraging habitat would be negligible, as the quantity of suitable foraging habitat in the BSA is small compared to that available in adjacent areas.

With implementation of the specific avoidance and minimization measures proposed in Section 2.16.4.1, permanent impacts to migratory birds (including take of individuals, nestlings or eggs) are not anticipated from project construction.

2.16.3.2. Essential Fish Habitat

The segment of Easton Creek between US 101 and Bayshore Highway travels through a concrete channel with little vegetation. The proposed project will extend the existing 6-by-6-foot double box culvert by 42 feet to the east to accommodate the realigned northbound US 101 on-ramp. The project design will incorporate Department BMPs for storm water pollution prevention (Section 2.8.4) and the general construction measures identified in Section 2.16.4.2. These measures will minimize project-related effects to EFH. In addition, although southern Distinct Population Segment North American green sturgeon (*Acipenser medirostris;* see Section 2.17.2.2) is not included in the Pacific Groundfish and Coastal Pelagic FMPs, the species has similar habitat requirements to many benthic species managed under the Pacific Groundfish FMP. As a result, the conservation measures proposed for green sturgeon identified in Section 2.17.4 will also minimize effects to EFH.

With implementation of the measures described above, no adverse effects to EFH, eelgrass, or other HAPCs are expected. Informal consultation with NOAA Fisheries for effects to EFH was concluded in December 2010 (Appendix I).

2.16.4. Avoidance, Minimization, and/or Mitigation Measures

2.16.4.1. Special-Status Birds

Implementation of the following specific avoidance and minimization measures would prevent impacts to special-status and other nesting raptors, and migratory birds. The following consolidates raptor and migratory bird measures listed in the project's Natural Environment Study (URS 2010c).

- Schedule vegetation removal during nonbreeding season: To avoid disruption or impacts to nesting raptors and other nesting birds, removal of vegetation (trees and ground cover) in the project's construction area should occur during the nonbreeding season, from September 1 to February 1.

- Focused preconstruction surveys: If construction is scheduled during the nesting season (February 1 through August 31), trees and vegetation within and extending approximately 500 feet from the perimeter of the construction area would be subject to a preconstruction survey. The Broadway overcrossing and pedestrian overcrossing would be included in the survey to identify nesting activity on or underneath these structures. The preconstruction survey should be completed no more than 15 days prior to ground-disturbing activities.
- Establish buffer areas if active nesting is identified: If an active nest is found, a temporary buffer area may be defined to restrict construction activities. A qualified biologist would determine the appropriate buffer size based on the type of construction activity and type of affected species, and delineate the buffer using ESA fencing, pin flags, and/or yellow caution tape. The size of the buffer may vary for different species. A 300-foot radius buffer would be used unless otherwise defined by the biologist. Clearing and construction within the buffer would be postponed until the active nest is vacated and the juveniles have fledged, as determined or verified by the biologist, and there is no evidence of second nesting attempts.
- Biological monitoring: If nesting activity is identified within the project's construction area and a buffer area is established, a qualified biologist would check the nest area approximately weekly for potential disturbances associated with construction. Construction within the buffer would be prohibited until the biologist determines the nest is no longer active. In the event that nesting birds are present and attempt to build nests during construction, a biologist would work with CDFG to implement a strategy to prevent nests from becoming established.

2.16.4.2. Essential Fish Habitat

Standard Department BMPs for water pollution control (Section 2.8.4) and the general construction measures listed below would minimize project-related effects to EFH. No additional measures are proposed.

General Construction Measures

The measures listed below will be implemented as part of construction to minimize and/or avoid impacts to sensitive species and habitat as well as to common biological resources.

- Construction Work, Access, and Staging Areas. All proposed construction will be limited to the existing and proposed right-of-way.

- Work In Waterways. Temporary cofferdams will be required to install the Easton Creek culvert extension. Only sandbags filled with clean gravel or sand, i.e. gravel or sand substantially free of dirt, silt or other debris that would adversely affect water quality if released into the stream, will be used for construction of the cofferdams. The downstream outlet of the diversion pump will be screened with 1/4-inch mesh screen material during all dewatering in accordance with NOAA Fisheries Fish Screening Criteria (NMFS 1997) for fingerling-sized fish unless otherwise directed by NOAA Fisheries. If sediment removal in the unnamed drainage channel is required, work will take place after upstream culvert work is complete. If the berm separating the unnamed drainage channel from San Francisco Bay is removed, it would be removed after completion of the culvert work (including sediment removal, if necessary) and during low tide.
- Construction Discharges. No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the United States, nonjurisdictional drainages, or other suitable California red-legged frog habitat. No discharges of excessively turbid water will be allowed, and all equipment will be well-maintained and free of leaks.
- Onsite Construction Personnel Education Program. Before the onset of construction activities, a qualified biologist will conduct an education program for all construction personnel. At a minimum, the training will include a description of California red-legged frog, San Francisco garter snake, California clapper rail, salt marsh harvest mouse, California seablite, and other listed species; migratory birds and their habitats; the potential occurrence of these species within the project area; an explanation of the status of these species and protection under the FESA, CESA, and all other federal, state, and local regulatory requirements; the measures to be implemented to conserve listed species and their habitats as they relate to the work site; and boundaries within which construction may occur. A fact sheet conveying this information will be prepared and distributed to all construction crews and project personnel entering the project footprint. Upon completion of the program, personnel will sign a form stating that they attended the program and understand all of the avoidance and minimization measures and implications of the FESA, CESA and all other federal, state, and local regulatory requirements.
- Erosion Control. Temporary erosion control and slope stabilization BMPs will be installed before the start of the wet season (October 15 through April 15). Erosion control measures may include silt fencing, straw wattles, coir blankets,

sediment traps, and other protective measures to minimize the potential for erosion of sediment beyond the work area or degradation of water quality in adjacent aquatic habitats.

- Restoration/Revegetation. Upon project completion, the slopes at the foot of each end of the overcrossing will be regraded and revegetated according to Department policy and will use appropriate native species to the maximum extent possible. A post-construction monitoring plan will be developed during final design, and re-establishment of vegetation and control of nonnative invasive species will be periodically monitored consistent with the plan.

2.17. Threatened and Endangered Species

The following section is summarized from the *Natural Environment Study* (completed in April 2010; URS 2010c) and *Biological Assessment* (completed in September 2010; URS 2010d) for the proposed project.

2.17.1. Regulatory Setting

The primary Federal law protecting threatened and endangered species is the FESA (16 USC Section 1531, et seq.; see also 50 CFR Part 402). This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of the FESA, Federal agencies such as FHWA are required to consult with the USFWS and NOAA Fisheries to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of the FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the State level, the CESA (California Fish and Game Code, Section 2050 et seq.). The CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The CDFG is the agency responsible for implementing CESA. Section 2081 of the California Fish and Game Code prohibits take of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the

California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the FESA, the CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

2.17.2. Affected Environment

2.17.2.1. Federal and State Consultation Process

USFWS species records were reviewed at the outset of the biological studies for the project as well as in December 2009 and June 2010. A copy of the USFWS species list is included in Appendix I. The CNDDB (CDFG 2010) and CNPS online Inventory of Rare and Endangered Vascular Plants of California (CNPS 2009) were used to identify state-listed threatened and endangered species. URS biologists conducted an early season plant survey and a general terrestrial wildlife habitat assessment of the BSA on March 31 and April 1, 2009, and a reconnaissance-level habitat assessment for California red-legged frog (CRLF) and San Francisco garter snake (SFGS) on January 29, 2010.

As a result of a review of the USFWS species list, species occurrence databases and literature, the rare plant survey, and the reconnaissance-level wildlife habitat assessments, the species and critical habitat listed in Table 2.17-1 were considered to have potential to occur in the BSA.

Table 2.17-1 Threatened and Endangered Species Considered in the Biological Study Area

Common Name	Scientific Name	Status[1]
Plant		
California seablite	*Suaeda californica*	FE
Fish		
Green sturgeon, southern distinct population segment (DPS)	*Acipenser medirostris*	FT, Ssc
Critical Habitat: Green sturgeon, southern DPS	*Acipenser medirostris*	Designated October 9, 2009
Central California Coast steelhead DPS	*Oncorhynchus mykiss irideus*	FT
Amphibian		
California red-legged frog	*Rana draytonii*	FT, Ssc
Reptile		
San Francisco garter snake	*Thamnophis sirtalis tetrataenia*	FE, SE, CaFP
Birds		
California black rail	*Laterallus jamaicensis coturniculus*	ST, CaFP
California clapper rail	*Rallus longirostris obsoletus*	FE, SE, CaFP

Table 2.17-1 Threatened and Endangered Species Considered in the Biological Study Area

Common Name	Scientific Name	Status[1]
Mammal		
Salt marsh harvest mouse	*Reithrodontomys raviventris*	FE, SE, CaFP

[1] CaFP = California fully protected
FE = Federal endangered
FT = Federal threatened
Ssc = California species of special concern
SE = State endangered
ST = State threatened

Endangered species consultation with the USFWS and/or NOAA Fisheries is necessary when a project has the potential to affect federally listed species and/or destroy or adversely modify designated critical habitat. The proposed project has the potential to affect five federally listed species under the jurisdiction of the USFWS: California seablite, CRLF, SFGS, California clapper rail, and salt marsh harvest mouse. The Department, as assigned by the FHWA, initiated Section 7 consultation with the USFWS in September 2010 by submitting a Biological Assessment (BA) that addresses potential effects to these species. The USFWS issued a Biological Opinion (81420-2010-F-0629) for the project on March 9, 2011 (Appendix I).

The proposed project has the potential to affect two federally listed species and designated critical habitat for one species under the jurisdiction of NOAA Fisheries: green sturgeon, southern distinct population segment (DPS), Central California Coast steelhead DPS, and critical habitat for southern DPS green sturgeon. In August 2010, the Department requested informal consultation with NOAA Fisheries for concurrence on its determination of potential project effects. Informal consultation was concluded in December 2010 (Appendix I).

Endangered species consultation with the CDFG is necessary when a project may result in the take of a state-listed species. The proposed project has the potential to affect California black rail as well as species listed as endangered under both FESA and CESA (SFGS, California clapper rail, and salt marsh harvest mouse). The Department will consult with CDFG to obtain a consistency determination for impacts to state-listed species and to ensure that proposed measures are sufficient to avoid impacts to California fully protected species.

2.17.2.2. Species Addressed in Consultation

California Seablite

The nearest CNDDB record for this species is approximately 10 miles north of the BSA at Heron's Head Park, Port of San Francisco, and was planted for restoration purposes (CDFG 2010).

The BSA is within the Central/South Bay Recovery Unit of the USFWS *Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (USFWS 2010a). The plan recommends acquiring or protecting currently unprotected habitat for California seablite, as well as augmenting existing populations and initiating new subpopulations in suitable habitat in San Francisco Bay.

The BSA contains marginal potential habitat for California seablite along the unnamed drainage channel between Bayshore Highway and San Francisco Bay near Airport Boulevard. The channel was identified as a potentially jurisdictional salt marsh wetland (WWUS 1 in Figure 2.14-2) in the wetland delineation. The narrow channel banks are vegetated with sparse, short stands of pickleweed, alkali heath, marsh gumplant, and extensive nonnative iceplant.

California seablite was not identified in the unnamed drainage channel during rare plant surveys of the BSA and adjacent marshes on March 31 and April 1, 2009. Because the species is an evergreen shrub, it is likely that surveys would have identified it, if present.

Southern DPS Green Sturgeon

Juvenile and subadult green sturgeon occur throughout the Sacramento River Delta and San Francisco Bay (Calfish 2009). No current or historic spawning locations for green sturgeon are known in the southern San Francisco Bay drainages; however, the South Bay contains migrant green sturgeon throughout the year in both the seawater and mixing zones (Miller and Kaplan 2001). During the spring months, sport fishermen catch sturgeon—most often white—from the Dumbarton Public Fishing Pier on the east side of the Bay. The CDFG estimates that one-fifth of the sturgeon landed in the estuary are green sturgeon and that the rest are white sturgeon (Moyle 2002).

Easton and Sanchez creeks in the BSA are directly connected to green sturgeon habitat in greater San Francisco Bay. These creek segments are in engineered underground or open concrete culverts that receive urban runoff, undergo annual sediment/debris removal, and contain little or no water during low tides. As a result, potential foraging habitat for green sturgeon within these creek segments is considered marginal.

