Chapter 3.0

Environmental Setting, Impacts, and Mitigation Measures

Introduction

This chapter provides the environmental analysis for the Proposed Project. The chapter is divided into 12 sections. With the exception of Section 3.1, which provides background information to assist the reader in understanding the environmental analysis, each section focuses on an environmental resource topic area. The resource sections describe the environmental setting in the Proposed Project area; analyze the impacts the Proposed Project will have on the various environmental resources; and present mitigation measures, where appropriate, to reduce the impacts to the extent feasible.

Section 3.1

Introduction to Environmental Analysis

3.1.1 Introduction

This section provides an overview of the environmental analysis chapter, which includes Sections 3.2 through 3.12. The environmental analysis sections describe the setting, impacts, and mitigation measures for the Proposed Project. This section also provides background information that will assist the reader in understanding the analysis.

3.1.2 Scope of this Supplemental Environmental Impact Report

The purpose of this SEIR is to disclose any significant effects that might occur as a result of changes to the project or its circumstances, or brought to light by new information related to the project discovered since certification of the 1992 EIR. In March 2002, BART circulated a Notice of Preparation (NOP) for the Proposed Project, consistent with Section 15082 of the CEQA Guidelines. (A copy of the NOP and the Initial Study checklist are included in Appendix A to this document.)

As a result of a review of the subjects analyzed in the 1992 EIR and in response to the scoping process as described in Chapter 1, BART has determined that the environmental resource areas listed below will be analyzed in this SEIR. The environmental analysis incorporated herein identifies the environmental impacts of the Proposed Project on those resource areas, as well as the mitigation measures proposed to reduce the impacts to less-than-significant levels. The resource areas are listed below in the order in which they appear in the 1992 EIR and in which they appear in this document. The section names are those that appear in this document; where necessary, the names in parentheses are those that appear in the 1992 EIR.

- Hazards and Hazardous Materials (Hazardous Materials).
- Hydrology and Water Quality.
- Biological Resources (Ecosystems).
- Land Use and Planning (Land Use and Economic Activity).
- Population, Employment, and Housing (Land Use and Economic Activity).[1]

[1] The 1992 EIR analyzed land use, population, and housing in one chapter entitled “Land Use and Economic Activity.” These resource areas have been analyzed in two chapters in this SEIR.

- Aesthetics (Visual and Aesthetic Quality).
- Cultural Resources.
- Transportation.
- Noise and Vibration.
- Air Quality.
- Energy.
- Alternatives Analysis.

3.1.3 Issues Not Further Analyzed in this Supplemental Environmental Impact Report

BART has determined that the following resource areas will not be discussed in this SEIR because they were adequately analyzed in the 1992 EIR, and no component of the 2003 Proposed Project warranted their revised evaluation.

- Geology, Soils, and Seismicity: The information provided in the 1992 EIR still accurately characterizes the regional geology of the Proposed Project alignment. There is no new information relative to this resource since 1992. (See the geotechnical report in Appendix C.) There have been no changes to the project or in the setting that would result in additional impacts related to geology, soils, and seismicity. Therefore, it was determined that no further analysis of impacts related to geology, soils, and seismicity beyond that which was completed for the 1992 EIR is necessary at this time.

  The 1992 EIR concluded that the following geology, soils, and seismicity impacts were likely to occur with implementation of the Adopted Project.

  - Increased exposure of the public to a seismically active region involving risks from potential seismic ground shaking and associated ground rupture (1992 Project Impact 1A).
  - Increased exposure of the public to a seismically active region involving risks from fault creep along the Hayward fault, which could displace rails and create adverse track conditions (1992 Project Impact 1B).
  - Potential risk of damage to structures from changing soil pressures created by expansive soils (1992 Project Impact 1C).
  - Increased exposure of the public to compressible soils, creating a potential risk of damage to structures from changing soils pressures (1992 Project Impact 1D).
  - Potential slope instability in excavations and during construction and potential erosion during and after construction (1992 Project Impact 1E).
  - Increased or higher density population near transit facilities may increase exposure of people to seismic hazards related to the Hayward Fault Zone (1992 Project Impact 1F).

To avoid or minimize these potential impacts associated with geology, soils, and seismicity, mitigation measures proposed in the 1992 EIR would be applied, as appropriate, during construction and operation of the Proposed Project. (See Appendix B, excerpts from 1992 Mitigation Monitoring Plan [MMP].)

The 1992 EIR found a significant and unavoidable risk of harm to people and property in the event of a ground rupture where the alignment crosses fault traces in the Hayward Fault Zone. The analysis in the 1992 EIR determined that the risk could be reduced by implementing BART's seismic design criteria and emergency procedures, complying with Uniform Building Code and Alquist-Priolo Special Studies Zones Act requirements, and performing investigation to identify the precise location of the Hayward fault and secondary faults near the Irvington Station prior to final design. (See mitigation measures for Project Impacts 1A and 1F, 1992 MMP, Appendix B). However, the 1992 EIR concluded that these measures would not reduce potential impacts from ground rupture in the event of a major earthquake to a less-than-significant level. This potential impact is not affected by any changes in the 2003 Proposed Project or surrounding circumstances, and remains significant and unavoidable.

- Hazardous Materials: The information provided in the 1992 EIR still accurately characterizes hazardous materials relative to operations of the Proposed Project. BART runs electric trains that do not employ hazardous materials, and operation of the Proposed Project would not involve the use or storage of hazardous materials. BART has an Emergency Plan that includes procedures for responding to a release of hazardous materials, should that occur. There has been no substantial change to operational policies, setting, or the Emergency Plan that would result in additional impacts from hazardous materials related to operations.

  The 1992 EIR concluded that employees and passengers could be exposed to hazardous materials in the event of an accident involving fuel pipelines along the alignment or an accident involving railcars transporting hazardous material (1992 Project Impact 2A). In addition, project implementation could interfere with the hazardous materials investigation and on-going clean up efforts (1992 Project Impact 2B). As appropriate, mitigation measures proposed in the 1992 MMP would be applied to the Proposed Project to avoid or minimize impacts related to hazardous materials.

  The 1992 EIR also concluded that the potential direct impacts associated with use and storage of hazardous materials along the Proposed Project alignment would be primarily construction related. The potential construction-related impacts of the Proposed Project are assessed in this SEIR.

- Safety and Security: The information provided in the 1992 EIR still accurately characterizes BART's system safety program, police department, and emergency plan. Since 1992, there have been no substantial changes in policies and procedures in BART's System Safety and Emergency Response plans and no changes to the project or in the setting that would result in additional impacts to safety and security have occurred. Furthermore, no new fire or police facilities would be necessitated by implementation of the Proposed Project.

  The 1992 EIR concluded that potential project-related safety and security impacts would be associated with increased demands on BART Safety Department and BART Police from

operating a longer system. The 1992 EIR also calls out potential impacts related to increased demands on Fremont Fire Department from the extended BART system within their jurisdiction. Impacts associated with the Proposed Project are expected to be similar to those called out in the 1992 EIR (1992 Project Impact 10A). As appropriate, mitigation measures proposed in the 1992 MMP would be applied to the Proposed Project to avoid or minimize impacts related to safety and security (public services). (See Appendix B, excerpts from 1992 MMP.)

- Utilities: The information provided in the 1992 EIR still accurately characterizes utilities and public services relative to the Proposed Project. There is no new information relative to this resource since 1992, nor have there been no changes to the project or in the setting that would result in additional impacts to utilities and public services.

  The 1992 EIR concluded that the following potential impacts related to utilities and public services could occur with implementation of the Adopted Project.

  - Potential disruptions of utilities, electrical transmission lines, pipelines, and fiber optic cables (1992 Project Impact 9A).
  - Potential impacts on drainage basins (1992 Project Impact 9B).
  - Potential impacts on sewer feeder lines during construction (1992 Project Impact 9C).
  - Potential conflicts with water pipelines for Hetch Hetchy water pipelines and electrical transmission lines (1992 Project Impact 9D).

  Utilities and public services impacts associated with the Proposed Project are expected to be similar to those identified in the 1992 EIR. As appropriate, mitigation measures proposed in the 1992 MMP would be applied to the Proposed Project to avoid or minimize impacts related to utilities. (See Appendix B, excerpts from 1992 MMP.)

In addition to the analysis of three environmental resource areas mentioned above, this SEIR addresses all of the topics addressed by the 1992 EIR. Growth-inducing impacts are addressed in Chapter 4, and significant unavoidable impacts are addressed in Chapter 6. The cumulative impacts of the 2003 Proposed Project have been assessed and are presented in the analysis of the environmental resource areas (Sections 3.2 through 3.12) and summarized in Chapter 6.

3.1.4 Resource Study Area

The area studied for the Proposed Project is defined in Section 1.4.1 in Chapter 1 and depicted in Figure 1-4. This area was considered in the process of making the determinations of appropriate study areas for each resource. The extent of the area studied for a resource varies depending on the characteristics of each environmental resource area being analyzed (e.g., the hydrology study area is defined by the physical limits of the watershed, the cultural resources area is defined by the Area of Potential Effect, etc.). The study area for each environmental resource area is therefore defined in the corresponding resource section.

3.1.5 Overview and Terminology of Impacts and Mitigation Measures

Sections 3.2 through 3.12 analyze the potential impacts of the Proposed Project for each of the environmental resource areas. Each section identifies impacts and mitigation measures for one resource area. The analysis in the SEIR has focused on updating and supplementing the information contained in the 1992 EIR, based on changes in the project, changes in circumstances, and any new information relevant to the Proposed Project discovered since certification of the 1992 EIR. As required by CEQA, this SEIR examines the expected project and cumulative impacts of the Proposed Project.

Significance Criteria

The *Criteria for Determining Significance of Impacts* in each section describe the criteria by which an impact is declared significant and therefore in need of mitigation (i.e., an action to minimize the effects of the impact). These criteria are largely based on BART standards and the CEQA Guidelines, which generally describe circumstances when impacts would be considered significant. Where appropriate, criteria are based on state or federal standards. For example, air quality significance criteria or thresholds are based on the state and federal ambient air quality standards; noise significant thresholds are based on criteria defined by BART and the Federal Transit Administration (FTA). In other cases, such as for visual resources, the significance criteria are based on BART standards and other professional standards.

Impacts

Types of Impacts

This report identifies the following types of impacts.

- **No impact:** A finding of *no impact* is made when the analysis concludes that the Proposed Project would not affect the resource or issue area in any way.

- **Less than significant:** An impact is considered *less than significant* if the analysis concludes that the impacts of the Proposed Project would not exceed established or defined thresholds.

- **Significant:** An impact is considered *significant* or *potentially significant* (not clear whether a significant impact would occur) if the analysis concludes that the Proposed Project could have a substantial adverse impact on the resource or issue area by exceeding an established or defined threshold. For example, air emissions that exceed federal ambient air quality standards or elimination of a rare or endangered species would be a significant adverse impact. In cases where an impact is *potentially significant*, the analysis conservatively assesses reasonably foreseeable potential impacts, but the discussion acknowledges that there is uncertainty regarding the extent of the impact. Mitigation (defined below) can be implemented to reduce a *significant impact* to a *less-than-significant* level, such that no substantial adverse change in the environment is expected to result.

- **Significant and unavoidable** : An impact is considered *significant and unavoidable* if the analysis concludes that the Proposed Project effects exceed established or defined thresholds could have a substantial adverse effect on the resource or issue area, and no mitigation is available to reduce this impact to a less-than-significant level.
- **Beneficial:** *Beneficial* effects include impacts that enhance or improve an existing environmental condition.

Operational Impacts

Operational impacts are long-term, repeated, or ongoing impacts; they include all effects of operating and maintaining all aspects of the Proposed Project, including trackways, trains, stations, parking lots, and associated equipment and facilities.

Construction Impacts

Construction-related impacts refer to the temporary effects of Project-related construction activities such as contractor laydown areas, site preparation, and installation of trackways and structures.

Mitigation Measures

In developing mitigation measures for significant environmental impacts, BART is guided by definitions in the CEQA Guidelines (Section 15370), which define *mitigation* as one or more of the following.

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.
- Compensating for secondary impacts caused by mitigation measures proposed in one resource area that may indirectly affect another.

The 1992 MMP lists mitigation measures proposed in the 1992 Adopted Project and defines a program to ensure implementation of these measures. As discussed above, certain subjects (geology and seismicity, operational hazardous materials, safety and security, and utilities) are not addressed further in this SEIR because the analysis, determinations of significance, and mitigation measures presented in the 1992 EIR are still applicable. Those mitigation measures from the 1992 EIR and MMP that are still applicable have been carried forward as mitigation for the Proposed Project and are presented in Appendix B (excerpts from 1992 MMP). In some cases, 1992 mitigation measures are no longer applicable because the impacts for which those measures were proposed would not occur with implementation of the Proposed Project.

Where new impacts not identified in the 1992 EIR have been identified in this SEIR, new mitigation measures have been identified to avoid impacts or reduce impacts to a less-than-significant level, where possible. In addition, for many impacts identified in the 1992 EIR, new or revised mitigation measures are proposed to account for changes in the project, changes in the setting, or new information available since 1992. Potentially significant impacts and mitigation measures addressed in this SEIR are summarized in the *Executive Summary* in Table ES-1.

3.1.6 Analysis of Cumulative Impacts

The term *cumulative impacts* refers to "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). A cumulative impact can result from either of the following.

- The combination of two or more individually significant impacts.
- The combination of two or more impacts that are individually less than significant but constitute a significant change in the environment when considered together.

To analyze a proposed project's contribution to cumulative impacts, CEQA requires that the lead agency identify reasonably foreseeable projects in the vicinity of the proposed project, summarize their effects, identify the contribution of the proposed project to cumulative impacts in the project region, and recommend feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects (CEQA Guidelines Section 15130(b) (3)). Cumulative impacts should be considered separately for each resource area addressed in an EIR. However, when the combined cumulative impact associated with the project's incremental effect and the effect of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and why it is not discussed in further detail in the EIR.

Approach

There are two approaches to identifying related past, present, and future projects and their impacts: the "list" approach, where projects are identified on an individual basis, and the "projection" approach, where the analysis of cumulative impacts is based on a summary of projections in an adopted general plan or related planning document. In this SEIR, both approaches have been used. Projections resulting from transportation modeling have been incorporated into the analysis of cumulative impacts for the transportation, air quality, and energy resource areas. For all other resource areas, the list approach has been used.

Table 3.1-1 identifies a list of approved, pending, and reasonably foreseeable potential developments within the City of Fremont that were included in this cumulative analysis. These projects were identified in consultation with city staff. The table also includes other reasonably foreseeable projects in the project area. For purposes of the cumulative analysis, the city's grade separations project is also assumed. Figure 3.1-1 shows the location of the projects considered for purposes of cumulative impacts analysis.

Silicon Valley Rapid Transit Corridor Project (SVRTC)

The cumulative analysis also includes the Silicon Valley Rapid Transit Corridor Project (SVRTC), which is an extension of BART service from BART's proposed future terminus at Warm Springs through Milpitas to downtown San Jose in Santa Clara.

The Santa Clara Valley Transportation Authority (VTA) is currently developing the SVRTC. The SVRTC project is intended to address the growing need for transit to serve residents of the East Bay and beyond who work in Santa Clara County. Residential development in the East Bay coupled with significant job growth in the corridor cities has led to very high and increasing levels of traffic congestion on area freeways and roads.

In 2000, VTA completed a Major Investment Study (MIS) that identified a Preferred Investment Strategy for the SVRTC. The Preferred Investment Strategy consists of an approximate 16.3-mile extension of the BART system. The extension would begin at the proposed Warm Springs station, extend along the Union Pacific Railroad line to Milpitas, and continue to 28th Street and Santa Clara Street in San Jose. From there, BART would leave the railroad right-of-way, tunneling under downtown San Jose to the Diridon Caltrain Station. The proposed BART extension would then turn north under the Caltrain line and terminate at the Santa Clara Caltrain Station. The proposed BART extension would be further refined during the conceptual design phase of the project and carried forward in the environmental impact statement/environmental impact report (EIS/EIR). The proposed BART extension would include seven new BART stations in Santa Clara County along the alignment: Montague/Capitol Expressways; Berryessa Road; Alum Rock Avenue; downtown San Jose at Civic Plaza/San Jose State University, Market Street, and Diridon/Arena; and in Santa Clara, near the existing light rail and Caltrain stations. The proposed BART alignment also includes an optional station near Calaveras Boulevard, in Milpitas. More precise station locations and alignment options will be developed during preparation of the draft EIS/EIR.

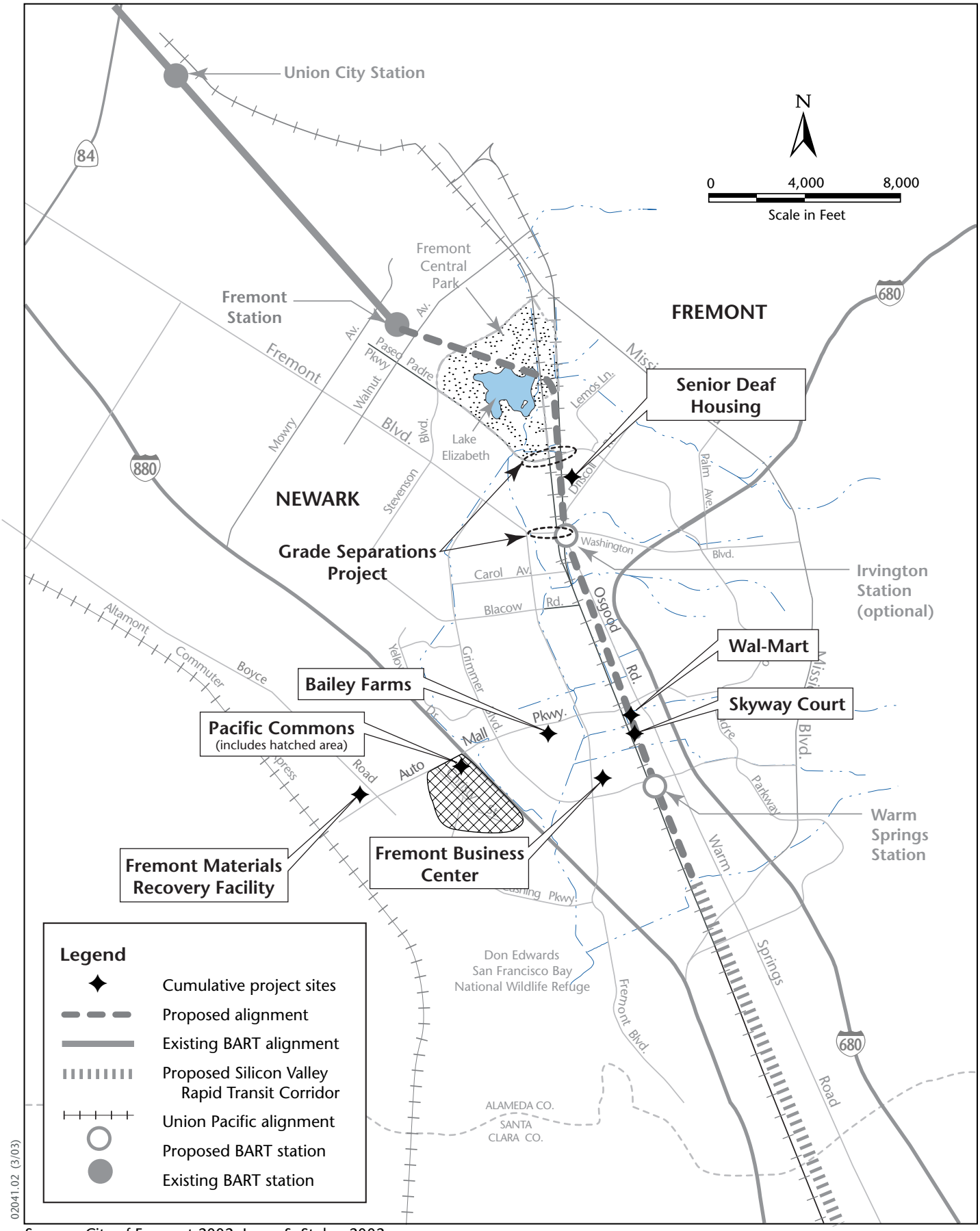
Further, project development under the guidance of the Federal Transit Administration (FTA) is now underway. An environmental impact statement/environmental impact report (EIS/EIR) is also being prepared to comply with the National Environmental Policy Act (NEPA) and CEQA. FTA is the lead agency under NEPA, and VTA is the lead agency under CEQA.

Table 3.1-1. Approved and Proposed Developments in the City of Fremont

Development	Location	Size	Description
Approved Development			
Deaf Senior Retirement Corporation	Driscoll Road, south of Valero Road	51(dwelling units)	Project would involve amending the City of Fremont General Plan to allow development of up to 51 units of affordable rental housing for deaf seniors. The proposed General Plan amendment would change the land use designation of the site from Medium Density Residential (6.5 to 10 dwelling units per acre to Medium Density Residential 18 to 23 units per acre. The site is currently developed with a church and parking area with an undeveloped field to the rear of the property. The proposed housing would be constructed on this 2.25-acre undeveloped portion.
Skyway Court	Skyway Court/Osgood Road	103,000 sq. ft.	Project includes four one-story light industrial buildings totaling approximately 103,000 square feet, and associated landscaping, parking, and circulation, and abandonment of a utility easement, on a 23.5-acre site.
Pacific Commons	West of I-880, south of Auto Mall Pkwy	8,316,000 sq. ft.	Project is within the Pacific Commons Planned District (approximately 840 acres). Project includes a retail center, expansion of the auto mall, rezoning two parcels from the Pacific Commons Planned District to the Auto Mall Planned District, wetlands preserve (391 acres), 60 acres of parks and open space (retention ponds), and a train station.
Proposed Development			
Bailey Farms	Auto Mall Pkwy near Technology Drive	176,000 sq. ft.	Project includes six new one-story general industrial buildings totaling approximately 175,500 square feet. Five of these buildings have already been approved, with the sixth scheduled for a later submittal date.
Fremont Business Center	Fremont Blvd/Old Warm Springs Boulevard	92,000 sq. ft.	Project includes five new general industrial buildings totaling approximately 92,000 square feet.
Wal-Mart	Osgood Road near Skyway Court	197,000 sq. ft.	Project would involve development in two phases. Phase I would involve development of a Wal-Mart store and Garden Center, with associated improvements on about 13.6 acres of the site. Phase II would involve development of the remaining three acres of the site as industrial use.
Fremont Materials Recovery Facility	Boyce Road near Auto Mall Parkway	1,700,000 sq. ft.	Proposal to develop an industrial use for disposal and treatment of solid waste.

Development	Location	Size	Description
Paseo Padre Estates	Paseo Padre Parkway adjacent to and east of Central Park	19.1 (acres)	Project would involve change in land use designation from open space to medium density residential. The new designation would allow 6.5–10 dwelling units per acre. With this change in land use designation, the 19.1-acre parcel could be developed with approximately 124 to 191 residential units.
Transit and Infrastructure Projects			
Silicon Valley Rapid Transit Corridor (SVRTC) Project	Warm Springs in Fremont, Alameda County to Fremont in Santa Clara County	16.3-mile BART extension	Proposed BART extension that would extend the system at grade from the proposed Warm Springs station to 28th Street/Santa Clara Street in San Jose on the Union Pacific Railroad alignment. The proposed extension would include seven new BART stations in Santa Clara County along the UP railroad alignment.
City of Fremont Grade Separations Project	Washington Boulevard and Paseo Padre Parkway, City of Fremont		The project involves constructing two railroad grade-separated crossings. An automobile underpass is planned for paseo Padre Parkway between Gomes Road and Hancock Drive, and an automobile overpass is planned for Washington Boulevard between Bruce Drive and Roberts Avenue. The city's grade separations project will include relocation of the former SP railroad tracks.

Source: City of Fremont 2002



Source: City of Fremont 2002; Jones & Stokes 2002.

Figure 3.1-1
Cumulative Projects

Section 3.2

Hazards and Hazardous Materials

3.2.1 Introduction

This section describes existing hazards and hazardous materials in the project area, analyzes the potential for Proposed Project construction activities to disturb hazardous materials, and identifies mitigation measures to address adverse construction-related impacts. The purpose of this section is to evaluate environmental factors that may have impacted the soil and groundwater quality of the project area due to past and present environmental and commercial activities.

This section incorporates information and analysis presented in the 1992 EIR and provides additional information obtained from surveys conducted in 2000 and 2002. Hazardous materials in the project area are largely unchanged since preparation of the 1992 EIR. An updated review of databases of known hazardous materials sites in the project area and site reconnaissance conducted in 2002 documented no new hazardous materials sites within the project area. Therefore, operational impacts and mitigation measures in the 1992 EIR for hazards and hazardous materials are unchanged and still applicable (see 1992 MMP in Appendix B). This section identifies new impacts and updates mitigation measures from the 1992 EIR to ensure safety of Proposed Project construction workers because the types and locations of construction activities that could expose workers to hazardous materials have changed since the 1992 EIR. Consequently, this section represents an augmentation of material appearing in the 1992 EIR and focuses on construction-related hazardous materials impacts and mitigation.

3.2.2 Environmental Setting

Methodology for Assessment of Existing Conditions

A hazardous materials background study was conducted to determine whether potential sources or indications of hazardous substance contamination are currently present in the project area, which encompasses the areas of right-of-way and contractor laydown areas for the 2003 Proposed Project. In addition, a database search was made for records of hazardous wastes sites within a 1-mile perimeter of the Proposed Project corridor. The investigation for this analysis also included a review of previous land uses in the area through a review of historical aerial photographs; a field inspection of the Proposed Project alignment; and a review of the listings of federal and state regulatory agencies that are responsible for recording incidents of spills, and agencies that are responsible for reviewing soil and groundwater contamination and treatment, storage, or disposal facilities that handle hazardous materials.

Previous hazardous materials investigations reports were reviewed to document existing conditions. Previous reports reviewed include the results of groundwater sampling conducted by BART in 1991, the 1992 EIR, and reports prepared for the City of Fremont's grade separations project.

Existing Conditions

The potential presence of hazardous materials, above ground or in the subsurface soils or groundwater along and adjacent to the Proposed Project alignment, could impact the health and safety of Proposed Project construction workers, the public, or the environment during construction of the Proposed Project. Excavation of soils containing hazardous materials and disposal of contaminated soils or water would require specific management, resulting possibly in either onsite treatment and/or offsite disposal.

The following discussion presents an inventory of existing information regarding the presence of hazardous materials in the project area.

Land Uses and their Potential for Contamination

Review of Historical Land Uses

Land uses in the project area were researched to identify locations where hazardous materials may be or may have been present. Historical aerial photographs dating from as early as 1954 were reviewed to determine the historical and continuing use of land in the project area.

It appears that the land in the project area has been used for agricultural purposes, was developed as residential and commercial properties, or remained undeveloped from 1953 to the present. The Proposed Project corridor has been undeveloped land and/or agricultural land, except for the railroad tracks, which have existed in the Proposed Project corridor since the nineteenth century and are visible in the photographs.

The first sign of Lake Elizabeth appears in the 1970 aerial photograph. The area the lake currently occupies was agricultural land.

Areas to the south of Auto Mall Parkway appear to be recent developments. The areas south of Grimmer Boulevard appear to have been used primarily as agricultural land from 1953 to the present.

Review of Current Land Uses

A site reconnaissance of the project area was conducted in May 2002 by Parikh Consultants, Inc., to identify possible nearby sites or current land uses that might constitute sources of contamination that could adversely affect the Proposed Project corridor. The site visit consisted of a drive through and a walk through of the project area and an observation of problem sites and visible contamination.

Current land uses along and adjacent to the Proposed Project alignment that may involve the use or storage of hazardous materials include the UP right-of-way, and agricultural and industrial uses in the area. The types of hazardous materials potentially associated with these uses include heavy petroleum hydrocarbons, polynuclear aromatics, and arsenic.

Contamination in the Proposed Project Corridor

The current or past use and storage of hazardous materials at or near the Proposed Project alignment could have resulted in contamination of subsurface soils or groundwater. Potential sources of contamination include facilities along and adjacent to the Proposed Project alignment where hazardous materials are or were used and stored, and where a release of hazardous materials is suspected or known to have occurred.

Potential Contamination

Lake Elizabeth has been in existence since the 1970s. Surface water runoff from the nearby park drains to this lake. Because of this runoff, there is the potential for lake sediments to have been impacted with herbicides.

There are underground petroleum pipelines that cross the Proposed Project corridor north of Washington Boulevard, and another set of underground petroleum pipelines move parallel to and between the former SP and WP railroad tracks 600 feet north of Washington Boulevard. A review of databases and county files did not reveal releases associated with these pipelines within the Proposed Project corridor.

The soils along Washington Boulevard and Auto Mall Parkway are potentially contaminated with lead from automobile exhaust.

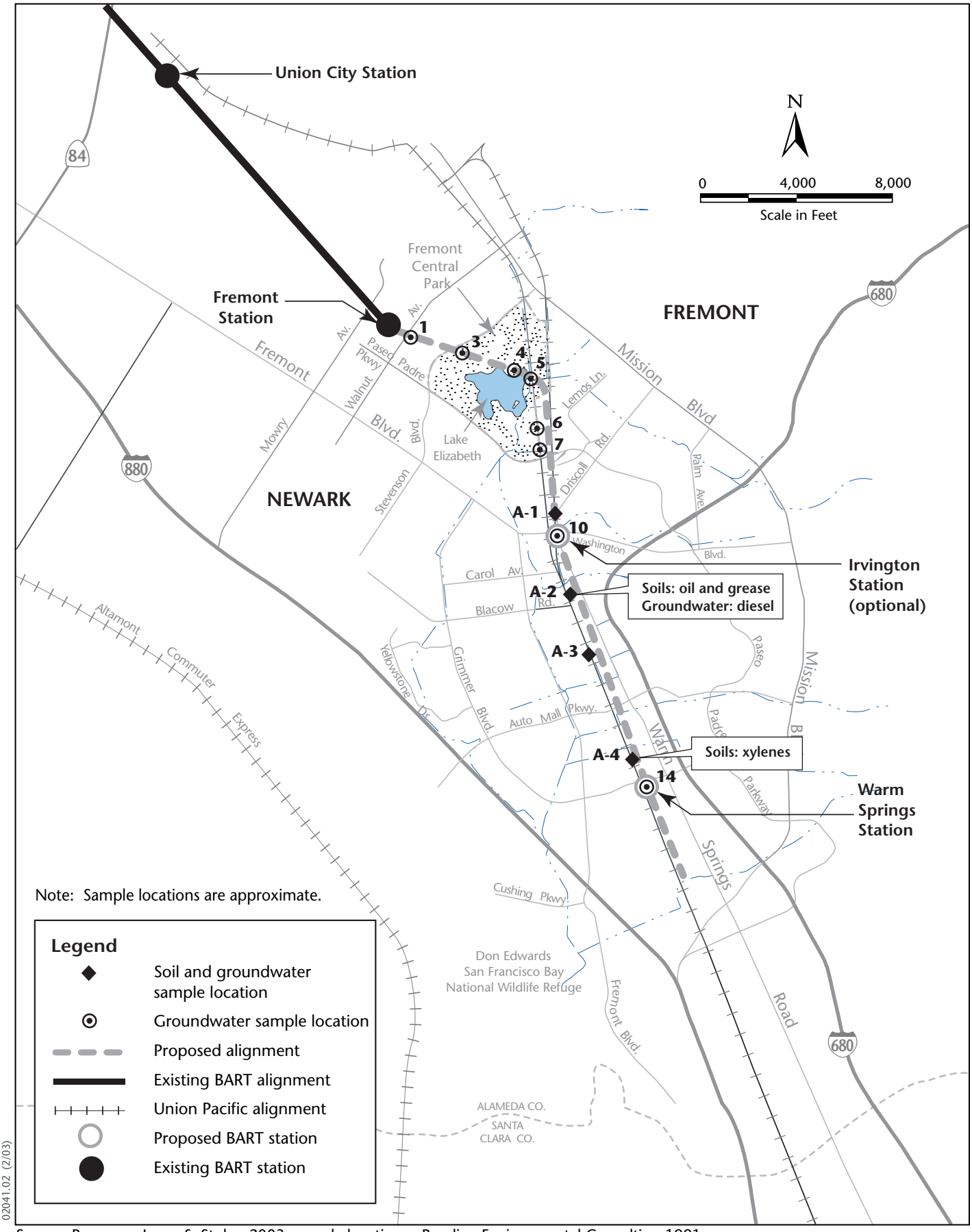
There is a potential for the presence of asbestos-containing materials (ACM) at structures within the Proposed Project corridor that were constructed prior to 1978, such as the Irvington Pump Station. (1978 is the date commonly used as a cut-off for ACM use.) In addition, lead-based paint may potentially have been used on some structures, such as the Grimmer Boulevard underpass structure and the Auto Mall Parkway overpass.

