CHAPTER 1.0: EXECUTIVE SUMMARY

1.1 EXECUTIVE SUMMARY

The Santa Clara Valley Transportation Authority (VTA) has prepared this Final Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA). The Final EIR addresses the environmental impacts resulting from the proposed San Francisco Bay Area Rapid Transit (BART) Extension to Milpitas, San Jose, and Santa Clara in the Silicon Valley Rapid Transit Corridor (SVRTC).

The VTA Board of Directors selected the BART Extension as the Preferred Investment Strategy (also known as the Locally Preferred Alternative) for the SVRTC following completion of a Major Investment Study/Alternatives Analysis (MIS/AA) in November 2001. During that same month, the VTA and BART Boards approved a comprehensive agreement regarding the institutional, project implementation, and financial issues related to the BART Extension. This agreement identified VTA as the local lead agency in preparing the environmental document in partnership with FTA. VTA will also design and construct the BART Extension. Upon completion, BART will operate and maintain the system. VTA, BART, and FTA will continue to work closely throughout the project development process.

With the approval of the MIS/AA, the VTA Board of Directors instructed that a "New Starts" Baseline Alternative also be evaluated in the environmental compliance phase as required under FTA's New Starts program. In addition, a No-Action Alternative has been formulated as a basis for comparison to the other alternatives.

It should be noted that this EIR was initially written as a combined federal/state document (Environmental Impact Statement/Environmental Impact Report [EIS/EIR]) in accordance with the requirements of the National Environmental Policy Act and the California Environmental Quality Act. However, subsequent to the public review period for the Draft EIS/EIR, VTA choose to pursue federal and state environmental clearance of the project on independent paths. Therefore, this Final EIR contains information that is applicable to the federal environmental review process. The Final EIS, to be completed at a later date, will require Federal Transit Administration review and approval.

This executive summary highlights the information that is presented in detail throughout this Final EIR. For full particulars on any topic herein, the reader is directed to the document chapter(s) or section(s) that address that topic.

1.2 STUDY AREA

The SVRTC extends over 20 miles from the City of Fremont in southwestern Alameda County through the cities of Milpitas, San Jose, and Santa Clara in Santa Clara County, covering approximately 100 square miles (Figure 1.2-1). Major roadway transportation facilities in the SVRTC include Interstate 880 (I-880), Interstate 680 (I-680), U.S. Highway 101 (US 101) and State Routes 237 and 87 (SR 237 and SR 87). The corridor is also traversed by two freight railroad mainlines and commuter rail, interstate and state routes, expressways, and major arterials. VTA, Caltrain, Altamont Commuter Express (ACE), Capitol Corridor Intercity Rail (Capitols), Amtrak, and a variety of bus operators provide transit services to major activity and employment centers located throughout the corridor.