Because green sturgeon are highly mobile, migratory, found throughout the Bay, and capable of foraging in shallow water, it is possible that an occasional juvenile or subadult green sturgeon could venture into Easton and Sanchez creeks. As Sanchez Creek in and upstream of the action area is in a 900-ft-long underground culvert, any green sturgeon that enter the creek via the Burlingame Lagoon would remain downstream of the action area.

Green sturgeon would not have access to the unnamed drainage channel between Bayshore Highway and San Francisco Bay near Airport Boulevard, as described in the "Central California Coast Steelhead DPS" discussion above. If the berm that separates the channel from the Bay is removed as part of the proposed project, the species may occasionally stray into the channel. However, the absence of upstream spawning opportunities and suitable instream foraging would make the unnamed drainage channel marginal potential habitat.

Critical Habitat for Southern DPS Green Sturgeon

On October 9, 2009, NOAA Fisheries issued a final rule to designate critical habitat for the southern DPS green sturgeon (74 Federal Register 52299–52351). Under this rule, the entire San Francisco Bay below mean higher high water is designated as critical habitat. Designated critical habitat includes spawning and rearing areas in freshwater and rearing habitats in coastal marine waters and bays and estuaries. All tidally influenced waters of San Francisco Bay and the tidally influenced reaches of specified tributaries are included in this designation. This includes the sections of Easton and Sanchez creeks within the BSA, which are below mean higher high water of the Bay and are tidally influenced (NOAA Fisheries 2009). The unnamed drainage channel between Bayshore Highway and San Francisco Bay is not within designated critical habitat.

Central California Coast Steelhead DPS

The Central California Coast (CCC) steelhead DPS includes all naturally spawned anadromous steelhead populations below natural and human-made impassable barriers in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco, San Pablo, and Suisun bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers (NOAA Fisheries 2007).

Surveys of the BSA found that Easton and Sanchez creeks lack the habitat elements required for CCC steelhead spawning and rearing. Both creeks are brackish and have variable water levels because of tidal influx from the Bay; in fact, the creeks can

contain little or no water during low tide. Logs, deep pools, and other escape cover are absent from the creek segments in the BSA.

For most of the lengths of Easton and Sanchez creeks, the channels are highly modified, engineered, or culverted, which makes them unsuitable as migratory corridors. The creeks drain urban areas of Burlingame and parts of Hillsborough from east of Interstate 280. The creeks also are degraded from urban runoff and annual sediment/debris removal. No historic occurrences of anadromous fish have been recorded in Easton and Sanchez creeks (Calfish 2009; Leidy et al. 2005a; Leidy et al. 2005b).

The only other surface water in the BSA is the unnamed drainage channel between Bayshore Highway and San Francisco Bay near Airport Boulevard (Section 1.3.1.6). The channel is not a natural stream and has no fish-bearing upstream reach. A berm separates the channel from the Bay and prevents CCC steelhead and other fish from entering the channel.

Designated critical habitat for CCC steelhead (NOAA Fisheries 2005) includes freshwater spawning sites, rearing sites, migration corridors, and estuarine areas free of obstruction. No designated critical habitat for CCC steelhead was identified in the BSA.

California Red-Legged Frog

No CRLF occurrences have been recorded in the BSA. The closest CNDDB occurrence was recorded near SFO, approximately 1.70 miles northwest of the BSA. Additional CRLF occurrences are documented in USFWS biological opinions, informal consultation communications, and environmental documents for other projects near the BSA (City of Burlingame 2004; Kobernus 2009; McGinnis 2002; TRA 2007; USFWS 2009c, d). Adult CRLF were sighted on two occasions approximately 0.10 mile northwest (and outside) of the BSA. In 2001, an adult CRLF was sighted on the northwest side of David Avenue near Rollins Road (Kobernus 2009; TRA 2007), and in 2004, an adult CRLF was sighted near a freshwater drainage ditch adjacent to 1510 Rollins Road (TRA 2007). Both sightings are west of US 101, north of Mills Creek.

Approximately 0.20 mile northwest (and outside) of the BSA, a breeding population of CRLF has been reported in a freshwater drainage along a PG&E transmission corridor (McGinnis 2002; City of Burlingame 2004). Approximately 0.85 mile north of the BSA, another breeding population of CRLF exists in the southern half of the US 101/Millbrae Avenue interchange (City of Burlingame 2004).

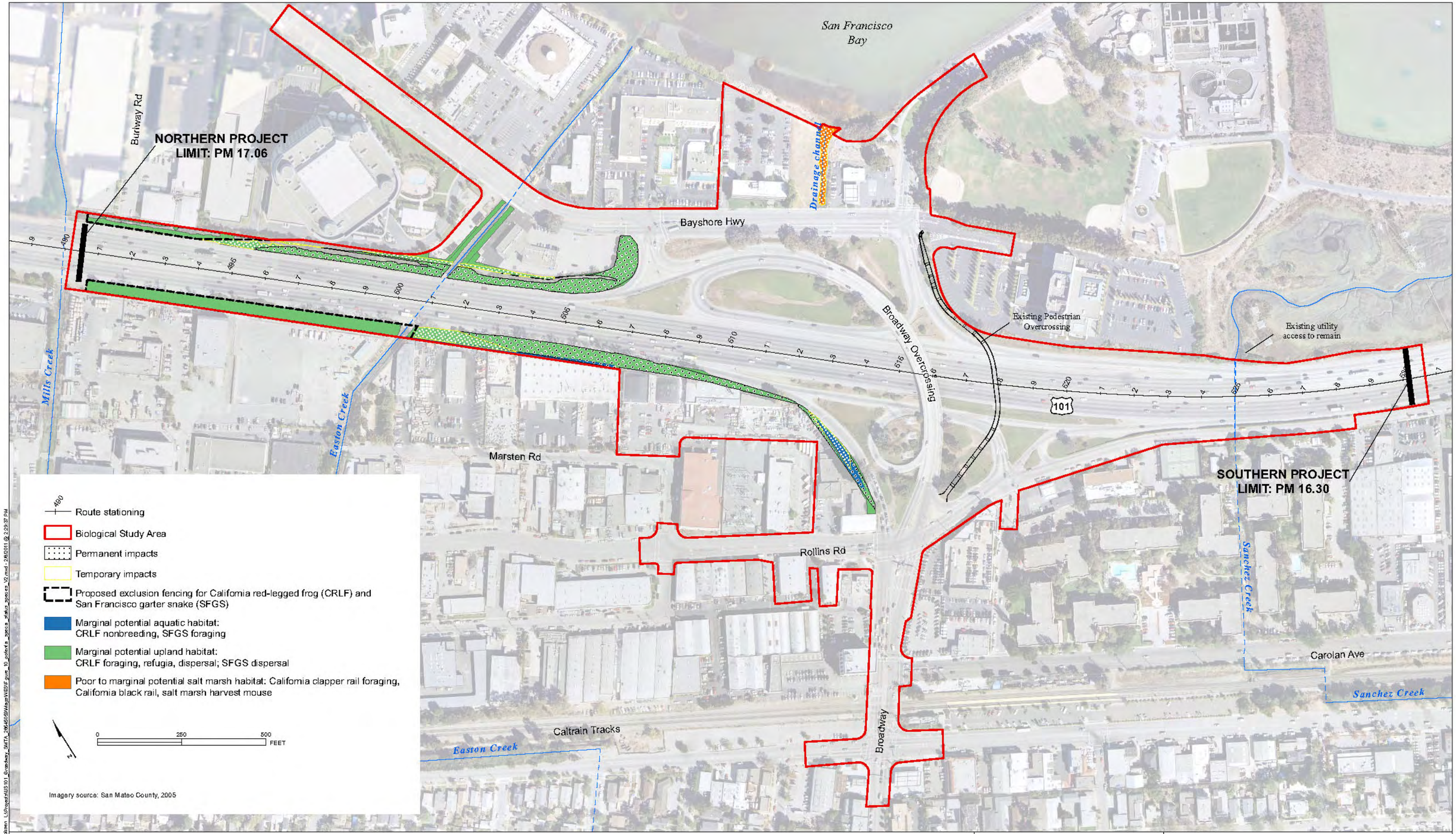
No protocol-level CRLF surveys have been conducted for the proposed project. URS biologists conducted a general terrestrial wildlife habitat assessment of the BSA on March 31 and April 1, 2009, and a reconnaissance-level habitat assessment for CRLF and SFGS on January 29, 2010. No CRLF or other frogs were observed in the BSA during the assessments.

Salinity from tidal influence renders most aquatic areas in and near the BSA generally unsuitable for CRLF aquatic habitat.[15] Easton Creek and several ditches along both sides of US 101 within the BSA, as well as Mills Creek and the Burlingame Lagoon outside of the BSA, are all exposed to tidal influence. Seasonal ponding from roadway runoff around the eastern and western touchdowns of the Broadway overcrossing does not remain in place long enough to support CRLF aquatic use.

The US 101/Broadway interchange medians are not suitable or accessible as CRLF aquatic or upland habitat. The upland areas of the medians were used for construction staging and access for the US 101 Auxiliary Lanes Project through late 2009, resulting in ground compaction and removal of or disturbance to small mammal burrows and landscaped/ruderal vegetation that could have provided marginal cover for CRLF terrestrial use. These areas are also isolated from known CRLF occurrences and breeding populations by the concrete median barrier of US 101, the paved freeway and ramps, and associated vehicular traffic.

Two aquatic areas in the BSA could at times provide marginal potential CRLF nonbreeding habitat (Figure 2.17-1). The first is a seasonal emergent wetland west of US 101. The feature contains cattails (*Typha* sp.), sedge (*Cyperus* sp.), and ornamental species such as blackwood acacia. The second is a seasonal wetland along the western boundary of the southbound US 101 off-ramp to Broadway. Both features are hydrologically connected to Easton Creek and tidally influenced (URS 2009k; USFWS 2011, included in Appendix I). During high tide on one survey day in January 2010, one feature (the seasonal emergent wetland) had a salinity level that was within the tolerance range of CRLF adults and the maximum tolerance range of CRLF eggs; however, the water depth and freshwater conditions do not appear to persist long enough for CRLF to successfully breed.

[15] CRLF are sensitive to high salinity (USFWS 2002). Their maximum salinity tolerance is about 9.0 parts per thousand (ppt) for adults, 6.0 ppt for embryos, and 4.5 ppt for eggs (Jennings and Hayes 1990).



US 101/BROADWAY INTERCHANGE
RECONSTRUCTION PROJECT
BURLINGAME, CA
EA 235840

Figure 2.17-1
POTENTIAL SPECIAL-STATUS SPECIES HABITAT IN THE BIOLOGICAL STUDY AREA

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These two aquatic areas and upland portions of drainages along both sides of US 101 have potential connectivity to known CRLF populations via the vegetated shoulders of US 101 and the PG&E transmission corridor. Although there is no indication that CRLF are using these or any other areas in the BSA, these areas are considered marginal potential habitat for CRLF aquatic nonbreeding use and upland foraging, refugia, and dispersal (Figure 2.17-1).

The BSA lies outside of designated critical habitat for CRLF (USFWS 2010b). The closest designated critical habitat is Unit SNM-1 in San Mateo County, which is west of Interstate 280, approximately 3 miles southwest of the BSA. The proposed project would not affect designated or proposed critical habitat for CRLF.

San Francisco Garter Snake

The nearest recorded occurrence of San Francisco garter snake (SFGS) is approximately 1.70 miles northwest of the BSA. SFGS typically do not move distances of more than 0.6 mile (USFWS 2006b). Therefore, the BSA appears to be outside of the species' dispersal range from the nearest SFGS occurrence.

The BSA lacks the vegetation and aquatic features that provide optimal SFGS habitat. Upland areas of the Broadway interchange medians were used for construction staging and access for the US 101 Auxiliary Lanes Project through late 2009, resulting in ground compaction and removal of or disturbance to small mammal burrows and landscaped/ruderal vegetation that could have provided marginal potential SFGS habitat. Moreover, the median barrier of US 101, the paved freeway and ramps, and associated vehicular traffic would prevent SFGS movement into the interchange median areas.

Breeding habitat for SFGS requires a breeding prey base of CRLF or Pacific tree frogs. Most aquatic areas in and near the BSA are estuarine, which renders them generally unsuitable for CRLF and Pacific tree frogs, both preferred prey species for SFGS. Two aquatic areas could at times provide marginal potential CRLF nonbreeding habitat (see Figure 2.17-1), although there is no indication that CRLF are using these or any other features in the BSA. Other potential SFGS prey such as Pacific tree frogs were not observed in field surveys. The closest documented breeding population of CRLF is approximately 0.20 mile northwest, and outside of, the BSA. As a result, the BSA is not considered to provide the habitat elements essential to support SFGS breeding.