Based on BART's experience constructing extensions on former railroad rights-of-way, the UP corridor is potentially contaminated with arsenic, lead, petroleum hydrocarbons, and polynuclear aromatic hydrocarbons (Gary Jensen pers. comm.).

Known Contamination

In 1991, BART collected eleven grab groundwater samples, and four borings for soils sampling were conducted within the Proposed Project corridor (see Figure 3.2-1). Of the eleven groundwater and four soil samples, only one groundwater sample and two soil samples contained detectable contaminants. The groundwater sample (A2, Osgood Road near Blacow Road) contained diesel at 60 micrograms per liter. One soil sample (A2) contained detectable oil and grease, and the other soil sample (A4, north of Grimmer Boulevard) contained xylenes.

In 1998, 21 grab soil samples were collected at the Irvington Pump Station facility, immediately north of Paseo Padre Parkway. The samples were aggregated into eight samples; four samples were analyzed for asbestos, and four were analyzed for lead. None of the soil samples contained asbestos above the laboratory detection limits. Three of the samples analyzed for lead were analyzed for soluble lead, and one of those showed a concentration above the soluble threshold limit concentration. The total lead concentration was identified as being below the total threshold limit



Source: Basemap: Jones & Stokes 2003; sample locations: Baseline Environmental Consulting 1991.

Figure 3.2-1
Soil and Groundwater Sample Locations

concentration. Further testing of the lead contamination in the vicinity of the sample would be required prior to excavation (Baseline Environmental Consultants 2000).

In May of 2000, the City of Fremont conducted a hazardous materials study for the city's grade separations project. The report recommended conducting additional testing of the soil that would be disturbed near the UP right-of-way. Other than the Irvington Pump Station, the UP right-of-way, and the previous agricultural uses of the site, the report did not identify any additional concerns in the Proposed Project corridor. The report indicated that of the 41 sites identified, only one had the potential to be of environmental concern, and that site was identified as a closed site by the Regional Water Quality Control Board (RWQCB).

Agency Record Search for Hazardous Waste Sites

A computer database government record search was conducted by Parikh Consultants, Inc., to review regulatory agency lists to identify the presence of hazardous waste sites in the vicinity of the Proposed Project. The records were searched for the existence of National Priority List (NPL) sites; Resource Conservation and Recovery Act (RCRA) Corrective Actions (CORRACTS) and RCRA-permitted treatment, storage, and disposal (TSD) facilities; state SPL (state equivalent priority list) sites; Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) sites; the California Waste Management Unit Database System Solid Waste Assessment Test data (WMUDS/SWAT); RCRA treatment, storage, and disposal sites and generators; state equivalent CERCLIS sites (SCL); statewide leaking underground storage tanks (LUSTs); solid waste facilities (SWFs); California Waste Discharge System (WDS) data; state Cortese List (CORTESE); California RWQCB spills, leaks, investigation, and cleanup sites (SLIC); Toxic Release Inventory (TRI) database; and state and county underground storage tanks (USTs), Emergency Response Notification System of Spills (ERNS), and RCRA-registered small or large generators of hazardous water (RCRA generator) in the area of the Proposed Project.

The database was searched to locate risk sites[1] within a 1-mile perimeter of the Proposed Project corridor. For those sites that were of additional concern,[2] file reviews were conducted at the RWQCB, ALCWD, and the local certified unified public health agency (CUPA).

The databases identified more than 100 mapped sites within a 1-mile perimeter of the Proposed Project. The majority of these sites are down gradient of the Proposed Project corridor, with respect to the groundwater flow, and therefore do not have the potential to impact the Proposed Project. Most of the up-gradient sites that are identified are located on Osgood Road or its side streets. Many of the sites identified up gradient of the subject area were small-quantity waste generators without any noted violations, or were too far up gradient to be of environmental concern.

There are three sites near the Fremont BART station and several sites located on Osgood Road and side streets that may have the potential to impact the Proposed Project. These sites are listed in Table 3.2-1. This table updates the status of sites investigated in the 1992 EIR.

[1] *Risk sites* are sites near the Proposed Project corridor that have had releases to soil or groundwater and/or generate, store, and or receive hazardous materials/wastes.
[2] *Sites of additional concern* refers to sites within the risk sites group that could have a direct impact on the corridor.

Table 3.2-1. Updated Information on Hazardous Materials Sites in the Proposed Project Corridor

Site	Address	Listing	Site Assessment
GSC Realty Corporation	1365 Walnut Avenue	LUST	Site closed in 1993. Impacts to soil only.
BART	2000 BART Way	HAZNET	Disposal of 1 ton of PCB-impacted soil. Disposal of PCB-impacted soil has been completed.*
Union Pacific Railroad	N/A	N/A	Potential for presence of arsenic, lead, petroleum hydrocarbons, and polynuclear hydrocarbons
City of Fremont Government Building/Police Building	39710 Civic Center Drive	UST	Presence of two 10,000 gal. unleaded USTs and one 10,000 gal. diesel UST; listed as LUST for discovery of release of TPH to soil during tank closure activities. Site closed in 2000.
Tri-City Rock	3553 Washington Boulevard	LUST	Release of TPH to soil only in 1991. Site closed in 1995. Impacted soil excavated and disposed offsite.
Fremont Lumber Company	3560 Washington Boulevard	LUST	1998 release affected soils within a 20 to 30 foot radius of a former UST. Samples should be taken for TPH-G, BTEX, and MTBE.
Mission Valley Equipment Rentals	41655 Osgood Road	HAZNET LUST	Disposal of waste oil, and release of gasoline in 1987. Site closed in 1998.
Howard's Backhoe	41875 Osgood Road	N/A	Discovery of release of gasoline to soil in 1985. Site closed in 1994.
Fremont Automotive	42450 Osgood Road	N/A	Small-quantity generator for recycling of water that contains oil.
L & L Nursery Supply, Inc.	42950 Osgood Road	LUST	Release of TPH to soil and groundwater. Site remediated, undergoing monitoring. NOTE: Site is greater than 500 feet from Proposed Project alignment.
Jonce Thomas	3270 Seldon Court	LUST	Release of petroleum hydrocarbons. Spill was remediated in June 2000.
Grade Way Construction	43801 Osgood Road	LUST	Releases discovered during removal of USTs in 1987. Site has been remediated.
Shell Oil	43921 Osgood Road	UST	Several active USTs. Distant from Proposed Project alignment.
Read Rite Corporation	44100 Osgood Road	N/A	Disposal of soils and other organic liquids and chemicals. NOTE: Site is greater than 1,000 feet from Proposed Project alignment.
Circle K Store	2950 Auto Mall Parkway	UST	No evidence of leading or offsite groundwater monitoring wells.
Valley Automotive Fuels	44671 Osgood	UST	No evidence of groundwater monitoring wells.

Site	Address	Listing	Site Assessment
Clinton Heating and Air Conditioning	2162 Prune Avenue	LUST	Release to soil and groundwater. Impacted soils excavated; minimal groundwater impacts.
Bay Con Company	2150 Prune Avenue	N/A	Release of TPH-D and MTBE to groundwater. Site is currently undergoing assessment.

Notes:

PCB = poly chlorinated biphenyl
UST = underground storage tank
LUST = leaking underground storage tank
TPH = total petroleum hydrocarbons
TPH-G = total petroleum hydrocarbons as gasoline
BTEX = benzene, toluene, ethylbenzene, or xylenes
MTBE = methyl tertiary butyl ether, tert-butyl methyl ether
TPH-D = total petroleum hydrocarbons as diesel

* Status of PCB-impacted soil disposal as per Gary Jensen, BART System Safety, February 7, 2003.

Source: San Francisco Bay Area Rapid Transit District 2003

In January 2003, Science Applications International Corporation (SAIC) completed a Supplemental Phase I Environmental Site Assessment on 34 sites along the Proposed Project corridor of which BART anticipates partial or full acquisition. Work completed included technical review of all currently available documentation, including past environmental assessment and subsurface reports noted above, aerial photographs for the years 1954 to 2002; Sanborn Insurance maps with coverage specific to the Irvington District area for the years 1908, 1926, and 1932; state and local environmental regulatory agency files as identified for each site; EDR Radius Map and Database Report noted above; and current features and improvements of each site and adjacent sites as documented during fence line site reconnaissance. Findings, observations, and potential environmental issues were compiled on each site. SAIC recommended no further action on 11 sites and Phase II and/or III subsurface soil and groundwater characterization work plans for 23 sites. Table 3.2-2 below summarizes the recommendations for each of the sites.

Electromagnetic Fields

In recent years, there has been scientific study and public debate on the health effects of electromagnetic fields (EMF) from utility lines and electrical appliances and facilities. Electric- and magnetic-field strengths drop off with distance from the source. Electric fields are shielded or weakened by materials that conduct electricity, including trees, buildings, and human skin. Magnetic fields, on the other hand, pass through most materials and are therefore more difficult to shield. As a result, recent studies have focused on the possible health effects associated with magnetic fields.

Studies have been conducted to prove or disprove the relationship between EMF exposure and numerous forms of cancer, birth defects, mental disorders, and other adverse health conditions, but no direct link has been established. No health-based standards currently exist for long-term human exposure to EMF in the United States. Federal and state agencies have reviewed past studies to determine whether exposure to date triggers adverse health effects and have found no basis for setting health standards to date (Pacific Gas & Electric Co. 1999). Some state and local authorities have passed laws and ordinances limiting EMF exposure by establishing minimum distances between

Table 3.2-2. Summary of Sites Requiring Additional Exploration

Current Owner	Street Address	Recommendations
San Francisco Public Utility Commission	Paseo Padre Pkwy, Fremont, CA 94538	Perform Phase II & III subsurface characterization.
Blankstein	40720 Paseo Pkwy, Fremont, CA 94538	A Phase II subsurface characterization is currently not required based on January 2003 Supplemental Phase I ESA.
BERG	41075 Railroad Av, Fremont, CA 94539-4401; Business Address: 41080 High Street	Perform Phase II subsurface characterization.
First Interstate	3553 Washington Blvd, Fremont, CA 94539-0000	A Phase II subsurface characterization is currently not required based on January 2003 Supplemental Phase I ESA.
Leighton Realty	39350 Civic Center Dr, Fremont, CA 94538-2331	A Phase II subsurface characterization is currently not required based on January 2003 Supplemental Phase I ESA.
Alameda County Flood Control	Walnut Av, Fremont, CA 94536	A Phase II subsurface characterization is not required, based on the Supplemental Phase I ESA.
Leighton Realty	Center Dr, Fremont, CA 94536	A Phase II subsurface characterization is not required, based on the Supplemental Phase I ESA.
Leighton Realty	Center Dr, Fremont, CA 94536	A Phase II subsurface characterization is not required, based on the Supplemental Phase I ESA.
Alameda County Flood Control	Stevenson Bl, Fremont, CA 94538	Review with City of Fremont prior dredges analytical findings. For Construction planning, perform additional subsurface screening of dredge sample if previous data unavailable.
City of Fremont, Central Park Golf Course	Mission Bl, Fremont, CA 94538	Perform Phase II subsurface screening.
City of Fremont	Paseo Padre Pkwy, Fremont, CA 94538	A Phase II subsurface characterization is not required, based on the Supplemental Phase I ESA.
BERG	Railroad Av, Fremont, CA 94538	Perform Phase II subsurface screening.
BERG	Railroad Av, Fremont, CA 94538	Perform Phase II subsurface screening.
Winworth		A Phase II subsurface characterization is not required, based on the Supplemental Phase I ESA.
BERG	High St, Fremont, CA 94538	Perform Phase II subsurface screening of soils beneath transformer.
UP	Railroad Ave, Fremont, CA 94538	Perform Phase II subsurface screening.
Charles Snow	2878 Prune Av, Fremont, CA 94569-743	Perform Phase II subsurface screenings limited to small area of BART take.
Alameda County Flood Control District	Prune Av, Fremont, CA 94538	Perform Phase II subsurface screening.

Current Owner	Street Address	Recommendations
Ashville	2215 Warm Springs Court, Fremont, CA 94538	Perform Phase II subsurface screenings limited to small area of BART take.
Unknown	45388 Warm Springs Bl, Fremont, CA 94538	A Phase II subsurface characterization is not required, based on the Supplemental Phase I ESA.
Radonich	2120 Warm Springs Court, Fremont, CA 94539-6774	Perform Phase II subsurface screening.
Russett	2090 Warm Springs Court, Fremont, CA 94539-6744	Perform Phase II/III Subsurface Characterization.
RMC Builder's Supply	2000 Warm Springs Court, Fremont, CA 94539-6777	Perform Phase II subsurface characterization.
Sakkaris	45915 Warm Springs Bl, Fremont, CA 94539-6746	Perform Phase II subsurface screening of soil piles adjacent to portion of BART take.
Barrows	45951 Warm Springs Bl, Fremont, CA 94539-6746	Perform Phase II subsurface screening.
Murphy	45973 Warm Springs Bl, Fremont, CA 94539-6721	Perform Phase II subsurface screening around building to be included in BART take.
City of Fremont, Fremont Central Park	1110 Stevenson Bl, Fremont, CA 94538-2967	Perform Phase II subsurface screenings of shallow soils within BART take.
New England Mutual Life	43941 Osgood Road, Fremont, CA 94539-5909	A Phase II subsurface characterization is not required, based on the Supplemental Phase I ESA.
City of Fremont, Fremont Central Park	Stevenson Bl, Fremont, CA 94539	Perform Phase II subsurface screenings of shallow soils within BART take.
New England Mutual Life	3045 Skyway Ct, Fremont, CA 94539	A Phase II subsurface characterization is not required, based on the Supplemental Phase I ESA.
Lacerda Trust	2318 Warm Springs Bl, Fremont, CA 94539	Perform Phase II subsurface screening of targeted debris areas.
Unknown	43801 Osgood Rd, Fremont, CA 94539-5630	Perform Phase II subsurface screenings of shallow soils along portion of BART take where current operator stores heavy construction equipment.
Unknown	43801 Osgood Rd, Fremont, CA 94539-5630	Perform Phase II subsurface screenings of shallow soils along portion of BART take where current operator stores heavy construction equipment.
Unknown	43801 Osgood Rd, Fremont, CA 94539-5630	Perform Phase II subsurface screenings of shallow soils along portion of BART take where current operator stores heavy construction equipment.

Source: Science Applications International Corporation

development and electrical systems of specific voltage. The distances and voltages vary by jurisdiction (Federal Transit Administration 1996). In 1993, the San Francisco Public Utilities Commission (PUC) issued Decision 93-11-013 that established certain steps to address EMF. After an investigation to determine the PUC's role in mitigating health effects, if any, of EMF created by electrical utility power lines and by cellular radiotelephone facilities, the PUC developed measures to reduce EMF levels, develop design guidelines, create EMF measurement programs, facilitate stakeholder and public involvement, and begin educational and research programs (San Francisco Public Utilities Commission 1993).

3.2.3 Regulatory Setting

The following describes the regulatory framework pertaining to management of hazardous materials. The use, storage, and disposal of hazardous materials, including the management of contaminated soils and groundwater, are regulated by local, state, and federal laws. A description of agency involvement in management of hazardous materials is provided below.

Federal Laws and Regulations

Resource Conservation and Recovery Act of 1976

The Resource Conservation and Recovery Act of 1976 (RCRA) establishes a comprehensive program for identifying and managing hazardous waste, including reporting and record-keeping requirements for generators, a manifest system for transport of hazardous waste shipments, and standards for treatment and disposal facilities. The 1984 and 1986 amendments established additional reporting requirements, restriction of landfill disposal, and a program regulating underground storage tanks. RCRA regulates active facilities and does not address abandoned or historical sites.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) provides a federal "Superfund" to clean up uncontrolled or abandoned sites contaminated by releases of hazardous substances, as well as accidents, spills, and other releases of pollutants and contaminants into the environment. CERCLA, as amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA), authorizes the EPA to order the parties responsible for a release to take action to remediate the contaminated site or to conduct remediation itself and recover the costs from responsible parties.

Title III of SARA also authorized the Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA requires facility operators to undertake emergency planning and report on hazardous chemical inventories and toxic releases, in order to make this information available to local communities.

State Laws and Regulations

California Department of Toxic Substances Control

The Department of Toxic Substances Control (DTSC) regulates hazardous waste under the authority of the federal Resource Conservation and Recovery Act of 1976 and the California Health & Safety Code. California has enacted legislation pertaining to the management of hazardous waste that is equivalent to, and in some cases more stringent than, corresponding federal laws and regulations. DTSC, a department of the California Environmental Protection Agency, is responsible for the enforcement and implementation of hazardous waste laws and regulations. The state hazardous waste regulations are codified in Title 22 of the California Code of Regulations (CCR).

Regional Water Quality Control Board, San Francisco Bay Region

The Proposed Project alignment is located within the jurisdiction of the San Francisco Bay RWQCB. The RWQCB is authorized by the Porter-Cologne Water Quality Control Act to implement water quality protection laws, including some federal water protection laws specified in CCR Title 26, Division 23, Subchapter 16. (See Section 3.3 [*Hydrology and Water Quality*] for a complete discussion of the Porter-Cologne Water Quality Control Act.) When the quality of the groundwater or the surface waters of the state are threatened, the RWQCB has the authority to require investigations and remedial actions, when necessary. The RWQCB provides oversight in cases that require permits, investigation, and/or remediation. Extraction of contaminated groundwater or dewatering during construction, and subsequent discharge of such waters to the storm drain or to the waters of the state or the sanitary sewer system would require permits from the RWQCB or the local publicly owned treatment works, respectively.

Local Laws and Regulations

Alameda County Water District

At sites within the City of Fremont where groundwater quality is threatened, the Alameda County Water District (ACWD) works with the RWQCB to oversee and provide guidelines for the investigation and cleanup of contaminated sites. The ACWD acts in a technical advisory capacity to the RWQCB; the district is not an enforcement agency.

Alameda County Health Services Agency, Hazardous Materials Division

The Hazardous Materials Division of the Alameda County Health Services Agency conducts inspections to ensure proper handling and storage of hazardous materials in Alameda County and is the local enforcement agency for those portions of Alameda County that do not have an environmental health program implemented by a city. For the City of Fremont, the county shares responsibility with the city for enforcing the proper storage and disposal of hazardous materials.

City of Fremont Hazardous Materials Department

For facilities located within City of Fremont boundaries, the City of Fremont Hazardous Materials Department is the enforcing agency for the handling and storage of hazardous materials. The city reviews hazardous materials business plans and conducts inspections of facilities that use or store hazardous materials above a certain quantity. The city also maintains operating permits for underground storage tanks. For sites where soil or groundwater contamination has been identified, or where releases of hazardous materials have been reported, the city works in conjunction with the DTSC or RWQCB to provide guidelines and oversight in site cleanup and environmental compliance.

3.2.4 Impact Assessment and Mitigation Measures

Methodology for Impact Analysis

Analysis of impacts related to hazards and hazardous materials focused on the potential for construction of the Proposed Project to result in exposure of construction workers to contaminated materials. No changes to the Proposed Project, changes in the setting, or new information discovered since the 1992 EIR warranted further analysis of operational impacts.

Criteria for Determining Significance of Impacts

This analysis relied on standards of significance developed by BART on the basis of regulatory requirements and accepted professional practice for hazardous materials management. The EPA uses the general 10^{-4} to 10^{-6} carcinogenic risk range as a target range within which it strives to manage risks for Superfund cleanups. The EPA guidance, Risk Assessment Guidance for Superfund (RAGS), Part D states: "In general, where the cumulative carcinogenic site risk to the reasonable maximum exposure (RME) individual is less than 10^{-4}, and the non-carcinogenic Hazard Index (HI) is less than or equal to 1, remedial action is not warranted under Superfund unless there are adverse environmental impacts or the applicable or relevant and appropriate requirements (ARARs) are not met." Therefore, a hazardous materials impact would be considered significant (a significant hazard) if it resulted in a cumulative carcinogenic site risk to the RME individual greater than 10^{-4} or a carcinogenic HI greater than 1.

Based on these criteria, impacts to Proposed Project construction workers or the environment occurring due to hazardous materials were considered significant if the Proposed Project was judged likely to result in any of the following.

- Creation of a significant hazard to the public or to the environment from reasonably foreseeable accidents involving the release of hazardous materials.
- Discharge of hazardous emissions, or handling of hazardous materials or waste within 0.25 mile of an existing or proposed school.

- Construction on a site that has been impacted by hazardous materials and, as a result, could create a significant hazard to the public or the environment.
- Creation of a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Impacts and Mitigation Measures

Impacts Related to Warm Springs Extension

Operational Impacts

Operation of the Proposed Project would generate no hazardous materials impacts beyond those analyzed in the 1992 EIR.

Construction-Related Impacts

Impact HazMat1 – Previous uses of the project alignment may have resulted in the release of hazardous materials into the soil or groundwater. Construction may result in exposure of workers or the public to these materials resulting in adverse health effects. The health and safety of construction workers and the general public could be adversely affected by exposure to hazardous materials along the Proposed Project corridor. Soil excavation and removal for construction of roadway/track grade separations, trackbeds, and below-grade sections of the alignment could expose workers to contaminated soil if excavation encounters contaminants released from nearby known or suspected hazardous waste sites (see Table 3.2-1). There may also be potentially contaminated sites that have yet to be identified in the Proposed Project corridor, and exposure could occur if previously unknown contamination is encountered.

Extensive dewatering of construction areas, particularly the cut-and-cover subway section, could cause groundwater inflow to the area causing migration of "off-site" contaminants to soil and groundwater within the construction footprint of the Proposed Project. Unintended releases of hazardous materials could also occur from construction equipment and processes. Typical hazardous materials that may be used during the construction activities include motor oils, solvents, cleaning fluids, and lubricants. There is a potential for dermal contact and inhalation of contaminants from these exposures.

Exposure of construction workers or the public to hazardous materials is a significant impact. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

> **Mitigation Measure HazMat1 – Develop a work plan for additional site characterization.** BART will retain the services of a Registered Geologist or Professional Engineer to develop a Work Plan for additional sites characterization along portions of the Proposed Project alignment where grading, excavation, or dewatering is likely to occur.

Construction activity in contaminated areas, including excavation and grading, will be conducted with a site-specific health and safety plan prepared by a qualified professional. The plan will provide safety guidelines, delineation of action levels for personal protective gear, and emergency response procedures. The plan would be reviewed by all construction workers prior to commencement of construction.

To mitigate significant impacts associated with exposure to hazardous materials during construction, BART will develop a soil management plan for approval by the appropriate regulatory agencies. Contaminated solids or groundwater excavated or extracted during construction activities would be managed in accordance with the approved soil management plan and regulatory agency oversight. Remediation of soils could include excavation and on-or off –site treatment/disposal or in-place treatment of the affected soils. Remediation of groundwater could include in-situ treatment or extraction and treatment. Disposal options for contaminated soil and groundwater (i.e., on- or off-site treatment and/or disposal) would depend on the specific chemicals present and the levels of contamination. The steps in such a process include the following.

1. Develop a Work Plan for additional site characterization.

2. Undertake additional soil sampling in areas of known contamination to further define the horizontal and vertical extent of contamination.

3. Conduct groundwater testing in locations where dewatering activities may be required to identify any potential groundwater contamination for water management purposes.

4. Develop and obtain approval of a soil management plan to address proper handling of contaminated materials.

5. Handle contaminated soils in accordance with the approved soil management plan.

6. Construction work with contaminated soils will utilize dust control measures (Mitigation Measure AIR6) and sediment and erosion control measures (Mitigation Measure H7) to prevent exposure to workers, the public, and the environment. Where appropriate, air monitoring will be conducted to measure the effectiveness of the control measures.

7. Manage groundwater discharges in accordance with construction stormwater, pre-treatment, or NPDES permits as appropriate.

8. Document the remediation work for submittal to the local and state agencies overseeing implementation of the soil management plan.

If any unidentified contaminated materials are encountered during construction or an accident results in the release of hazardous materials, halt work to ascertain the

immediacy and nature of the material. If necessary, clear the area to provide safety to workers and the public. Take measures to isolate the release and determine a course of action for cleanup, treatment, and/or disposal of contaminated materials. Notify public emergency services and regulatory agencies as appropriate. Prior to construction near the underground fuel pipelines, the exact location of lines should be accurately established (e.g., accurate maps from the owner or operator or geophysical surveys). Potential hazards associated with rupture of the pipelines or discovery of hazardous materials releases from the pipelines should be included in the site health and safety plan.

Impact HazMat 2 – Potential handling of hazardous materials within 0.25 miles of an existing school. The Grimmer Elementary School is located adjacent to and on the west side of the Proposed Project alignment at 43030 Newport Drive in Fremont. The closest school buildings are approximately 300 feet from the proposed BART alignment. The school playfields are immediately adjacent to the railroad corridor and separated from the BART alignment by the UP right-of-way, which is approximately 50 feet wide. During project construction, any hazardous materials present in the railroad roadbed could be disturbed and released. The location of the project construction is within 0.25 miles of Grimmer Elementary School could be a potentially significant impact; however, implementation of Mitigation Measure HazMat1 would reduce the impact a less-than-significant level. (*Less than significant with mitigation incorporated.*)

Mitigation Measure HazMat1 – Develop a work plan for additional site characterization. This mitigation measure is described above. Implementation of Mitigation Measure HazMat1 will ensure that potential impacts of handling hazardous materials within 0.25 miles of Grimmer Elementary School will be less than significant.

Impact HazMat3 – Potential for demolition or renovation of existing structures to expose workers to lead-based paint and asbestos-containing materials. The Proposed Project would require the demolition of the Irvington Pump Station and may require demolition or renovation of other structures built prior to 1978. Such structures may include asbestos-containing materials and/or lead-based paint.

Exposure of workers to these materials is a potentially significant impact. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

Mitigation Measure HazMat3 – Survey and properly handle materials from structures that may contain asbestos and lead-based paint. Prior to demolition or renovation of structures built before 1978, a survey for the presence of ACM will be conducted. The survey will be conducted by Asbestos Hazard Emergency Response Act (AHERA)-certified personnel, trained according to state and federal regulations. Structures will also be surveyed for the presence of lead-based paint. If the results of the survey detect the presence of lead-based paint, construction will be performed in accordance with the Lead in Construction Standard (8 Cal. Code of Regulations Section 5132.1). ACM will be removed in accordance with the requirements of

Cal OHSA (8 Cal. Code of Regulations 5129) and the Bay Area Air Quality Management District (BAAQMD).

Optional Irvington Station

Some of the impacts and mitigation measures identified in the design option would also apply to the optional Irvington Station. As appropriate, the discussion below refers the reader to the previous section, *Impacts Related to Warm Springs Extension*, for descriptions of those mitigation measures that apply to both the Warm Springs Extension and the optional Irvington Station.

Construction-Related Impacts

Impact HazMat4 – Previous uses of the optional Irvington Station area may have resulted in the release of hazardous materials into the soil or groundwater. Construction may result in exposure of workers or the public to these materials resulting in adverse health effects. *(Less than significant with mitigation incorporated.)*

Mitigation Measure HazMat1 –Develop a work plan for additional site characterization. This mitigation measure is described above.

Contribution to Cumulative Impacts

Contribution of Warm Springs Extension to Cumulative Impacts

Exposure of workers to contaminated substances at work sites is a site-specific impact and not generally subject to cumulative impacts. Each of the projects considered in the cumulative impacts analysis (see Section 3.1), whether publicly or privately sponsored, is required to provide for worker safety, thereby minimizing the potential for exposure of workers at the various project sites. The Proposed Project would not make a cumulatively considerable contribution to exposure of workers to hazardous materials because mitigation measures would minimize the potential for Proposed Project workers to encounter hazardous materials.

3.2.5 References Cited in this Section

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Section 3.3
Hydrology and Water Quality

3.3.1 Introduction

This section describes existing hydrology and water quality conditions in the Proposed Project area, analyzes the Proposed Project's potential impacts on hydrology and water quality, and identifies mitigation measures to avoid or reduce adverse impacts. This section incorporates information and analysis presented in the 1992 EIR.

Hydrological resources in the project area are largely unchanged since preparation of the 1992 EIR. However, the differences between the Proposed Project and the 1992 Adopted Project warrant an update of material appearing in the 1992 EIR. In addition, a new flood insurance study (FIS) has been completed and new Flood Insurance Rate Maps (FIRMs) have been published for the Fremont Area (Federal Emergency Management Agency 2000a, 2000b). Consequently, this section represents a revision and augmentation of material appearing in the 1992 EIR.

3.3.2 Environmental Setting

Methodology for Assessment of Existing Conditions

The hydrology and water quality study area is approximately bounded on the north by the Fremont BART Station, on the south by the Warm Springs segment of Mission Boulevard, on the east by the ridgeline defining the eastern edge of the local watersheds, and on the west by the UP alignment. This study area defines the area that is likely to affect proposed BART facilities. It is assumed that BART would mitigate any effects caused by the Proposed Project in accordance with BART design standards, and therefore further study of downstream areas was not needed. Existing hydrologic and water quality conditions in the study area were evaluated qualitatively, and in accordance with standard professional practice. Key sources of information consulted on existing hydrologic conditions included the following.

- The current *Fremont General Plan* (City of Fremont 1991, as amended).
- The California State Water Resources Control Board's listing of water bodies identified as having limited water quality (California State Water Resources Control Board 1998 [adoption of the 2002 list is pending]).
- The most recent FIS for the region that includes the Proposed Project area (Federal Emergency Management Agency 2000a).