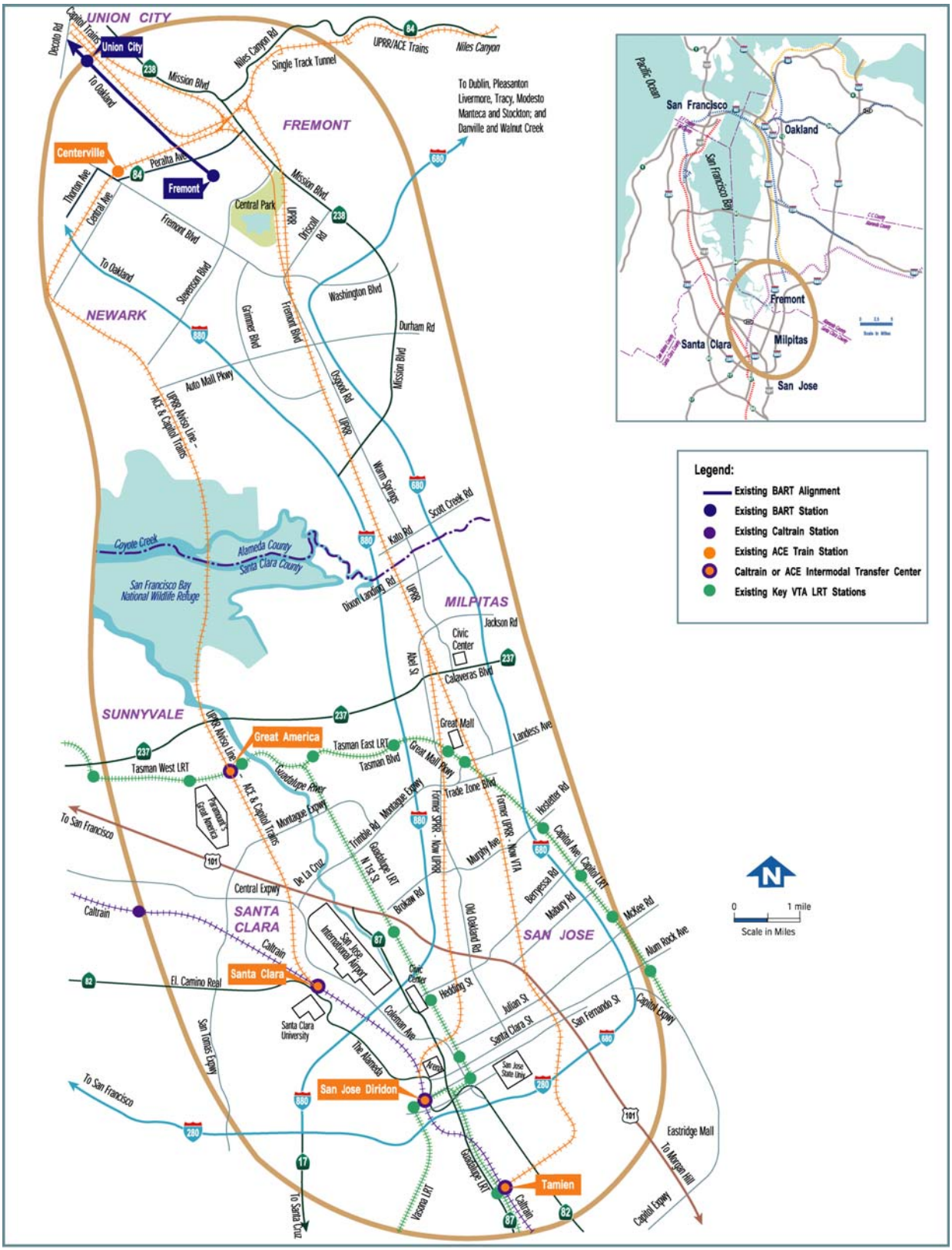

Figure 1.2-1: Silicon Valley Rapid Transit Corridor

1.3 PURPOSE AND NEED FOR TRANSPORTATION IMPROVEMENTS

The overall purpose of transportation improvements in the SVRTC is to:

- Improve public transit service in this severely congested corridor by providing increased transit capacity and faster, convenient access throughout the San Francisco Bay Area Region, including southern Alameda County, central Contra Costa County, Tri-Valley, Central Valley, and Silicon Valley.
- Enhance regional connectivity through expanded, interconnected rapid transit services between BART in Fremont and light rail transit (LRT) and Caltrain in Silicon Valley.
- Accommodate future travel demand in the corridor by expanding modal options.
- Alleviate severe and ever-increasing traffic congestion on the I-880 and I-680 freeways between Alameda County and Santa Clara County.
- Improve regional air quality by reducing auto emissions.
- Improve mobility options to employment, education, medical, and retail centers for corridor residents, in particular low-income, youth, elderly, disabled, and ethnic minority populations.
- Maximize transit usage and ridership.
- Support local economic and land use plans and goals.

1.3.1 PURPOSE OF THE EIS/EIR AND SECTION 4(F) EVALUATION

This document is a Final EIS/EIR and Final Section 4(f) Evaluation prepared pursuant to the requirements of the Council on Environmental Quality regulations implementing NEPA and the CEQA Statutes and Guidelines. It presents alternatives for improving transit services in the SVRTC and discloses the environmental impacts of those alternatives.

This document will be used by federal, state, regional, and local agencies to assess the environmental impacts of the SVRTC project on resources under their jurisdiction and/or to make discretionary decisions regarding the project. The FTA, the State of California, and the Metropolitan Transportation Commission (MTC) will use this document in deciding whether and how to fund the project.

Once the project is approved, public agencies can use this EIS/EIR as the basis for their decisions to issue permits and other approvals necessary to construct the project.