The areas that provide marginal potential aquatic habitat and potential upland habitat for CRLF are considered to provide marginal potential aquatic foraging habitat and potential upland dispersal habitat for SFGS (see Figure 2.17-1). No other potential habitat for SFGS was identified.

As discussed above in the "California Red-Legged Frog" subsection, sightings of CRLF—a prey species for SFGS—have been reported within 0.10 mile of the BSA, and a CRLF breeding population has been documented within 0.20 mile of the BSA. No SFGS have been reported at either of these locations, which are separated from the nearest SFGS occurrence by movement barriers including roadways with heavy vehicular traffic and industrial and commercial parcels with extensive pavement and minimal vegetative cover. There are no continuous roadway shoulders or drainages that would provide connectivity between the nearest SFGS occurrence and the CRLF sighting locations or CRLF breeding population outside of the BSA.

California Black Rail

No California black rail occurrences have been documented in the BSA. The nearest CNDDB occurrence was recorded in Foster City in 1972, approximately 5.7 miles from the BSA. The species was not observed during habitat assessments in the BSA.

California black rails are shy, secretive birds that need a dense pickleweed canopy for escape cover. The species favors large marshes that are close to water, away from urban areas, and saline to brackish with a high proportion of pickleweed, gumplant, alkali bulrush, rushes, and cattails (Spautz et al. 2005).

The species is not expected to be present in the BSA. The BSA is exposed to constant vehicular traffic and lacks dense pickleweed for escape cover. Poor to marginal potential habitat is present along the unnamed drainage channel between Bayshore Highway and the San Francisco Bay near Airport Boulevard (Figure 2.17-1). The channel provides few of the habitat elements favored by California black rail. The channel is close to the Bay but not large (approximately 0.12 acre). The channel is immediately adjacent to a gas station, busy roadways, and other urban development. The narrow channel banks are vegetated with sparse, short stands of pickleweed, alkali heath, marsh gumplant, and extensive nonnative iceplant. No rushes or cattails are present in or along the channel.

Although breeding populations are uncommon in the South Bay, the northern extent of the Burlingame Lagoon (a segment known as Sanchez Marsh; outside of the BSA) has vegetation characteristics that would provide potential habitat for California black rail.

California Clapper Rail

There are no documented occurrences of California clapper rail in the BSA. The nearest CNDDB occurrence was a 1975 record for a small California clapper rail population along San Francisco Bay between the mouths of Mills and Easton Creeks, outside of the BSA. Historical aerial photography indicates the presence of potential habitat for California clapper rail in the Bay near the mouth of Easton Creek, which is more than 500 feet east of the BSA; however, *Spartina* sp. and other vegetation in this area has been removed during efforts by the San Francisco Estuary Invasive Spartina Project (SFEISP) to eradicate the nonnative *Spartina* hybrid (SFEISP 2008).

Between 2006 and 2008, the SFEISP conducted annual protocol-level surveys for California clapper rails at the mouth of Easton Creek, in the Burlingame Lagoon (adjacent to the southern boundary of the BSA), and at the mouth of Mills Creek (immediately north of the BSA). No clapper rails were observed at Easton Creek or Burlingame Lagoon, and the SFEISP concluded that there were no California clapper rails in either area (SFEISP 2006, 2007, 2008). In 2007, SFEISP documented the presence of one or two California clapper rails at the mouth of Mills Creek (SFEISP 2007); however, after the 2008 survey, SFEISP concluded that the species is no longer present in the area (SFEISP 2008).

No nesting habitat for California clapper rail was identified during field surveys in the BSA. The brackish areas lack the dense pickleweed and *Spartina* sp. cover required for clapper rail nesting.

Poor to marginal potential foraging habitat is present along the unnamed drainage channel between Bayshore Highway and the San Francisco Bay near Airport Boulevard (Figure 2.17-1). No *Spartina* sp. is present in or along the channel. The narrow channel banks are vegetated with sparse, short stands of pickleweed, alkali heath, marsh gumplant, and extensive iceplant. The channel is immediately adjacent to a gas station and constant vehicular traffic and offers no protection or isolation from predators. As a result of these factors, the species is not expected to use the channel for foraging.

The nearest areas of potential nesting habitat for California clapper rail are outside of the BSA at the mouth of Mills Creek and in the Burlingame Lagoon. Those locations, and potentially San Francisco Bay near the mouth of Easton Creek, also offer potential foraging habitat.

The BSA is within the Central/South Bay Recovery Unit of the USFWS *Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (USFWS 2010a). The plan recommends acquisition and protection of tidal marshes east of the BSA for California clapper rail and other species.

Salt Marsh Harvest Mouse

There are no records of salt marsh harvest mouse occurrences in the BSA. The nearest CNDDB record for a salt marsh harvest mouse dates from 1960 and is more than 6 miles to the southeast, in Foster City. A number of trapping efforts, catalogued by the San Francisco Estuary Institute, have been conducted in the southern Bay Area to identify populations of salt marsh harvest mice (SFEI 2008). In 1998, an individual was trapped approximately 4 miles southeast of the southern extent of the BSA. In 1999, unsuccessful attempts were made to trap salt marsh harvest mice at Seal Point Park, approximately 3 miles southeast of the BSA. Seal Point Park is the closest location to the BSA where trapping was attempted (SFEI 2008).

The maximum distance the salt marsh harvest mouse has been observed to move through brackish or freshwater marsh vegetation cover is approximately 656 feet (Shellhammer et al. 1982, H.T. Harvey & Associates 2005). Salt marsh harvest mice have not been documented to move more than 16.4 feet across water or bare ground (Bias 1994; Geissel et al. 1988). Therefore, the BSA is well beyond the maximum movement range from any known occurrences.

The BSA lacks the dense pickleweed cover associated with species use. Poor to marginal potential habitat is present along the unnamed drainage channel between Bayshore Highway and the San Francisco Bay near Airport Boulevard (Figure 2.17-1). The narrow channel banks have sparse, short stands of pickleweed interspersed with other vegetation (alkali heath, marsh gumplant, and iceplant). Because of the marginal amount and quality of vegetation, lack of contiguity with dense pickleweed stands, and distance from known occurrences, the salt marsh harvest mouse is not expected to use the channel for cover, foraging, or nesting.

The BSA is within the Central/South Bay Recovery Unit of the USFWS *Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (USFWS 2010a). The plan recommends acquisition and protection of tidal marshes east of the BSA for salt marsh harvest mouse and other species.

2.17.3. Environmental Consequences

California Seablite

The rare plant surveys did not detect California seablite within the BSA, and natural populations of the species are presumed to be extirpated from the Bay Area. The only marginally suitable potential habitat is along the narrow banks of the unnamed drainage channel. If the project restores the conveyance capacity of the channel (see Section 1.3.1.6), sediment and berm removal and related activities would have a temporary direct impact on an estimated 0.12 acre (5,066.79 square feet) of marginal potential habitat for California seablite. The species has been determined to be absent from the BSA and from the area with marginal potential habitat. The project will have no effect on California seablite.

Southern DPS Green Sturgeon

The southern DPS green sturgeon has a low potential to occur in Easton and Sanchez creeks in the BSA. With implementation of the general avoidance and minimization measures listed in Section 2.16.4.2 and the conservation measures listed in Section 2.17.4, the proposed project will not have an adverse effect on the species.

The proposed project will extend the US 101 culvert over Easton Creek by 42 feet. This concrete box culvert will be constructed in an existing concrete-lined channel. The resulting habitat modification will have an insignificant effect on the creek's potential habitat value for this species. When completed, the culvert extension will not affect the species' ability to pass through the project area.

Installation of the cofferdams will temporarily prevent green sturgeon from moving upstream of the construction area. The portion of Easton Creek in the BSA, both upstream and downstream of the culvert extension, is a straightened channel with hardened banks that provides little habitat value for this species. As a result, this temporary exclusion will not prevent the species from using foraging or rearing habitat upstream of the temporary cofferdams, and will have a discountable effect on habitat availability.

The project may cause a temporary and localized increase in water turbidity during installation and removal of the cofferdams in Easton Creek. A temporary, localized increase in turbidity could also occur if sediment and berm removal activities are conducted in the unnamed drainage channel. However, green sturgeon commonly encounter increased turbidity during storm runoff events and as a result of wind and wave action. As a result, the effects of increased turbidity on green sturgeon, if the

species is present, will be insignificant and discountable. The project is not likely to adversely affect southern DPS green sturgeon.

Critical Habitat for Southern DPS Green Sturgeon

The extension of the Easton Creek culvert by 42 feet will take place in designated critical habitat for the green sturgeon. The culvert extension will have a permanent effect on 0.02 acre of critical habitat. This impact is anticipated to be minor because the culvert extension will take place in an existing concrete-lined channel segment that lacks primary constituent elements (PCEs)[16] for green sturgeon.

The culvert extension may also cause a temporary localized increase in water turbidity within designated critical habitat in Easton Creek and San Francisco Bay. The estuarine component of this designated critical habitat unit often experiences increased turbidity naturally as a result of storm runoff and wind and wave action. If drainage work is required in the unnamed channel, which is not within designated critical habitat, construction sediment or other materials could flow into San Francisco Bay. Implementation of avoidance, minimization and conservation measures, in concert with the contractor's compliance with the SWPPP, CWA Section 401 certification, CDFG Section 1602 Agreement, and/or CWA Section 404 permit, will minimize these temporary and localized effects.

Impacts to critical habitat from extending the Easton Creek culvert are not expected to affect the survival or recovery of the southern DPS green sturgeon. The project is not likely to adversely affect designated critical habitat for southern DPS green sturgeon.

Central California Coast Steelhead DPS

The project will have no effect on CCC steelhead. No impacts to spawning populations of steelhead or any other anadromous fish are anticipated because of the lack of suitable spawning habitat. In-stream structures, undercut banks, and deep pools that could provide resting habitat are absent from the creek segments in the BSA. The proposed project avoids construction at Sanchez Creek, and construction at Easton Creek will be limited to extending the existing culvert. The reach of Easton Creek in the BSA is confined to an underground culvert and a straight, concrete-lined channel that is too narrow and disturbed to support salmonids (Winzler and Kelly 2009).

[16] PCEs are physical or biological features that are essential to the conservation of a species, such as space for individual and population growth and for normal behavior. The Natural Environment Study (URS 2010b) provides an overview of PCEs for southern DPS green sturgeon in Section 4.5.1. For a full list of PCEs, see NOAA 2009a.

If a CCC steelhead individual or any other anadromous salmonid were to stray into the BSA, the general avoidance and minimization measures in Section 2.16.4.2 will prevent adverse impacts to the species. Implementation of standard Department BMPs for erosion control and spill prevention will prevent habitat loss or degradation during construction.

California Red-Legged Frog

If CRLF are present in the BSA during construction, take under FESA could occur in the form of harm, harassment, injury, and mortality from habitat loss and degradation, construction-related disturbance, and capture and relocation. Figure 2.17-1 depicts the areas of temporary and permanent impacts to potential aquatic and upland habitat for CRLF.

Constructing the northbound US 101 on-ramp, southbound US 101 off-ramp, and embankments and a retaining wall will result in permanent impacts to an estimated 0.07 acre of potential aquatic nonbreeding habitat, and 1.53 acres of potential upland foraging, refugia, and dispersal habitat. Temporary direct effects to an estimated 0.06 acre of potential aquatic nonbreeding habitat and 0.38 acre of potential upland foraging, refugia, and dispersal habitat could result from the use of US 101 shoulder areas for construction access and from the culvert extension at Easton Creek.

Project-related indirect effects could include increased erosion and sedimentation from disturbance to upland areas and removal of vegetation, which could affect potential CRLF aquatic and upland habitat outside of the project footprint. With implementation of the erosion control and restoration/revegetation measures described in Section 2.16.4.2 and the project landscaping plan, these effects would be temporary and insignificant. The project is likely to adversely affect, but not jeopardize, CRLF.

San Francisco Garter Snake

SFGS are not expected to be present in the BSA. Constructing the northbound US 101 on-ramp, southbound US 101 off-ramp, and embankments and a retaining wall will result in permanent impacts to an estimated 0.07 acre of potential aquatic foraging habitat and 1.53 acre of potential upland dispersal habitat for SFGS. Temporary direct effects to an estimated 0.06 acre of potential aquatic foraging habitat and 0.38 acre of potential upland dispersal habitat could result from the use of US 101 shoulder areas for construction access and from the culvert extension at Easton Creek. Effects to the species from habitat disturbance would be discountable because of the absence of recorded SFGS occurrences, the lack of connectivity with

the closest occurrence, and the distance between the closest occurrence and the BSA (1.70 miles, compared with the species' dispersal range of 0.60 miles). Indirect effects to potential SFGS aquatic and upland habitat outside of the project footprint would be the same as those described above for CRLF. The project is not likely to adversely affect SFGS.