- Updated FIRMs for the region that includes the Proposed Project area (Federal Emergency Management Agency 2000b).
- A recent conceptual plan for restoration and enhancement of Mission Creek in Fremont (Jones & Stokes 2000).
- The site-specific geotechnical investigation performed for the Proposed Project (Parikh Consultants 2002) (See Appendix C).
- *BART Warm Springs Extension Draft Environmental Impact Report* (San Francisco Bay Area Rapid Transit District 1991a). (San Francisco Bay Area Rapid Transit District 1991a).
- *BART Warm Springs Extension Final Environmental Impact Report* (San Francisco Bay Area Rapid Transit District 1991b).
- The *Tule Pond Hydrology Study* (Bay Area Transit Consultants 1993).

Existing Conditions

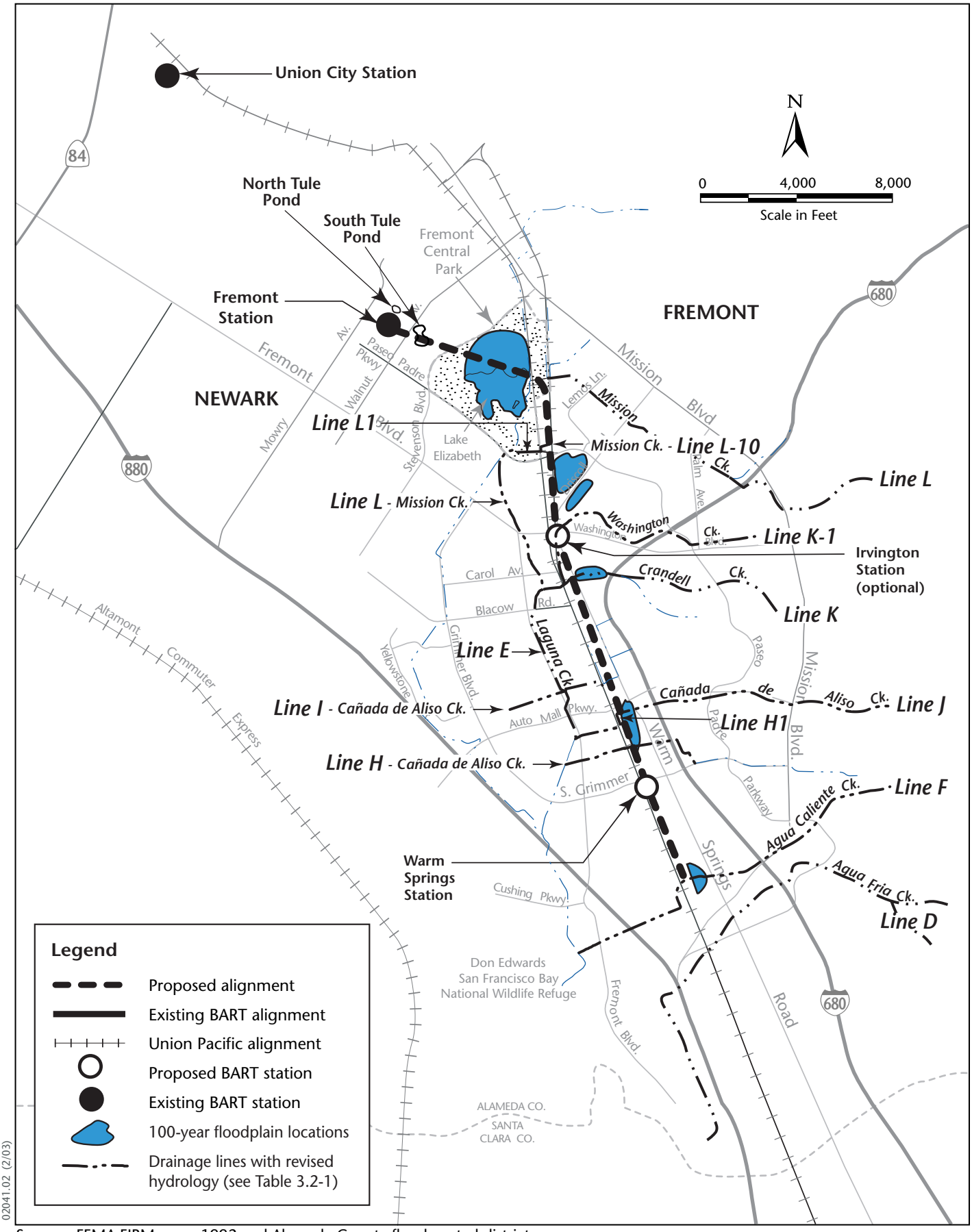
Climate and Precipitation

The San Francisco Bay area, like much of California's central coast, enjoys a Mediterranean climate characterized by mild, wet winters and warm summers. Moderated by proximity to San Francisco Bay and the ocean, temperatures are seldom below freezing. Summer weather is dominated by sea breezes caused by differential heating between the interior valleys and the coast, while winter weather is dominated by storms from the northern Pacific Ocean that produce the majority of the region's annual rainfall. The mean annual temperature in Fremont is 57°F. The mean annual rainfall in Fremont is approximately 18 inches, most of which occurs between October and April (City of Fremont 1991).

Surface Hydrology and Flooding

Surface Water Drainages in the Proposed Project Area

Surface hydrology in the eastern Fremont area is dominated by perennial and intermittent streams that flow westward from the East Bay hills and the foothills of the northern Diablo Range toward San Francisco Bay. Laguna Creek (Line E on Figure 3.3-1) is the principal drainage of the study area, draining a watershed that includes part of Fremont and the northern foothills of the Diablo Range as well as the Livermore and San Ramon Valleys (Alameda County Water District 2002). There are seven major drainage areas within or immediately adjacent to the Proposed Project alignment (Line E and its tributaries), shown on Figure 3.3-1 and described further in Table 3.3-1.



Source: FEMA FIRM maps 1992 and Alameda County flood central district maps.

Figure 3.3-1
Major Drainages in Proposed Project Area

Table 3.3-1. Drainage Channel Characteristics Revised Since 1992 EIR for Flood Insurance Study

Drainage Line	Associated Watershed	Total Drainage Area (square miles)	Crossing Location (BART stationing [feet])	Characteristics at Crossing		
				Conveyance Structure		100-Year Peak Flow (cubic feet per second)
				West of Alignment	East of Alignment	
L	Mission Creek	0.9	2279+50	48-inch pipe	48-inch pipe	230
L-10	Mission Creek	N/A	2302+20	24-inch pipe	24-inch-pipe	139
L-1	Mission Creek	N/A	2305+50	N/A[1]		
K	Crandall Creek	3.3	2361+00	6-by-3.5-foot box culvert and 66-inch pipe	6-by-5-foot arch and 66-inch pipe	267
I	Cañada de Aliso	0.6	2406+00	34-inch pipe	7-by-6-foot box culvert	245
J	Cañada de Aliso	1.6	2424+50	72-inch pipe	72-inch pipe	560
H	Cañada de Aliso	1.3	2434+00	modified box culvert	modified box culvert	589
H-1	Cañada de Aliso	N/A	2434+00 to 2442+00	N/A	48-inch pipe	N/A
F[2]	Arroyo del Agua Caliente (Agua Caliente Creek)	2.7	2493+50	8- by 6-foot box culvert	81-inch pipe	945

Notes:

N/A = No data available.
[1] Drainage channel will be filled in by the City of Fremont's grade separations project.
[2] Line F does not cross the Proposed Project alignment; however, its flooding may affect the project.

Source: San Francisco Bay Area Rapid Transit District 1991, Federal Emergency Management Agency 2000a

The lower reaches of the drainages shown on Figure 3.3-1 have been modified to serve as stormwater drainage channels. The Alameda County Flood Control and Water Conservation District (ACFCD) requires that drainage structures be designed to reduce post-development flows from the 15-year storm to predevelopment levels. The ACFCD also requires that drainage facilities serving watershed areas larger than 50 acres be designed to safely convey flows from the 100-year storm.[1] Accordingly, as of 1991, existing drainage structures were sized to effectively convey flood flows from the 15-year storm (San Francisco Bay Area Rapid Transit District 1991); many are still not capable of effectively conveying flood flows from the 100-year storm (Federal Emergency Management Agency 2000a). No changes have been made to the stormwater channels or conveyance structures since the 1992 EIR was approved.

[1] The *100-year storm* is a storm that has a 1% chance of occurring in any given year; the *15-year storm* is a storm that has a 6.7% chance of occurring in any given year.

Peak flows for the 100-year storm, and resultant flooding, have increased since preparation of the 1992 EIR because of additional development in the area's upper watersheds. The FIS (Federal Emergency Management Agency 2000a) for the region that includes the Proposed Project area was revised in 2000 to incorporate updated flood hazard information along selected area drainages; revised peak flows for the drainages affected by the Proposed Project are shown in Table 3.3-1. Flooding remains a concern along the northeastern portion of Lake Elizabeth, and along Mission Creek, Crandell Creek, Cañada de Aliso, the unnamed tributary to Laguna Creek shown as drainage line H in Table 3.3-1, and Agua Caliente Creek. Where the Proposed Project alignment crosses these drainages, flow exceeds the capacity of the conveyance structures during extreme flood events and water moves as sheet flow across the existing railroad embankments (Federal Emergency Management Agency 2000a).

Tule Pond and Lake Elizabeth

Tule Pond, located at the north end of the Proposed Project alignment, is a sag pond[2] formed along the Hayward fault (Parikh Consultants 2002). It has been modified to serve as a flood control basin for local runoff during the wet season (San Francisco Bay Area Rapid Transit District 1991). Tule Pond is bisected by Walnut Avenue, but the portion north of Walnut Avenue (Tule Pond North) is hydrologically connected to the portion south of Walnut Avenue (Tule Pond South) via two 18-inch culverts. The portion of Tule Pond within the Proposed Project corridor (Tule Pond South) has an area of approximately 6 acres and is seasonally flooded.

Lake Elizabeth, located in Fremont Central Park, is an 83-acre recreational lake owned by the Alameda County Flood Control and Water Conservation District (ACFCD) and maintained with groundwater by the City of Fremont. It originated as a natural sag (Stivers Lagoon) formed along an active trace of the Hayward fault (see City of Fremont 1991, as amended), but has been artificially enlarged, and hardscape has been installed to stabilize portions of the shoreline.

In addition to serving as a recreational resource, Lake Elizabeth and the surrounding park areas also provide approximately 985 acre-feet of flood storage capacity during the wet season (Jones & Stokes 2000). High wet-season flows in Mission Creek back up where the creek is culverted at Paseo Padre Parkway and flow over a weir into Lake Elizabeth. As the flood flows subside, lake water drains back into Mission Creek via the same weir. During extreme flood events, flood flows in Mission Creek overtop the bank and discharge directly into Lake Elizabeth upstream of the weir. During the summer, the City of Fremont installs flashboards in the weir and adds supplemental water to offset evaporation and regulate lake level for recreation uses (Jones & Stokes 2000). Because of the shallow slopes adjoining Lake Elizabeth, surface runoff rates are slow and little overland runoff reaches the lake.

Lake Elizabeth acts as a sink for sediment transported by Mission Creek, particularly when the creek discharges directly into the lake at flood stage. Bathymetric surveys of the lake suggest that sediment has been accumulating at an average rate of approximately 8,000 cubic yards per year (Jones & Stokes 2000). The lake is periodically dredged to maintain floodwater storage capacity, and dredge spoils are retained in a bermed area north of the lake and two dredge ponds with an aggregate area of

[2] Sag refers to a depression formed by surface deformation along an active fault trace. A sag pond forms when a sag is filled by runoff and/or groundwater to form a body of standing water.

approximately 20 acres located west of the lake. The ponds are maintained by Fremont Central Park staff.

Approximately 550 linear feet of the Proposed Project alignment is within the northeast arm of Lake Elizabeth; the Proposed Project corridor includes 3.7 acres of the lake's area. The portion of Lake Elizabeth intersected by the Proposed Project corridor has a maximum depth of approximately 6 feet.

Subsurface Hydrology

The Proposed Project area overlies the Warm Springs subarea of the South Bay Groundwater Basin. The basin provides approximately 50% of the Alameda County Water District's (ACWD's) water supply. Aquifers in the Warm Springs subarea consist of thin discontinuous horizons within the Warm Springs alluvial apron. In general, groundwater flows west toward San Francisco Bay (San Francisco Bay Area Rapid Transit District 1991).

The Hayward fault acts as a substantial barrier to east-west movement of groundwater in the Proposed Project area. Consequently, groundwater levels east of the fault are as much as 50 feet higher than those west of the fault. In the vicinity of Lake Elizabeth, the water table is typically 4–8 feet below ground surface, but is locally at the surface (Parikh Consultants 2002).

Water Quality

None of the surface water bodies in the Proposed Project area are considered water quality limited pursuant to Section 303(d) of the federal Clean Water Act (CWA) (California State Water Resources Control Board 2002). However, as identified in the 1992 EIR, runoff and discharges from industrial facilities and urban areas have the potential to contribute elevated levels of contaminants, especially petroleum products and heavy metals, to local water bodies. In addition, sediments accumulating in Lake Elizabeth likely carry adsorbed nutrients as well as pesticides and other pollutants derived from upstream urban areas (Jones & Stokes 2000). Surface water quality conditions have not changed substantially since preparation of the 1992 EIR.

Groundwater in the Fremont area has been identified as containing elevated levels of nitrates and boron. Nitrates are likely derived in part from naturally occurring nitrate-bearing minerals in the area's sediments, and in part from discharges from wastewater treatment facilities and septic tanks. Boron is likely derived from naturally occurring minerals in the area's sediments (San Francisco Bay Area Rapid Transit District 1991). Groundwater quality has been locally affected by leakage from underground storage tanks and by infiltration of surface spills (San Francisco Regional Water Quality Control Board 2001). Based on review of recent data from the San Francisco Bay Regional Water Quality Control Board (2001), groundwater quality has not changed substantially since preparation of the 1992 EIR.

3.3.3 Regulatory Setting

The following sections describe current laws and regulations relevant to the Proposed Project.

Federal Laws and Regulations

Clean Water Act

The federal Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA now serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The CWA authorizes states to adopt water quality standards for water bodies in the state and includes programs addressing both point source and nonpoint source pollution.[3] The CWA operates under the principle that all discharges from point sources into the nation's waters are unlawful unless specifically authorized by a permit; permit review is one of the CWA's primary regulatory tools. Permits issued to point source discharges must contain effluent limitations that implement state water quality standards and technology-based standards established by the U.S. Environmental Protection Agency (EPA). EPA establishes water quality standards for states that fail to do so; for California, after the state's corresponding water quality standards were judicially invalidated, EPA established such standards for certain toxic water pollutants in the "National Toxics Rule" and "California Toxics Rule." The following sections provide additional details on specific CWA sections that apply to the Proposed Project.

The following sections provide additional details on specific sections of the CWA that apply to the Proposed Project.

Section 404 – Permits for Fill Placement in Waters and Wetlands

CWA Section 404 regulates the discharge of dredged and fill materials into "waters of the United States." *Waters of the United States* refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands, including any or all of the following.

- Areas within the ordinary high water mark of a stream, including nonperennial streams with a defined bed and bank and any stream channel that conveys natural runoff, even if it has been realigned.
- Seasonal and perennial wetlands, including coastal wetlands.

Wetlands are defined for regulatory purposes as areas "inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3, 40 CFR 230.3).

Project proponents must obtain a permit from the U.S. Army Corps of Engineers (Corps) for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity. The Corps may issue either an individual permit evaluated on a case-by-case basis, or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities

[3] *Point source pollution* is pollution that originates or enters surface waters at a single, discrete location such as an outfall structure or an excavation or construction site. *Nonpoint source pollution* originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas.

expected to cause only minimal adverse environmental effects. Nationwide Permits (NWPs) are a type of general permit issued to cover particular fill activities. Each NWP specifies particular conditions that must be met in order for the NWP to apply to a particular project. Waters of the United States in the Proposed Project corridor are under the jurisdiction of the Corps, San Francisco District.

Section 404 permits may be issued only if there is no practicable alternative to the proposed discharge that would have a less-adverse impact on the aquatic ecosystem (as long as the alternative does not have other significant adverse environmental consequences). Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. The Corps cannot issue an individual permit or verify the use of a general permit until applicable requirements of NEPA, the federal Endangered Species Act (see Section 3.4), the federal Coastal Zone Management Act, and the National Historic Preservation Act (see Section 3.8) have been met. In addition, the Corps cannot issue or verify any permit until a water quality certification, or waiver of certification, has been issued pursuant to CWA Section 401.

Section 401 – Water Quality Certification

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate. The state must certify that the discharge will comply with state water quality standards and other requirements of the CWA. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. Section 401 certification or waiver for the Proposed Project corridor is under the jurisdiction of the San Francisco Bay RWQCB.

Section 402 – Permits for Stormwater Discharge

CWA Section 402 regulates all point source stormwater discharges to surface waters through the EPA's National Pollutant Discharge Elimination System (NPDES) program. In California, the State Water Resources Control Board (SWRCB) is authorized by the EPA to oversee the NPDES program through the state's nine Regional Water Quality Control Boards (RWQCBs). Additional information on NPDES provisions relevant to the Proposed Project is provided in *Porter-Cologne Water Quality Control Act* under *State Laws and Regulations* below.

Federal Flood Insurance Program

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were enacted in response to concern about the increasing costs of disaster relief. The intent of these acts is to reduce the need for large publicly funded flood-control structures and to limit disaster relief costs by restricting development on floodplains.

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development on floodplains. FEMA is responsible for issuing FIRMs for communities participating in the NFIP. These maps delineate flood hazard zones in the community.

The FIRMs for the region including the Proposed Project area have been updated since preparation of the 1992 EIR; the analysis in this section was based on the most recent FIRMs, which have an effective date of February 9, 2000.

State Laws and Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act provides for the development and periodic review of water quality control plans (basin plans) that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. Basin plans are primarily implemented by using the NPDES permitting system to regulate waste discharges so that water quality objectives are met (see *Section 402 – Permits for Stormwater Discharge* in *Clean Water Act* above). In California, the SWRCB is responsible for implementing the NPDES program through the state's nine RWQCBs. The Proposed Project corridor and surrounding vicinity are under the jurisdiction of the San Francisco Bay RWQCB.

Transportation construction is now regulated under the NPDES General Permit for Storm Water Discharges Associated with Construction Activities, which was adopted by the SWRCB in August 1992 and revised in 1999 and again in 2001. Coverage under this general permit requires the facility owner to submit a notice of intent to the SWRCB, prepare a Storm Water Pollution Prevention Plan (SWPPP, pronounced "swip"), and submit annual monitoring reports to the appropriate RWQCB. The SWPPP is required to include pollution prevention measures (erosion and sediment control measures, measures to control nonstormwater discharges and hazardous spills, and postconstruction stormwater management measures); demonstration of compliance with all applicable local and regional erosion and sediment control and stormwater management standards; identification of responsible parties; a detailed construction timeline; and a monitoring and maintenance schedule for the best management practice (BMP) for sediment control, spill containment, postconstruction measures, etc.

Transportation facilities that discharge stormwater are regulated under the NPDES General Permit for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities, which was adopted in November 1991 and revised in 1992 (after preparation of the 1992 EIR) and then again in 1999. Coverage under this general permit requires the facility operator to submit a notice of intent to the SWRCB, prepare a SWPPP, perform monitoring, and submit annual monitoring reports to the appropriate RWQCB. The SWPPP must include measures used to eliminate nonstormwater discharges to the facility's storm drain system. Examples of nonstormwater discharges include waters from the rinsing or washing of vehicles, equipment, buildings, or pavement; materials that have been improperly disposed of; and spilled or leaked materials.

Lake or Streambed Alteration Agreements (California Fish and Game Code Section 1600 *et seq*.)

The California Fish and Game Code regulates activities that affect the flow, channel, or banks of natural bodies of water. Project proponents are required to notify and enter into a streambed

alteration agreement with the California Department of Fish and Game (CDFG) before beginning construction of a project that will result in any of the following.

- Diversion, obstruction, or change in the natural flow or the bed, channel, or bank of any river, stream, or lake.
- Use of materials from a streambed.
- Disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

Lake and streambed alteration activities are covered under California Fish and Game Code Section 1601 for public agencies and Section 1603 for private parties. Section 1600 *et seq*. typically do not apply to drainages that lack a defined bed and banks, such as swales and vernal pools.

Local Laws and Regulations

Alameda Countywide Clean Water Program

The Alameda Countywide Clean Water Program (Clean Water Program) was initiated with the goal of forging consistent, effective countywide strategies to control sources of stormwater pollution. Since preparation of the 1992 EIR, the San Francisco Bay RWQCB has issued a joint municipal stormwater permit to the 17 agencies and cities participating in the Clean Water Program (Alameda Countywide Clean Water Program 2001). The participating entities include Alameda County; the ACFCD and its Zone 7; and the Cities of Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City. The Clean Water Program is responsible for helping participant entities ensure that they are fulfilling their obligations under the permit and for preparing detailed reports that describe what each entity is doing to prevent stormwater pollution. The Program coordinates its activities with other pollution prevention programs, such as wastewater treatment, hazardous waste disposal, and waste recycling.

The Clean Water Program has developed a Storm Water Quality Management Plan (Plan) that describes the Program's approach to reducing stormwater pollution. The Storm Water Quality Management Plan for fiscal years 2001/02 through 2007/08 is the Clean Water Program's third to date, and serves as the basis of the Clean Water Program's NPDES permit (Alameda Countywide Clean Water Program 2001). This project in the City of Fremont, which is a participating entity of the Clean Water Program, is within the boundaries addressed by the Plan. The Plan does not regulate discharge requirements. Rather, the Clean Water Program's Plan is an advisory tool intended to assist dischargers within the boundaries of the 17 participatory agencies to comply with RWQCB regulations. The Plan provides details and guidelines for RWQCB compliance for entities that will generate discharges to water bodies.

3.3.4 Impact Assessment and Mitigation Measures

Methodology for Impact Analysis

Potential impacts on hydrology and water quality were assessed qualitatively, based on standard professional practice. This analysis included review and revision of impacts and proposed mitigation measures identified in the 1992 EIR to ensure consistency with the current Proposed Project and updated environmental regulations.

Criteria for Determining Significance of Impacts

This analysis relied on standards of significance developed by BART on the basis of regulatory requirements and accepted professional practice related to water resources management. Based on these criteria, impacts on hydrology and water quality were considered significant if the Proposed Project was judged likely to result in any of the following.

- Alteration of surface runoff rates and patterns so as to cause substantial flooding, erosion, or siltation.
- Substantial degradation of surface water or groundwater quality.
- Substantial depletion of water resources.

Impacts and Mitigation Measures

Impacts Related to Warm Springs Extension

Operational Impacts

Impact H1 – Alteration of flooding conditions due to changes in infiltration rates, drainage patterns, or the rate and amount of surface runoff. Implementation of the Proposed Project would involve construction of impervious surfaces on areas that are presently undeveloped. Approximately 49 acres of impervious area would be created as a result of implementing the Proposed Project (not including the additional 18 acres that would be created if the optional Irvington Station were also constructed). New areas of impervious surface would include the Warm Springs Station, the maintenance yard, the train control bungalow, the traction power substations, the gap breaker stations, and the ventilation structure(s). These additional impervious areas would decrease the amount of rainfall expected to infiltrate into the ground and would result in higher peak flows in area drainages. Increased peak flows could exacerbate flooding problems along the drainage lines that experience flooding under existing conditions (the northeastern portion of Lake Elizabeth, Mission Creek, Crandell Creek, Cañada de Aliso, Agua Caliente Creek, and the unnamed tributary to Laguna Creek shown as Line H on Figure 3.3-1). If postconstruction flows are not controlled, existing flooding problems could be exacerbated, and additional flooding and channel bank scouring could take place. This impact is considered potentially significant, but would be reduced to a less-than-significant level by implementation of the following mitigation measure. *(Less than significant with mitigation incorporated.)*

Mitigation Measure H1 – Design and implement a stormwater management system to safely convey stormwater. BART will design and implement a stormwater management system and will develop and implement a stormwater management plan to convey flows up to and including the 100-year design storm. The stormwater management system will be incorporated into plans and specifications for the Proposed Project, and BART will submit the Proposed Project designs to ACFCD for approval to ensure that the Proposed Project does not exacerbate either upstream or downstream flooding conditions. The ACFCD publishes guidelines with which design of drainage systems are to comply. In addition, any work that would encroach on structures or areas owned or operated by the ACFCD would require approval from the ACFCD. The stormwater management plan may recommend use of stormwater detention facilities to temporarily store the increased flows from storms up to and including the 15-year storm, and to discharge the flows at approximately predevelopment levels.

Impact H2 – Change in flood storage capacity at Lake Elizabeth. Lake Elizabeth is an important flood storage facility; any reduction in capacity of the lake would adversely affect the flood management capabilities of the City of Fremont and the ACFCD. The Proposed Project alignment crosses the northeast arm of the lake, which is approximately 6 feet deep. A subway would be constructed under the lake, and the top of the subway box would be a minimum of 6 feet below the existing lake bottom. When subway construction is complete, the lake bottom would be backfilled over the structure and the lake would be restored over the alignment. Consequently, the long-term flood storage capacity of the lake would not differ from existing conditions after the Proposed Project is implemented.[4] This impact is accordingly considered less than significant. *(Less than significant.)*

Mitigation – None required.

Impact H3 – Loss of flood storage capacity at Tule Pond South. Construction of the Proposed Project would necessitate filling in part of the portion of Tule Pond south of Walnut Avenue (Tule Pond South). No major drainage lines presently flow into Tule Pond South. However, it is hydrologically connected to the portion of Tule Pond north of Walnut Avenue (Tule Pond North) via two culverts under Walnut Avenue; filling in part of Tule Pond South would reduce available flood storage capacity. The deepening of Tule Pond to offset losses in storage due to the partial filling in one location of the pond would not necessarily result in increased flood storage capacity. The close proximity to groundwater levels during the normal wet season would result a greater amount of stored water but no increased capacity to contain floodwater above this water level. The loss of flood storage capacity is considered a significant impact, but would be reduced to a less-than-significant level by implementation of the following mitigation measure. *(Less than significant with mitigation incorporated.)*

Mitigation Measure H3 –Mitigate the loss of flood storage capacity by providing an equal or greater amount of lost storage capacity at the same location. To maintain existing flood storage capacity, BART will expand Tule Pond and/or create an additional flood storage facility (e.g., detention pond) at the same location. The

[4] Temporary impacts on Lake Elizabeth during construction are discussed in Impacts H7, H8, and H11 below.

storage capacity will be at least as large as the loss of storage resulting from implementation of the project (see Figure 2-4a in Chapter 2 [*Project Description*]).

Impact H4 – Delivery of increased pollutant loads to urban drainages from expanded impervious areas. Operation of the Proposed Project would increase traffic and parking in the Proposed Project corridor, resulting in increased accumulation of pollutants such as hydrocarbons and trace metals on impervious surfaces (roads and parking areas). Delivered to waterways by local runoff, these pollutants would have the potential to affect water quality and aquatic life. This impact is considered significant. BART would be required to implement water quality measures and monitoring procedures as conditions of coverage under the NPDES General Permit for Industrial Activities. This permit is required by the San Francisco Bay RWQCB; the following mitigation measure would reduce potential impacts related to increase pollutant loads and associated water quality degradation to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

Mitigation Measure H4 – Incorporate design features and implement best management practices (BMPs) for postconstruction water quality protection. BART will incorporate design features for postconstruction water quality protection into the stormwater management system described in Mitigation Measure H1 above, and will ensure that appropriate water quality protection BMPs are implemented during operation of the Proposed Project. Design features may include, but will not necessarily be limited to, water quality inlets, grassy swales, oil-water separators, and wet ponds. These structures remove hydrocarbons, dissolved pollutants, and particulate matter using a range of mechanisms, including particulate settling, biological uptake, flocculation, and filtration. BART will monitor and maintain water quality design features as necessary for the life of the Proposed Project.

In addition to physical structures, BMPs may include programs designed to educate staff and reduce potential impacts to water quality. Likewise, BART may incorporate operational elements that will reduce or eliminate potential sources of point- and non-point source pollutants. Implementation of BMPs to protect water quality will be specified in the SWPPP associated with their NPDES General Permit. In addition, BART may receive assistance in defining and implementing those BMPs via the Clean Water Program's storm water quality management plan.

Impact H5 – Interference with groundwater recharge. As discussed under Impact H1 above, the Proposed Project would result in construction of additional areas of impervious surfaces, especially at the proposed Warm Springs Station and on associated sidewalks and parking lots. Increased areas of impervious surface could reduce the area available for potential recharge of groundwater by creating a barrier that water cannot penetrate (subsequently, the water could not infiltrate into the subsurface groundwater). However, the soils underlying the Proposed Project area are generally poorly drained silt and clay loams that provide little recharge capacity (Welch 1981). The potential reduction in the amount of groundwater recharge is considered a less-than-significant impact. *(Less than significant.)*

Mitigation – None required.

Impact H6 – Potential depletion of local groundwater supplies during operation. As described in the *Subsurface Hydrology* section of *Existing Conditions* above, groundwater flows to the west in the Proposed Project area. The subway segment of the Proposed Project would represent a localized barrier to westward flow of groundwater in the vicinity of Lake Elizabeth. However, the extent of the barrier would be limited. Moreover, westward flow of groundwater in the vicinity of Lake Elizabeth is naturally impeded by the Hayward fault. Consequently, the presence of the subway segment of the Proposed Project is not expected to result in substantial depletion of local groundwater supplies, and this impact is considered less than significant. *(Less than significant.)*

Mitigation – None required.

Construction-Related Impacts

Impact H7 – Potential for accelerated erosion and discharge of sediment into water bodies as a result of ground-disturbing activities. Implementation of the Proposed Project would require site clearing and grading along the Proposed Project alignment; at the sites of the proposed Warm Springs Station, maintenance facilities, and traction power and train control facilities; and to create construction laydown areas. Exposed soil could be eroded and additional sediment discharged to waterbodies in the vicinity of the Proposed Project. Increased sediment load has the potential to clog the gills and filters of aquatic organisms; to decrease flood storage capacity in Lake Elizabeth and Tule Pond; and to decrease aesthetic and recreational values in these and the other water bodies in the vicinity of the Proposed Project. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

Mitigation Measure H7 –Ensure the implementation of NPDES permit conditions. As required by the NPDES General Permit for Discharges of Storm Water Associated with Construction Activities, BART will ensure that specific erosion and sediment control measures are implemented during Proposed Project construction to prevent accelerated erosion stemming from grading and other ground-disturbing activities. Measures include, but are not limited to, the following.

Erosion Control Measures:

- Temporary and permanent seeding of disturbed areas and stockpiles.
- Use of erosion control blankets.
- Stabilization of construction area entrances and exits.
- Dust suppression (e.g., watering exposed surfaces and stockpiles of soils and/or excavated material, covering stockpiles with plastic tarps).