The EIS/EIR includes the following chapters, with supporting information found in the appendices:

- Chapter 1: Executive Summary
- Chapter 2: Introduction
- Chapter 3: Alternatives
- Chapter 4: Environmental Analysis
- Chapter 5: BART Core System Parking Analysis
- Chapter 6: Other CEQA and NEPA Considerations
- Chapter 7: Final 4(f) Evaluation
- Chapter 8: Financial Considerations

- Chapter 9: Agency and Community Participation
- Chapter 10: Agencies and Organizations
- Chapter 11: List of Preparers
- Chapter 12: Definitions, Abbreviations, and Acronyms
- Chapter 13: Bibliography

1.4 ALTERNATIVES

Three alternatives are under consideration for the SVRTC project: No-Action Alternative, "New Starts" Baseline Alternative, and BART Extension Alternative. Two Minimum Operating Segment (MOS) scenarios also are included as sub-options under the BART Alternative.

1.4.1 NO-ACTION ALTERNATIVE

The No-Action Alternative consists of the existing SVRTC roadway and transit networks, as well as programmed improvements that are identified in the San Francisco Bay Area Regional Transportation Plan (RTP) through the long-range planning horizon year 2025. Major highways include I-880, I-680, US 101, SR 237, and SR 87. Existing transit systems encompass Caltrain commuter rail, VTA LRT and buses, ACE, Capitols, and Amtrak. Expansion of those transit networks is also planned in the future through the year 2025, along with highway and roadway improvements in the corridor.

1.4.2 "NEW STARTS" BASELINE ALTERNATIVE

The FTA requires project proponents to develop and evaluate a Baseline Alternative in comparison with the rail project that is seeking federal funding under FTA's "New Starts" Program. The "New Starts" Baseline Alternative (Baseline Alternative) identifies transit improvements above and beyond the No-Action Alternative to represent the "best that can be done" to increase transit services without major capital investment in new infrastructure and provides a basis for comparison to the proposed project. The Baseline Alternative builds upon existing, planned, and programmed transportation improvements in the corridor with additional express bus service and associated improvements (Figure 1.4-1). Bus service for the Baseline Alternative could be implemented, in conjunction with the completion of the BART Extension to Warm Springs, in 2008.

1.4.2.1 Proposed Improvements

The Baseline Alternative would expand express bus service between: (1) the Central Valley, Tri-Valley, and central Contra Costa County and the planned BART Warm Springs Station in southern Fremont, Alameda County; and (2) the BART Warm Springs Station and various Silicon Valley destinations in Santa Clara County. The service into Santa Clara County would augment existing express bus service and improvements planned in VTA's Valley Transportation Plan 2020.

In addition, the following three new busway connectors are proposed in the Baseline Alternative to facilitate bus circulation:

- I-680 to Planned BART Warm Springs Station
- BART Warm Springs Station to I-880
- I-880 to Montague Expressway