California Black Rail

No permanent impacts to California black rail will occur. If the project restores the conveyance capacity of the unnamed drainage channel (see Section 1.3.1.6), sediment and berm removal and related activities will have a temporary direct impact on an estimated 0.12 acre (5,066.79 square feet) of poor to marginal potential habitat for the California black rail. No other potential habitat for the species was identified in the BSA.

Temporary project construction noise is not expected to result in indirect impacts to California black rails. As described in Section 2.16.3.1, pile driving noise will diminish to ambient highway noise levels within 400 feet or less of the pile driving locations. The closest pile-driving location is approximately 700 feet from potential California black rail habitat in the Burlingame Lagoon (Department 2009f). Temporary pile-driving noise is expected to have a discountable effect on the species and any potential nesting habitat in the Burlingame Lagoon.

California Clapper Rail

No permanent impacts to California clapper rail will occur. If the project restores the conveyance capacity of the unnamed drainage channel (see Section 1.3.1.6), sediment and berm removal and related activities would have a temporary direct impact on an estimated 0.12 acre (5,066.79 square feet) of poor to marginal potential foraging habitat for the California clapper rail. The species is not expected to use the channel for foraging because of the marginal quantity and quality of suitable vegetation and the proximity to human and vehicular traffic.

Temporary construction noise is not expected to result in indirect impacts to California clapper rail if they are present outside of the BSA. As described in Section 2.16.3.1, noise from pile-driving and other loud construction activities will diminish to levels that will not harm birds within approximately 400 feet of the noise source. The potential nesting habitat for California clapper rail at the mouth of Mills Creek is more than 2,000 feet from the nearest pile-driving locations. The potential nesting habitat in the northern extent of the Burlingame Lagoon (known as Sanchez Marsh) is approximately 700 feet from the closest pile-driving locations. California clapper rails

are not known to nest in either location, and at these distances, no masking effects or nest abandonment will occur. Potential foraging habitat outside of the BSA, such as in San Francisco Bay near the mouth of Easton Creek, is approximately 900 feet from the closest pile-driving locations. Temporary pile-driving noise is expected to have a discountable effect on the species. The project may effect, but is not likely to adversely affect, California clapper rail.

Salt Marsh Harvest Mouse

If the project restores the conveyance capacity of the unnamed drainage channel (see Section 1.3.1.6), sediment and berm removal and related activities would have a temporary direct impact on an estimated 0.12 acre (5,066.79 square feet) of poor to marginal potential habitat for the salt marsh harvest mouse. The species is not expected to use the channel because of the marginal amount and quality of vegetation, lack of contiguity with dense pickleweed stands, and distance from known occurrences. The channel is also beyond the species' known dispersal range from potential habitat outside of the BSA. Therefore, the salt marsh harvest mouse is not expected to be present. The project would have no effect on salt marsh harvest mouse.

2.17.4. Avoidance, Minimization, and/or Mitigation Measures

California black rail, California clapper rail, and salt marsh harvest mouse are not anticipated to be present; therefore, no avoidance and minimization measures are proposed for those species. The general construction measures listed in Section 2.16.4.2 and the following conservation measures would avoid or minimize effects to threatened and endangered species and critical habitat.

California Seablite

The field survey and review of recorded occurrences indicate that this species is absent from the BSA. A qualified botanist will conduct a focused preconstruction survey for California seablite during the blooming period for the species (July to October) in 2013. In the event that the species is identified in the BSA during the focused preconstruction survey, the USFWS will be contacted for guidance on exclusion buffers, and additional avoidance and minimization methods will be determined through supplemental consultation.

Southern DPS Green Sturgeon

The project design incorporates cofferdam installation requirements, Department BMPs for storm water pollution prevention, and the general avoidance and minimization measures listed in Section 2.16.4.2, which will reduce potential effects

to this species. In addition, the following conservation measures are proposed to further avoid and minimize effects:

- All in-stream work in Easton Creek (and, if necessary, the unnamed drainage channel) will take place during the dry season (April 15 through October 15) to minimize effects on creek flows and reduce the potential for sedimentation.
- The cofferdams required for work at Easton Creek will be installed during low tide, when green sturgeon will not be present. This will also prevent green sturgeon from being trapped above the cofferdams.
- Only clean gravel or sand fill will be used for construction of the cofferdams.
- A NOAA Fisheries-qualified biological monitor will be present during installation and removal of the cofferdams to ensure that impacts to Easton Creek and downstream waters are minimized.
- If work in the unnamed drainage channel is necessary, all construction activities will take place during low tide.

Critical Habitat for Southern DPS Green Sturgeon

The project design incorporates cofferdam installation requirements and Department BMPs for storm water pollution prevention. The measures outlined in Section 2.16.4.2 and the conservation measures for southern DPS green sturgeon will also avoid and minimize effects to critical habitat for the species. No additional measures are proposed.

Central California Coast Steelhead DPS

The general measures for work in waterways described in Section 2.16.4.2 will minimize impacts to aquatic species. No additional avoidance and minimization measures for CCC steelhead are necessary.

California Red-Legged Frog

The Department will implement the following precautionary measures, the general measures described in Section 2.16.4.2, and the measures, terms, and conditions set forth in the Biological Opinion (USFWS 2011; see Appendix I) to avoid or minimize impacts to the CRLF and its potential habitat.

- Exclusion fencing such as Ertec E-fence™ or an equivalent will be installed prior to any construction during the dry season (April 15 through October 15), when CRLF are not actively dispersing or foraging to prevent unintentional entrapment within the BSA. The location of the exclusion fencing will be determined by the

Resident Engineer and a USFWS-approved biologist in cooperation with the USFWS. The exclusion fencing will remain in place throughout the duration of the project and will be regularly inspected and maintained.

- To prevent CRLF from becoming entangled, trapped, or injured, erosion control materials that use plastic or synthetic monofilament netting will not be used. Acceptable substitutes include natural fibers such as jute, coconut, twine, or other similar fibers.
- A USFWS-approved biologist will conduct preconstruction surveys for CRLF before any vegetation clearing and grubbing or other ground-disturbing activities that may result in take of CRLF. The surveys will consist of walking transects while conducting visual encounter surveys in areas that will be subject to ground disturbing activities. If CRLF are found during the preconstruction surveys, the USFWS will be contacted immediately, and work in the area will cease until the individual(s) are relocated to a suitable site in conformance with approved USFWS protocol.
- A USFWS-approved biologist will be onsite to monitor for CRLF during clearing and grubbing and other activities that may result in take of CRLF. Through communication with the Resident Engineer or their designee, the biologist may stop work if deemed necessary for any reason to protect CRLF and will advise the Resident Engineer or designee on how to proceed accordingly. If a CRLF is found, work will be halted and the USFWS will be notified immediately. Work in the area will not resume until the individual(s) are relocated by the USFWS-approved biologist to a suitable site in conformance with approved USFWS protocol.

San Francisco Garter Snake

SFGS are not expected to be present in the BSA; however, the first two measures proposed for CRLF above, as well as the general measures described in Section 2.16.4.2, will avoid or minimize impacts to marginal potential habitat for SFGS. The following preconstruction survey and construction monitoring measures will also be implemented to avoid direct or indirect effects to SFGS.

- A CDFG/USFWS-approved biologist will conduct preconstruction surveys before any ground-disturbing activities take place in potential SFGS habitat. These surveys will consist of walking transects while conducting visual encounter surveys in areas that will be subject to vegetation clearing, grubbing, grading, cut and fill, or other ground-disturbing activities. If an SFGS is observed during a

survey, the USFWS and CDFG will be notified, and the SFGS will be monitored until it leaves the area on its own accord.

- After vegetation removal in potential SFGS habitat, a CDFG/USFWS-approved biologist will be on call as needed to monitor construction activities in potential habitat and inspect the exclusion fencing to ensure that it remains intact throughout the duration of construction. Through communication with the Resident Engineer or their designee, the biologist may stop work if deemed necessary for any reason to protect SFGS and will advise the Resident Engineer or designee on how to proceed accordingly.

2.18. Invasive Species

This section is based on the *Natural Environment Study* (URS 2010c) for the proposed project, which was completed in April 2010.

2.18.1. Regulatory Setting

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

2.18.2. Affected Environment

The BSA supports a number of nonnative species. Some are invasive (that is, species that are not indigenous to the area where they are found and adversely affect the habitat in that area) and some are not invasive. Invasive species in the BSA are those designated as high risk by the California Invasive Plant Council. These species include pampas grass (*Cortadeira selloana*), English ivy (*Hedera helix*), and sweet fennel (*Foeniculum vulgare*). Bunches of pampas grass and small stands of sweet fennel are established along both sides of US 101. English ivy grows extensively throughout the BSA on both sides of US 101, into the canopies of large eucalyptus trees, in the understory of the eucalyptus stand along the north side of Bayside Park, and within the medians of the Broadway overcrossing.

Species in the BSA that are nonnative but not invasive include multiple callistemon (bottle brush) and melaleuca (paper bark) trees that were planted along the Bay Trail at the eastern extent of the BSA and extensive stands of nonnative Tasmanian blue gum eucalyptus that were planted along US 101 and around Bayside Park adjacent to Airport Boulevard.

2.18.3. Environmental Consequences

None of the identified species on the California list of noxious weeds is currently used by the Department for erosion control or landscaping. However, project construction activities could have the potential to inadvertently spread these species.

2.18.4. Avoidance, Minimization, and/or Mitigation Measures

In compliance with the Executive Order on Invasive Species, EO 13112, and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project will not use species listed as noxious weeds. The following measures will also reduce the spread of invasive nonnative plant species and minimize the potential for construction disturbance to decrease palatable vegetation for wildlife to the greatest degree possible:

- No disposal of soil and plant materials should be allowed from areas that support invasive species to areas dominated by native vegetation;
- Resident Engineers should be educated on weed identification and the importance of controlling and preventing the spread of identified invasive nonnative species; and
- Gravel and/or fill material to be placed in relatively weed-free areas should come from weed-free sources. Certified weed-free imported materials (or rice straw in upland areas) will be used.

Cumulative Impacts

2.19. Cumulative Impacts

2.19.1. Regulatory Setting

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

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

Section 15130 of the CEQA Guidelines describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA appears in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under NEPA appears in 40 CFR Section 1508.7 of the Council on Environmental Quality Regulations.

2.19.2. Projects Considered for Cumulative Impacts

A list of nearby projects was developed to evaluate the potential for cumulative impacts. The list includes projects that the City of Burlingame Planning Division identified as being under review or recently approved as of June 22, 2010. The Governor’s Office of Planning and Research CEQAnet database was also reviewed to identify projects for which notices of preparation or completion of an environmental document were filed with the State Clearinghouse. In addition, publicly available

information from the Department, Caltrain, and the California High Speed Rail Authority was reviewed to identify transportation projects that have the potential to contribute to cumulative impacts.

The study area for the cumulative impacts assessment was approximately 1 mile from the project limits for private development and nontransportation project and approximately 3 miles from the project limits for transportation projects. The cumulative impacts assessment considered conceptual, planned, and recently completed projects.

2.19.2.1. Private Development and Nontransportation Projects

The following briefly summarizes the nature and status of the private development and nontransportation projects identified to consider for cumulative impacts. State Clearinghouse reference numbers (SCH #) are included where available.

- **Addition to Existing Commercial Building, 1801 Adrian Road, Burlingame.** A 60,929-square-foot second floor would be added to an existing commercial building. The project application was submitted in September 2009, and the project is in the initial review stage.
- **Office/Life Science Campus, 350 Beach Road, Burlingame.** The proposed complex would construct two five-story buildings, one seven-story building, and one eight-story building with a total of 730,000 square feet of floor space. In addition, a two-story, 37,000-square-foot building would include a child care facility, an exercise facility and a café/break room. Parking would be provided in a five-story parking structure and other locations. The project application was submitted in April 2010, and the project is in the initial review stage.
- **18-Unit Residential Condominium, 556 El Camino Real, Burlingame.** A new four-story condominium would replace a structure containing 14 apartment units. The project application was submitted in August 2006. When the application is deemed complete, an environmental scoping meeting will be scheduled with the City of Burlingame Planning Commission.
- **Nine-Unit Residential Condominium, 1512-1516 Floribunda Ave., Burlingame.** A new four-story condominium replaced one single-family home and a four-unit residential building. This project was approved in 2005 and construction is complete.
- **45-Unit Residential Condominium, 1840 Ogden Drive, Burlingame.** A new four-story condominium would replace a one-story office building. This project was approved on July 24, 2006, and construction is in progress.