Sediment Control Measures:

- Use of straw rolls, sediment fences, straw bales, and/or sediment traps to prevent sediment-laden runoff from leaving the construction area.
- Use of temporary dikes to redirect or control runoff.

These measures would be installed before October 15 and monitored throughout the winter rainy season (October 15–March 15). The measures and monitoring requirements required under the NPDES General Permit would minimize the potential for accelerated erosion and sedimentation. In addition, BART may receive assistance in defining and implementing those BMPs via the Clean Water Program's storm water quality management plan. BART will verify that an NOI and a SWPPP have been filed before allowing construction to begin. BART will routinely inspect the project site to verify that the BMPs specified in the SWPPP are properly installed and maintained. BART will immediately notify the contractor if there is a noncompliance issue and require compliance.

Impact H8 – Water quality degradation at Lake Elizabeth, Mission Creek, Tule Pond, and Cañada de Aliso during construction. Construction of the Proposed Project would include the installation of a temporary cofferdam in Lake Elizabeth to accommodate the cut-and-cover construction operation. The cofferdam in Lake Elizabeth is expected to consist of an earthen fill placed at the mouth of the eastern arm of the lake. When the cofferdam is in place, the area east of the cofferdam would be dewatered by pumping water into the western side of the lake. When dewatering is completed, the alignment would be excavated with laid-back slopes, meaning that the walls of the excavation would have a horizontal: vertical ratio of approximately 2:1 to stabilize the soil and avoid cave-ins while the subway structure is being constructed. When subway construction is completed, the lake bottom would be backfilled over the subway structure; water would flow back into the lake's eastern arm from the western side of the lake; and the cofferdam would be removed, restoring the lake over the alignment.

A similar construction method would be used for cut-and-cover subway construction at Mission Creek, except that sheet piles (metal sheets driven into the ground to hold back the surrounding earth from the excavation zone) may be used instead of laid-back slopes to create a narrower construction zone.

Sediments on the bottom of Lake Elizabeth and Mission Creek in the vicinity of the cofferdams could be entrained into lake and creek waters by cofferdam installation and removal operations, potentially increasing turbidity. Further, the cut-and-cover operation at Lake Elizabeth and Mission Creek could loosen lake-bottom sediments, such that when water is restored to the dewatered section of the lake or channel, the sediments could be more prone to entrainment and subsequent downstream conveyance.

Dewatering and fill placement activities at Tule Pond could also result in release of sediments during construction. Construction activities at Tule Pond may vary based on final design level soils, geotechnical, and hydrological analyses. It is likely, however, that dewatering of all or a portion of Tule Pond would be required. The construction sequence might entail driving sheet piles within the construction zones in Tule Pond and then pumping out the water in the affected portion of the pond.

Construction activities might include excavation and removal of existing drainage structures under the railroad tracks, grading of the existing channel, and installation of precast box culverts underneath the Proposed Project alignment.

Implementation of the following mitigation measures would reduce this impact to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

> **Mitigation Measure H8(a) – Implement water quality control measures to prevent release of sediment.** BART will ensure that water quality control measures, such as turbidity barriers/curtains, are in place before construction activities begin in these areas, and prior to cofferdam installation. The barriers have pores that are large enough to allow water to pass through, but the pores are small enough to trap most sediments that may be suspended in the water. Measures will be installed on the west side of the cofferdam in Lake Elizabeth to prevent the release of disturbed lake-bottom sediments into the majority of the lake. Additional turbidity barriers/curtains or other appropriate measures will be installed at the outlet to Mission Creek to retain entrained lake-bottom sediments. BART may also use additional technologies to reduce potential impacts to water quality. These technologies may include, but not be limited to, the use of sheet piles instead of using an earthen cofferdam.
>
> BART will also ensure that construction activities related to dewatering or the runoff of stormwater from Lake Elizabeth, Mission Creek, Tule Pond, and Cañada de Aliso will incorporate BMPs to minimize impacts to water quality. BMPs may include, but not be limited to, using sediment barriers (e.g., silt curtains), limiting the amount of exposed soils, and incorporating settling basins prior to discharge of water.
>
> **Mitigation Measure H8(b) – Comply with City of Fremont MS-4 Permit.** BART will conduct any dewatering activities associated with the construction or operation of the Proposed Project according to the Waste Discharge Requirements for Facility-Wide Municipal Storm Water Discharges from Storm Sewer System and Non-Storm Water Discharges from the City of Fremont (MS4 Permit) issued by the San Francisco Bay RWQCB.

Impact H9 – Release of hazardous substances that violate water quality standards. Laydown and operation of construction equipment, including heavy earthmoving equipment and haul trucks, could result in the accidental release of substances such as fuels and lubricants that have the potential to degrade water quality and result in violation of applicable water quality standards. This impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

> **Mitigation Measure H9 – Implement hazardous materials spill prevention and control plan.** As part of its NPDES General Permit for Construction Activities, BART will be required to develop and implement a Hazardous Material Spill Prevention and Control Plan related to the use of construction equipment for the Proposed Project. The Hazardous Material Spill Prevention and Control Plan would describe storage procedures and construction site housekeeping practices and identify the parties responsible for monitoring and spill response. The measures and monitoring procedures required under the NPDES General Permit would minimize the potential for release of hazardous materials to the environment. BART will ensure the filing of the NOI for the NPDES permit and developing and implementing a Hazardous Materials Spill Prevention and Control Plan. BART will review the

Hazardous Materials Spill Prevention and Control Plan before allowing construction to begin. BART will routinely inspect the project site to verify that the BMPs specified in the Hazardous Materials Spill Prevention and Control Plan are properly installed and maintained. BART will immediately notify the contractor if there is a noncompliance issue.

Impact H10 – Potential depletion of local groundwater supplies during construction. As described in *Existing Conditions* above, the Hayward fault acts as a significant barrier to east-west movement of groundwater in the Proposed Project area. During construction, dewatering of Tule Pond would be required, and depending on the hydrology of the area, dewatering of the retained-cut section between Walnut Avenue and Stevenson Boulevard may also be required. In the vicinity of Lake Elizabeth, the water table is located 0–8 feet below ground surface. Therefore, groundwater is expected to be present within the depth of excavation that would be required for construction of the subway segment of the Proposed Project (Parikh Consultants 2002). Construction of the subway beneath Lake Elizabeth and Mission Creek would require a dewatering system.

Dewatering measures have the potential to result in localized lowering of shallow groundwater levels. This groundwater supports wetland and riparian habitats in the area but is not the drinking water supply, which is obtained from deeper aquifers. Because the effects of dewatering on shallow groundwater would be temporary and localized (less than 6 months and within 1,000 feet respectively), they are accordingly expected to be less than significant. Locally, there is no demand upon groundwater supplies. Potential impacts from this activity on biological resources are discussed in detail within Section 3.4 (*Biological Resources*). *(Less than significant.)*

Mitigation – None is required.

Impact H11 – Temporary reduction in flood storage capacity at Lake Elizabeth. Construction of the Proposed Project would include the installation of a temporary cofferdam in Lake Elizabeth to accommodate the cut-and-cover construction operation. The presence of the cofferdam is expected to displace 50 acre-feet of flood storage. Lake Elizabeth currently provides 985 acre-feet of storage (Jones & Stokes 2000), so approximately 935 acre-feet of storage would still be available even if 50 acre-feet of storage were temporarily displaced. However, although the City of Fremont is required to maintain only 931 acre-feet of storage for flood control purposes (Jones & Stokes 2000), the reduction in flood storage capacity could have substantial effects on downstream flooding if a substantial storm occurred during construction (San Francisco Bay Area Rapid Transit District 1991). In addition, during flood events, Mission Creek frequently flows over the eastern bank of Lake Elizabeth into the area that would be enclosed by the cofferdam and dewatered during construction. Consequently, flooding on Mission Creek during construction could inundate the construction area, possibly damaging the facilities and releasing hazardous construction-related materials to the environment. This impact is considered significant, but would be reduced to a less-than-significant level by implementation of Mitigation Measure H11(a) if Proposed Project construction at Lake Elizabeth can be completed between April 1 and November 1. If not, Mitigation Measure H11(b) would be implemented. *(Less than significant with mitigation incorporated.)*

Mitigation Measure H11(a) – Limit construction of cut-and-cover subway to the dry season. BART will close the cofferdam after April 1 and will complete construction and breach the cofferdam by November 1. Using this construction

method, there would only be a small reduction in flood storage during the flood season (fill above the normal water level) and the construction period would be maximized.

If Proposed Project construction at Lake Elizabeth cannot be completed between April 1 and November 1, Mitigation Measure H11(b) will be implemented.

Mitigation Measure H11(b) – Create additional flood storage capacity equal to or greater than the temporary reduction in flood storage during construction. One or more of the following solutions could be employed to provide additional flood storage to offset the temporary reduction of flood storage during construction activities:

- Actively manage the level of water within Lake Elizabeth to provide additional storage capacity equal to the storage loss.
- Construct a second temporary cofferdam on the east side of the open trenching activities during construction and divert flows back into the eastern arm of Elizabeth Lake.
- Construct additional storage facilities (e.g., detention basin) at the same location to provide additional storage capacity.

One or more of these solutions would be incorporated with the review and permission of the City of Fremont and the ACFCD.

Impacts Related to Optional Irvington Station

Operational Impacts

Impact H12 – Alteration of flooding conditions due to changes in infiltration rates, drainage patterns, or the rate and amount of surface runoff as a result of implementation of optional Irvington Station. The optional Irvington Station would add 18 acres of impervious surface to the 49 acres resulting from implementation of the Proposed Project. The additional impervious area would further decrease the amount of rainfall expected to infiltrate into the ground and would result in higher peak flows in area drainages. As described under Impact H1 above, uncontrolled postconstruction flows could exacerbate existing flooding problems and could contribute to additional flooding and channel bank scouring. This effect is considered potentially significant, but would be reduced to a less-than-significant level with implementation of Mitigation Measure H1. *(Less than significant with mitigation incorporated.)*

Mitigation Measure H1 – Design and implement a stormwater management system to safely convey stormwater. This mitigation measure is described above.

Construction-Related Impacts

Some of the impacts and mitigation measures identified in the design option would also apply to the optional Irvington Station. For construction-related impacts, Impacts H7 and H9 and Mitigation

Measures H7 and H9 would apply. The section *Impacts Related to Warm Springs Extension* above contains descriptions of mitigation measures that apply to both the Warm Springs Extension and the optional Irvington Station.

Contribution to Cumulative Impacts

Contribution of Warm Springs Extension to Cumulative Impacts

Table 3.1-1 and Section 3.1.6 in Section 3.1 (*Introduction to Environmental Analysis*) list approved and pending development projects in Fremont as of the date of preparation of this SEIR. The projects included in Section 3.1 largely represent infill development and redevelopment in an already urbanized area. Consequently, they are not expected to result in a substantial cumulative degradation of area hydrologic function or water quality. However, there is some potential for the following impacts.

Operational Contribution

Impact H-Cume1 – Potential for increased hardscape area to reduce groundwater infiltration and increase peak flows in area drainages. Pollutant loads delivered to area drainages may also increase. The Proposed Project's incremental contribution to these impacts is described above in Impact H1 (Alteration of flooding conditions due to changes in absorption rates, drainage patterns, or the rate and amount of surface runoff) and Impact H4 (Delivery of increased pollutant loads to urban drainages from expanded impervious areas). Because these impacts would be effectively minimized by implementing Mitigation Measure H1 (Design and implement a stormwater management system to safely convey stormwater), compliance with requirements of the Clean Water Program, and implementation of Mitigation Measure H4 (Incorporate design features and implement BMPs for postconstruction water quality protection), none of these are expected to be cumulatively considerable. The Proposed Project's potential to contribute to long-term cumulative impacts on area hydrology and water quality is accordingly considered less than significant. *(Less than significant.)*

Mitigation – No additional mitigation required.

Construction-Related Contribution

Impact H-Cume2 – Potential for cumulative construction impacts on local hydrology and water quality. If one or more of the projects listed in Table 3.1-1 and Section 3.1.6 are constructed at the same time as the Proposed Project, there is some potential for cumulative construction impacts on local hydrology and water quality as a result of (1) accelerated erosion and sediment transport related to site preparation and earthwork, and (2) accidental release of substances such as fuels and lubricants. The incremental contributions of other projects are small because they are subject to the same flood protection and stormwater requirements as Proposed Project. These impacts would be effectively minimized by implementing the erosion and sediment control measures and hazardous material storage and spill control measures required by the NPDES General Permit. As a result, neither is likely to be cumulatively considerable, and the Proposed Project's potential to contribute to cumulative construction-related impacts on area hydrology and water quality is considered less than significant. *(Less than significant.)*

Mitigation – No additional mitigation required.

Contribution of Optional Irvington Station to Cumulative Impacts

Operational Contribution

Impact H-Cume3 – Potential for optional Irvington Station to increase the Project-related contribution to any cumulative regional impacts on groundwater recharge and peak flood flows. As described above in Impact H12 (Alteration of flooding conditions due to changes in absorption rates, drainage patterns, or the rate and amount of surface runoff as a result of implementation of optional Irvington Station), the optional Irvington Station would add 18 acres of impervious surface to the 49 acres resulting from implementation of the Proposed Project, increasing the Project-related contribution to any cumulative regional impacts on groundwater recharge and peak flood flows. However, Impact H12 would be effectively minimized by implementing Mitigation Measure H1 (Design and implement a stormwater management system to safely convey stormwater), and is thus not expected to be cumulatively considerable. The optional Irvington Station's potential to contribute to long-term cumulative impacts on area hydrology and water quality is considered less than significant. *(Less than significant.)*

Mitigation – No additional mitigation required.

Construction-Related Contribution

Impact H-Cume4 – Potential for construction of the optional Irvington Station to contribute to any cumulative regional impacts on hydrology and water quality. Construction of the optional Irvington Station would increase the duration of construction, with a consequent increase in the Proposed Project's potential to contribute to any cumulative regional impacts on hydrology and water quality as a result of (1) accelerated erosion and sediment transport related to site preparation and earthwork, and (2) accidental release of substances such as fuels and lubricants. The contributions of other projects are small because they are subject to the same flood protection and stormwater requirements as Proposed Project These impacts would be effectively minimized by implementing the erosion and sediment control measures and hazardous material storage and spill control measures required by the NPDES General Permit, so neither is likely to be cumulatively considerable. The optional Irvington Station's potential to contribute to cumulative construction-related impacts on area hydrology and water quality is accordingly considered less than significant. *(Less than significant.)*

Mitigation – No additional mitigation required.

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Figures

Tables

Miscellaneous

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Section 3.4
Biological Resources

3.4.1 Introduction

This section describes existing biological resources in the Proposed Project area, analyzes the Proposed Project's potential impacts on those resources, and identifies mitigation measures to address adverse impacts.

This section incorporates information and analysis presented in the 1992 EIR. Biological resources and habitat type in the project area are largely unchanged since preparation of the 1992 EIR. However, the overall extent of available habitat has been reduced as a result of development during the intervening decade. In addition, regulations governing management of biological resources have changed substantially; for example, the California red-legged frog (*Rana aurora draytonii*) is now listed as threatened under the federal Endangered Species Act, and additional standards for protocol-level biological surveys have been adopted. Listing of the California red-legged frog as federally threatened could render impacts on suitable habitat for this species more severe. Finally, as discussed in Chapter 2, the Proposed Project differs from the 1992 Adopted Project. Consequently, this section represents a substantial revision and augmentation of material appearing in the 1992 EIR.

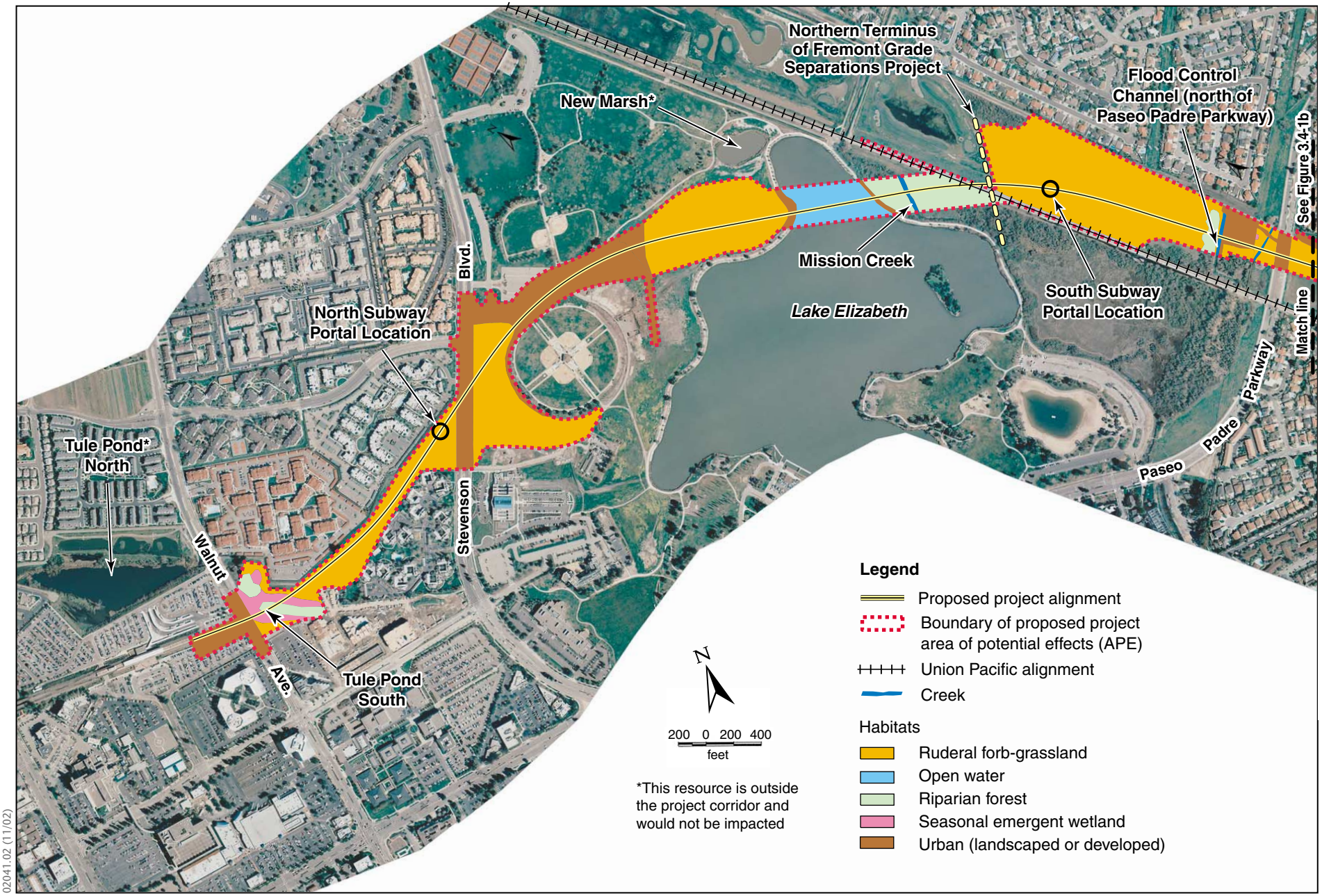
3.4.2 Environmental Setting

Methodology for Assessment of Existing Conditions

The biological resources study area included the 5.4-mile-long, approximately 100-foot-wide Proposed Project corridor and one adjacent biological resource area: New Marsh. (Biological resources in the study area are shown in Figures 3.4-1a through 3.4-1c. New Marsh is shown in Figure 3.4-1a.) The assessment of biological resources conducted for the Proposed Project took place in two phases: (1) pre-field inventory of existing information and (2) reconnaissance- and protocol-level field surveys performed by Jones & Stokes biologists. The following sections provide detail on each phase and summarize the definition of *special-status species* as used in this SEIR.

Inventory of Existing Information

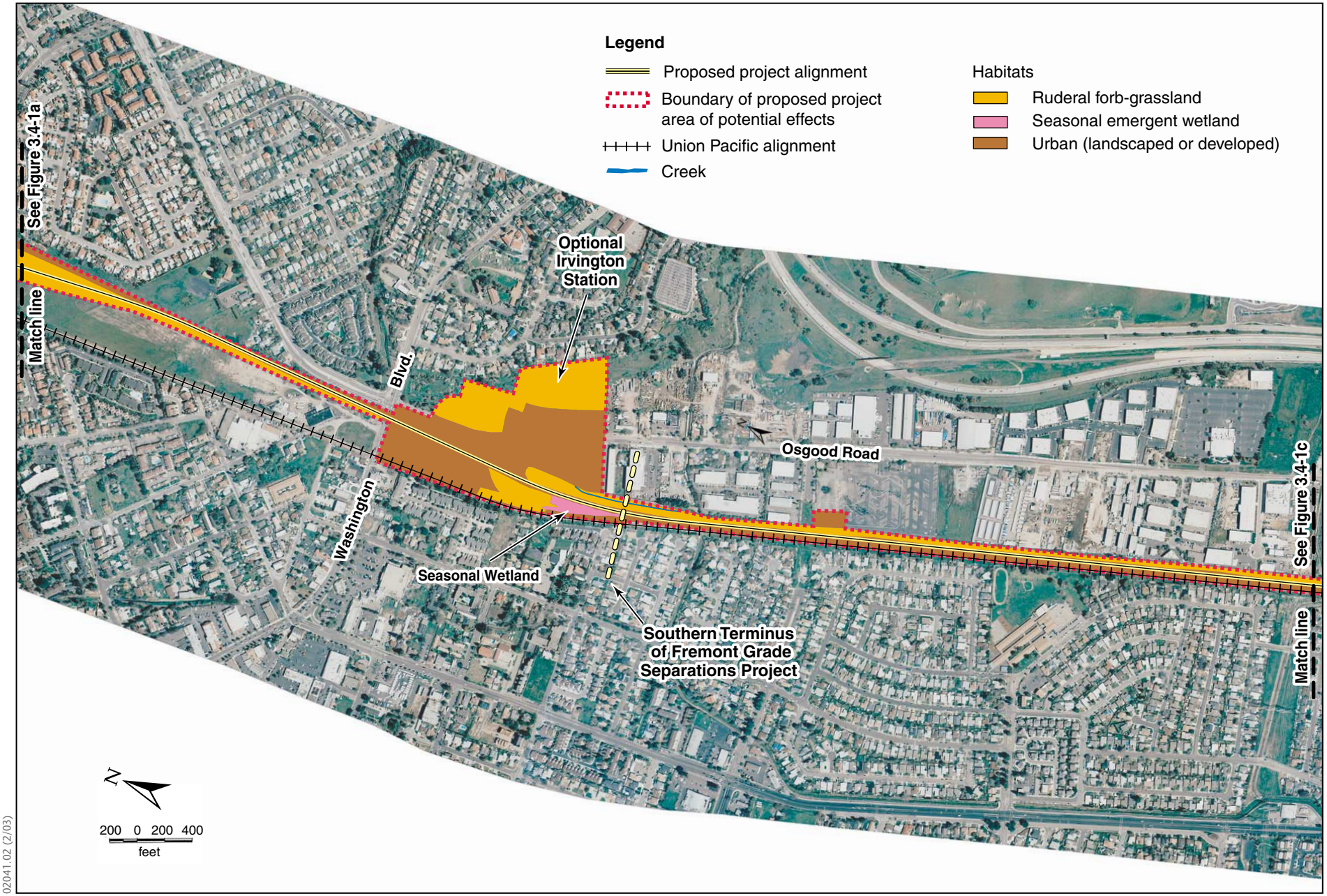
As preparation for the field surveys, Jones & Stokes biologists conducted a search of pertinent existing literature to evaluate the potential for special-status species and sensitive habitats to occur in the biological resources study area. The following sources of information were used in the pre-field inventory.



02041.02 (11/02)

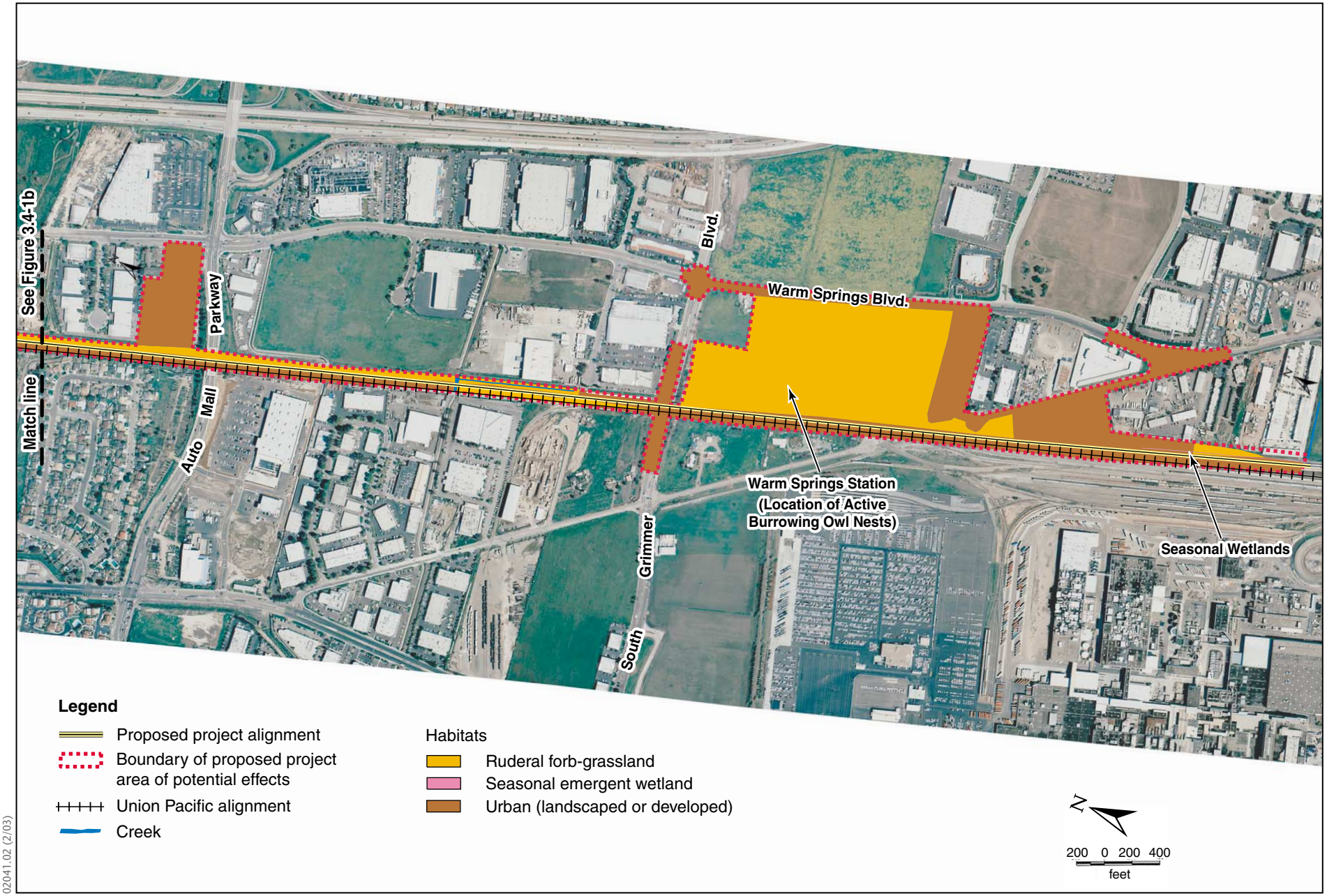
Source: Aerial base and alignments: Parsons Brinkerhoff 2002; habitats: Jones & Stokes 2002.

Figure 3.4-1a
Biological Resources Within and Adjacent to the Proposed Project Corridor



Source: Aerial base and alignments: Parsons Brinkerhoff 2002; habitats: Jones & Stokes 2002.

Figure 3.4-1b
Biological Resources Within and Adjacent to the Proposed Project Corridor



Source: Aerial base and alignments: Parsons Brinkerhoff 2002; habitats: Jones & Stokes 2002.

Figure 3.4-1c
Biological Resources Within and Adjacent to the Proposed Project Corridor

- Pertinent environmental documents, including the following.
  - *Lake Elizabeth Stivers Lagoon Marsh Design and Improvement Program, Draft Environmental Impact Report* (City of Fremont 1993a).
  - *Lake Elizabeth Stivers Lagoon Marsh Design and Improvement Program, Final Environmental Impact Report* (City of Fremont 1993b).
  - Biological Resource Assessment for the Grimmer Boulevard and Irvington Pump Station Sites Owned by San Francisco Public Utilities Commission (Environmental Collaborative for Baseline Environmental Consulting 2000).
  - Summary of Preliminary Mitigation Requirements and Options, BART Warm Springs Extension Project (Reynolds 1997).
  - *BART Warm Springs Extension Draft Environmental Impact Report* (San Francisco Bay Area Rapid Transit District 1991a).
  - *BART Warm Springs Extension Final Environmental Impact Report* (San Francisco Bay Area Rapid Transit District 1991b).
  - Technical Memorandum, Fremont Wal-Mart Site Burrowing Owl Survey and Biological Reconnaissance Summary Letter (North State Resources 1999).
- U.S. Fish and Wildlife Service (USFWS) species lists for the Proposed Project corridor and vicinity. (See Appendix D.)
- California Natural Diversity Database (CNDDB) records for the Niles, Milpitas, Mountain View, Newark, Hayward, Dublin, Livermore, La Costa Valley, and Calaveras Reservoir 7.5-minute topographic quadrangles. (See Appendix E.)

Jones & Stokes staff also consulted individuals recognized as experts in biological issues relevant to the biological resources study area. These individuals are listed in *Personal Communications* at the end of Section 3.4.

Field Surveys

Jones & Stokes biologists conducted reconnaissance-level surveys of the biological resources study area in May 2002. Data collected by walking and driving the project site were recorded in the field on data sheets and aerial photographs (scale 1:2,400). Special attention was paid to sensitive resources such as wetlands, sensitive habitats, and areas with the potential to support special-status species.[1]

A reconnaissance-level botanical survey was performed in May and July 2002. On May 17, 2002, the Proposed Project corridor was surveyed, except for the 19.37-acre ruderal area between the former SP and WP railroad tracks southeast of Lake Elizabeth, which was surveyed on July 17, 2002. During the surveys, botanists traversed the survey area on foot. They recorded all plant species observed and mapped vegetation communities on aerial photographs.

[1] See *3.4.3 Regulatory Setting* below for a full definition of the term *special-status species*.

A formal delineation of waters of the United States in the biological resources study area was conducted on June 6, 2002 in order to identify bodies of water, including wetlands, that qualify for jurisdictional status under Section 404 of the federal Clean Water Act (see *3.4.3 Regulatory Setting* below). The survey was conducted by a botanist/wetland ecologist and a soil scientist, in accordance with standard protocols detailed in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987).

Reconnaissance-level surveys for special-status and common wildlife were conducted on May 14 and 15, 2002. A habitat assessment for California red-legged frog was also conducted during these visits. During the reconnaissance-level wildlife surveys, a wildlife biologist walked the length of the Proposed Project corridor. All wildlife species observed during the field survey were recorded in field notes. In addition, information was gathered to assess the suitability of existing habitats for special-status wildlife species; where habitat suitable for special-status wildlife was encountered, its areal extent and potential as breeding habitat were evaluated.