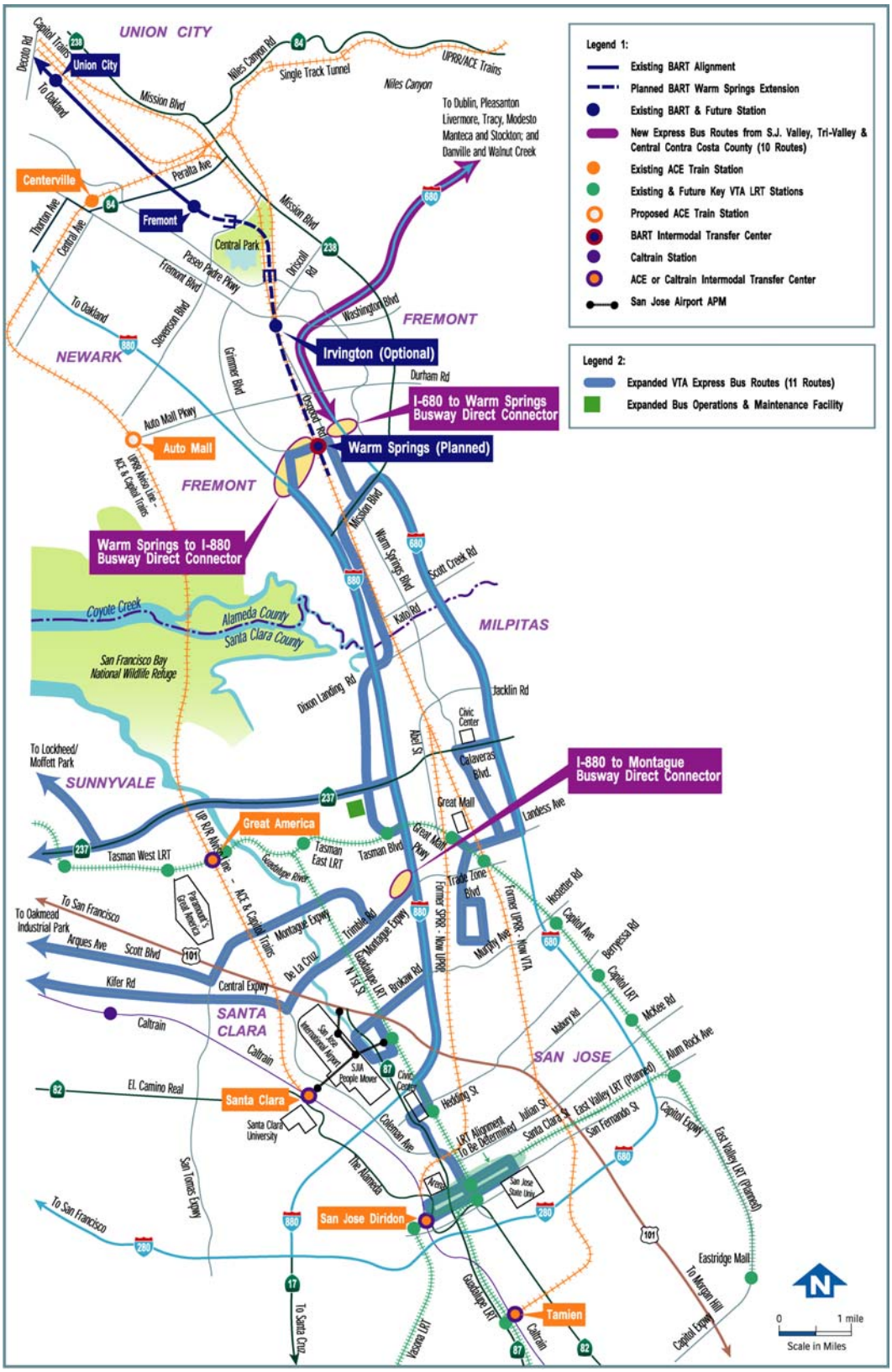

Figure 1.4-1: Baseline Alternative

1.4.2.2 Financial Considerations

Total capital costs are estimated to be $379.0 million in 2003 dollars for the Baseline Alternative to purchase buses and construct roadway improvements. In 2025, annual operating and maintenance costs are projected to increase by $28.2 million (2003 dollars) for all modes under the Baseline Alternative in comparison to the No-Action Alternative.

1.4.3 BART EXTENSION ALTERNATIVE

The BART Extension Alternative (BART Alternative) consists of a BART rail transit line constructed on the Union Pacific Railroad (UPRR) San Jose Branch right-of-way (ROW), now owned by VTA. The new extension would run between the planned BART Warm Springs Station and Santa Clara Street in San Jose, continuing in a subway (Figure 1.4-2) under public and private property through east and downtown San Jose, terminating at grade near the Santa Clara Caltrain Station (Figure 1.4-3). Service for the BART Alternative could start in 2013, if funding were available.

Figure 1.4-2: BART Subway Station

The 16.3-mile BART Alternative would have seven stations, plus one future station, as follows:

- South Calaveras (Future) – at Calaveras Boulevard (SR 237) and the railroad corridor ROW
- Montague/Capitol – at the rail ROW between Montague Expressway and Capitol Avenue
- Berryessa – at Berryessa Road and the railroad corridor ROW
- Alum Rock – at 28th Street between East Julian and East Santa Clara streets
- Civic Plaza/San Jose State University (SJSU) – at East Santa Clara Street between 4th and 7th streets
- Market Street – at West Santa Clara Street between 1st Street and Almaden Avenue
- Diridon/Arena – south of and parallel to West Santa Clara Street between Autumn and White streets
- Santa Clara – at Benton Street/Brokaw Road between El Camino Real and Coleman Avenue.

Multiple alignment and station options are under consideration for the BART Alternative. Alignment options are provided for BART south of Warm Springs, at the Alum Rock Station, for crossover locations in downtown San Jose, and at the Diridon/Arena Station. Profile options are also included for BART's crossings of Warren Avenue and Dixon Landing Road. Various station and parking design options are evaluated for the South Calaveras Future, Montague/Capitol, Berryessa, Alum Rock, Diridon/Arena, and Santa Clara stations. In addition, the three downtown San Jose subway stations – Civic Plaza/SJSU, Market Street, and Diridon/Arena – have multiple station entrance options. The Santa Clara Station also has options for a pedestrian overcrossing or undercrossing connecting with the existing Caltrain station. An at-grade or lowered vertical profile option has been developed to accommodate a potential future connection to the Norman Y. Mineta San Jose International Airport (SJIA).