- **20-Unit Residential Condominium, 1441-1445 Bellevue Ave., Burlingame (SCH #2005042032).** A new four-story condominium would replace five multifamily residential buildings containing a total of 18 units. This project was approved on January 8, 2007; a building permit had not been issued as of August 24, 2010.
- **25-Unit Residential Condominium, 1800 Trousdale Drive, Burlingame.** A new seven-story condominium would replace a one-story office building. This project was approved on April 16, 2007; a building permit had not been issued as of August 24, 2010.
- **Nine-Unit Residential Condominium, including 1 affordable unit, 1226 El Camino Real, Burlingame (SCH #2008032007).** A new four-story condominium will replace four apartment buildings containing a total of 12 units. This project has been constructed.
- **Safeway store and two-story retail/office building, 1450 Howard Ave., Burlingame (SCH #2009112043).** This commercial/institutional project would replace the existing Safeway and Walgreens stores with a new 44,982-square-foot store with a 6,865-square-foot mezzanine and a two-story building with 18,739 square feet total. The project application was approved in February 2010, and the applicant is applying for building permits.
- **Remodel and addition to existing building for proposed office use, 1427 Chapin Ave., Burlingame.** This commercial/institutional project demolished several accessory structures, remodeled the interior of an existing two-story building, and constructed a two-story addition. This project was approved on April 24, 2006, and construction is complete.
- **79-unit assisted living facility, 1818 Trousdale Dr., Burlingame.** This commercial/institutional project consists of a new four-story structure with below-grade parking that will replace a one-story office building. This project was approved on July 10, 2006, and construction is under way.
- **Remodel of existing building and construction of new building, 1450 Rollins Rd./20 Edwards Ct., Burlingame (SCH #2006022081)**. This property would be used as a veterinary/rehabilitation, adoption, education, and retail facility for Peninsula Humane Society and SPCA. This project's Environmental Impact Report was certified on June 18, 2007, and construction is in progress.
- **New retail building, 260 El Camino Real, Burlingame (SCH #2008082083).** This project would replace a gas station with a 13,755-square-foot, one-story structure with a mezzanine. The project has been constructed.

- **1616 Rollins Road and 1625 Adrian Road Creek Enclosure Project (SCH #2009032095).** The proposed project would convert a DHL shipping distribution center to a BMW automobile service center. The existing front building would be converted to a customer service center and offices and the rear building would be converted to service bays, warehouse, offices and a lunchroom. The project activities would include installing an open-bottom concrete culvert and constructing a road crossing across the drainage channel to connect the property to additional parking areas located to the southwest. The project would also install a storm water treatment system to remove pollutants from runoff before entering the drainage channel. A Notice of Determination was submitted on August 10, 2009.
- **Burlingame High School Expansion, Arsenic Removal Action Workplan (SCH #2008018078).** This project involves the Department of Toxic Substances Control's approval of a Removal Action Workplan for the Burlingame High School Expansion. The workplan addresses the excavation and off-site disposals of soils contaminated with arsenic. A notice of exemption was received on January 1, 2008.
- **1510 Rollins Road (SCH #2007102079).** This project paved an existing unpaved area within a drainage easement for supplemental parking for employees working on the property, added new fencing within the drainage easement, and made tenant improvements to the interior of the existing office/warehouse building. A Mitigated Negative Declaration was filed with the State Clearinghouse on October 15, 2007. Construction was completed as of January 2010.
- **Easton Creek-Marsten Pump Station Addition and Outfall Pipeline Project, Burlingame (SCH #2005052091).** The City of Burlingame is constructing a three-phase series of storm water drainage improvements in and near Easton Creek to alleviate chronic flooding in the area. The improvements are scheduled for completion in 2011.
- **City of Burlingame Annual Creek and Channel Facility Maintenance Program (SCH #2008122013).** The City of Burlingame will perform ongoing maintenance at Burlingame, Sanchez, Easton, Mills and El Portal creeks annually for a total of 5 years. The maintenance activities will include removal of accumulated sediment, debris, and nonnative vegetation, and cutting or mowing vegetation in and around the channels. A Mitigated Negative Declaration was filed with the State Clearinghouse on December 3, 2008.

2.19.2.2. Transportation Projects

- **US 101 Auxiliary Lanes Project, Third Ave. to Millbrae Ave., San Mateo County (SCH #2003072150).** Construction is being completed for auxiliary lanes between Third and Millbrae Avenues along northbound and southbound US 101, the Peninsula Avenue overcrossing, the Monte Diablo pedestrian/bicycle overcrossing, a pedestrian/bicycle overcrossing south of the US 101/Broadway interchange (now finished), and retaining walls and soundwalls. The project was approved on June 8, 2006, and construction is scheduled for completion in spring 2011.
- **Carolan Avenue Bike Route Project, Burlingame.** This project would provide a dedicated Class III bike route with signs along approximately 1 mile of Carolan Avenue between North Lane and Broadway. The project was approved and will be constructed before 2013.
- **Broadway Pedestrian/Bicycle Bridge Connections Project, Burlingame.** This project would construct standard sidewalks, curb ramps, crosswalks, and signs at both ends of the pedestrian overcrossing. The project was approved and will be constructed before 2013.
- **Caltrain Burlingame Station Improvement, Burlingame.** This project included a range of improvements including improved accessibility and remodeling of the Morrell Avenue crossing north of the station. The design included a pedestrian plaza, enhanced landscaping, wider sidewalks, custom shelters and new station fencing. This project was approved and construction was completed in June 2008.
- **San Mateo County Grade Crossing Improvement Project, Burlingame and other cities**. This project would improve 25 Caltrain at-grade crossings in San Mateo County, including at Broadway, Oak Grove Avenue, and Peninsula Avenue in Burlingame. Improvements would include more clearly marked pedestrian crossings with fencing and gates, improved sidewalks and pavement markings, and roadway medians. Construction is under way and is scheduled to continue through 2010.
- **California High Speed Train, San Francisco to San Jose Section (SCH# 2008122079).** This proposed project is for a segment of the future high-speed train service proposed by the California High Speed Rail Authority. The project would use the Caltrain rail right-of-way between San Francisco and San Jose and would include stations at the San Francisco Transbay Terminal, SFO, Millbrae, either Redwood City or Palo Alto, San Jose, and Gilroy. The environmental review process for this segment of the high-speed rail project was initiated in December 2008, and preparation of an EIS/EIR is in progress. In April 2009,

Burlingame city officials requested that the Burlingame segment of the trackway be placed in a tunnel to avoid creating a physical barrier through the community.

2.19.3. Environmental Consequences

The projects listed above were considered together with the proposed US 101/Broadway Interchange Reconstruction Project for the potential for cumulative impacts. The potential impacts are described by resource area below.

2.19.3.1. Land Use and Community Resources

A number of the recently completed and proposed projects added or will add residential units or commercial/retail establishments to the US 101/Broadway Interchange Reconstruction Project vicinity. The projects were reviewed for location, timing, and available information on potential environmental impacts. None of these projects overlap geographically or combine with the proposed interchange improvements to create adverse cumulative impacts for land use or community resources.

Two proposed projects would affect the Caltrain tracks that cross Broadway between Carolan Avenue and California Drive: the San Mateo County Grade Crossing Improvement Project (scheduled for 2009–2010) and the California High Speed Train, San Francisco to San Jose Section (SCH# 2008122079; construction date unknown and environmental scoping is in progress). As the construction periods for these projects would not overlap with those of the US 101/Broadway project, short-term disruptions or detours from each project would not result in cumulative effects to community cohesion.

2.19.3.2. Traffic and Transportation

The transportation analysis for the US 101/Broadway Interchange Reconstruction Project included growth projections through 2035 from Association of Bay Area Governments forecasts (Section 2.4.2.2). The majority of residential projects included in the cumulative list of projects replace existing multifamily structures. The list identifies less than 200 additional residential units (79 of them in one assisted-living facility) that have recently been added or are planned for construction in the cumulative impact study area. The additional traffic from the new residential units will be distributed over the local roadway system, are within the 2035 growth forecasts used for the traffic analysis, and would not change the conclusions of the transportation analysis.

The US 101 Auxiliary Lanes Project is scheduled for completion in spring 2011. The project would reduce congestion from merging and weaving conflicts and improve overall system performance along US 101 between San Mateo and Burlingame. Although the US 101 Auxiliary Lanes Project overlaps geographically with the US 101/Broadway project, it will be completed before the US 101/Broadway project and would not result in cumulative construction impacts or other traffic impacts.

Two City of Burlingame projects—the Carolan Avenue Bike Route Project and the Broadway Pedestrian/Bicycle Bridge Connections Project—would improve bicycle and pedestrian access in the vicinity of the US 101/Broadway interchange (see Sections 2.4.2.3 and 2.4.3.3). Both projects will be completed before construction of the US 101/Broadway project begins. The US 101/Broadway project footprint would overlap with the area of the Broadway Pedestrian/Bicycle Bridge Connections Project but would preserve or reconstruct the proposed access improvements. No cumulative construction impacts or bicycle and pedestrian access impacts would occur.

As described in Section 2.19.3.1, two proposed projects would affect the Caltrain tracks that cross Broadway. No cumulative traffic impacts would occur from the San Mateo County Grade Crossing Improvement Project; it would improve pedestrian and vehicle access across the at-grade crossing at Broadway and would be completed before the US 101/Broadway project.

The California High Speed Train, San Francisco to San Jose Section (SCH #2008122079) is at a conceptual design stage. If the High Speed Train project were to rely on the existing Caltrain tracks and at-grade local street crossings, the increase in "gate down time" would exacerbate the slight increase in delays that are projected at the Broadway/Carolan Avenue and Broadway/California Drive intersections in 2035 from the US 101/Broadway project. Operating high-speed trains on an at-grade track through an urban intersection could pose substantial safety risks, and as stated in Section 2.19.2.2, the City of Burlingame requested that the trackway be placed in a tunnel. For these reasons, the High Speed Train project would be unlikely to use the existing at-grade crossing of Broadway. Therefore, no cumulative traffic or transportation impacts are anticipated.

In addition, Caltrain and the California High Speed Rail Authority have developed a formal agreement to coordinate and implement related projects that will affect both Caltrain and the High Speed Train project (Caltrain, no date). This effort, known as the Peninsula Rail Program, would investigate a variety of trackway alignments,

including at-grade, elevated, and below-grade trench and/or tunnel. The potential exists for both the high-speed train and Caltrain to use the same grade-separated trackway, which would decrease future projected delays in the vicinity of the Broadway/Carolan Avenue and Broadway/California Drive intersections.

2.19.3.3. Visual Resources

The US 101 Auxiliary Lanes Project has already removed trees and other vegetation and introduced soundwalls, retaining walls, and vehicle barriers along the US 101 corridor in the vicinity of the Broadway overcrossing. As described in Sections 2.5.3.1 and 2.13.2.1, the US 101/Broadway project would remove approximately 71 trees, including some prominent eucalyptus trees at the interchange, and construct retaining walls up to 25 feet high at the Broadway overcrossing. The US 101 Auxiliary Lanes Project includes replacement planting and other measures to minimize project-specific impacts. The US 101/Broadway project would also include replacement planting as well as structure design measures such as surface texture treatment. No cumulative decreases to visual quality are anticipated.

2.19.3.4. Air Quality and Noise

As noted in Section 2.19.3.2, traffic changes through the year 2035 were accounted for in the traffic study for the US 101/Broadway project, which was the basis for the modeling and analysis of air quality and noise impacts. Therefore, regional and local increases in traffic have already been used to evaluate these impacts, and the local development projects fall well within the growth projections used in these studies. In addition, the 101/Broadway project is considered to meet regional air quality conformity requirements if it is included in a current TIP and RTP. The TIP and RTP undergo a cumulative transportation project, land use growth, and air quality evaluation. No long-term cumulative impacts related to air quality and noise are anticipated.

Each of the cumulative projects identified in Section 2.19.2 would have temporary air quality and noise impacts, including dust and diesel emissions from construction equipment and activities. The US 101 Auxiliary Lanes Project overlaps geographically with the US 101/Broadway project, but the Auxiliary Lanes Project would be completed at least 3 years before construction would begin at the US 101/Broadway interchange. Construction emissions would not occur at the same time, and no substantial cumulative air quality impacts are predicted.