Focused surveys for special-status wildlife were conducted during the week of June 10, 2002. They included surveys for special-status birds and nesting raptors as well as protocol-level surveys for California red-legged frog and Western Burrowing Owl (*Athene cunicularia hypugea*). *Protocol-level surveys* refers to surveys that follow an established protocol or guidelines approved by regulatory agencies. Protocol-level surveys for California red-legged frog are administered by the U.S. Fish and Wildlife Service (USFWS), and Burrowing Owl surveys are subject to guidelines prepared and administered by the California Department of Fish and Game (CDFG). Additional information on procedures followed during the June 2002 focused surveys is provided in Appendix F, Appendix H, and Appendix I.

Definition of Special-Status Species

Special-status species refers to plants and animals that are legally protected under state or federal laws or other regulations, and species that are candidates for certain types of legal protection. Special-status species include the following categories of plants and animals.

- Plants and animals listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (ESA) (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [proposed species]); plants and animals that are candidates for possible future listing as threatened or endangered under the ESA.
- Plants and animals listed or proposed for listing as threatened or endangered under the California Endangered Species Act (CESA) (14 CCR 670.5); plants and animals that are candidates for possible future listing as threatened or endangered under CESA.
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code, Sec. 1900 *et seq*.).
- Plants that meet the CEQA definition of *rare* or *endangered* (CEQA Guidelines Sec. 15380), including those considered by the California Native Plant Society (CNPS) to be “rare, threatened, or endangered in California” (Lists 1B and 2 in California Native Plant Society 2001).

- Animal species of special concern to CDFG, as listed in Remsen (1978) (birds), Williams (1986) (mammals), and Jennings and Hayes (1994) (amphibians and reptiles).
- Animals fully protected under the California Fish and Game Code (Sec. 5050 [amphibians and reptiles], Sec. 3515 [fish], Secs. 3500 and 3800 [birds], and Sec. 4700 [mammals]).

Additional information on relevant laws and regulations is provided in 3.4.3 *Regulatory Setting* below.

Existing Conditions

Vegetation

Vegetation Communities

Much of the biological resources study area is developed with houses, occupied and vacant businesses, parking lots, paved sidewalks, and horticultural landscaping, including a variety of nonnative trees and shrubs. However, some lands have remained in a seminatural to natural condition.

For the most part, this section follows the habitat classification system used in the 1992 EIR (San Francisco Bay Area Rapid Transit District 1991b); differences in procedure are identified as appropriate. Vegetation communities in the biological resources study area include ruderal forb-grassland and agricultural fields; open water habitats; forested and emergent seasonal wetlands; and residential and commercial landscaped areas. The following sections describe each community type and summarize changes in its extent or function since certification of the 1992 document. Table 3.4-1 and Figures 3.4-1a though 3.4-1c show the acreage and areal distribution of vegetation communities within the biological resources study area.[2] Table 3.4-2 lists the common plant species observed during the May–July 2002 botanical survey.

Ruderal Forb-Grassland and Agricultural Fields

There are approximately 112 acres of ruderal forb-grassland and agricultural fields in the Proposed Project corridor. Vegetation typical of ruderal forb-grasslands and agricultural fields includes early flowering annuals, such as mustards (*Brassica* spp.), wild barley (*Hordeum vulgare*), ripgut grass (*Bromus diandrus*), Italian ryegrass (*Lolium multiflorum*), fiddleneck (*Amsinckia* sp.), and clasping henbit (*Lamium amplexicaule*) (San Francisco Bay Area Rapid Transit District 1991b). Agricultural fields in the biological resources study area are limited in extent. At the time of the May 2002 surveys, existing fields had recently been disked and crops were not evident; however, the fields are used to grow a variety of crops, including grains and assorted vegetables.

[2] The City of Fremont grade separations project is recognized as a change to the existing setting that will occur before the Proposed Project is constructed; therefore, it must be taken into account in project design and in evaluating impacts and alternatives. However, because CEQA requires a description of existing conditions at the time the NOP for an EIR is issued (CEQA Guidelines section 15125), those conditions (without the grade separations project) are also described here.

Table 3.4-1. Vegetation Communities in the Proposed Project Biological Resources Study Area

Habitat Type (Location)	Acreage
Seasonal wetland (Tule Pond South)	1.53
*Seasonal wetland (flood control channel north of Paseo Padre Parkway)	0.25
*Seasonal wetland	0.69
Seasonal wetland	0.09
Total wetland	**2.6**
Riparian (Tule Pond South)	1.16
Riparian (Mission Creek/Lake Elizabeth)	3.87
*Riparian (north of Paseo Padre Parkway)	0.93
Total riparian	**5.96**
Open water (Lake Elizabeth)	3.7
Open water (Mission Creek)	0.2
*Open water (Unnamed Creek A)	0.1
Open water (other creeks in Proposed Project corridor)	0.3
Total open water	**4.3**
Ruderal forb-grassland (subway portal)	7.7
Ruderal forb-grassland (Fremont Central Park and dredge pond areas)	20.0
*Ruderal forb-grassland (subway portal)	19.4
*Ruderal forb-grassland	8.9
Ruderal forb-grassland (optional Irvington Station site)	7.8
Ruderal forb-grassland	7.3
Ruderal forb-grassland	8.0
Ruderal forb-grassland	1.7
Ruderal forb-grassland (Warm Springs Station site)	30.7
Ruderal forb-grassland	0.6
Total ruderal forb-grassland	**112.0**

Notes:

* Denotes communities within the City of Fremont's grade separations project boundaries.

Source: Jones & Stokes

Table 3.4-2. Common Plant Species Observed in the Proposed Project Biological Resources Study Area: May–July 2002

Scientific Name	Common Name	Scientific Name	Common Name
Ambrosia psilostachya	Western ragweed	*Lotus corniculatus*	Bird's-foot trefoil
Anagallis arvensis	Scarlet pimpernel	*Malva nicaensis*	Bull mallow
Arundo donax	Giant reed	*Malvella leprosa*	Alkali mallow
Asclepias fascicularis	Narrow-leaf milkweed	*Matricaria matricarioides*	Pineapple weed
Avena fatua	Wild oat	*Medicago polymorpha*	Burclover
Baccharis pilularis	Coyote brush	*Melilotus alba*	White sweetclover
Baccharis salicifolius	Mulefat	*Myoporum laetum*	Myoporum
Beta vulgaris	Beet	*Olea europaea*	Olive
Bromus catharticus	Rescue grass	*Opuntia* sp.	Prickly-pear
Bromus diandrus	Ripgut brome	*Paspalum dilatatum*	Dallis grass
Bromus hordeaceus	Soft chess	*Phalaris minor*	Mediterranean canary grass
Bromus madritensis ssp. *rubens*	Red brome	*Phalaris paradoxa*	Paradox canary grass
Bromus tectorum	Cheatgrass	*Picris echioides*	Bristly ox-tongue
Capsella bursa-pastoris	Shepherd's-purse	*Piptatherum miliaceum*	Smilo grass
Cardaria draba	Heart-podded hoary cress	*Plantago lanceolata*	English plantain
Carduus pycnocephalus	Italian thistle	*Polygonum amphibium* var. *emersum*	Swamp knotweed
Centaurea calcitrapa	Purple star-thistle	*Polygonum arenastrum*	Common knotweed
Chamaesyce sp.	Spurge	*Polypogon monspeliensis*	Annual rabbit's-foot grass
Chenopodium sp.	Goosefoot	*Prunus dulcis*	Almond
Cirsium vulgare	Bull thistle	*Raphanus sativus*	Wild radish
Conium maculatum	Poison hemlock	*Ricinis communis*	Castor-bean
Convolvulus arvensis	Field bindweed	*Rubus discolor*	Himalayan blackberry
Conyza bonariensis	Horseweed	*Rubus ursinus*	California blackberry
Coronopus didymus	Wartcress	*Rumex crispus*	Curly dock
Crassula aquatica	Water pygmy-weed	*Salix exigua*	Narrow-leaved willow
Crypsis schoenoides	Swamp timothy	*Salix laevigata*	Red willow
Cyperus eragrostis	Umbrella sedge	*Salix lasiolepis*	Arroyo willow
Distichlis spicata	Saltgrass	*Salsola tragus*	Russian thistle
Dittrichia graveolens	Stinkweed	*Sambucus mexicanus*	Blue elderberry
Eleocharis macrostachya	Creeping spikerush	*Schinus* sp.	Pepper tree
Epilobium brachycarpum	Panicled willow-herb	*Schoenoplectus acutus* var. *occidentalis*	Hard-stem bulrush
Eremocarpus setigerus	Turkey mullein	*Scrophularia californica*	California figwort
Erodium cicutarium	Red-stem filaree	*Senecio vulgaris*	Common groundsel
Eschscholzia californica	California poppy	*Silybum marianum*	Milk-thistle
Eucalyptus camaldulensis	Red gum	*Sinapis arvensis*	Field mustard
Foeniculum vulgare	Wild fennel	*Sonchus asper*	Prickly sow-thistle
Galium aparine	Bedstraw	*Sonchus oleraceus*	Common sow-thistle
Geranium dissectum	Cut-leaf geranium	*Sparganium eurycarpum*	Bur-reed
Gnaphalium luteo-album	Weedy cudweed	*Toxicodendron diversilobum*	Poison-oak
Hirschfeldia incana	Mediterranean mustard	*Tragopogon porrifolius*	salsify
Hordeum brachyantherum	Meadow barley	*Tribulus terrestris*	Puncture vine
Hordeum murinum ssp. *leporinum*	Foxtail barley	*Trifolium pratense*	Red clover
Hordeum vulgare	Wild barley	*Triticum aestivum*	Wheat
Juglans sp.	Black walnut	*Typha angustifolia*	Arrow-leaved cattail

Scientific Name	Common Name	Scientific Name	Common Name
Juncus balticus	Baltic rush	*Vicia sativa* ssp. *sativa*	Common vetch
Lactuca serriola	Prickly lettuce	*Vicia villosa* ssp. *varia*	Winter vetch
Lepidium strictum	Wayside peppergrass	*Vinca major*	Greater periwinkle
Leymus triticoides	Creeping wildrye	*Xanthium strumarium*	Common cocklebur
Lolium multiflorum	Italian ryegrass		

Source: Jones & Stokes

The extent and quality of ruderal forb-grassland and agricultural habitat within and adjacent to the Proposed Project corridor has decreased since 1992, particularly north of Lake Elizabeth. West of New Marsh, an area along the north edge of Lake Elizabeth has been graded and bermed to accept dredge spoils from the Lake Elizabeth silt removal project. North of Stevenson Boulevard, residential development along the east side of the Proposed Project alignment has reduced the area of ruderal forb-grassland and agricultural habitat from a belt approximately 750 feet wide to a much narrower strip approximately 150 feet wide.

Open Water Habitats

Bodies of open water in the biological resources study area include Lake Elizabeth, New Marsh, and several creeks. Deeper areas of open water are largely unvegetated. However, vegetation is found along shorelines. The following sections focus on vegetation communities along the shorelines of the biological resources study area's open water habitats.

Lake Elizabeth and New Marsh

Lake Elizabeth, located in Fremont Central Park, originated as a natural sag pond along an active trace of the Hayward fault (City of Fremont 1991, as amended).[3] It has been artificially modified to form a year-round recreational lake maintained with groundwater, and also provides flood storage capacity for the City of Fremont during the wet season (Jones & Stokes 2000). Lake Elizabeth has an area of 83 acres. Approximately 550 linear feet of the Proposed Project alignment is within the northeast arm of Lake Elizabeth; the Proposed Project corridor includes 3.7 acres or approximately 4% of the lake's area. The portion of Lake Elizabeth intersected by the Proposed Project corridor has a maximum depth of approximately 6 feet. Much of Lake Elizabeth's shoreline consists of concrete and riprap, but a narrow band of cattail (*Typha latifolia*) and bulrush (*Scirpus acutus*) grows along the lake's southern and eastern margins. An island in the southern portion of the lake supports arroyo willow (*Salix lasiolepis*) cover.

New Marsh is located approximately 350 feet east of the Proposed Project corridor at the northern end of Lake Elizabeth. New Marsh is a small (1.8-acre) pond created in the late 1980s to serve as a retention basin for runoff from surrounding portions of Fremont Central Park. The shoreline of New Marsh supports patches of bulrush and cattail.

Upland habitat adjacent to Lake Elizabeth and New Marsh consists of park-maintained ball fields and ruderal forb-grassland. The UP alignment east of New Marsh isolates it from other upland habitat in the area.

Creek Habitat

There are eight creeks within the Proposed Project corridor, all of which have been rerouted and altered from their historical condition. Four of the creeks (K, I, J, H) are either culverted or channelized and lined with concrete where they cross the Proposed Project corridor; they serve as flood control channels and are maintained by the ACFCD. The remaining four (L, L-1[4], L-10, and H-1) are open channels that have not been hardscaped.

Mission Creek is a perennial tributary of Coyote Creek, a principal drainage of the South Bay region that enters San Francisco Bay southwest of Fremont (see related discussion in Section 3.3

[3] *Sag pond* refers to a wetted depression formed by surface deformation along an active fault trace.
[4] Line L-1 would be removed by the City of Fremont's grade separations project.

[*Hydrology and Water Quality*]). The 6-foot-wide channel that characterizes Mission Creek in the Proposed Project corridor was established in 1986 when Lake Elizabeth was excavated. Although Mission Creek is tributary to Coyote Creek, high wet-season flows typically back up where the creek is culverted at Paseo Padre Parkway and flow over a weir into Lake Elizabeth. As the flood flows subside, lake water drains back into Mission Creek via the same weir. During extreme flood events, flood flows in Mission Creek overtop the bank and discharge directly into Lake Elizabeth upstream of the weir (Jones & Stokes 2000). Mission Creek supports a range of emergent, upland, and ruderal plant species along its banks (Figure 3.4-1a).

The other seven creeks within the Proposed Project corridor, including the unnamed flood control channel north of Paseo Padre Parkway, are tributaries to Mission Creek. They range from 2 feet wide to approximately 6 feet wide. Some support intermittent emergent vegetation such as watercress; most also support ruderal vegetation such as cocklebur on their banks. Emergent vegetation along the unnamed flood control channel north of Paseo Padre Parkway includes cattail, watercress (*Nasturtium officinale*), bulrush, alkali bulrush (*Scirpus robustus*), and knotweed (*Polygonum* sp.). Saltgrass (*Distichlis spicata*), rabbit's-foot grass (*Polypogon monspeliensis*), and cocklebur (*Xanthium strumarium*) are found on the banks of this unnamed flood control channel.

Riparian vegetation along the creek corridors is discussed in the following section.

Forested and Emergent Seasonal Wetlands

The 1992 EIR identified four occurrences of forested and emergent seasonal wetland habitat within the biological resources study area: at Tule Pond South, east of Lake Elizabeth, along Mission Creek; and along the flood control channels adjacent to the UP alignment north of Paseo Padre Parkway (see Figure 3.4-1a). Although they were identified as separate localities in the 1992 EIR, the occurrences east of Lake Elizabeth and along Mission Creek are treated as a single site in this SEIR, because they are physically contiguous and biologically similar.

Riparian Habitat (Forested)

The project corridor supports approximately 6.0 acres of riparian habitat in three locations: at Tule Pond South, at Lake Elizabeth/Mission Creek, and north of Paseo Padre Parkway (Table 3.4-1, Figure 3.4-1a).

Like Lake Elizabeth, Tule Pond occupies a natural sag formed along the Hayward fault that has been modified to serve as a flood control basin for local runoff during the wet season (San Francisco Bay Area Rapid Transit District 1991, Parikh Consultants 2002). Tule Pond is bisected by Walnut Avenue; the portion north of Walnut Avenue (Tule Pond North) is hydrologically connected to the portion south of Walnut Avenue (Tule Pond South) via two 18-inch culverts. The portion of Tule Pond within the Proposed Project corridor (Tule Pond South) has an area of approximately 1.1 acres and is seasonally flooded; at the time of the May–July 2002 surveys, Tule Pond South was dry except for a small pool approximately 1–2 feet deep in the northern portion of the basin. The portion of Tule Pond outside the project corridor (Tule Pond North) has an area of 1.6 acres. Tule Pond South supports 1.2 acres of riparian forest habitat, which is dominated by arroyo willow.

As of the May 2002 survey, the extent of riparian forest east of Lake Elizabeth (approximately 6 acres) was much the same as it was during preparation of the 1992 EIR (see San Francisco Bay Area Rapid Transit District 1991b). The dominant overstory species in this area are willows (*Salix* spp.).

The understory typically consists of blackberries (*Rubus* spp.), poison-oak (*Toxicodendron diversilobum*), poison hemlock (*Conium maculatum*), rushes (*Juncus* spp.), and stinging nettle (*Urtica dioica*). Riparian vegetation along Mission Creek consists of a dense canopy of red willow (*Salix laevigata*), arroyo willow, and sandbar willow (*S. exigua*). Because the floodplain adjacent to Mission Creek is several feet above the ordinary high water mark, willow scrub in this area is subject only to occasional flooding.

The flood control channels north of Paseo Padre Parkway support 0.9 acres of riparian forest similar to that east of Lake Elizabeth and along Mission Creek. This flood control channel supports willow scrub habitat. The riparian forest at this location is within the area affected by the City of Fremont's grade separations project and will be removed or substantially disturbed prior to implementation of the Proposed Project if the city's grade separations project takes place as planned; additional discussion of this issue is provided in *Impacts and Mitigation Measures* below.

Seasonal Wetlands

Emergent seasonal wetland habitat is present in three occurrences: at Tule Pond South (1.5 acres), adjacent to the flood control channels north of Paseo Padre Parkway (0.3 acre), and in isolated patches along the Proposed Project alignment (0.8 acre). The wetland delineation report prepared for the Proposed Project (San Francisco Bay Area Rapid Transit District 2002) contains detailed information on individual wetland features (Appendix K). The following paragraphs provide a summary.

Wetland habitat at Tule Pond South supports knotweed, cattail, and hardstem bulrush (*Schoenoplectus acutus*). Adjacent upland habitat is dominated by ripgut grass, wild barley, and coyote brush (*Baccharis pilularis*) (San Francisco Bay Area Rapid Transit District 1991b).

As described in the 1992 EIR (San Francisco Bay Area Rapid Transit District 1991b), approximately 0.3 acre of seasonal wetlands is present in the area north of Paseo Padre Parkway, on both sides of the flood control channels (Huffman & Associates 2002a). Dominant species include smartweed, bristly ox-tongue (*Picris echioides*), curly dock (*Rumex crispus*), and poison hemlock. Adjacent herbaceous uplands at this location consist primarily of annual grassland dominated by Italian ryegrass, in association with bird's-foot trefoil (*Lotus corniculatus*), bristly ox-tongue, curly dock, field bindweed (*Convolvulus arvensis*), bull thistle (*Cirsium vulgare*), and narrow-leaved milkweed (*Asclepias fascicularis*).

The 2002 surveys identified an emergent seasonal wetland approximately 500 feet south of the proposed location of the optional Irvington Station, along the west side of the Proposed Project alignment between the two railroad tracks. This wetland is approximately 550 feet long and has an area of 0.7 acre. The dominant species is creeping spikerush (*Eleocharis macrostachya*); associated species include Italian ryegrass, bristly ox-tongue, creeping wildrye (*Leymus triticoides*), umbrella sedge (*Cyperus eragrostis*), and water pygmy-weed (*Crassula aquatica*). Adjacent upland vegetation is dominated by Bermuda grass (*Cynodon dactylon*) in association with stinkweed (*Ditrichia graveolens*), curly dock, scarlet pimpernel (*Anagallis arvensis*), Mediterranean mustard (*Hirschfeldia incana*), and wild oat (*Avena fatua*). This wetland is within the area affected by the city's grade separations project and will be removed prior to implementation the Proposed Project if the grade separations project takes place as planned; additional discussion of this issue is provided in *Impacts and Mitigation Measures* below.

The 2002 surveys identified an additional small seasonal wetland in the toe drain along the east side of the UP alignment, approximately 500 feet south of the proposed Warm Springs Station. This wetland is approximately 700 feet long and 3–10 feet wide, with a total area of approximately 0.09 acre. Dominant species are saltgrass and Dallis grass (*Paspalum dilatatum*), but small patches of narrow-leaved cattail (*Typha angustifolia*) are also present. The wetland is highly disturbed and contains debris from nearby light industrial activities and from railroad activity. Water from this feature drains south into Agua Caliente (unnamed Creek F). The adjacent upland vegetation is ruderal and dominated by Bermuda grass and sweet fennel (*Foeniculum vulgare*).

Residential and Landscaped Areas

Landscaped portions of the biological resources study area support a variety of ornamental native and exotic species, such as coast redwood (*Sequoia sempervirens*), western sycamore (*Platanus racemosa*), pines (*Pinus* spp.), eucalyptus (*Eucalyptus* spp.), and sweetgum (*Liquidambar styraciflua*), as well as shrubs and grasses.

Special-Status Plant Species

Table 3.4-3 lists the special-status plants identified as having the potential to occur within the biological resources study area, based on the presence of known populations in or near the study area and the presence of suitable habitat. Detailed information on these species is provided in Appendix G.

The 1992 EIR reported no special-status plant species in the project corridor (San Francisco Bay Area Rapid Transit District 1991b), and none were observed during the May–July 2002 botanical surveys, although not all plants that could occur in the project corridor were visible or identifiable at that time. Based on the May 2002 surveys, the biological resources study area offers suitable habitat for only one special-status plant, Congdon's spikeweed (*Centromadia parryi* ssp. *congdonii*).

Congdon's spikeweed is on the California Native Plant Society's (CNPS's) List 1B of species considered rare, threatened, or endangered in California and elsewhere. It is a late summer-blooming annual plant up to 2.3 feet tall. The species is endemic to California's central coast and is found in four distinct areas: northern Monterey County; San Luis Obispo County; southwestern Alameda County and northwestern Santa Clara County; and central Contra Costa County. Congdon's spikeweed occurs in annual grassland and in ruderal areas that were once annual grassland. The primary threat to its survival is habitat loss from agricultural and urban development.

Several locations of Congdon's spikeweed have recently been confirmed in the Proposed Project vicinity, including two within 0.5 mile of the Proposed Project corridor: one near the intersection of Durham Road and Warm Springs Boulevard and a second on Auto Mall Parkway approximately 0.4 mile west of the Proposed Project alignment (Preston 1999). Habitat at the Auto Mall Parkway locality is similar to the ruderal forb-grassland habitat at the proposed Warm Springs Station site. No spikeweeds were observed at the proposed Warm Springs Station site in May 2002. However, Congdon's spikeweed normally blooms during the late summer and autumn, and the best time to survey for the species is between August and October. To ensure that surveys would be conducted at the appropriate time of year, Jones & Stokes botanists conducted a visit to a known population during the May 2002 survey, and on August 7, 2002, visited another known population in Pleasanton to assess whether plants were in bloom at that time. Based on the results of these visits, an additional

survey for Congdon's spikeweed was conducted in the biological resources study area on September 11, 2002, and no spikeweeds were observed. Accordingly, Congdon's spikeweed is believed to be absent from the biological resources study area.

Table 3.4-3. Special-Status Plants of the East Bay Region

Scientific Name	Common Name	Likelihood of Occurrence in Proposed Project Biological Resources Study Area
Astragalus tener var. *tener*	Alkali milk-vetch	None; no suitable habitat
Atriplex joaquiniana	San Joaquin spearscale	None; no suitable habitat
Castilleja ambigua ssp. *ambigua*	Salt-marsh owl's-clover	None; no suitable habitat
Centromadia parryi ssp. *congdonii*	Congdon's spikeweed	Suitable habitat is present but surveys indicate species is absent from biological resources study area.
Chorizanthe robusta var. *robusta*	Robust spineflower	None; no suitable habitat
Clarkia concinna ssp. *automixa*	Santa Clara red ribbons (South Bay clarkia)	None; no suitable habitat
Cordylanthus maritimus ssp. *palustris*	Point Reyes bird's-beak	None; no suitable habitat
Eryngium aristulatum var. *hooveri*	Hoover's button-celery	None; no suitable habitat
Lasthenia conjugens	Contra Costa goldfields	None; no suitable habitat
Malacothamnus arcuatus	Arcuate bush mallow	None; no suitable habitat
Monardella villosa ssp. *globosa*	Robust monardella	None; no suitable habitat
Navarretia prostrata	Prostrate navarretia	None; no suitable habitat
Plagiobothrys chorisianus var. *chorisianus*	Choris's popcorn-flower	None; no suitable habitat
Streptanthus albidus ssp. *peramoenus*	Most beautiful jewel-flower	None; no suitable habitat

Source: California Department of Fish and Game 2002, California Native Plant Society 2001, Jones & Stokes field survey data

Wildlife

Common Species

A variety of common wildlife species have been observed in the biological resources study area. Because of the study area's urban/suburban setting, these species are largely limited to those that can tolerate disturbance by human activity. Table 3.4-4 lists common birds and mammals known or expected to use habitats in the biological resources study area. Results of the 2002 surveys suggest that use of the biological resources study area by common wildlife species has not changed substantially since preparation of the 1992 EIR.

Table 3.4-4. Birds and Mammals Observed or Expected to Use Habitat in the Biological Resources Study Area

Scientific Name	Common Name
Birds	
Accipiter cooperii	Cooper's Hawk
Accipiter striatus	Sharp-shinned Hawk
Aechmophorus occidentalis	Western Grebe
Aeronautes saxatalis	White-throated Swift
Agelaius phoeniceus	Red-winged Blackbird
Agelaius tricolor	Tri-colored Blackbird
Anas cyanoptera	Cinnamon Teal
Anas platyrhynchos	Mallard
Anser albifrons	Greater White-fronted Goose
Aphelocoma coerulescens	Scrub Jay
Ardea herodias	Great Blue Heron
Athene cunicularia hypugea	Western Burrowing Owl
Branta canadensis	Canada Goose
Bucephala albeola	Bufflehead
Buteo jamaicensis	Red-tailed Hawk
Buteo lineatus	Red-shouldered Hawk
Buteo regalis	Ferruginous Hawk
Butorides striatus	Green-backed Heron
Calidris minutilla	Least Sandpiper
Calypte anna	Anna's Hummingbird
Carduelis psaltria	Lesser Goldfinch
Carduelis tristis	American Goldfinch
Carpodacus mexicanus	House Finch
Cathartes aura	Turkey Vulture
Catharus ustalatus	Swainson's Thrush
Casmerodius albus	Great Egret
Charadrius vociferus	Killdeer
Circus cyaneus	Northern Harrier
Cistothorus palustris	Marsh Wren
Colaptes auratus	Northern Flicker
Columba livia	Rock Dove
Corvus brachyrynchos	Common Crow
Dendrocopos nuttallii	Nuttall's Woodpecker
Dendrocopos pebescens	Downy Woodpecker
Dendroica petechia	Yellow Warbler
Egretta thula	Snowy Egret
Elanus leucurus	White-tailed Kite
Euphagus cyanocephalus	Brewer's Blackbird
Falco sparverius	American Kestrel
Fulica americana	American Coot
Gallinago gallinago	Common Snipe
Gallinula chloropus	Common Moorhen
Geothlypis trichas	Yellow-rumped Warbler
Himantopus mexicanus	Black-necked Stilt
Hirundo pyrrhonota	Cliff Swallow
Hirundo rustica	Barn Swallow
Lanius excubitor	Northern Shrike
Larus occidentalis	Western Gull
Limnodromus griseus	Short-billed Dowitcher
Limnodromus scolopaceus	Long-billed Dowitcher
Melospiza melodia	Song Sparrow
Melospiza lincolnii	Lincoln's Sparrow
Mimus polyglottos	Northern Mockingbird
Numenius phaeopus	Long-billed Curlew
Nycticorax nycticorax	Black-crowned Night Heron
Oxyura jamaicensis	Ruddy Duck
Passerculus sandwichensis	Savannah Sparrow
Passerina amoena	Lazuli Bunting
Phaisianus colchicus	Ring-necked Pheasant
Phalacrocorax auritus	Double-crested Cormorant
Pipilo crissalis	California Towhee
Pipilo erythrophthalmus	Spotted Towhee
Podilymbus podiceps	Pied-billed Grebe
Porzana carolina	Sora
Psaltriparus minimus	Bushtit
Rallus limicola	Virginia Rail
Sayornis nigricans	Black Phoebe
Sayornis saya	Say's Phoebe
Stelgidopteryx serripennis	Northern Rough-winged Swallow
Sturnella neglecta	Western Meadowlark
Sturnus vulgaris	European Starling
Tachycineta bicolor	Tree Swallow
Tachycineta thalassina	Violet-green Swallow
Tringa melanoleuca	Greater Yellowlegs
Turdus migratorius	American Robin
Wilsonia pusilla	Wilson's Warbler
Zenaida macroura	Mourning Dove
Zonotrichia atricapilla	Golden-crowned Sparrow
Zonotrichia leucophrys	White-crowned Sparrow
Mammals	
Didelphis virginiana	Virginia opossum
Lepus californicus	Black-tailed jackrabbit
Mephitis mephitis	Striped skunk
Microtus californicus	Meadow vole
Ondatra zibethius	Muskrat
Otospermophilus beecheyi	California ground squirrel
Peromyscus maniculatus	Deer mouse
Procyon lotor	Raccoon
Reithrdontomys megalotis	Western harvest mouse
Thomomys bottae	Botta's pocket gopher
Urocyron cinereoargenteus	Gray fox
Vulpes fulva	Red fox

Source: Jones & Stokes

Most of the creeks in the Proposed Project area are small systems that are substantially affected by air temperature; therefore, most contain warm water from late spring through early fall. There are two unnamed channels (L-1 and L-10) that likely support mostly introduced warm-water resident fish species, including green sunfish (*Lepomis cyanellis*), fathead minnow (*Pimephales promelas*), red and golden shiner (*Notropis lutrensis* and *Notemigonas crysoleucas*), and mosquitofish (*Gambusia affinis*). Native fish species that could occur include California roach (*Hesperoleucas symmetricus*), threespine stickleback (*Gasterosteus aculeatus*) and Sacramento sucker (*Catostomus occidentalis*).

Special-Status Species

Table 3.4-5 lists special-status species with the potential to occur in the Proposed Project corridor.

The 1992 EIR identified the following special-status species as known to be present in the Project Proposed corridor: Long-billed Curlew (*Numenius americanus*), Tricolored Blackbird (*Agelaius tricolor*) (last observed nesting in 1986), Western Burrowing Owl, White-tailed Kite (*Elanus leucurus*), Northern Harrier (*Circus cyaneus*), and Cooper's Hawk (*Accipiter cooperii*). Other special-status species identified in the 1992 EIR as having the potential to occur within the project corridor but not actually observed include San Francisco forktail damselfly (*Ischnura gemina*) and Bank Swallow (*Riparia riparia*) (San Francisco Bay Area Rapid Transit District 1991b).

Appendix J contains a table listing special-status wildlife species identified in the 2002 pre-field inventory as occurring in the East Bay region. Since the publication of the 1992 EIR, the status of several of these species has changed. Most importantly, the California red-legged frog and vernal pool fairy shrimp (*Branchinecta lynchi*) have been listed as threatened under the federal ESA, the vernal pool tadpole shrimp (*Lepidurus packardi*) has been listed as endangered under the federal ESA, and the California tiger salamander (*Ambystoma californiense*) is now considered a category 1 candidate species for listing under the federal ESA. Neither the vernal pool tadpole shrimp nor the vernal pool fairy shrimp was addressed in the 1992 EIR because they were not listed as threatened or endangered at that time; their status was elevated in 1994 (59 FR 17 48153–48185).

Based on known species distribution, habitat requirements, and the results of the 2002 pre-field inventory and field surveys, the following special-status wildlife species are known or have the potential to occur in the biological resources study area.

- Vernal pool fairy shrimp.
- Vernal pool tadpole shrimp.
- California tiger salamander.
- Western pond turtle (*Clemmys marmorata*).
- Cooper's Hawk.
- Loggerhead Shrike (*Lanius ludovicianus*).
- Northern Harrier.
- Tricolored Blackbird.

Table 3.4-5. Summary of Special-Status Species' Use of the Biological Resources Study Area

Special-Status Species
Species with Potential to Occur in Study Area
Vernal pool fairy shrimp (*Branchinecta lynchi*)
Vernal pool tadpole shrimp (*Lepidurus packardi*)
California tiger salamander (*Ambystoma californiense*)
Western pond turtle (*Clemmys marmorata*)
Cooper's Hawk (*Accipiter cooperi*)
Loggerhead Shrike (*Lanius ludovicianus*)
White-tailed Kite (*Elanurus leucurus*)
Northern Harrier (*Circus cyaneus*)
Tricolored Blackbird (*Agelaius tricolor*)
Western Burrowing Owl (*Athene cunicularia hypugea*)
Yellow-breasted Chat (*Icteria virens*)
Yellow Warbler (*Dendroica petechia brewsteri*)
Nesting Swallows and Raptors in Study Area
Barn Swallow (*Hirundo rustica*)
Cliff Swallow (*Petrochelidon pyrrhonota*)
Tree Swallow (*Tachycineta bicolor*)
Red-tailed Hawk (*Buteo jamaicensis*)
Great Horned Owl (*Bubo virginiana*)
Species that May Occur in Surrounding Region but Are Unlikely to Use Study Area
San Francisco forktail damselfly (*Ischnura gemina*)
California red-legged frog (*Rana aurora draytonii*)
California Black Rail (*Laterallus jamaicensis*)
Species that May Use Study Area for Migration, Dispersal, or Foraging but Do Not Breed in Study Area
Curved-foot hygrotus diving beetle (*Hygrotus curvipes*)
Bank Swallow (*Riparia riparia*)
Ferruginous Hawk (*Buteo regalis*)
Little Willow Flycatcher (*Empidonax traillii*)
Long-billed Curlew (*Numenius americanus*)
Sharp-shinned Hawk (*Accipiter striatus*)
Short-eared Owl (*Asio flammeus*)
Greater western mastiff bat (*Eumops perotis californicus*)
Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)
Small-footed myotis (*Myotis ciliolabrum*)
Yuma myotis (*Myotis yumanensis*)

Sources: San Francisco Bay Area Rapid Transit District 1991b, California Department of Fish and Game 2002, California Native Plant Society 2002, Jones & Stokes field survey data

- Western Burrowing Owl.
- White-tailed Kite.
- Yellow-breasted Chat (*Icteria virens*).
- Yellow Warbler (*Dendroica petechia brewsteri*).

In addition, raptors and swallows may nest in the biological resources study area. Although most raptors and swallows are not special-status species, their occupied nests and eggs are protected under the federal Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code (see *3.4.3 Regulatory Setting* below). The results of the 2002 surveys are presented below in *Special-Status Species that May Occur in the Biological Resources Study Area* and *Nesting Swallows and Raptors in the Biological Resources Study Area*.

Three special-status species are known to occur in the region surrounding the biological resources study area, but are believed to be absent from the study area itself: the San Francisco forktail damselfly, California red-legged frog, and California Black Rail (*Laterallus jamaicensis*). These species are discussed in greater detail in *Special-Status Species that May Occur in the Surrounding Region* below.

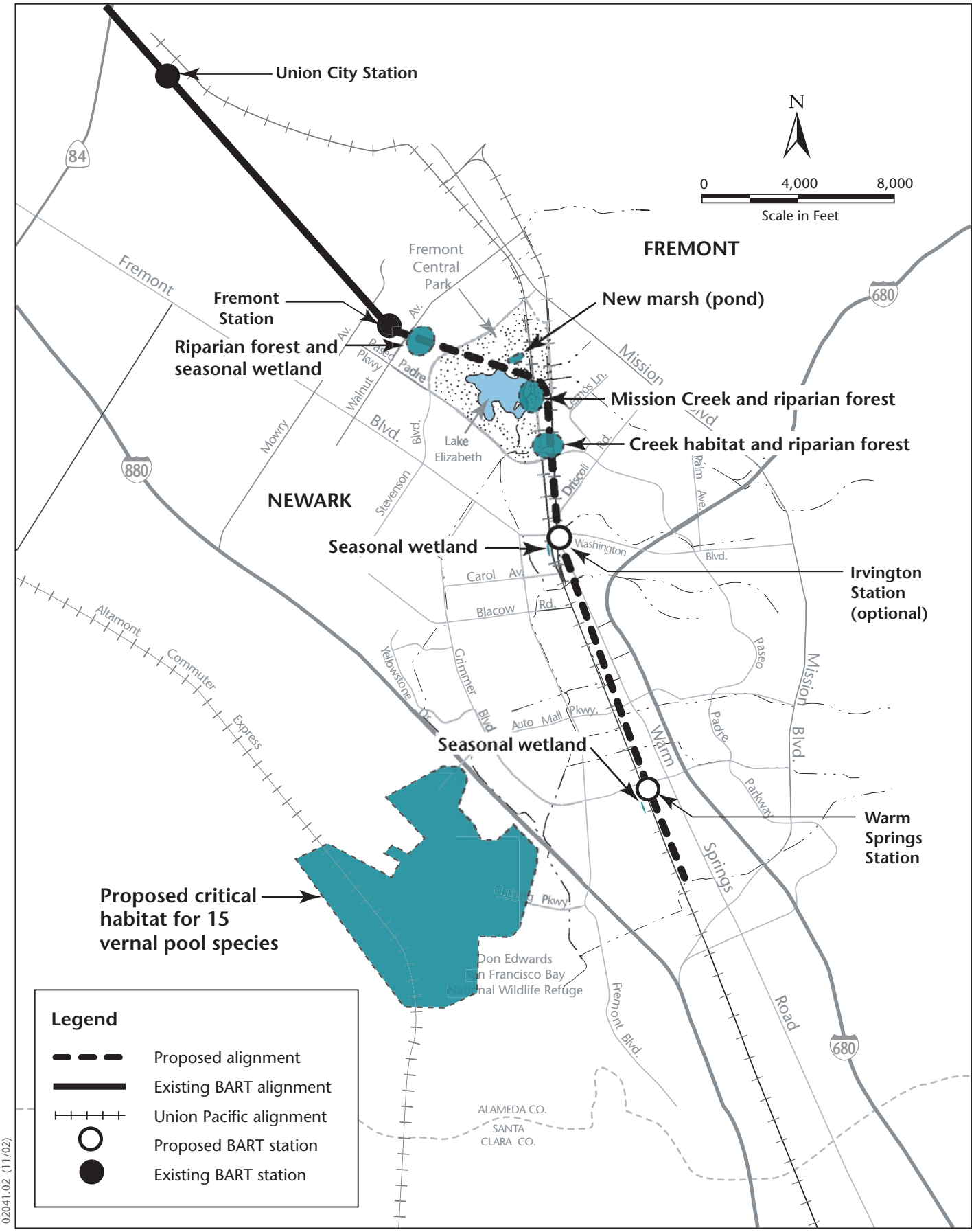
An additional 11 of the 46 species listed in Appendix J may use the biological resources study area during migration or dispersal or may forage in the surrounding region, but do not breed or roost in the study area: the curved-foot hygrotus diving beetle (*Hygrotus curvipes*), Bank Swallow, Ferruginous Hawk (*Buteo regalis*), Little Willow Flycatcher (*Empidonax traillii*), Long-billed Curlew, Sharp-shinned Hawk (*Accipiter striatus*), Short-eared Owl (*Asio flammeus*), greater western mastiff bat (*Eumops perotis californicus*), Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*), small-footed myotis (*Myotis ciliolabrum*), and Yuma myotis (*M. yumanensis*). Because sufficient and/or higher quality migration and foraging habitat exists for these 11 species within the East Bay region, they are not discussed further. In addition, based on the 2002 reconnaissance-level field surveys, the biological resources study area does not support habitat for the 20 remaining species listed in Appendix J. These 20 species were eliminated from further consideration and are not discussed further.

Special-Status Species that May Occur in the Biological Resources Study Area

Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp is found in vernal pools and seasonal wetlands throughout California's Central Valley and interior Coast Ranges, and in western Riverside County. It is federally listed as threatened. Critical habitat has been proposed for 11 vernal pool invertebrates, including the vernal pool fairy shrimp and vernal pool tadpole shrimp. Figure 3.4-2 indicates proximity of proposed critical habitat to the Proposed Project corridor.

Vernal pool fairy shrimp are very small (length less than 1.0 inch), and are typically translucent or pale in color. They occur in neutral to slightly alkaline vernal pools and rock outcrop pools. The life history of vernal pool fairy shrimp is dependent on the ephemeral nature of the vernal pools and seasonal wetlands they inhabit. The eggs, or resting cysts, of fairy shrimp allow the species to persist in dry sediment throughout the summer months. A percentage of these cysts hatch upon inundation



Source: Jones & Stokes 2002.

Figure 3.4-2
Environmentally Sensitive Areas within Project Corridor

of the pool and individuals can reach sexual maturity in as little as 3 weeks. Adults of this species typically only persist in a pool for 70–90 days, even if the habitat remains inundated for a longer duration.

Suitable habitat for vernal pool fairy shrimp is present at one site in the biological resources study area: the 0.7-acre seasonal wetland located between the former SP and WP railroad tracks, south of the optional Irvington Station site (Figure 3.4-1b). As described above, the dominant plant species in this habitat is creeping spikerush; associated species include Italian ryegrass, bristly ox-tongue, creeping wildrye, umbrella sedge, and water pygmy-weed. An informal reconnaissance of this wetland on August 20, 2002, found that the sediments contain shells of seed shrimp (*Ostracoda*), which commonly co-occur with fairy shrimp. However, the wetland receives runoff from the former SP and WP railroad tracks, which may render the water chemistry unsuitable for vernal pool fairy shrimp. Protocol-level surveys are now being conducted to determine the presence of the vernal pool fairy shrimp and will be completed following the conclusion of the wet season.

Vernal Pool Tadpole Shrimp

The vernal pool tadpole shrimp is found in vernal pools and seasonal wetlands in the Central Valley and Sacramento–San Joaquin Delta regions. It is federally listed as endangered.

Vernal pool tadpole shrimp are larger than vernal pool fairy shrimp (length approximately 0.2–2.0 inches). Individuals are typically green, but may be mottled in highly turbid water. Vernal pool tadpole shrimp are typically found in moderate- to large-sized pools with muddy bottoms. They are omnivorous and generally forage in dense vegetation on the bottoms of pools. The life history of this species is closely dependent on the dry and wet cycles of its habitat. Adults are only present in the winter months when the habitat is inundated; the population persists through the summer months in the form of resting cysts. Once hatched, vernal pool tadpole shrimp are long-lived, typically persisting until the habitat is dry or the water's dissolved oxygen content falls to a fatal level.

However, because individuals tend to be slow-growing, they are usually not collected until the vernal pool has been ponded for 30 days.

The vernal pool tadpole shrimp is known to occur in the San Francisco Bay National Wildlife Refuge, approximately 2.8 miles west of the proposed Warm Springs Station site. Suitable habitat for vernal pool tadpole shrimp is present at one site in the biological resources study area: The seasonal wetland located between the former SP and WP railroad tracks, south of the optional Irvington Station site (described above). Protocol-level surveys are now being conducted to determine the presence of the vernal pool tadpole shrimp and will be completed following the conclusion of the wet season.

Special-Status Fishes

Central California Coast Steelhead. Central California Coast steelhead are federally listed as threatened (62 FR 43938, August 18, 1997), with designated critical habitat (65 FR 7764, February 16, 2000) that covers all river reaches and estuarine areas accessible in coastal river basins from the Russian River to Soquel Creek (inclusive), and the drainages of San Francisco and San Pablo bays. Excluded are areas above specific dams or above naturally impassable barriers. Steelhead are known to spawn and rear in Coyote Creek (Able pers. comm.).

The adults spawn in shallow redds (nests) dug in the gravel in the upper river and tributaries. Spawning generally begins in late November or December, peaks in January and February, and continues through April. Eggs incubate for 30–60 days. Adult steelhead return to the ocean after spawning.

Requirements for steelhead rearing include adequate cover, food supply, and water temperatures of 42–65º F. Juvenile steelhead primarily occupy riffle habitat. Juveniles rear in the natal stream, and the young fish feed primarily on insects. Most juvenile steelhead spend 1 or 2 years in freshwater. As streamflow declines and water temperatures increase, juvenile steelhead begin to smolt (a physiological process by which the young fish adapt to a saltwater environment) and migrate towards the ocean. Water temperatures for smoltification are usually below 60º F. Juveniles that do not smolt, remain in freshwater. Steelhead live in the ocean for 1–3 years before returning to the river to spawn.

Although Mission Creek is a tributary to Coyote Creek, it is highly unlikely that Central California Coast steelhead spawn successfully (hatch and rear to emigration) in Mission Creek. Adult steelhead that stray into Mission Creek may spawn in the headwaters, but creek conditions during the rearing season are most likely unsuitable to support them. Water temperatures can become too warm, and flows can be reduced to a level where downstream migration is difficult (Able pers. comm.). Steelhead sightings reported in Mission Creek are likely strays.

Fall-Run Chinook Salmon. On March 9, 1998 (63 FR 11481), a proposed rule to list fall-run chinook salmon as threatened was issued, but on September 16, 1999 (64 FR 50393), a subsequent federal study determined that they did not warrant listing as threatened and downgraded the species to candidate status.

Adult fall-run chinook salmon migrate into rivers from July through December and spawn from early October through late December. Spawning typically peaks in October and November. Eggs incubate from October through March, and juveniles rear and smolts emigrate from January through June. Although the majority of young fall-run chinook salmon migrate to the ocean during the first few months following emergence, a small number may remain in fresh water and migrate as yearlings.

Fall-run chinook salmon are known to spawn and rear in Coyote Creek (Able pers. comm.); however, like steelhead, it is highly unlikely that they spawn and rear successfully in Mission Creek. As with steelhead, chinook sightings occasionally reported in Mission Creek are likely strays.

California Tiger Salamander

The California tiger salamander is found throughout the Central Valley, including the Sierra Nevada foothills, and in the coastal region from Butte County south to Santa Barbara County. It inhabits small ponds, lakes, and vernal pools and uses adjacent uplands for estivation. Grasslands and oak woodlands provide habitat for larvae; and rodent burrows, rock crevices, and fallen logs provide cover and refuge for adults during estivation. The CNDDB contains several records of California tiger salamander in the Niles and Milpitas 7.5-minute quadrangles. California tiger salamanders were common at Lake Elizabeth until the 1950s, before the shoreline was hardscaped and human

activity in the park increased. California tiger salamander is a candidate for listing under the federal ESA and is considered a species of special concern by CDFG.[5]

Suitable breeding habitat for this species is present at two locations within the biological resources study area: the 0.7-acre seasonal wetland located between the former SP and WP railroad tracks, south of the optional Irvington Station site, and at New Marsh. Biologists observed California tiger salamander larvae in the seasonal wetland between the railroad tracks in February 2003. New Marsh may provide suitable breeding habitat and adjacent upland estivation habitat for this species; however, California tiger salamanders were not observed in New Marsh during the June 2002 surveys for California red-legged frogs.

Western Pond Turtle

The western pond turtle occurs throughout California in ponds, marshes, rivers, and irrigation canals with muddy or rocky bottoms and emergent vegetation. The western pond turtle is a federal species of concern and a state species of special concern.

The open water in existing ponds or streams of the biological resources study area likely offers moderate-quality habitat for western pond turtles. However, none were observed during either the reconnaissance-level wildlife surveys or surveys for California red-legged frog conducted in 2002. The CNDDB contains one record of western pond turtle occurring near Sunol, which is approximately 3 miles east of the project corridor (California Department of Fish and Game 2002).

Cooper's Hawk

Cooper's Hawks are found throughout North America and Mexico. In California, they breed in a wide variety of habitat types, including deciduous, coniferous, and mixed forests; oak woodlands; deciduous riparian habitats; woodlots; and suburban and urban areas. Urban nest sites have included isolated trees in residential neighborhoods. The species' decline is not well documented overall, but has been attributed in California to habitat destruction, particularly destruction of lowland riparian areas (Remsen 1978). The Cooper's Hawk is a state species of special concern.

Cooper's Hawks were observed in the project corridor during preparation of the 1992 EIR and may have nested in the vicinity of Stivers Lagoon at that time (San Francisco Bay Area Rapid Transit District 1991b). No Cooper's Hawks were observed during the June 2002 protocol-level surveys. However, suitable nest sites for the species occur in the riparian habitat adjacent to Lake Elizabeth, which is within and adjacent to the Proposed Project corridor.

Loggerhead Shrike

Loggerhead Shrikes are relatively common in lowland California, preferring open habitat with scattered shrubs, trees, posts, fences, utility lines, or other perches. They nest in shrubs or trees. The Loggerhead Shrike is a state species of special concern.

Loggerhead Shrikes were not observed during the 2002 surveys, although suitable nesting and foraging habitat is abundant in the Proposed Project corridor.

[5] The USFWS listed the Santa Barbara County population segment of the California tiger salamander as endangered on January 19, 2000, and emergency-listed the Sonoma County population segment as endangered on July 22, 2002.

Northern Harrier

Northern Harriers are residents throughout lowlands in California, where they forage in grasslands, meadows, marshes, and seasonal and agricultural wetlands. They construct their nests on the ground in grasslands with tall vegetative cover. The Northern Harrier is a state species of special concern.

Northern Harriers are abundant and widespread throughout the region surrounding the Proposed Project corridor. They are known to have nested in the 1992 project area (San Francisco Bay Area Rapid Transit District 1991b), although none were seen in the biological resources study area during the June 2002 surveys. One nest was observed near the proposed Warm Springs Station site but appeared to have been destroyed by mowing activity earlier in the nesting season.

Tricolored Blackbird

Tricolored Blackbirds are permanent residents in California's Central Valley from Butte County to Kern County, and are also found at scattered coastal locations from Marin County south to San Diego County. They breed at scattered locations in Lake, Sonoma, and Solano Counties and rarely in Siskiyou, Modoc, and Lassen Counties as well. Tricolored Blackbirds forage in open areas that offer abundant insect prey, such as marshes, pastures, agricultural wetlands, dairies, and feedlots. They are colonial nesters and prefer nest sites in emergent marsh vegetation such as cattails, or upland nest sites that offer blackberries or grain crops and a nearby source of water. The Tricolored Blackbird is a state species of special concern.

Statewide surveys found no nesting colonies of Tricolored Blackbirds near the biological resources study area (Beedy and Hamilton 1999). Two Tricolored Blackbirds were observed in the cattail border along the pond northwest of Lake Elizabeth during the 2002 focused surveys for special-status wildlife. These individuals were not breeding; however, suitable foraging and resting habitat is present in the biological resources study area, especially in ruderal forb-grassland and emergent seasonal wetland habitat.

Western Burrowing Owl

Western Burrowing Owls are found in lowland areas throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal regions. Western Burrowing Owls prefer open, dry, and nearly level grassland habitats, where they feed on insects, small mammals, and reptiles. They nest and roost in burrows, typically using abandoned ground squirrel burrows in roadside embankments, on levees, and along irrigation canals. The breeding season usually extends from late February to August. Ground squirrel control measures and the conversion of grassland to agricultural use are the primary factors responsible for the decline of the species. The Western Burrowing Owl is a federal species of concern and a state species of special concern. Burrowing Owl nests are also protected by Section 3503.5 of the California Fish and Game Code (see *3.4.3 Regulatory Setting* below).

Five Burrowing Owls and three active Burrowing Owl nests were observed within the biological resources study area during the June 2002 protocol-level surveys (Appendix I). All of the nests were located at the proposed Warm Springs Station site. Suitable habitat for this species also occurs north and south of Paseo Padre Parkway and between the former SP and WP railroad tracks south of Washington Boulevard, although no owls were observed in these areas during the June 2002 surveys. Additional surveys were conducted in June 2002 by a biologist from Beeman & Associates Biological Consultants, in preparation for the City of Fremont's grade separations project (Huffman

& Associates 2002b). No owls were found in any of the potential habitat surveyed for the city's grade separations project.

White-Tailed Kite

White-tailed Kites are found in lowlands west of the Sierra Nevada from the northern end of the Sacramento Valley south as far as San Diego County. They forage in valleys, coastal areas, and low foothills that support valley oaks (*Quercus lobata*) or live oaks (*Q. wislizenii*); in riparian areas; and in marshes near open grasslands. They construct their nests in trees, often in riparian corridors. The White-tailed Kite is fully protected under the California Fish and Game Code (see *3.4.3 Regulatory Setting* below).

White-tailed Kites have been observed foraging in the Proposed Project area (San Francisco Bay Area Rapid Transit District 1991a), but none were seen during the June 2002 surveys.

Yellow-Breasted Chat

The Yellow-breasted Chat breeds locally in California's coastal mountains and in the foothills of the Sierra Nevada; in the area east of the northern California Cascades; and very locally in inland southern California. It constructs nests in dense riparian habitats. The Yellow-breasted Chat is a state species of special concern.

The Yellow-breasted Chat is considered a rare, local breeder in the East Bay region. The biological resources study area offers a limited extent of suitable breeding habitat for this species. No Yellow-breasted Chats were observed during the June 2002 surveys.

Yellow Warbler

The Yellow Warbler is a resident and winter visitor on the Salton Sea and in isolated areas in Imperial, San Diego, Ventura, and Fresno Counties. It winters in Merced County and along the Sacramento River in Colusa, Glenn, Butte, Sutter, and Yolo Counties, and breeds at sites in Lassen, Fresno, and Yolo Counties. The Yellow Warbler is a state species of special concern.

The Yellow Warbler is considered a rare, local breeder in the East Bay region. The biological resources study area offers a limited extent of suitable breeding habitat for this species. No Yellow Warblers were observed during the June 2002 surveys.

Nesting Swallows and Raptors in the Biological Resources Study Area

The following sections discuss swallows and raptors that are known to nest or have the potential to nest in the project corridor. Swallows are not considered special-status species, but their occupied nests and eggs are protected by federal and state laws, including the federal Migratory Bird Treaty Act and the California Fish and Game Code (see *3.4.3 Regulatory Setting* below).

Swallows

Cliff Swallows (*Petrochelidon pyrrhonota*) and Barn Swallows (*Hirundo rustica*) build mud nests on the undersides of artificial structures such as bridges. Cliff Swallows are colonial nesters and often nest in colonies of hundreds of birds. Both species winter in South America and return to California in February to breed. Nesting occurs from April to August, and southward migration occurs in September and October (Zeiner et al. 1990).

Northern Rough-winged Swallows (*Stelgidopteryx serripennis*) and Tree Swallows (*Tachycineta bicolor*) are cavity-nesting birds that inhabit lakeshores, flooded meadows, marshes, and streams. Northern Rough-winged Swallows nest in burrows, under bridges, and in culverts or sewer pipes, while Tree Swallows nest in tree holes. Northern Rough-winged Swallows nests are usually solitary, while most Tree Swallows nest in loose colonies.

Potential nesting habitat for Cliff Swallows and Barn Swallows occurs on the undersides of the UP bridge structures and the Auto Mall Parkway overpass in the biological resources study area. No nesting Cliff or Barn Swallows were observed during the June 2002 surveys, but it is possible for swallows to colonize previously unused bridges that offer suitable habitat.

Tree Swallows nest in cavities in trees and snags throughout Fremont Central Park. The City of Fremont maintains nest boxes for Tree Swallows around Lake Elizabeth. The swallows begin arriving in Central Park in January and continue to use the area for the remainder of the nesting season (March–August) (San Francisco Bay Area Rapid Transit District 1991b). Cliff Swallows, Tree Swallows, and Northern Rough-winged Swallows were observed during the June 2002 surveys.

Raptors

Raptors such as Red-tailed Hawk (*Buteo jamaicensis*), Red-shouldered Hawk (*Buteo lineatus*), and Great Horned Owl (*Bubo virginianus*) nest in riparian and woodland areas. The breeding season for these species generally lasts from February 1 to August 15.

A variety of raptors may nest in riparian and woodland habitats within the biological resources study area. During the 2002 focused surveys, a pair of American Kestrels (*Falco sparverius*) was observed along the UP alignment north of Washington Boulevard, a Great Horned Owl was observed in the riparian habitat south of Lake Elizabeth, a Red-tailed Hawk was observed over Paseo Padre Parkway in the Proposed Project corridor, and a damaged and abandoned Northern Harrier nest was observed at the proposed Warm Springs Station site (see *Northern Harrier* section above). In addition, a Red-shouldered Hawk was observed in a large conifer adjacent to the optional Irvington Station site, and a Barn Owl feather was found under a large eucalyptus tree on the site. No active raptor nests were identified within the biological resources study area during the June 2002 surveys, but suitable nesting habitat is present. The potential for raptors to nest within the Proposed Project corridor is considered moderate.

Special-Status Species that May Occur in the Surrounding Region

The following sections briefly describe special-status wildlife species that may occur in the region surrounding the biological resources study area, but are believed to be absent from the study area itself. They also summarize the evidence suggesting that these species do not occur in the biological resources study area.

San Francisco Forktail Damselfly

The San Francisco forktail damselfly is endemic to the San Francisco Bay Area; extant populations occur from Marin County south to Santa Cruz County. Habitat for the San Francisco forktail damselfly includes shallow permanent water sources with gradually sloping banks, and the species is known to use small ponds, marshes, and artificial channels with sparse emergent vegetation. The San Francisco forktail damselfly is a federal species of concern.

The channelized creeks and other permanent bodies of open water within the biological resources study area may provide suitable habitat for the San Francisco forktail damselfly. However, no evidence of the species' presence was observed during surveys conducted in 1991 (San Francisco Bay Area Rapid Transit District 1991b). More recent surveys conducted in suitable habitat within 5 miles of the Proposed Project corridor in Union City also failed to document the species' presence (Hafernik pers. comm.). The San Francisco forktail damselfly is considered unlikely to occur in the biological resources study area.

California Red-Legged Frog

The current range of the California red-legged frog includes California's central coast from Marin County south to Ventura County. California red-legged frogs are usually found near ponds, creeks, marshes, and other vegetated wetlands, but may disperse far from water following breeding, and may estivate in rodent burrows or cracks in the soil during dry periods. California red-legged frogs require permanent or nearly permanent ponded water habitat with emergent and submergent vegetation, and may use stock ponds and pools within streams. California red-legged frogs are most common in intermittent waters that lack predatory bullfrogs (*Rana catesbeiana*) and introduced fish species. The California red-legged frog is federally listed as threatened and is a state species of special concern.

California red-legged frogs have not been observed in the Proposed Project corridor or the larger biological resources study area. However, California red-legged frogs have been reported from two localities within 5 miles of the Proposed Project corridor, outside the biological resources study area.[6] In 1996, one adult and one juvenile were found in Agua Caliente Creek south of Mission Boulevard (1 mile east of the southern terminus of the project area and 2.2 miles southeast of Lake Elizabeth). In 1999, one individual was observed in a densely vegetated canal in Union City (3 miles northwest of the northern terminus of the project area and 4 miles northwest of Lake Elizabeth) (California Department of Fish and Game 2002). Both of these occurrences are hydrologically isolated from waters within the Proposed Project corridor.

Portions of the Proposed Project corridor, including Mission Creek and the creeks and riparian habitat north of Paseo Padre Parkway, could provide habitat for California red-legged frogs. An additional location near the Proposed Project corridor, New Marsh, may also offer suitable habitat for the species, although bullfrogs were heard calling at New Marsh during the 2002 protocol-level surveys. New Marsh and other aquatic habitat within the Proposed Project corridor also support mosquitofish (*Gambusia affinis*) and crayfish (*Astacus astacus*). The presence of nonnative predators and the lack of accessible upland estivation and dispersal habitat reduces the suitability of this habitat for California red-legged frogs, and California red-legged frogs were not detected at any of these locations during the June 2002 protocol-level surveys. Based on the results of the 2002 protocol-level surveys, the lack of recorded sightings in the biological resources study area, and the extent of urban development and recreational activity in the biological resources study area, it is unlikely that California red-legged frog occurs in the Proposed Project corridor (Appendix H).

[6] USFWS requires habitat assessments for California red-legged frog to document all known occurrences within 5 miles of a project area.

California Black Rail

California Black Rails are largely confined to the northern San Francisco Bay Estuary. Small, isolated populations are present along the outer coast in Tomales Bay, Bolinas Lagoon, Morro Bay, and Bodega Bay; in the Sacramento Valley and Sierra Nevada foothills; and in the Colorado River basin (Evens et al. 1991). Black Rails are primarily found in tidal salt marsh habitat, but they also occur in freshwater marsh (Aigner et al. 1995). The California Black Rail is a federal species of concern and is listed as threatened under CESA.

The CNDDB contains one record of Black Rail in Alameda Creek, less than1 mile northwest of the Proposed Project corridor. However, there is no habitat for this species within the biological resources study area and no Black Rails were observed during the 2002 field surveys.

3.4.3 Regulatory Setting

Federal Laws and Regulations

Endangered Species Act

The federal ESA of 1973 protects fish and wildlife species that have been identified by the USFWS and/or the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) as threatened or endangered, and their habitats. *Endangered* refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range; *threatened* refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

The ESA is administered by the USFWS and NOAA Fisheries. In general, NOAA Fisheries is responsible for protection of ESA-listed marine species and anadromous fishes while other listed species are under USFWS jurisdiction.

The following sections summarize specific provisions of the ESA (Sections 9, 7, and 10) that are relevant to the Proposed Project.

ESA Prohibitions (Section 9)

ESA Section 9 prohibits the "take" of any fish or wildlife species listed under the ESA as endangered. Take of threatened species is also prohibited under Section 9 unless otherwise authorized by federal regulations.[7] *Take*, as defined by the ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Harm* is defined as "any act that kills or injures the species, including significant habitat modification." In addition, Section 9 prohibits removing, digging up, cutting, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction.