2.19.3.5. Storm Water Runoff

Easton Creek carries storm water from the residential areas west of US 101 and the industrial area north of Broadway. Lack of creek capacity can cause flooding in the residential and industrial areas during moderate rainstorms and medium to high tides (City of Burlingame 2009). The flooding causes property damage and the closure of major roadways such as California Drive and El Camino Real, which serve as emergency access roads. The city's project consists of building a new pump station at the existing Marsten pump station site west of US 101 and installation of a 66-inch diameter discharge pipeline that parallels Easton Creek and outfalls to San Francisco Bay. The project includes construction of trash/debris collection chambers to prevent pollutants from entering the Bay. The improvements are scheduled for completion in 2011.

As described in Section 1.3.1.6, the US 101/Broadway project would replace undersized culverts and install additional inlets and new longitudinal systems to meet current drainage design requirements. The project would also implement one or more drainage modifications to eliminate the flooding around the eastern landing of the Broadway overcrossing. No cumulative impacts are anticipated.

2.19.3.6. Biological Environment

Potential for cumulative impacts to trees, jurisdictional waters, and threatened and endangered species (CRLF and SFGS) were identified and are described below.

Trees

The US 101 Auxiliary Lanes Project removed trees directly adjacent to US 101 in areas between the Millbrae Avenue interchange north of Broadway to the Third Avenue interchange to the south. The proposed US 101/Broadway project would add to the overall loss of tree habitat along the freeway corridor, although the trees are primarily nonnative species. As noted in Section 2.19.3.3, both projects include replacement planting, and the US 101/Broadway project would use native species where possible. With implementation of these measures, no long-term adverse cumulative impacts to trees are anticipated.

Jurisdictional Waters

The City of Burlingame's Easton Creek-Marsten Pump Station Addition and Outfall Pipeline Project (SCH #2005052091) and Annual Creek and Channel Facility Maintenance Program (SCH #2008122013) would overlap geographically with the US 101/Broadway project. The projects would affect Easton Creek, a potentially jurisdictional nonwetland water of the U.S., on the east side of US 101.

The Easton Creek-Marsten Pump Station Addition and Outfall Pipeline Project would place fill in Easton Creek downstream of the US 101/Broadway project BSA, between Bayshore Highway and the Bay. The fill would consist of a concrete retaining wall along the south creek bank (approximately 442 square feet of fill) and riprap to channel storm water flows (approximately 1,350 square feet of fill). The channel of Easton Creek would also be widened, and a large amount of asphalt and concrete would be removed from the channel. The city's project includes compensation and restoration measures to mitigate impacts to potentially jurisdictional waters (Winzler and Kelly 2009).

The Annual Creek and Channel Facility Maintenance Program would remove a total of approximately 150 cubic yards of silt and debris from each of two segments of Easton Creek in the US 101/Broadway BSA: the concrete box culvert under US 101, and the concrete channel between US 101 and Bayshore Highway. The project includes conservation measures for potentially jurisdictional waters (USFWS 2009c).

The US 101/Broadway project would also affect Easton Creek by extending the culvert east of US 101 by 42 feet. The culvert extension is anticipated to result in a permanent impact of approximately 528 square feet (Section 2.14.3.1, Table 2.14-2, WUS 3b). The project would either purchase compensatory mitigation for impacts to wetlands and other waters of the United States or pursue on-site restoration, enhancement, or creation of wetlands and other waters.

Each project would implement measures to conserve, compensate and/or restore the loss of jurisdictional waters from the placement of any fill in adjacent segments of Easton Creek (between US 101 and Bayshore Highway, and between Bayshore Highway and San Francisco Bay). Also, City of Burlingame projects would be completed before the US 101/Broadway begins construction. Therefore, no cumulative adverse impacts to jurisdictional waters would occur.

Threatened and Endangered Species

The following six recent or proposed projects were evaluated for their potential to contribute cumulative impacts to threatened and endangered species.

- **City of Burlingame Annual Creek and Channel Facility Maintenance Program (SCH #2008122013).** The City of Burlingame will conduct periodic maintenance in creeks in the US 101/Broadway BSA through 2014. The USFWS Biological Opinion for the maintenance program identified temporary impacts to 1.52 acres of combined CRLF/SFGS habitat along segments of Mills and Easton

creeks west of the Caltrain tracks near California Drive and anticipated take of one CRLF and one SFGS per year (USFWS 2009c). No effects to CRLF or SFGS were identified in creek segments in or adjacent to the BSA for the US 101/Broadway project, and adverse effects to California clapper rail and salt marsh harvest mouse were determined unlikely. However, maintenance activities could result in temporary increases in turbidity in designated critical habitat for southern DPS green sturgeon in Easton Creek (NOAA Fisheries 2009b). The city's project would be completed before the US 101/Broadway project begins construction; therefore, no cumulative impacts would occur.

- **1510 Rollins Road (SCH #2007102079).** This project, which is 0.10 mile northwest of the US 101/Broadway project BSA, paved an area within a drainage easement. In informal consultation, the USFWS determined that impacts to a freshwater drainage channel that may support CRLF foraging and aestivation would be avoided/minimized by use of silt fencing and a 5-foot buffer to protect channel during construction (Appendix B of TRA 2007). No cumulative impacts will occur because the project has been completed.
- **1616 Rollins Road and 1625 Adrian Road Creek Enclosure Project (SCH #2009032095).** The project, which is 0.20 mile northwest of the US 101/Broadway project BSA, will construct a concrete culvert for a freshwater drainage channel. The USFWS Biological Opinion determined that the project could result in permanent impacts to 0.053 acre of CRLF aquatic and upland dispersal habitat, harm/harassment to any individuals in the area, and mortality of one individual (USFWS 2009d). The USFWS also stated that effects to SFGS habitat would be insignificant and discountable with implementation of the project's conservation measures. Potential impacts would not spatially overlap with those of the proposed project, and the project would be completed before the US 101/Broadway project begins construction; therefore, no cumulative impacts would occur.
- **Easton Creek-Marsten Pump Station Addition and Outfall Pipeline Project, Burlingame (SCH #2005052091).** This City of Burlingame project will affect Easton Creek downstream of the US 101/Broadway project BSA, between Bayshore Highway and the Bay (see "Jurisdictional Waters," above). The Initial Study/Mitigated Negative Declaration for the project states that no CRLF impacts would occur because of the salinity of Easton Creek, existing disturbance of the creek segment, and significant barriers that prevent CRLF from moving into Easton Creek (Winzler and Kelly 2009). Therefore, this project would not result in cumulative impacts.

- **Remodel of existing building and construction of new building, 1450 Rollins Rd./20 Edwards Ct., Burlingame (SCH #2006022081).** The Peninsula Humane Society and SPCA Center for Compassion is being constructed approximately 0.1 mile west of the BSA at Rollins Road and Edwards Court. The project would not contribute impacts to CRLF because of lack of suitable habitat and barriers to movement into the site including buildings, fences, and paved areas (Impact Sciences 2006). No cumulative impacts would occur.
- **US 101 Auxiliary Lanes Project, Third Ave. to Millbrae Ave., San Mateo County (SCH #2003072150).** Construction for this project, which overlaps the US 101/Broadway BSA along the US 101 corridor, is scheduled for completion in spring 2011. In informal consultation, the USFWS stated that CRLF and SFGS were not likely to be present, and the proposed avoidance and minimization measures (preconstruction surveys, worker training, and exclusion fencing between construction activities and potential aquatic corridors) would avoid take of the species (USFWS 2003). The project would be completed before the US 101/Broadway project begins construction; therefore, no cumulative impacts would occur.

The US 101/Broadway project would not contribute cumulatively or incrementally to impacts to threatened or endangered species.

2.20. Climate Change (CEQA)

2.20.1. Regulatory Setting

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. These efforts are primarily concerned with the emissions of GHG related to human activity that include carbon dioxide (CO_2), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and pro-active approach to dealing with greenhouse gas emissions and climate change at the state level. Assembly Bill 1493 requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck

greenhouse gas emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year; however, in order to enact the standards California needed a waiver from the U.S. Environmental Protection Agency (EPA). The waiver was denied by Environmental Protection Agency in December 2007 and efforts to overturn the decision had been unsuccessful. See California v. Environmental Protection Agency, 9th Cir. Jul. 25, 2008, No. 08-70011. On January 26, 2009, it was announced that EPA would reconsider their decision regarding the denial of California's waiver. On May 18, 2009, President Obama announced the enactment of a 35.5 mpg fuel economy standard for automobiles and light duty trucks which will take effect in 2012. On June 30, 2009 EPA granted California the waiver. California is expected to enforce its standards for 2009 to 2011 and then look to the federal government to implement equivalent standards for 2012 to 2016. The granting of the waiver will also allow California to implement even stronger standards in the future. The state is expected to start developing new standards for the post-2016 model years later this year.

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 the 2020 and 3) 80 percent below the 1990 levels by the year 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 CARB 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.

With Executive Order S-01-07, Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Climate change and GHG reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change. California, in conjunction with several environmental organizations and several other states, sued to force the U.S. Environmental Protection Agency (EPA) to regulate GHG as a pollutant under the Clean Air Act (Massachusetts vs. Environmental Protection Agency et al., 549 U.S. 497 (2007). The court ruled that GHG does fit within the Clean Air Act's definition of a pollutant,

and that the EPA does have the authority to regulate GHG. Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting GHG emissions.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases--carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)--in the atmosphere threaten the public health and welfare of current and future generations.

- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

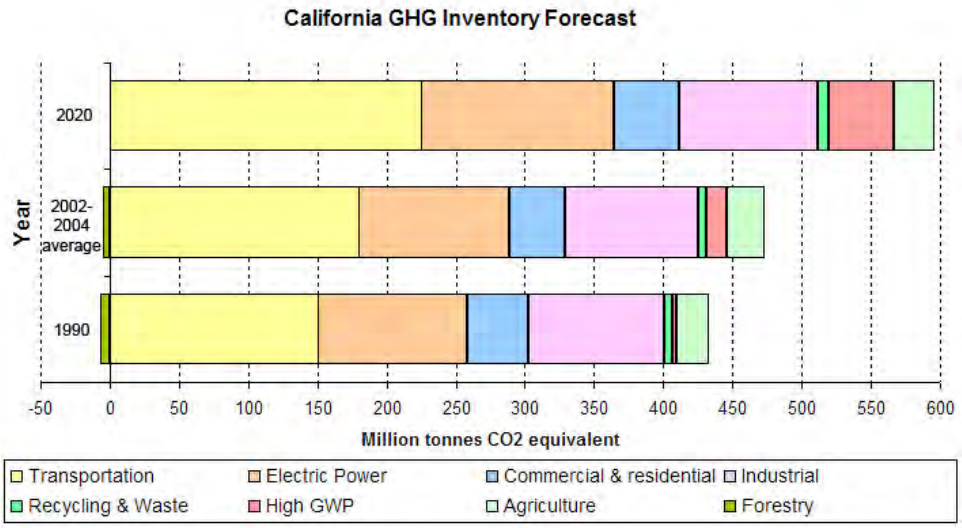
These findings do not themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing the EPA's proposed greenhouse gas emission standards for light-duty vehicles, which were jointly proposed by EPA and the Department of Transportation's National Highway Safety Administration on September 15, 2009. [17]

According to Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents (March 5, 2007), an individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHG. In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See CEQA Guidelines sections 15064(i)(1) and 15130. To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

[17] http://www.epa.gov/climatechange/endangerment.html

As part of its supporting documentation for the Draft Scoping Plan, CARB recently released an updated version of the GHG inventory for California (June 26, 2008).

Shown below is a graph from that update that shows the total GHG emissions for California for 1990, 2002-2004 average, and 2020 projected if no action is taken.



From: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

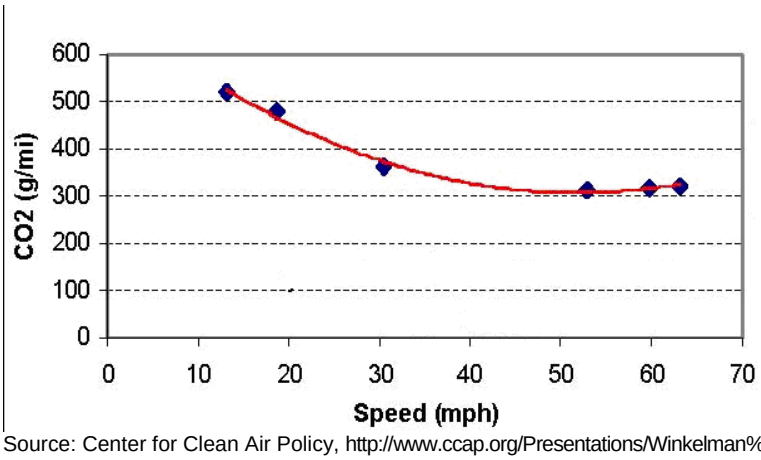
Figure 2.20-1 California Greenhouse Gas Inventory

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation (see Climate Action Program at Caltrans (December 2006), Caltrans has created and is implementing the Climate Action Program at Caltrans that was published in December 2006. This document can be found at: http://www.dot.ca.gov/docs/ClimateReport.pdf.