[7] In some cases, exceptions may be made for threatened species under ESA Section 4[d]; in such cases, the USFWS or NMFS issues a "4[d] rule" describing protections for the threatened species and specifying the circumstances under which take is allowed.

ESA Authorization Process for Federal Actions (Section 7)

ESA Section 7 provides a means for authorizing take of threatened and endangered species by federal agencies. It applies to actions that are conducted, permitted, or funded by a federal agency. Under Section 7, the federal agency conducting, funding, or permitting an action (the lead agency) must consult with USFWS or NOAA Fisheries, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed project "may affect" a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment (BA) evaluating the nature and severity of the expected effect. In response, USFWS or NOAA Fisheries issues a biological opinion (BO), with a determination that the proposed action either

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

The BO issued by USFWS or NOAA Fisheries may stipulate discretionary "reasonable and prudent" conservation measures. If the project would not jeopardize a listed species, USFWS or NOAA Fisheries issues an *incidental take statement* to authorize the proposed activity.

ESA Permitting Process for Nonfederal Entities (Section 10)

ESA Section 10 provides a means for nonfederal entities (states, local agencies, and private parties) to receive authorization for take of threatened and endangered species. ESA Section 10 applies to actions that are not conducted, permitted, or funded by a federal agency. It allows USFWS and/or NOAA Fisheries to issue an *incidental take permit* authorizing take resulting from otherwise legal activities, as long as the take would not jeopardize the continued existence of the species. Section 10 requires the applicant to prepare a habitat conservation plan (HCP) addressing project impacts and proposing mitigation measures to compensate for those impacts. The HCP is subject to USFWS and/or NOAA Fisheries review and must be approved by the reviewing agency or agencies before the proposed project can be initiated. Because the issuance of the incidental take permit is a federal action, the USFWS must also comply with the requirements of ESA Section 7 and conduct an internal consultation.

Migratory Bird Treaty Act

The MBTA (16 USC 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the former Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 CFR 21, 50 CFR 10). Most actions that result in taking or in permanent or temporary possession of a protected species constitute violations of the MBTA. Examples of permitted actions that do not violate the MBTA include: the possession of a hunting license to pursue specific gamebirds; legitimate research activities; display in zoological gardens; bird-banding; and other similar activities (Faanes et al. 1992). USFWS is responsible for overseeing compliance with the MBTA, and the U.S.

Department of Agriculture's Animal Damage Control Officer makes recommendations on related animal protection issues.

Clean Water Act

The Clean Water Act (CWA) is the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. As such, it empowers the EPA to set national water quality standards and effluent limitations and establishes permit review mechanisms to enforce them, operating on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit. Key provisions of the CWA are described in detail in Section 3.3 (*Hydrology and Water Quality*).

Most of the CWA's provisions are at least indirectly relevant to the management and protection of biological resources because of the link between water quality and ecosystem health. The portions of the CWA that are most directly relevant to biological resources management are contained in CWA Section 404, which regulates the discharge of dredged and fill materials into "waters of the United States," including the following.

- All areas within the ordinary high water mark of a stream, including nonperennial streams with a defined bed and bank and any streamchannel that conveys natural runoff, even if it has been realigned.
- Seasonal and perennial wetlands, including coastal wetlands.

Wetlands are defined for regulatory purposes as areas "inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3, 40 CFR 230.3).

CWA Section 404 requires project proponents to obtain a permit from the U.S. Army Corps of Engineers (Corps) for all discharges of dredged or fill material into waters of the United States, including oceans, bays, rivers, streams, lakes, ponds, and wetlands, before proceeding with a proposed activity. The Corps may issue either an individual permit evaluated on a case-by-case basis, or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. Nationwide Permits (NWPs) are a type of general permit issued to cover particular fill activities. Each NWP specifies particular conditions that must be met in order for the NWP to apply to a particular project. Waters of the United States in the project corridor are under the jurisdiction of the Corps, San Francisco District.

Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations, including NEPA (see Chapter 1), the ESA, the federal Coastal Zone Management Act, and the National Historic Preservation Act (see Section 3.8 [*Cultural Resources*]). In addition, the Corps cannot issue or verify any permit until a water quality certification, or waiver of certification, has been issued pursuant to CWA Section 401 (see Section 3.3 [*Hydrology and Water Quality*]). Section 404 permits may be issued only if there is no practicable alternative to the proposed discharge that would have less impact to the aquatic ecosystem and has no other significant adverse

environmental consequences. Section 3.3 (*Hydrology and Water Quality*) provides additional information on Section 404 permitting.

State Laws and Regulations

California Endangered Species Act

CESA protects wildlife and plants listed as threatened and endangered under the Act by the California Fish and Game Commission. It is administered by CDFG. CESA prohibits all persons from taking species that are state-listed as threatened or endangered except under certain circumstances; the CESA definition of *take* is any action or attempt to "hunt, pursue, catch, capture, or kill."

CESA Section 2081 provides a means by which agencies or individuals may obtain authorization for incidental take of state-listed species, except for certain species designated as "fully protected" under the California Fish and Game Code (see below). Take must be incidental to, and not the purpose of, an otherwise lawful activity. Requirements for a Section 2081 permit are similar to those used in the ESA Section 7 process. They include identification of impacts on listed species; development of mitigation measures that minimize and fully mitigate impacts; development of a monitoring plan; and assurance of funding to implement mitigation and monitoring.

California Native Plant Protection Act

The California Native Plant Protection Act (CNPPA) of 1977 prohibits importation of rare and endangered plants into California; take of rare and endangered plants; and sale of rare and endangered plants (the "threatened " category replaced "rare" when the CESA was enacted in 1984. CESA prohibits take of listed plants except as otherwise authorized by the California Native Plant Protection Act, which ensures that state-listed plant species are protected when state agencies are involved in projects subject to CEQA.

Removal of plants for performance of a public service by a public agency or a publicly or privately owned public utility is exempt from CNPPA. Accordingly, some BART activities may be considered exempt from the CNPPA. However, evaluation of potential impacts on state-listed plant species is required pursuant to CEQA Guidelines Section 15380(c)(1).

California Fish and Game Code

Protections for Individual Species

The California Fish and Game Code (Code) provides protection from take for a variety of species, defining *take* as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Certain species are considered *fully protected*, meaning that the Code explicitly prohibits all take of individuals of these species, except for take required for scientific research, which may be authorized by CDFG in some situations. Section 5050 of the Code lists fully protected amphibians and reptiles,

Section 5515 lists fully protected fishes, Section 3511 lists fully protected birds, and Section 4700 lists fully protected mammals.

The Code provides less stringent protection for other species, prohibiting most take, but permitting CDFG to issue regulations authorizing take under some circumstances. Eggs and nests of all birds are protected under Section 3503, nesting birds (including raptors and passerines) under Sections 3513 and 3503.5, birds of prey under Section 3503.5, migratory nongame birds under Section 3800, and other specified birds under Section 3505.

Lake or Streambed Alteration Agreements (Section 1600 et seq.)

As discussed in Section 3.3 (*Hydrology and Water Quality*), the Code regulates activities that interfere with the natural flow of, or substantially alter the channel, bed, or bank of a lake, river, or stream. Lake-bed and streambed alteration activities are covered under Section 1601 for public agencies and Section 1603 for private parties. Requirements to protect the integrity of biological resources and water quality are often conditions of streambed alteration agreements administered under Section 1600 *et seq*.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, in part, implements the federal CWA to provide a mechanism for protecting the quality of the state's waters through the State Water Quality Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs). Section 3.3 (*Hydrology and Water Quality*) describes the provisions of the Porter-Cologne Act.

The SWRCB and the San Francisco Bay RWQCB have taken the position that the Porter-Cologne Act and basin plans developed pursuant to the Act provide independent authority to regulate discharge of fill material to wetlands outside the jurisdiction of Corps. This applies specifically to isolated wetlands considered nonjurisdictional based on the *Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers* decision (121 S.CT. 675, 2001), which limited the Corps's jurisdiction over isolated wetlands.

Local Laws and Regulations

City of Fremont Tree Ordinance

The City of Fremont's Tree Preservation Ordinance is intended to limit the unnecessary destruction of trees, in order to preserve existing windbreaks and foster conservation. The ordinance currently requires that a permit be obtained for the removal of any tree with a trunk diameter of 4 inches or more, measured at 4 feet above the ground.[8] Certain trees designated as "landmark trees" are specifically protected from removal under Section 4-5109 of the ordinance; a list of existing landmark trees within Fremont city limits is maintained by the city and is periodically amended and updated by the Fremont City Council. Commercial-type nut- and fruit-bearing trees, with the

[8] A proposed amendment to the Tree Preservation Ordinance would increase the specified diameter from 4 inches to 6 inches, measured at 4 feet above the ground.

exception of European olive (*Olea europaea*) and black walnut (*Juglans hindsii*), are exempt from protection.

As a multi-county transit district, BART is not legally required to comply with local regulations such as the Fremont Tree Ordinance. However, BART recognizes that transit projects can result in the loss of local biological resources, and considers relevant local regulations in developing its criteria for determining significance.

3.4.4 Impact Assessment and Mitigation Measures

Methodology for Impact Analysis

Analysis of impacts related to biological resources focused on the Proposed Project's potential to result in changes in the areal extent or quality of biological resources. Changes in the areal extent of habitat were evaluated quantitatively through GIS analysis, based on field mapping and the anticipated area and duration of ground disturbance (see Chapter 2); Table 3.4-6 summarizes the potentially affected habitat acreages that were derived via GIS analysis and used in the following impact analysis. Other types of impacts on biological resources were evaluated qualitatively.

As described in Section 3.1 (*Introduction to Environmental Analysis*), this analysis uses the term *operational impacts* to refer to long-term results of operating and maintaining all aspects of the Proposed Project, including trackways, trains, stations, parking lots, and associated equipment and facilities, and to permanent effects of construction activities related to the Proposed Project. *Construction-related impacts* refers to the temporary effects of Proposed Project construction activities such as contractor laydown, site preparation, and installation of trackways and structures.

Impacts specific to construction and operation of the optional Irvington Station were addressed separately, because this option may not be implemented even if the Proposed Project is approved.

Criteria for Determining Significance of Impacts

This analysis relied on standards of significance developed by BART on the basis of regulatory requirements and accepted professional practice for biological resources management and conservation. Based on these criteria, impacts on biological resources were considered significant if the Proposed Project was judged likely to result in any of the following.

- Substantial adverse effects on a special-status species, or creation of a barrier to normal replenishment of a natural community, an important plant or animal species, or a special-status species.
- Substantial change in plant or wildlife species or community composition (abundance or diversity).
- A substantial adverse effect on any riparian habitat, wetland, or other sensitive natural community, including state- and federally protected wetlands (including marshes, vernal pools, and coastal wetlands), through direct removal, filling, hydrological interruption, or other means.

Table 3.4-6. Summary of Habitat Acreages Impacted by Proposed Project and Optional Irvington Station

Vegetation Community	Permanent Impact (acres)	Temporary Impact (acres)
Seasonal wetland		
Tule Pond South	0.7	0.8
Seasonal wetland south of Warm Springs Station	0.09	0.0
Total seasonal wetland acreage affected	**0.8**	**0.8**
Riparian		
Tule Pond South	0.4	0.8
Mission Creek	0.1	3.8
Total riparian acreage affected	**0.5**	**4.6**
Open water and creek		
Lake Elizabeth	0.0	7.5
Mission Creek	0.0	1.4
Other creeks and flood control channels	0.0	4.8
Total open water and creek acreage affected	**0.0**	**13.7**
Ruderal forb-grassland		
Walnut Avenue to Stevenson Boulevard	3.3	4.5
Fremont Central Park	0.0	20.0
Areas adjacent to former SP and WP railroad tracks	3.4	13.3
Warm Springs Station site	30.7	0.0
Total ruderal forb-grassland acreage affected	**37.4**	**37.8**
Irvington Station site	7.8	0.0
Total ruderal forb-grassland affected, including Irvington Station option	**45.2**	**37.8**

Note:
This table does not include habitats within the City of Fremont's grade separations project area of potential effect.

Source: Jones & Stokes

- Substantial interference with the movement of any native resident or migratory fish or wildlife species, or with an established native wildlife corridor.
- Conflict with the provisions of an adopted habitat conservation plan (HCP), natural community conservation plan (NCCP), or other approved local, regional, or state conservation plan.

Impacts and Mitigation Measures

Impacts Related to Warm Springs Extension

Operational Impacts

Impact BIO1 – Effects of increased noise and groundborne vibration on wildlife. As discussed in Section 3.10 (*Noise and Vibration*), operation of the Proposed Project would result in additional noise and groundborne vibration in the project vicinity. Increased noise and vibration have the potential to disturb common and special-status wildlife species, including migratory birds and raptors; wildlife might avoid areas traversed by frequent, noisy, fast-moving trains. However, as described in Mitigation Measures N1 and N2 (see Section 3.10 [*Noise and Vibration*]), BART would implement measures to reduce noise and groundborne vibration in areas adjacent to the Proposed Project alignment. Moreover, wildlife in the area is already habituated to noise and vibration associated with trains operating on the existing UP tracks, motor vehicle traffic, and nearby urban/suburban land uses. Wildlife would likely also become habituated to noise and vibration levels associated with operation of the Proposed Project. This impact is considered less than significant, and no mitigation is required. *(Less than significant.)*

Mitigation – None required.

Impact BIO2 – Loss of ruderal forb-grassland habitat. A total of approximately 37.4 acres of ruderal forb-grassland habitat would be permanently removed from the Proposed Project corridor as a result of implementing the Proposed Project. An additional 19.4 acres of ruderal forb habitat would be impacted in the area east of Lake Elizabeth between the former WP and SP alignments; however, because this habitat is within the area affected by the city's grade separations project and will be removed or substantially disturbed prior to implementation the Proposed Project, these acres are not considered under this impact analysis.

As described in *Existing Conditions* above, a variety of bird species use the ruderal forb-grassland habitat in the biological resources study area for foraging, nesting, and cover. Loss of this habitat would result in further fragmentation; however, the existing ruderal grassland in the project corridor is highly fragmented due to development in the past decade, and similar habitat of equivalent or greater value is abundant in the East Bay region. The loss of 30.7 acres of this habitat at the proposed Warm Springs Station project site would result in significant effects on nesting Western Burrowing Owls. This impact is addressed under Impact BIO6. The loss of the remaining 6.7 acres of nonnative annual forb-grassland, which is currently not occupied by Western Burrowing Owls or other special-status species, is considered less than significant because this habitat type is not a sensitive natural community, it provides low-quality habitat for most species. Furthermore, loss of 37.4 acres of ruderal forb-grassland is not expected to contribute to the destruction or deterioration of an individual, population, or habitat for special-status species. *(Less than significant.)*

Mitigation – None required.

Impact BIO3 – Permanent loss of wetland habitat. Implementation of the Proposed Project would require filling emergent seasonal wetlands at Tule Pond South and in the vicinity of the proposed Warm Springs Station site. As much as 0.7 acre of seasonal wetland habitat at Tule Pond South and an additional 0.09 acre of wetland habitat east of the UP alignment and south of the proposed Warm Springs Station site could be lost. This would represent a substantial adverse effect on a sensitive plant community that provides important habitat for a variety of wildlife. This impact is considered significant, but would be reduced to a less-than-significant level by implementation of the following mitigation measure. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO3 – Restore, create, and protect wetland habitat to mitigate loss of wetland habitat. In order to ensure that implementation of the Proposed Project results in no net loss of wetland habitat functions and values, BART will compensate for the loss of wetland habitat at Tule Pond South and south of the Warm Springs Station site through a combination of onsite restoration/creation and offsite protection and enhancement of at least 0.79 acre of wetland habitat. The size and location(s) of the area(s) to be restored/created will be determined based on appropriate mitigation ratios derived in consultation with the Corps. A mitigation plan will be prepared by a wetland biologist experienced in mitigation and restoration. The plan will be implemented under the biologist's guidance. Subject to approval by the Corps, the wetland mitigation plan will address temporary and permanent impacts (temporary impacts are addressed under Impact BIO11). Factors that will be considered in developing an effective mitigation plan in consultation with the Corps include the following.

- Function and values: Wildlife species, percentage of vegetative cover and/or density, approximate plant height; plant and animal species diversity, root development, and canopy stratification.
- Hydrological regime: Sources of water, discharge points, areas affected by seasonal flooding, direction of flow, and size of watershed.

Specific measurable criteria for the above factors will be incorporated into the plan in conformance with applicable regulatory requirements and the Corps' Guidelines. Such criteria cannot be specifically identified at this stage, however, because the Corps has not visited the site.

Prior to any work that could disturb wetland or creek habitat within the Proposed Project corridor, BART will obtain the following permits as required.

- U.S. Army Corps of Engineers – Nationwide or individual permit as required under Clean Water Act Section 404.
- San Francisco Bay Regional Water Quality Control Board – Water quality certification or waiver under Clean Water Act Section 401.
- California Department of Fish and Game – Streambed Alteration Agreement.

Consultation with these agencies will govern how the disturbance of wetland and creek habitats will be mitigated.

Impact BIO4 – Loss of riparian forest habitat. Implementation of the Proposed Project would result in the permanent loss of approximately 0.5 acre[9] of riparian forest habitat adjacent to Tule Pond South and east of Mission Creek, within the Proposed Project corridor. Riparian forest is naturally rare because it is restricted to stream corridors. Because of its rarity, biological importance, and sensitivity to disturbance, any impacts are typically considered significant. Loss of 0.5 acre of riparian habitat would constitute a significant impact, but would be mitigated to a less-than-significant level by implementation of the following measure. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO4 – Enhance, recreate, or restore riparian forest to compensate for the loss of riparian forest habitat. BART will compensate for the permanent loss of riparian forest habitat at Tule Pond South and east of Mission Creek through onsite restoration/creation of 0.5 acre of forested riparian habitat west of the existing Tule Pond South site (Figure 3.4-1a) and east of Mission Creek. Compensation will be provided at a minimum ratio of 1:1 (1 acre restored or created for every acre removed). Restoration activities will occur after construction.

BART will retain a qualified restoration ecologist to develop a conceptual restoration and monitoring plan that describes how riparian habitat will be enhanced or recreated and monitored over a minimum period of time. BART will be responsible for ensuring that the restoration and monitoring plan is implemented.

After restoration and revegetation are completed, monitoring will be conducted for a minimum of 5 years to ensure that the success criteria identified below are met and to identify any necessary remedial actions. The revegetation/restoration plan for riparian habitats will be considered successful when the following criteria are met.

- The restored site is composed of a mix of species similar to that removed during the construction activity.
- The restored site has at least 75% of the absolute cover of native vegetation present in areas immediately adjacent to the construction corridor.
- Plantings are self-sustaining without human support (e.g., weed control, rodent and deer control, irrigation).
- Functions and values of the restored habitat are comparable to those of adjacent undisturbed riparian habitat.

Remedial action will be required if any of the above criteria are not met during the monitoring period. The purpose of the remedial action will be to ensure that the above criteria are met.

[9] This acreage is an estimate until placement of the optional vent structure adjacent to Mission Creek has been determined.

Impact BIO5 – Disturbance or loss of potential habitat for California red-legged frog. Potential habitat for California red-legged frog was identified within and adjacent to the project corridor. Construction of the Proposed Project would result in temporary disturbance of 0.20 acres of aquatic habitat at Mission Creek and permanent removal of 0.25 acres of seasonal wetland at the flood control channels north of Paseo Padre Parkway (which is within the City of Fremont's grade separations project area). Both of these areas were identified as low quality California red-legged frog habitat. In addition, New Marsh, which is located approximately 100 feet from the project corridor, was identified as potential habitat for California red-legged frog. Construction of the Proposed Project near New Marsh would encroach upon the 300-foot buffer required by USFWS for protection of California red-legged frog upland habitat.

Qualified Jones & Stokes biologists conducted protocol-level surveys for this species in the above areas. Jones & Stokes has prepared a California red-legged frog site assessment for the Proposed Project (Appendix H) and has engaged in informal consultation with USFWS (Hankens and Buford pers. comm.). This report will be submitted to the Corps in accordance with the 404 permitting process. BART will request concurrence that, for the following reasons, the Proposed Project will not adversely impact California red-legged frog.

- Protocol-level surveys determined that no California red-legged frog were found in potential habitat.
- There is no hydrological connectivity between the aquatic habitat in the project corridor and habitat with known occurrences of California red-legged frog.
- The aquatic habitat within the project corridor contains non-native predators such as bullfrogs, mosquito fish, and crayfish.

However, if the Corps, in conjunction with USFWS, determines that the Proposed Project has potential to affect CRLF, the following mitigation measures, in addition to all other conditions stipulated by USFWS, will be implemented to reduce this impact to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO5(a) – Avoid and minimize impacts to California red-legged frog habitat.

- Prior to the initial site investigation and subsequent ground-disturbing activities, a qualified biologist will provide worker awareness training to all project personnel in recognition of California red-legged frog and its habitat.
- A qualified biologist will conduct pre-construction surveys within the project area no earlier than 2 days before ground-disturbing activities.
- No activities will occur after October 15 or the onset of the rainy season, whichever occurs first, until May 1, except for during periods greater than 72 hours without precipitation. Activities can only resume after site inspection by a qualified biologist. The rainy season is defined as "a frontal system that results in depositing 0.25 inches or more of precipitation in one event."

- Vehicles to and from the project site will be confined to existing roadways to minimize disturbance of habitat.
- Prior to movement of heavy equipment in the project area, a qualified biologist will verify that the route is clear of California red-legged frogs.
- If a California red-legged frog is encountered during excavations or any project activities, activity will cease until the frog is removed and relocated by a USFWS-approved biologist. Any incidental take will be reported to USFWS immediately by telephone.
- If suitable wetland habitat is disturbed or removed, BART will restore the suitable habitat back to its original value by covering bare areas with mulch and revegetating all cleared areas with wetland species that are currently found in the project area.

Mitigation Measure BIO5(b) – Compensate for permanent removal of California red-legged frog habitat through protection or enhancement of California red-legged frog habitat. Any permanent removal of habitat identified by USFWS as suitable to support California red-legged frog will be mitigated through protection of suitable California red-legged frog habitat elsewhere, at a 3:1 ratio. The location and size of the compensation habitat will be determined through consultation with USFWS.

Impact BIO6 – Loss of occupied Western Burrowing Owl habitat and direct impacts on Western Burrowing Owls. Construction of the proposed Warm Springs Station would result in the permanent loss of 30.7 acres of currently occupied Western Burrowing Owl habitat and the removal of three nests that support five individual owls. The permanent loss of occupied habitat would constitute a significant impact, but would be reduced to a less-than-significant level by implementation of the following mitigation measure. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO6 – Implement on- and offsite replacement of Western Burrowing Owl habitat. BART will ensure that the loss of Western Burrowing Owl habitat in the Proposed Project corridor is compensated by the provision of replacement habitat either on-site or offsite. Habitat replacement will be based on a biological analysis of the requirements of the owls at this site, or CDFG-approved guidelines (California Department of Fish and Game 1995).

Location of the compensation habitat will be identified in conjunction with CDFG through a mitigation agreement. Compensation habitat may be located either on-site or off-site, depending on approval from CDFG. If necessary, BART will construct two artificial burrows for each occupied burrow lost or rendered unsuitable as a result of construction activities. BART will retain a qualified biologist to build and monitor the artificial burrows. BART will ensure that the mitigation habitat (including artificial burrows) is maintained for owls in perpetuity.

Impact BIO7 – Potential impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp. Implementation of the Proposed Project has the potential to result in loss of the 0.7-acre seasonal wetland located between the former SP and WP railroad tracks south of the optional Irvington Station site. This wetland is within the area affected by the city's grade separations project, and its loss would be addressed under the environmental review process for that project. Because the wetland would no longer be present, it would not be affected by the Proposed Project. (*No impact.*)

Mitigation – None required.

Impact BIO8 – Potential impacts on California tiger salamander habitat.

Implementation of the Proposed Project has the potential to result in loss of the 0.7-acre seasonal wetland located between the former SP and WP railroad tracks south of the optional Irvington Station site, which is known to support a population of California tiger salamander. This wetland is within the area affected by the city's grade separations project. It is anticipated that this wetland will be removed by the city's grade separations project. The Proposed Project would not contribute to impacts on habitat for the California tiger salamander. (*No impact.*)

Mitigation – None required.

Impact BIO9 – Removal of trees. The Proposed Project has the potential to result in the loss of trees along the Proposed Project alignment. The number of protected trees that would be removed due to the Proposed Project cannot be ascertained until Proposed Project designs are finalized, but based on the results of the May–June 2002 surveys, it is not expected to exceed 5, including two large red gum (*Eucalyptus camaldulensis*) trees adjacent to Tule Pond South. In addition, according to the City of Fremont's current list of landmark trees, no listed landmark trees would be removed as a result of Proposed Project activities. Although BART is a multi-county transit agency and as such is not legally required to comply with local ordinances, BART considers this impact potentially significant, and will implement the following mitigation measures to ensure that it is reduced to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO9(a) – Conduct a tree survey to assess tree resources impacted by the Proposed Project. BART will retain a certified arborist to conduct a tree survey of the Proposed Project corridor, including potential contractor laydown areas, and identify and evaluate trees, including any landmark trees as identified by the City of Fremont, that will be removed. If the arborist's survey does not identify any protected trees or known landmark trees that would be removed or damaged as a result of the Proposed Project, no further mitigation is necessary. However, if the Proposed Project would remove or damage any tree(s), Mitigation Measure BIO9(b) as described below will also be implemented.

Mitigation Measure BIO9(b) – Compensate for removal of protected trees. For any tree with a trunk diameter in excess of 4 inches measured at 4 feet above ground level that is removed as a result of the Proposed Project, BART will ensure that replacement trees are planted in the Proposed Project corridor. At a minimum, each removed tree that meets the 4-inch size standard will be replaced with either (i) one replacement tree of 24-inch box size, or (ii) three replacement trees of 15-gallon size.

Replacement trees will belong to a native species such as coast live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), California bay laurel (*Umbellularia californica*), or other appropriate species native to the Fremont area. Trees will be planted in close proximity to removal sites, in locations suitable for the replacement species. Selection of replacement sites and installation of replacement plantings will be supervised by a qualified botanist. Newly planted trees will be monitored by a qualified botanist at least once a year for 5 years. Each year, any trees that do not survive will be replaced. Any trees planted as remediation for failed plantings will be planted as stipulated here for original plantings, and will be monitored for a period of 5 years following installation. Tree replacement will occur after project construction.

Construction-Related Impacts

Impact BIO10 – Temporary disturbance of ruderal forb-grassland. Construction of the Proposed Project would result in the temporary disturbance of a total of approximately 37.8 acres of ruderal forb-grassland (nonnative annual grassland) habitat throughout the Proposed Project corridor. Temporary disturbance of ruderal forb-grassland habitat represents a less-than-significant impact because this habitat type is not a sensitive natural community. However, all 37.8 acres of ruderal grassland disturbed during construction would be replaced with a native grassland community to ensure that the acreage is returned to the pre-project conditions. In addition, Mitigation Measures H7 (Ensure the implementation of NPDES permit conditions) and H8 (Implement water quality control measures to prevent release of sediment) (described in Section 3.3 [*Hydrology and Water Quality*]), as well as the following mitigation measures, will be implemented. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO10(a) – Minimize and avoid ruderal forb-grassland habitat. The following minimization and avoidance measures will be implemented in order to ensure pre-project conditions in areas where ruderal forb-grassland habitat is temporarily disturbed.

- Remove as little vegetation as possible.
- Replace top soil and replant the grassland habitat, using a mixture of native perennial and annual grasses and forbs.
- Minimize construction activities in sensitive habitat areas.

Mitigation Measure BIO10(b) – Minimize erosion of stockpiled soil.

During construction, measures necessary to prevent erosion and pollution from the excavated and stockpiled soil, such as the use of geotextiles, will be implemented.

Impact BIO11 – Temporary disturbance of open water habitat.[10] Construction of the subway segment of the Proposed Project would require installation of a cofferdam and dewatering of a total

[10] The 1992 EIR (San Francisco Bay Area Rapid Transit District 1991b) evaluated impacts on open water habitats and wetlands collectively, identifying them as significant because of the potential for impacts on wetlands. In this SEIR, impacts on wetlands are treated separately under Impacts BIO3, BIO11, and BIO-Cume3.

of 7.5 acres of open water habitat in the northeast arm of Lake Elizabeth (approximately 9% of the lake's area). Once construction is complete, the cofferdam would be removed and the area would return to its preconstruction condition. During construction, water quality in the remaining portion of the lake would be protected by Best Management Practices (BMPs) required for compliance with the NPDES General Permit for Discharges of Storm Water Associated with Construction Activities (see discussion under Impact H7 (Potential for accelerated erosion and discharge of sediment into water bodies as a result of ground-disturbing activities) in Section 3.3 [*Hydrology and Water Quality*]) and by Mitigation Measures H8 (Implement water quality control measures to prevent release of sediment) and H9 (Implement hazardous materials spill prevention and control plan). However, construction activities could deter wildlife from using open water habitats. The following mitigation measures would reduce this impact to a less-than-significant level. *(Less than significant with incorporation of mitigation.)*

Mitigation Measure BIO11 – Restore disturbed vegetation and install erosion barriers.

- Destroyed vegetation will be replaced and the channels restored to previous condition following construction.
- Require the construction contractor to use erosion barriers in order to prevent construction materials and excavated soil from entering any of the open water areas.

Impact BIO12 – Temporary disturbance of wetland and creek habitat. Construction of the Proposed Project could result in the temporary disturbance of as much as 6.2 acres of wetland and creek habitat in the Proposed Project corridor (Figure 3.4-1a) via direct removal, filling, hydrologic interruption (including dewatering), and other activities. Affected waterways would include Mission Creek, which has not been hardscaped and supports a substantial amount of native and nonnative natural vegetation. Wetland and creek habitats are considered environmentally sensitive areas (see Figure 3.4-2 for general locations of these areas). Disturbance of these areas would consequently represent a significant impact, but would be reduced to a less-than-significant level by implementation of BMPs required for compliance with relevant NPDES General Permits (see discussion under Impacts H7 and H9 (Release of hazardous substances that violate water quality standards) in Section 3.3 [*Hydrology and Water Quality*]), and the following mitigation measures. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO12(a) – Avoid or minimize disturbance of wetlands and creeks. At a minimum, mitigation for this impact will include the following measures.

All environmentally sensitive areas will be staked and flagged in the field and marked on construction drawings before construction begins. BART's construction contractor(s) will avoid construction activities in and adjacent to creeks and saturated or ponded wetlands during the wet season (winter and spring) to the maximum extent possible. Wetlands and creek habitats on and near active Project construction sites will be protected by installing environmentally sensitive area fencing (orange construction barrier fencing) at least 20 feet outboard of the edge of the ordinary high-water mark; depending on site-specific conditions and permit requirements, the

buffer may be wider than 20 feet to prevent erosion and sedimentation impacts on wetland habitats. Construction specifications for the Proposed Project will include language that specifically prohibits construction-related activities, including vehicle laydown and operation, storage of materials and equipment, and other ground-disturbing activities in fenced environmentally sensitive areas.