2.20.2. Project Analysis

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0 to 25 miles per hour) and speeds over 55 mph; the most severe emissions occur from 0 to 25 miles per hour (see Figure 2.20-2). To the extent that a

project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors GHG emissions, particularly CO_2, may be reduced.



Source: Center for Clean Air Policy, http://www.ccap.org/Presentations/Winkelman%20TRB%202004%20(1-13-04).pdf

Figure 2.20-2 Fleet CO_2 Emissions vs. Speed (Highway)

The project would improve traffic operations at the US 101/Broadway interchange, including adjacent ramps and intersections, and would help to reduce or avoid traffic queues that currently affect US 101 operations between East Millbrae Avenue to the north and Anza Boulevard to the south. Quantitative modeling of carbon monoxide shows that the project would have no change, or negligible changes, in concentrations at nearby locations (see Section 2.11.3). This indicates that the project would similarly not increase emissions or concentrations of greenhouse gases. The project is included in the 2009 RTP and TIP, which contain adopted strategies for greenhouse gas emissions from transportation sources. Specifically, TIP reference number 230550, "Transportation Climate Action Campaign," is an adopted 5-year program for the Bay Area region involving outreach and education, promotion of safe routes to school and transit, and funding for transit priorities. The adopted TIP also demonstrates that the region will remain below all approved "vehicle emission budgets" through the 2035 study year.

The project design incorporates facilities that will improve access to alternative modes of transportation. This project focuses on improving the traffic operations at the interchange intersections and ramps. The project would not add capacity to US 101, and would not affect traffic flow at a regional level (compared to the No Build Alternative). The project would therefore not result in substantial direct or indirect emissions of greenhouse gases.

2.20.3. Construction Emissions

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. Measures to reduce construction emissions are listed in Section 2.11.4 and include maintenance of construction equipment and vehicles, limiting of construction vehicle idling time, and scheduling and routing of construction traffic to reduce engine emissions.

CEQA Conclusion

While project construction will result in a slight increase in GHG emissions, it is anticipated that this increase will be offset by the subsequent reduction in operational GHG emissions. While it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct impact and its contribution on the cumulative scale to climate change, Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in the following section.

2.20.4. AB 32 Compliance

Caltrans continues to be actively involved on the Governor's Climate Action Team as CARB works to implement the Governor's Executive Orders and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a $222 billion infrastructure improvement program to fortify the State's transportation system, education, housing, and waterways, including $100.7 billion in transportation funding during the next decade. As shown on the figure below, the Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to

do this while accommodating growth in population and the economy. A suite of investment options has been created that when combined together yield the promised reduction in congestion. The Strategic Growth Plan relies on a complete systems approach of a variety of strategies: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements.

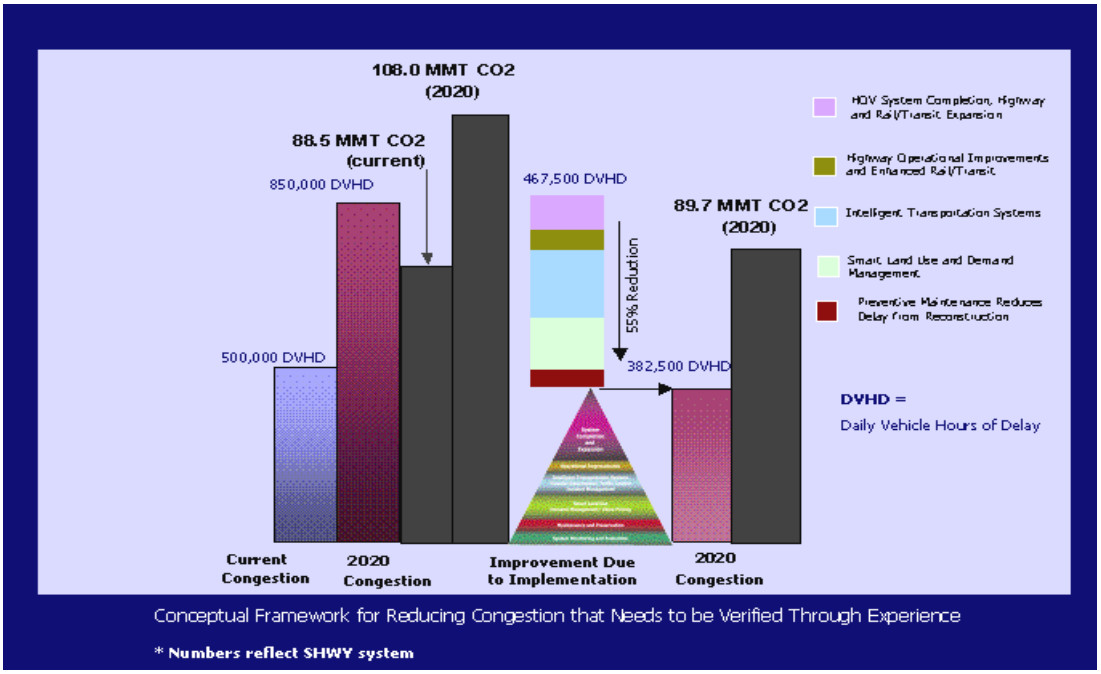


Figure 2.20-3 Outcome of Strategic Growth Plan

As part of the Climate Action Program at Caltrans (December 2006, http://www.dot.ca.gov/docs/ClimateReport.pdf), the Department is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks. Caltrans is doing this by supporting ongoing research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by the USEPA and

CARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at UC Davis.

Table 2.20-1 summarizes Department and statewide efforts that Caltrans is implementing to reduce GHG emissions. For more detailed information about each strategy, please see the Climate Action Program at Caltrans (December 2006); it is available at http://www.dot.ca.gov/docs/ClimateReport.pdf.

To the extent that it is applicable or feasible for the project and through coordination with the Project Development Team (PDT), the following measures will be included in the project to reduce the GHG emissions and potential climate change impacts from the project:

1. Caltrans and the California Highway Patrol are working with regional agencies to implement intelligent transportation systems (ITS) to help manage the efficiency of the existing highway system. ITS is commonly referred to as electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.

2. US 101 is part of the Bay Area high occupancy vehicle lane network, and the MTC and other agencies actively encourage ridesharing (e.g., the “511.org” ridesharing information link provides resources for ride sharing and trip planning). Ridesharing, or carpooling, reduces vehicle trips and their associated emissions.

3. The project will utilize energy efficient lighting, which will be defined during final design.

Table 2.20-1 Climate Change Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	.007	2.17
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, CARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.45 .0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5% limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 .36	3.6
Goods Movement	Office of Goods Movement	Cal EPA, CARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.67

2.20.5. Adaptation Strategies

"Adaptation strategies" refers to how the Department and others can plan for the effects of climate change on the State's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect transportation infrastructure in various ways, such as increasing roadbed damage due to longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation caused by rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to transportation infrastructure.

Climate change adaptation must also involve the natural environment as well. Efforts are underway on a statewide level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, Governor Schwarzenegger signed Executive Order S-13-08, which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change.

The California Resources Agency (now the Natural Resources Agency [Resources Agency]), through the interagency Climate Action Team, was directed to coordinate with local, regional, state and federal public and private entities to develop a state Climate Adaptation Strategy. The Climate Adaptation Strategy will summarize the best known science on climate change impacts to California, assess California's vulnerability to the identified impacts, and then outline solutions that can be implemented within and across state agencies to promote resiliency.

As part of its development of the Climate Adaptation Strategy, the Resources Agency was directed to request the National Academy of Science to prepare a Sea Level Rise Assessment Report by December 2010 to advise how California should plan for future sea level rise. The report is to include:

- Relative sea level rise projections for California, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates;
- The range of uncertainty in selected sea level rise projections;
- A synthesis of existing information on projected sea level rise impacts to State infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems; and
- A discussion of future research needs regarding sea level rise for California.

Furthermore, Executive Order S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level affecting safety, maintenance, and operational improvements of the systems and economy of the State. The Department continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Prior to the release of the final *Sea Level Rise Assessment Report,* all State agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for the years 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. However, all projects that have filed a Notice of Preparation, and/or are programmed for construction funding during the next 5 years (through 2013), or are routine maintenance projects as of the date of Executive Order S-13-08 may, but are not required to, consider these planning guidelines.[18] Sea level rise estimates should also be used in conjunction with information regarding local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data, although Executive Order S-13-08 allows some exceptions to this planning requirement. The potential effects of sea level rise on the proposed project are discussed at the end of this section.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. The Department is an active participant in the efforts being conducted as part of Governor Schwarzenegger's Executive Order on Sea Level Rise and is mobilizing to be able to

[18] The US 101/Broadway Interchange Reconstruction Project does not meet these criteria. A discussion of sea level rise is included at the end of this section.

respond to the National Academy of Science report on Sea Level Rise Assessment, which is due to be released by December 2010.

On August 3, 2009, the Natural Resources Agency, in cooperation and partnership with multiple state agencies, released the 2009 California Climate Adaptation Strategy Discussion Draft. The draft summarizes the best known science on climate change impacts in seven specific sectors and provides recommendations on how to manage those threats. The release of the draft document marked the beginning of a 45-day public comment period. Led by the California Natural Resources Agency, numerous other state agencies were involved in the creation of the discussion draft, including Environmental Protection; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The discussion draft focuses on sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. The strategy addresses Gov. Schwarzenegger's November 2008 Executive Order S-13-08 directive that the Natural Resources Agency identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. As data continues to be developed and collected, California's adaptation strategy will be updated to reflect current findings. A revised version of the report was posted on the Natural Resource Agency website on December 2, 2009, and can be viewed at: http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF.

The Department is now working to assess which transportation facilities are most vulnerable to climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, the Department has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, the Department will be able to review its current design standards and determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise.

The BCDC has produced maps projecting potential inundation for two San Francisco Bay water elevation scenarios: a 16-inch sea level rise by midcentury and a 55-inch rise by end of century. The midcentury estimate shows inundation at the shoreline but minor effects at the US 101/Broadway interchange. The end of century estimate shows substantial inundation of the interchange area (regional maps available at

http://www.bcdc.ca.gov/planning/climate_change/index_map.shtml). Preventing inundation of the magnitude estimated for end of century would require an overall increase in the elevation of US 101 and connecting local roads. Climate change scenarios of a lesser magnitude, similar to the midcentury estimate or less, could still result in impacts to the facility. Impacts could include, for example, increased runoff potentially requiring drainage improvements, or increased life-cycle costs for roadway maintenance from increased summer heat intensity or wintertime rainfall and runoff. The proposed project improvements will help but not fully address some of these effects, depending on their magnitude. The project includes improvements to the drainage culverts at Bayshore Highway and drainage modifications to eliminate the flooding around the eastern landing of the Broadway overcrossing. The project will also improve intersection traffic operations, which will help address emergency response and access through the project area.

Chapter 3. Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including project development team meetings and interagency coordination meetings. This chapter summarizes the results of the Department's efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

3.1. Initial Project Development and Public Participation

Conceptual information about the project has been available to the public since at least the late 1980s. Reconstruction of the US 101/Broadway interchange was included in San Mateo County Tax Measure A, approved in June 1988 as part of planned improvements to US 101. Measure A authorized the imposition of a ½-cent sales tax and the creation of SMCTA to administer the proceeds. In November 2004, San Mateo County voters approved a 25-year extension of the ½-cent sales tax. The proposed project is also in the reauthorized Measure A expenditure plan (SMCTA 2004).

In October 2002, SMCTA and the project design consultants gave a presentation about the proposed project and the US 101 Auxiliary Lane Project to the Burlingame City Council and interested members of the public. The presentation discussed the traffic and circulation issues that the US 101/Broadway project would address, the alternatives evaluated in the PSR, and the Buttonhook/Diamond Interchange that was proposed as the build alternative. The PSR was approved in 2005 but lack of funding prevented the project from proceeding to the environmental review phase.

Public input on the project was solicited during the review period for this Initial Study/Environmental Assessment (IS/EA). See Section 3.3 for additional information.

3.2. Consultation and Coordination with Public Agencies

This section summarizes the results of contact and consultation with other public agencies during project development. These include specific consultation with federal, state, and local agencies as listed below.

U.S. Fish and Wildlife Service

- A list of species of concern was obtained from the online database of the USFWS Sacramento field office in February 2009 to assist in the identification of sensitive plant and wildlife species that might occur in the project region. Updated USFWS species lists were obtained in December 2009, June 2010, and August 2010 (see Appendix I).
- Department and URS project team members conducted a site visit with staff from USFWS and CDFG on February 23, 2010, to discuss the project design, species- and habitat-related issues in the project vicinity, potential impacts to special-status species, and proposed avoidance and minimization measures.
- The Department submitted a Biological Assessment for the project on September 8, 2010. The USFWS acknowledged receipt of the BA on September 9, 2010.
- A Biological Opinion for the project was issued on March 9, 2011 (USFWS File No. 81420-2010-F-0629; see Appendix I).

NOAA Fisheries

- On August 23, 2010, the Department submitted a letter requesting concurrence on the proposed project's potential to affect southern DPS green sturgeon, critical habitat for southern DPS green sturgeon, and EFH (see Appendix I).
- On December 7, 2010, NOAA Fisheries responded with a letter concurring with the Department's determination that the project is not likely to adversely affect southern DPS green sturgeon and critical habitat for southern DPS green sturgeon (see Appendix I).
- On December 29, 2010, the Department submitted a letter regarding EFH Conservation Measures proposed in the December 7, 2010, NOAA Fisheries letter (see Appendix I).

U.S. Army Corps of Engineers

- The Department submitted a draft wetland delineation in August 2010.
- USACE issued a Preliminary Jurisdictional Determination on December 3, 2010.

Federal Highway Administration

- The Department submitted a request for a project-level conformity determination on February 1, 2011.
- FHWA issued a conformity determination on March 9, 2011 (see Appendix I).

State Historic Preservation Office

- The Department submitted the cultural resources studies, and the determination of No Adverse Effect, to the SHPO in December 2009.
- No response was received from SHPO during the specified 30-day time period. The Department has assumed SHPO concurrence, in accordance with the Programmatic Agreement.

Metropolitan Transportation Commission

- SMCTA submitted a Project Assessment Form for $PM_{2.5}$ Interagency Consultation on December 10, 2010.
- The Air Quality Conformity Task Force determined that the project is not a Project of Air Quality Concern on January 31, 2011.

City of Burlingame

- URS project team members presented the proposed project to the Burlingame City Council on February 1, 2010.
- SMCTA submitted a letter to the City of Burlingame on behalf of the Department requesting concurrence on the proposed finding of *de minimis* impacts on Section 4(f) facilities (see Section 2.1.4.3). The City of Burlingame concurred with the finding (see Appendix I).

Bay Conservation and Development Commission

- PDT members met with BCDC staff and an Association of Bay Area Governments/Bay Trail representative on May 26, 2010. The purpose of the meeting was to provide an overview of the project and specific activities that would take place within BCDC jurisdiction, including realignment of a short Bay Trail segment; and to present preliminary mapping of the BCDC jurisdictional boundaries in the project area for BCDC's review and concurrence.

Bicycle and Pedestrian Advisory Committee

- PDT members presented the proposed project to the Bicycle and Pedestrian Advisory Committee (BPAC) of the City/County Association of Governments of San Mateo County (C/CAG) on May 27, 2010.

3.3. Circulation, Review, and Comment on the Draft Environmental Document

This IS/EA was made available for public review from August 30, 2010, through September 29, 2010. The public was notified of the availability of the IS/EA and of the public meeting for the proposed project by the following methods.

- Mailers were sent to more than 500 property owners, residents, and stakeholders in the vicinity of the proposed project.
- The Department e-mailed and faxed a press release to major media outlets (radio, television, and print) in the area.
- Notices were posted on the City of Burlingame's website and SMCTA's website.
- Display advertisements were placed in two local newspapers, the *San Mateo County Times* and the *Daily Journal*, on August 30 and September 8, 2010.

On September 15, 2010, the Department and SMCTA held a public meeting to share information about the project and collect comments on the IS/EA from interested parties. The meeting was from 6:00 PM to 8:00 PM at the Lane Room in the Burlingame Public Library, 480 Primrose Road, Burlingame, CA 94010. Exhibits about the project were on display, and team members were available to answer questions. The meeting included a slideshow presentation with an overview of the project and design features. A court reporter transcribed the presentation and was available to record public comments. Approximately 30 members of the public attended. Public comments received during the meeting and the public review period are presented in Appendix J.

In addition to the public meeting, the project team held a meeting for a group of property owners, managers and long-term tenants whose properties could be affected by the project. The meeting was on August 23, 2010, from 10:00 AM to 11:00 AM at Burlingame City Hall, 501 Primrose Road, Burlingame, CA 94010. The purpose of the meeting was to personally inform the individuals about the project, construction timeline, and nature of the potential impacts. The meeting was held in advance of the

public availability of the IS/EA, but all property owners were invited to attend the September 15, 2010, public meeting and provide comments on the IS/EA.

Appendix J presents the public comments on the IS/EA and the Department's responses.

Chapter 4. List of Preparers

This document and its related technical studies were prepared under the supervision of Caltrans District 4. The Project Development Team (PDT) was responsible for oversight of the project and consists of representatives from Caltrans, SMCTA, the City of Burlingame, and PBS&J.

Key PDT Members Involved in Project Management

- Al B. Lee, Project Manager, Caltrans District 4
- Khai Leong, Caltrans District 4
- Amir-Fardin Sadeghi-Nedjad, Caltrans District 4 Design
- Ed Pang, Caltrans District 4 Environmental Analysis
- James W. McKim, Senior Engineer, SMCTA
- Art Morimoto, Assistant Director of Public Works, City of Burlingame
- Syed Murtuza, Director of Public Works, City of Burlingame
- William R. Hughes, Project Director, PBS&J
- Ramsey Hissen, Principal in Charge, URS Corporation
- Scott Kelsey, Contract Manager, URS Corporation
- Ramesh Sathiamurthy, Engineering Project Manager, URS Corporation
- Jeff Zimmerman, Environmental Manager, URS Corporation
- Erdal Karatayliogl u, Project Engineer, URS Corporation

Individuals Involved in Caltrans Oversight of the Environmental Studies

- Glenn Kinoshita, District Branch Chief Air/Noise Studies – Reviewed Noise and Air Quality
- Michelle P. Squyer, PQS, Architectural Historian – Reviewed Historic Resources
- Lorena Wong, District Branch Chief, Office of Landscape Architecture – Reviewed Visual Resources
- Benjamin Harris, Archaeologist – Reviewed Cultural Resources
- Elizabeth Krase, Branch Chief, South Counties – Reviewed Cultural Resources
- Margaret Gabil, Branch Chief, Office of Biological Sciences and Permits – Reviewed Wetlands, Biological Assessment, and Natural Environment Study
- Laura Ivey, Landscape Associate – Reviewed Biological Assessment, Jurisdictional Delineation, and Natural Environment Study
- Tom Rosevear, Associate Environmental Planner – Reviewed Community Impact Assessment and Environmental Document

- Ed Pang, Senior Environmental Planner – Manager of Caltrans environmental oversight and Environmental Document preparation
- Yolanda Rivas, Branch Chief, Environmental Planning – Manager of Caltrans environmental oversight and Environmental Document preparation
- Ronald Karpowicz, Engineering Geologist – Reviewed Geology
- Grant Wilcox, Chief, Branch B, Office of Geotechnical Design/West – Reviewed Geology
- Chris Wilson, Senior Transportation Engineer – Reviewed Hazardous Waste/Initial Site Assessment
- Ganga Tripathi, Transportation Engineer – Reviewed Hazardous Waste/Initial Site Assessment
- Dixon Lau, Senior Transportation Engineer – Reviewed Hydrology/Water Quality
- Lance Hall, Senior Transportation Engineer – Reviewed Traffic
- Derek Man, Transportation Engineer – Reviewed Traffic

Individuals Involved in Technical Studies and Environmental Document Preparation

The following key consulting team staff were responsible for the preparation of the environmental technical studies and the environmental document:

Nayan Amin, URS Corporation, M.S., Civil Engineering. Experience in traffic projections, modeling, and operation analysis. Contribution: Traffic study and report.

Joe Bandel, URS Corporation, B.S., Wildlife, Fish and Conservation Biology. Experience in fisheries and field biology. Contribution: Jurisdictional Delineation and Natural Environment Study preparation.

Cheryl Brookshear, JRP Historical Consulting Services, M.S., Historic Preservation. Contribution: Prepared the Historical Resources Evaluation Report.

Catherine Byun, WRECO, MEM (Master of Environmental Management), Urban Ecology and Environmental Design; B.A., English. Contribution: Prepared Water Quality Study and Storm Water Data Report.

Erica J. Cruz, WRECO, B.S., Civil and Environmental Engineering. Contribution: Prepared the Drainage Impact Report.

Joel Dickerson, URS Corporation, M.S., Civil Engineering. Contribution: Engineering design and CADD work.

Fletcher Halliday, URS Corporation, B.S., Molecular Environmental Biology. Experience in community ecology and plant biology. Contribution: Biological Assessment preparation.

Brian Hatoff, URS Corporation, M.A., Anthropology. Experience in cultural resource management. Contribution: Senior reviewer and manager of Cultural Resources Studies.

Ulysses Hillard, WRECO, M.S.E., Hydrology; B.S., Environmental Engineering Science; B.A., History. Contribution: Location Hydraulic Study.

William Kanemoto, William Kanemoto & Associates, M. Landscape Architecture. Specialist in visual impact assessment. Contribution: Visual Impact Assessment.

Erdal Karatayliogl u, URS Corporation, M.Eng., Civil Engineering. Contribution: Project engineering, design, coordination, and CADD work; preparation of Project Report and other engineering deliverables.

Lindsay Lane, URS Corporation, M.S., Environmental Science and Management. Contribution: Environmental Document review.

Han-Bin Liang, WRECO, Ph.D., Civil Engineering. Contribution: Oversight and review of Storm Water Data Report and Location Hydraulic Study.

Dean Martorana, URS Corporation, M.A., Anthropology, Cultural resource management. Contribution: Preparation of Archaeological Survey Report and Historic Properties Survey Report.

Lynn McIntyre, URS Corporation, B.A., Journalism. Contribution: Community Impact Assessment preparation; Environmental Document preparation/review; deputy environmental project management.

David Pecora, URS Corporation, B.S., Marine Science. Experience in fish biology, biological field studies, marine and aquatic biology, and biological sampling. Contribution: Natural Environment Study preparation.

Galen Peracca, URS Corporation, B.S., Resource Management; M.F., Forestry. Experience in wetland delineation, botany, and Endangered Species Act compliance. Contribution: Natural Environment Study preparation.

Linda Peters, URS Corporation, B.A., Anthropology. Experience in NEPA, transportation planning, Section 4(f), cultural resources, and hazardous materials. Contribution: Environmental Document preparation.

Casey Stewman, URS Corporation, M.A., Biological Sciences; B.S., Biological Sciences. Experience in plant ecology, plant taxonomy, resource management, wetland science, plant community mapping, revegetation, and CEQA-NEPA analyses. Contribution: Jurisdictional Delineation preparation.

Avanti Tamhane, URS Corporation, M.S., Environmental Analysis and Decision Making; B.S., Chemical Engineering. Experience in air quality regulatory compliance and permitting. Contribution: Air Quality Report preparation.

Michael Thill, Illingworth & Rodkin, B.S., Environmental Studies. Specialist in field research, analyzing noise data, and noise modeling. Contribution: Noise Study Report.

Cheri Velzy, URS Corporation, B.S., Meteorology. Experience in air quality analysis. Contribution: Air Quality Report oversight and review.

Patrick Walz, URS Corporation, B.S., Civil Engineering. Experience in hazardous waste investigations and reporting. Contribution: Initial Site Assessment preparation.

Jeff Zimmerman, URS Corporation, B.S., Conservation of Natural Resources. Experience in environmental documentation and CEQA/NEPA process. Contribution: Environmental project manager.

Chapter 5. Distribution List

The following agencies, organizations, and individuals received printed or electronic copies of this document. Agencies, organizations, and individuals on the project mailing list were notified of the availability of this document and public meetings as described in Chapter 3. Agency names marked with an asterisk (*) received copies through the State Clearinghouse.

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U.S. Army Corp of Engineers
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