BART will retain qualified biologists and/or resource specialists to monitor construction activities near wetlands and creeks. Monitors will be hired and trained prior to construction, and will be responsible for preconstruction surveying, staking and fencing sensitive resources, onsite monitoring, documenting compliance and violations, coordinating with contract compliance inspectors, and performing postconstruction documentation.

Contractors will ensure that woody debris, soils, and any other materials that are inadvertently deposited below the ordinary high-water mark of drainages are removed. Removal will be accomplished by qualified personnel, in a manner that minimizes disturbance of drainage bed and banks.

If it is not possible to avoid ground-disturbing activities in or adjacent to environmentally sensitive areas, including creeks and/or saturated or ponded wetlands, the following measures will be implemented to minimize disturbance.

- When working in or adjacent to creeks or wetlands, contractors will use geotextile cushions or other appropriate materials (e.g., timber pads, prefabricated equipment pads) to minimize damage to the substrate and vegetation and increase the likelihood of successful restoration.
- When working upslope of creeks or wetlands, contractors will use geotextile mats, excelsior blankets, or other soil stabilization products to minimize the potential for construction to contribute to erosion and sedimentation that could affect wetland water quality.
- Contractors will stabilize exposed slopes and streambanks immediately on completion of ground-disturbing activities, using a nonvegetative material that will bind the soil initially and break down within a few years.

BART will ensure that all measures stipulated here, and all relevant permit conditions, are incorporated into contract specifications and implemented by the construction contractor.

Mitigation Measure BIO12(b) – Restore disturbed wetland and creek habitat. In order to ensure that implementation of the Proposed Project results in no net loss of wetland and creek habitat functions and values, BART will ensure that wetlands and creeks disturbed during construction activities are restored and/or revegetated. BART will comply with any measures required by the Corps as part of the Section 404 permitting process.

In addition, BART will retain a qualified restoration ecologist to develop a restoration/revegetation plan for wetlands and creeks adversely affected by construction activities, in conjunction with resource and regulatory agency staff. The restoration/revegetation plan will include design specifications, an implementation plan, maintenance requirements, and a monitoring program.

After restoration and revegetation are completed, monitoring will be conducted for a minimum of 5 years to ensure that the success criteria identified below are met and to identify any necessary remedial actions. Annual monitoring reports will be submitted to the Corps and the San Francisco Bay RWQCB. The reports will summarize the data collected during each monitoring period, describe the progress of the restored habitats relative to the success criteria outlined below, and discuss any remedial actions performed.

The revegetation/restoration plan for wetland and creek habitats will be considered successful when the following criteria are met.

- The restored site is composed of a mix of species similar to that removed during the construction activity.
- The restored site has at least 75% of the absolute cover of native vegetation present in areas immediately adjacent to the construction corridor.
- Plantings are self-sustaining without human support (e.g., weed control, rodent and deer control, irrigation).
- Functions and values of the restored habitat are comparable to those of adjacent undisturbed wetland and creek habitats.

Remedial action will be required by BART if any of the above criteria are not met during the monitoring period. The purpose of the remedial action will be to ensure that the above criteria are met.

Mitigation Measure BIO12(c) – Compensate for temporary loss of wetland and creek habitat. To compensate for the temporary loss of wetland and creek habitat during construction, BART will implement Mitigation Measure BIO3 (Restore, create, and protect wetland habitat to mitigate loss of wetland habitat). As discussed in this mitigation measure, the size of the area(s) to be restored/created will be determined based on appropriate mitigation ratios derived in consultation with the Corps.

Impact BIO13 – Temporary disturbance of riparian forest habitat. Construction of the Proposed Project would result in the temporary disturbance of approximately 0.8 acres of riparian habitat located at Tule Pond South and 3.8 acres of riparian forest habitat located east of Lake Elizabeth on both sides of Mission Creek (Figure 3.4-1a).

Because it is typically restricted to stream corridors, riparian forest is naturally a rare component of the landscape. However, because the 3.9 acres of riparian forest along Mission Creek are adjacent to

approximately 40 acres of intact riparian forest habitat, the effect of temporary disturbance at this location would be reduced by the presence of the larger area of undisturbed habitat. Most wildlife displaced by the project would be able to utilize the adjacent habitat temporarily, and the undisturbed riparian forest habitat would serve as a seed bank to facilitate the revegetation of the disturbed habitat. However, because of the rarity, biological importance, and sensitivity to disturbance of riparian habitat, any impact on riparian forest is typically considered significant. This impact would be reduced to a less-than-significant level by implementation of the following mitigation measures. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO13(a) – Minimize disturbance of riparian habitats. BART's construction contractor(s) will avoid construction activities in and adjacent to riparian habitats to the maximum extent possible. Riparian habitats on and near active Project construction sites will be protected by installing environmentally sensitive area fencing (orange construction barrier fencing) outboard of (upslope from) the edge of the riparian zone. Depending on site-specific conditions, the buffer may be wider than 20 feet, as needed to protect the area from erosion. The locations of fences will be marked in the field with stakes and flags and will be shown on the construction drawings.

If it is not possible to avoid work in riparian areas, BART's construction contractor(s) will minimize impacts on riparian forest vegetation by trimming vegetation rather than removing entire shrubs or trees wherever practicable. Shrubs will be cut at least 1 foot above ground level to leave the root systems intact and allow for more rapid regeneration. Cutting will be limited to the minimum area necessary in the construction zone. To protect migratory birds, no removal of woody riparian vegetation will take place during the breeding season (March 1–August 1).

Mitigation Measure BIO13(b) – If it is not possible to avoid work in riparian areas, restore disturbed riparian forest areas. BART will ensure that the riparian forest disturbed during construction activities is restored and/or revegetated.

BART will retain a qualified restoration ecologist to develop a revegetation plan for riparian forest adversely affected by construction activities. The revegetation plan will include design specifications, an implementation plan, maintenance requirements, and a monitoring program. To help develop the plan, the restoration ecologist shall qualitatively sample the riparian vegetation in the Proposed Project corridor prior to construction. Revegetation will be implemented immediately following disturbance in substantially disturbed areas, or as appropriate for site conditions, based on the evaluation of the restoration ecologist and input from agency staff. Weeds will be vigorously controlled within and adjacent to the restoration site to ensure that no new noxious weeds are introduced into the area.

Monitoring will be conducted by BART for a minimum of 5 years to document the degree of success in achieving the success criteria identified below and to identify any necessary remedial actions. The reports will summarize the data collected during each monitoring period, describe the progress of restored habitats relative to the success criteria outlined below, and discuss any remedial actions performed.

The revegetation plan for riparian habitat will be considered successful when the following criteria are met.

- The riparian habitat established is composed of a mix of native species similar to that removed by the construction.
- The absolute cover of riparian vegetation is at least 75% of that in adjacent riparian areas not impacted by construction.
- The health and vigor of riparian vegetation in the planted areas is similar to that of individuals of the same species in adjacent riparian areas, based on a qualitative comparison of leaf turgor, stem caliber, leaf cover and foliage density.
- Plantings are self-sustaining without human support (e.g., weed control, rodent control, or irrigation).

Impact BIO14 – Potential for introduction or spread of noxious weeds. Construction activities have the potential to introduce or spread noxious weeds in currently uninfested areas. However, the Proposed Project corridor is highly disturbed and urbanized, and is dominated by ruderal forb-grassland that already supports a relatively high proportion of exotic plants and noxious weeds. Because of the dominance of this habitat and the Proposed Project corridor's urban setting, the potential for noxious weeds introduced or spread from active construction areas to affect wildlands is low, and this impact is considered less than significant. *(Less than significant.)*

Mitigation – None required.

Impact BIO15 – Temporary disturbance of habitat for Western Burrowing Owl. As described in Impact BIO6 above, Western Burrowing Owl (a state species of special concern and federal species of concern) is known to occur at the Warm Springs Station site, and suitable habitat also occurs elsewhere in the Proposed Project corridor. Construction of the Proposed Project has the potential to result in temporary disturbance of up to 37.8 acres of habitat suitable for Western Burrowing Owls. Owls could colonize currently unoccupied habitat in the project corridor before construction begins. Disturbance or mortality of Western Burrowing Owls would be a significant impact, but implementation of the following mitigation measure would reduce potential impacts to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO15 – Conduct preconstruction surveys for nesting and wintering Burrowing Owls and implement measures to avoid or minimize impacts if owls are present. If construction activities are scheduled to occur during the breeding season (approximately February 1–August 31), BART, in consultation with CDFG, will retain a qualified biologist to conduct a preconstruction survey within 1–2 weeks of the onset of construction activities. If active Western Burrowing Owl nests are found, biologists will establish a 250-foot buffer zone around the active burrow(s). The buffer zone(s) will be delineated with highly visible temporary construction fencing. No construction activities will occur until a qualified biologist has determined that the young have fledged.

Preconstruction surveys will also be conducted if activities are scheduled to occur

during the nonbreeding season (September 1–January 31). If Western Burrowing Owls are found, BART will either implement avoidance measures or will passively relocate the owls. Avoidance will involve establishing a 160-foot no-disturbance buffer zone that will be delineated with highly visible temporary construction fencing. Passive relocation will involve installation of one-way doors in the entrances of all burrows in areas where construction is slated to occur. One-way doors will be installed at least 48 hours before construction begins, and will be monitored for 1 week. Following the monitoring period, the burrows will be excavated to prevent reoccupation by owls.

Impact BIO16 – Temporary noise disturbance of nesting common and special-status raptors. The Proposed Project corridor contains potential nesting habitat for nonlisted special-status raptors and for common raptor species protected under Section 3503.5 of the Code (see *3.4.3 Regulatory Setting*). Disturbance related to human activity and construction noise could cause nest abandonment and death of young or loss of reproductive potential at active nest sites. Disturbance of individuals belonging to common raptor species represents a less-than-significant impact, because these species are widespread in the East Bay region and localized disturbance of nesting is not expected to present a threat to the species' persistence in the area.[11] Disturbance of nesting special-status raptors would constitute a significant impact, but would be reduced to a less-than-significant level by implementation of the following mitigation measure. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO16 – Conduct a preconstruction survey for nesting raptors and implement measures to avoid or minimize impacts if nesting special-status raptors are present. No mitigation is required if construction occurs during the nonbreeding season (August 16–February 28). However, if construction activities occur between March 1 and August 15, BART will retain a qualified biologist to conduct a preconstruction survey for special-status raptor species in the Proposed Project corridor, including contractor laydown areas. The survey will be conducted during the calendar year in which the activity is slated to begin, to determine whether nesting special-status birds of prey would be affected. The results of the survey will be considered valid only for the season in which the survey was conducted; if phased construction is planned, an additional survey or surveys may be required.

If the survey does not identify any nesting special-status raptor species in the area potentially affected by the proposed activity, no further mitigation is required.

If nesting special-status raptors are found during a preconstruction survey, the biologist will identify and establish a buffer area around each active raptor nest. No construction activities will take place inside the buffer area until the biologist has determined that the young have fledged or the parents are no longer attempting to nest. The size of the buffer area will be determined in consultation with CDFG, based on site conditions. Examples of approved buffers include the following.

[11] Although considered a less-than-significant impact from a CEQA standpoint, disturbance of common raptors is a violation of protections established under Sections 3513 and 3503.5 of the California Fish and Game Code (see *3.4.3 Regulatory Setting*), and could be subject to fine or other penalty.

- **Northern Harrier –** minimum 200-foot radius around active nest.
- **Cooper's Hawk –** minimum 500-foot radius around active nest.
- **White-tailed Kite –** minimum of 500-foot radius around active nest.

Impact BIO17 – Temporary disturbance of nesting habitat for special-status raptors. Construction of the Proposed Project would result in the temporary disturbance of 4.7 acres of riparian forest habitat adjacent to Tule Pond South, Lake Elizabeth and on both sides of Mission Creek, and a total of 37.8 acres of ruderal forb-grassland habitat throughout the Proposed Project corridor, both of which represent potential nesting habitat for a variety of special-status raptors. The temporary loss of potential nesting habitat for special-status raptors is considered less than significant because disturbed habitats would return to preproject conditions following Project construction, and similar habitat of equivalent or greater value is abundant in the East Bay region. *(Less than significant.)*

Mitigation – None required.

Impact BIO18 – Temporary disturbance of nesting swallows. Construction of the Proposed Project could disturb nesting swallows. As discussed in *Existing Conditions* above, Tree Swallow nests have been observed in riparian habitat south of Lake Elizabeth, and the two railroad bridges in the Proposed Project corridor offer potential nesting habitat for Cliff Swallows and Barn Swallows, although no swallows have been observed nesting at either of these locations. Swallows are not considered special-status species, but their occupied nests and eggs are protected by federal and state laws, including the MBTA and the Code (see 3.4.3 *Regulatory Setting* above). Impacts on nesting swallows are considered significant if they have the potential to affect the viability of local populations. Disturbance of nesting swallows in the Proposed Project corridor is considered a significant impact because the species potentially affected are colonial nesters and entire breeding populations could be impacted. Implementation of the following mitigation measure and Mitigation Measure BIO13(a) would reduce impacts on nesting swallows to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO18 – Avoid construction during swallow nesting season or remove empty nests and prevent new nesting. No mitigation is required if construction in potential swallow nesting habitat occurs entirely outside the swallow nesting season (March 1–August 1). However, if construction activities will occur in potential swallow nesting habitat during the nesting season, BART will retain a qualified wildlife biologist to inspect known and potential nest sites during the nonbreeding season (September 1–February 28). Abandoned nests will be removed. If swallows begin constructing new nests during the breeding season, a qualified wildlife biologist will remove the nests before nesting swallows complete nest construction. Construction in nesting swallow habitat will not begin before September 1, or until after USFWS issues appropriate removal permits.

Mitigation Measure BIO13(a) – Minimize disturbance of riparian habitats. This mitigation measure is described above. In this case, this mitigation measure applies specifically to impacts on nesting Tree Swallows because this species typically nests in riparian habitat.

Impact BIO19 – Temporary disturbance of potential California tiger salamander upland estivation habitat. Construction of the Proposed Project would result in temporary disturbance of approximately 2.5 acres of potential upland estivation habitat for California tiger salamander located west of New Marsh. New Marsh may provide suitable breeding habitat for species, although no occurrences have been recorded and Jones & Stokes biologists did not observe this species in New Marsh during focused surveys for California red-legged frog in June 2002. While the Proposed Project would not directly affect the breeding habitat at New Marsh, it would impact adjacent upland areas that could potentially be used as estivation habitat for salamanders. This upland estivation habitat has been degraded within the last year from application of up to 2 feet of dredged spoils. However, although degraded, the adjacent uplands are considered potential estivation habitat for this species.

Construction activities expected to occur in upland habitat near New Marsh include creation and operation of a contractor laydown area approximately 200 feet west of New Marsh, and cut-and-cover construction of the subway segment of the Proposed Project approximately 400 feet south of New Marsh. This impact is considered significant. Implementation of the following mitigation measures would reduce this impact to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO19(a) – Conduct preconstruction surveys for California tiger salamander and implement measures to avoid or minimize impacts if salamanders are present. Prior to any construction activity, BART will retain a qualified biologist to conduct a preconstruction survey for California tiger salamander in New Marsh. The presence/absence surveys will be based on USFWS or CDFG approved protocols. Surveys for adult salamanders will occur during and following the first rains of the 2003/2004 rainy season as adults are moving between estivation sites and New Marsh. Surveys for larval salamanders will be conducted in New Marsh during spring 2004. If it is determined that salamanders are present, Mitigation Measure 19(b) will be implemented. If salamanders are absent from New Marsh, and the resource agencies concur with this finding, no further mitigation will be required.

Mitigation Measure BIO19(b) – Implement measures to avoid and minimize disturbance and mortality of California tiger salamander.

- A construction work area will be delineated along the Proposed Project corridor in the vicinity of New Marsh. All construction activities will be restricted to the area within the delineated work area. The work area will begin 200 feet from New Marsh, thereby creating a 200-foot no-disturbance buffer zone around New Marsh. The contractor will identify the outer extent (i.e., width) of the work area. A qualified biologist will determine the length of the work area based on habitat characteristics and topography. The areas outside of the designated work area will be identified on construction drawings as an “Environmentally Sensitive Areas.”
- Barrier fencing will be installed along the perimeter of both sides of the work area. Drift fencing will be installed along the base of the barrier fencing to ensure that no salamanders enter the work area from New Marsh or from estivation sites.

To minimize disruption of migratory movements, pit traps will be installed periodically along the drift fence to capture migrating salamanders. During the migratory period (generally during the rainy season while salamanders move between the upland estivation sites and the breeding pond), a qualified biologist will monitor the traps and move any captured salamanders to the opposite side of the work area. This process will protect New Marsh and immediately adjacent uplands, minimize the disruption of migratory movements, and ensure construction activities are not interrupted within the work area. The process will not require biological monitoring within the work area.

Impact BIO20 – Temporary disturbance of potential California red-legged frog habitat. Construction of the Proposed Project would result in temporary disturbance of 1.4 acres of wetland and creek habitat at Mission Creek, identified as low-quality dispersal habitat for the California red-legged frog. New Marsh, approximately 350 feet away from the Proposed Project corridor, offers potential aquatic habitat for California red-legged frog. If California red-legged frogs are present at these locations, construction could result in disturbance or mortality. Mitigation for loss and disturbance to habitat for this species is addressed under Mitigation Measures BIO5(a) (Avoid and minimize impacts to California red-legged frog habitat) and BIO5(b) (Compensate for permanent removal of California red-legged frog habitat through protection or enhancement of California red-legged frog habitat).

However, as discussed in *Existing Conditions* and Appendix H, protocol-level surveys were conducted for California red-legged frog during June 2002 and no California red-legged frogs were found in any of the areas identified as potential habitat. Accordingly, BART plans to request concurrence from USFWS that the Proposed Project would not adversely impact California red-legged frog. This impact is considered less than significant. *(Less than significant.)*

Mitigation – None required.

Impacts Specific to Optional Irvington Station

Some of the impacts and mitigation measures identified in the design option would also apply to the optional Irvington Station. As appropriate, the discussion below refers the reader to the previous section, *Impacts Related to Warm Springs Extension*, for descriptions of those mitigation measures that apply to both the Warm Springs Extension and the optional Irvington Station.

Operational Impacts

Impact BIO21 – Loss of ruderal forb-grassland habitat at optional Irvington Station site. Development of the optional Irvington Station would result in the permanent loss of 7.8 acres of ruderal forb-grassland (nonnative annual grassland) habitat at the Irvington Station site. The loss of ruderal forb-grassland habitat represents a less-than-significant impact because this habitat type is not a sensitive natural community, it provides low-quality habitat for most species, and similar habitat of equivalent or greater quality is abundant in the East Bay region. Moreover, loss of 7.8 acres of ruderal forb-grassland is not expected to contribute to the destruction or deterioration of an individual, population, or habitat for special-status species. *(Less than significant.)*

Mitigation – None required.

Impact BIO22 – Removal of protected trees from Irvington Station site. Development of the optional Irvington Station has the potential to result in the loss of trees at the Irvington Station site that are protected by the Fremont Tree Protection Ordinance. The number of protected trees that would be removed due to the Irvington Station option cannot be ascertained until designs are finalized, but based on the results of the May–June 2002 surveys, it is expected to be on the order of 20–30, including California pepper trees (*Schinus molle*), red gums, walnuts (*Juglans* spp.), and palms (*Phoenix* sp.). Impacts on the palm trees, which are associated with the historic Gallegos Winery site, would occur with implementation of the city's grade separations project. BART considers removal of any trees greater than 4 inches in diameter or 4 feet in height a potentially significant impact, and will implement Mitigation Measures BIO9(a) and BIO 9(b) to ensure that this impact is reduced to a less-than-significant level. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO9(a) – Conduct a tree survey to assess tree resources impacted by the Proposed Project. This mitigation measure is described above.

Mitigation Measure BIO9(b) – Compensate for removal of protected trees. This mitigation measure is described above.

Construction-Related Impacts

Impact BIO23 – Temporary noise disturbance of common and special-status nesting raptors at site of optional Irvington Station. Potential nesting habitat for nonlisted special-status raptors and for common raptor species protected under Section 3503.5 of the California Fish and Game (see *3.4.3 Regulatory Setting* above) occurs within and adjacent to the optional Irvington Station site. Disturbance related to human activity and construction noise could cause nest abandonment and death of young or loss of reproductive potential at active nest sites. Disturbance of individuals belonging to common raptor species represents a less-than-significant impact, because these species are widespread in the East Bay region and localized disturbance of nesting is not expected to present a threat to the species' persistence in the area.[12] Disturbance of nesting special-status raptors at the Irvington Station site constitutes a significant impact, but would be reduced to a less-than-significant level by implementation of Mitigation Measure BIO16. *(Less than significant with mitigation incorporated.)*

Mitigation Measure BIO16 – Conduct a preconstruction survey for nesting raptors and implement measures to avoid or minimize impacts if nesting special-status raptors are present. This mitigation measure is described above.

Contribution to Cumulative Impacts

Table 3.1-1 and Section 3.1-6 of Section 3.1 (*Introduction to Environmental Analysis*) lists approved and pending development projects in Fremont as of the date of preparation of this SEIR. The

[12] As described under Impact BIO15, although it is considered a less-than-significant impact from a CEQA standpoint, disturbance of common raptors is a violation of protections established under Sections 3513 and 3503.5 of the California Fish and Game Code (see *3.4.3 Regulatory Setting*), and could be subject to fine or other penalty.

projects listed largely represent infill development and redevelopment in an already urbanized area. The historic extent of biological resources, including upland, riparian, and freshwater wetland habitats, has been substantially reduced and fragmented by development, and remaining areas of open space are primarily ruderal in character. The discussion of cumulative impacts to biological resources presented in this section is based on the assumption that the projects listed in Section 3.1 will proceed as planned.

Contribution of Warm Springs Extension to Cumulative Impacts

Operational Contribution

Impacts on Wildlife Species

Impact BIO-Cume1 – Potential to disturb common and special-status wildlife species in the region. Cumulative impacts as a result of noise and groundborne vibrations generated by operation of the Proposed Project and SVRTC would have the potential to disturb common and special-status wildlife species in the region. However, wildlife species in the region are already habituated to noise and vibration associated with trains operating on the existing UP tracks, motor vehicle traffic, and nearby land uses. Although an overall increase in cumulative noise and vibration would occur, this impact is considered less than significant because wildlife would not likely be displaced but would adapt to the change in conditions over time. *(Less than significant.)*

Mitigation – None required.

Habitat Loss

Impact BIO-Cume2 – Potential for loss of ruderal forb-grassland habitat. Cumulative loss of ruderal forb-grassland habitat in the region is expected to continue in the foreseeable future as a result of the proposed development listed in Table 3.1-1. Approximately 475 acres of existing habitat dominated by ruderal forb-grassland would to be developed should all of these projects be constructed. Additional habitat loss is expected as a result of SVRTC and the City of Fremont's grade separations project.

The Proposed Project would result in the loss of an additional 37.8 acres of ruderal forb-grassland habitat in the region (Impact BIO2). Although Impact BIO2 is identified as less than significant, it represents a cumulatively considerable contribution to the ongoing regional loss of habitat for a wide range of common and special-status species that depend on Fremont's remaining open spaces. However, as described in Mitigation Measure BIO6 (Implement on- and offsite replacement of Western Burrowing Owl habitat), BART has committed to preserve habitat suitable for Western Burrowing Owl. This minimizes the Proposed Project's incremental contribution to loss of ruderal forb-grassland habitat in the region. Nevertheless, this cumulative impact is considered significant and unavoidable. *(Significant and unavoidable.)*

Mitigation – None available.

Impact BIO-Cume3 – Potential for loss of wetland and riparian habitat. Cumulative loss of wetland habitat throughout the region may result from the developments listed in Table 3.1-1. Cumulative regional loss of wetland and riparian habitat has the potential to result in a measurable change in species or community composition above and beyond the changes that have occurred as a

result of urban growth to date. However, through the regulatory and environmental permitting process, these developments will be required to mitigate the loss of seasonal wetland and riparian habitat, typically at a 3:1 ratio. For example, the Pacific Commons development will establish a 371-acre wetland preserve that is likely to be designated as critical habitat for vernal pool species. Therefore, the overall effect of wetland impacts and required mitigation through regulatory processes will be a change in the distribution of wetland habitat in the region.

The city's grade separations project will likely impact 0.7 acres of seasonal wetland and an additional 2.5 acres of riparian habitat would be removed from the area around the two flood control channels north of Paseo Padre Parkway. The SVRTC development may also contribute to overall impacts on wetland and riparian habitat. The Proposed Project would result in the loss of 0.8 acre of seasonal wetland habitat (Impact BIO3) and 0.5 acre of riparian forest habitat (Impact BIO4). Both of these habitat types have already been substantially fragmented and reduced by urbanization in the Proposed Project corridor and surrounding area. Project-related contribution to habitat fragmentation has been addressed to the extent feasible by selecting habitat enhancement and restoration sites to maximize the connectivity of restored and created habitat with existing habitat.

Mitigation Measure BIO3 (Restore, create, and protect wetland habitat to mitigate loss of wetland habitat) and Mitigation Measure BIO4 (Enhance, recreate, or restore riparian forest to compensate for the loss of riparian forest habitat) would minimize the Proposed Project's incremental contribution to loss and fragmentation of wetland and riparian habitat. Impacts to wetlands from the Proposed Project and those projects identified in Section 3.1, including the city's grade separations project and SVRTC, have the potential to be cumulatively significant but would be mitigated through the regulatory process as discussed above. Consequently, the Proposed Project's potential to contribute to cumulative impacts related to loss and fragmentation of riparian and freshwater wetland habitat is considered less than significant. *(Less than significant.)*

Mitigation – No additional mitigation required.

Impacts on Western Burrowing Owl

Impact BIO-Cume4 – Potential to contribute to cumulative regional impacts on the Western Burrowing Owl. Habitat loss and disturbance associated with the Proposed Project has the potential to contribute to cumulative regional impacts on the Western Burrowing Owl. Results of protocol-level surveys are not available for all projects listed in Section 3.1, but some of the ruderal forb-grassland habitat proposed for development is likely to support Western Burrowing Owls. Because the regional population of the Western Burrowing Owl has declined precipitously, any adverse impact would represent a cumulatively considerable contribution to regional effects on the species.

The Proposed Project area is known to support breeding Western Burrowing Owls. As described in Impact BIO5, the Proposed Project could result in both permanent loss of owl habitat and disturbance and/or mortality of individual owls. Implementation of the survey, avoidance, and exclusion procedures described in Mitigation Measure BIO15 and the habitat replacement described in Mitigation Measure BIO6 would minimize the Proposed Project's contribution to direct and indirect regional impacts on Western Burrowing Owl. However, cumulative loss of suitable habitat for the Western Burrowing Owl in the region is considered significant and unavoidable. *(Significant and unavoidable.)*

Mitigation – None available.

Construction-Related Contribution

Impact BIO-Cume5 – Potential for construction-related cumulative impacts. If one or more of the projects listed in Table 3.1-1 and Section 3.1-6 of Section 3.1, including SVRTC and the city's grade separations project, are constructed at the same time as the Proposed Project, there is potential for cumulative impacts in the following areas.

- Temporary disturbance of habitats, including ruderal forb-grassland, emergent seasonal wetland and creek habitat, and riparian forest habitat.
- Temporary disturbance of Western Burrowing Owl habitat.
- Temporary disturbance of birds, including swallows and raptors, and their habitat.

Construction-related impacts would occur at a regional level if construction schedules for any of the identified projects overlap in time. This impact has the potential to result in a significant temporary impact on special-status wildlife through disturbance to their habitat. However, through the regulatory and environmental permitting process, these developments will be required to minimize and avoid temporary impacts through approved mitigation measures. For example, the Proposed Project's contribution to construction-related impacts will be minimized through the mitigation measures listed below.

- Incremental contribution to disturbance of habitats is described in Impacts BIO10 (ruderal forb-grassland), BIO12 (emergent seasonal wetland and creek habitat), and BIO13 (riparian forest). Potentially significant impacts related to habitat disturbance would be effectively minimized by implementing Mitigation Measures BIO12(a) (Avoid or minimize disturbance of wetlands and creeks), BIO12(b) (Restore disturbed wetland and creek habitat), BIO12(c) (Compensate for temporary loss of wetland and creek habitat), BIO13(a) (Minimize disturbance of riparian habitats), and BIO13(b) (If it is not possible to avoid work in riparian areas, restore disturbed riparian forest areas).
- Incremental contributions to disturbance of Western Burrowing Owl habitat are described in Impact BIO15. Potentially significant impacts related to disturbance of Western Burrowing Owl habitat would be addressed by implementing Mitigation Measure BIO15 (Conduct preconstruction surveys for nesting and wintering Burrowing Owls and avoid or minimize impacts if owls are present).
- Contributions to disturbance of nesting birds are described in Impacts BIO16 (raptors), BIO17 (raptor nesting habitat), and BIO18 (swallows). Potentially significant impacts related to disturbance of nesting birds and their habitat would be addressed by implementing Mitigation Measures BIO16 (Conduct a preconstruction survey for nesting special-status raptors and implement measures to avoid or minimize impacts if nesting raptors are present), BIO13(a) (Minimize disturbance of riparian habitats [addresses impacts on nesting Tree Swallows]), and BIO18 (Avoid construction during swallow nesting season or remove empty nests and prevent new nesting).

It is assumed that the projects listed in Table 3.1-1, Section 3.1, and SVRTC would also be required to provide mitigation measures that reduce the temporary impacts associated with construction under applicable law. Therefore, the Proposed Project's contribution to construction-related impacts would not represent a cumulatively considerable impact because all projects in the region will be subject to implementation of minimization and avoidance measures similar to those listed above. *(Less than significant.)*

Mitigation – No additional mitigation required.

Contribution of Optional Irvington Station to Cumulative Impacts

Operational Contribution

Impact BIO-Cume6 – Potential for loss of ruderal forb-grassland habitat. Development of the optional Irvington Station would result in the permanent loss of 7.8 acres of ruderal forb-grassland in addition to the acreage lost as a result of the Proposed Project. This represents a cumulatively considerable contribution to the ongoing regional loss of habitat for a wide range of common and special-status species that depend on Fremont's remaining open spaces. Loss of 7.8 acres of this habitat is considered a significant and unavoidable cumulative impact. *(Significant and unavoidable.)*

Mitigation – None available.

Construction-Related Contribution

Impact BIO-Cume7 – Potential for temporary disturbance of nesting special-status raptors. If the optional Irvington Station is constructed at the same time as one or more of the projects listed in Section 3.1, it has the potential to contribute to cumulative impacts related to temporary disturbance of nesting special-status raptors (Impact BIO23). Mitigation Measure BIO16 (Conduct a preconstruction survey for nesting raptors and implement measures to avoid or minimize impacts if nesting raptors are present) would minimize this impact. Consequently, the optional Irvington Station's potential contribution to cumulative construction-related impacts on biological resources is considered less than significant. *(Less than significant.)*

Mitigation – No additional mitigation required.

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