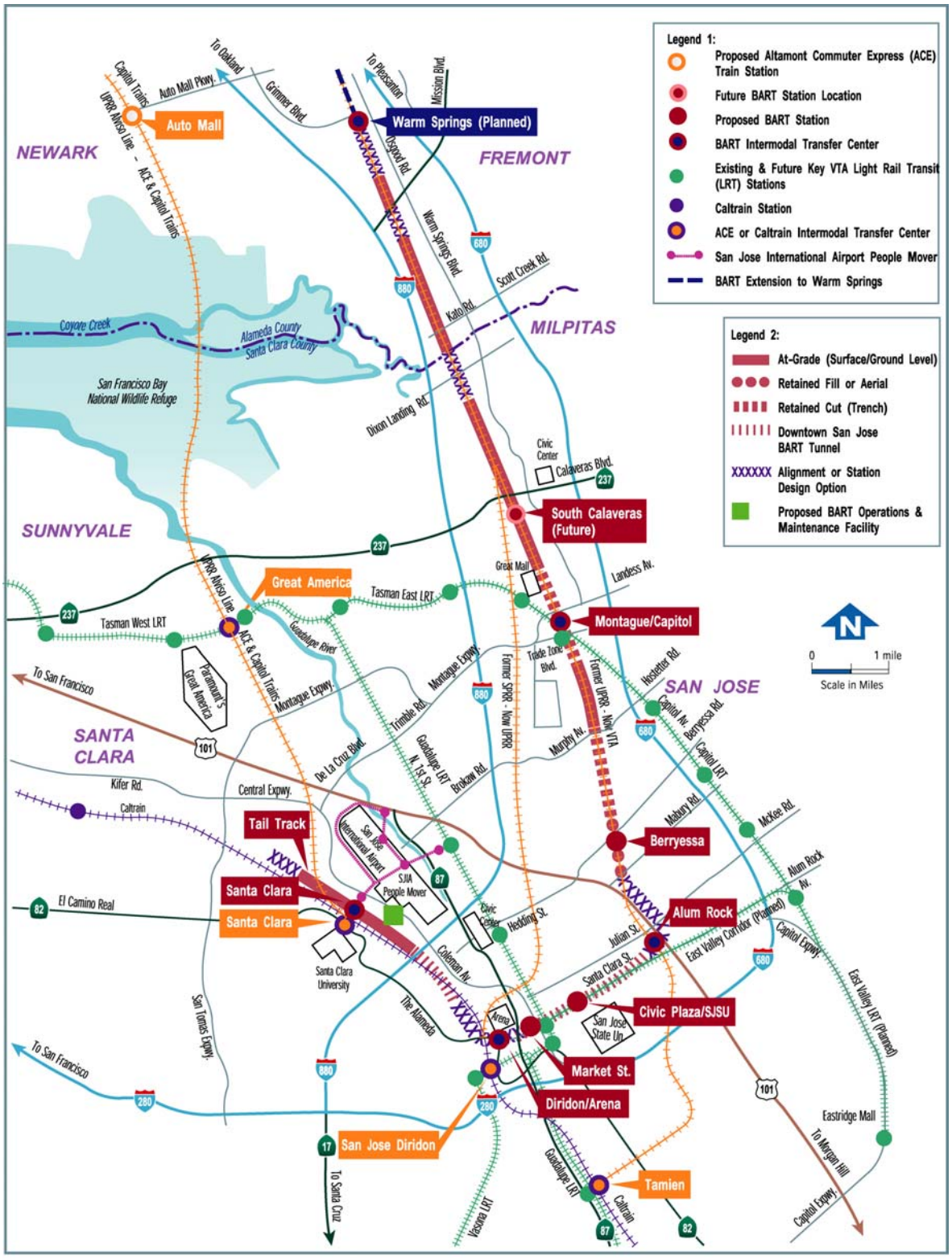

Figure 1.4-3: BART Extension Alternative

1.4.3.1 Other Related Facilities

Other ancillary facilities would be constructed along the BART Alternative, including electrical, train control, communications, and subway support equipment. In addition, a new BART Maintenance Facility would be constructed east of the UPRR Newhall Yard in San Jose/Santa Clara. UPRR track improvements also would need to be made to terminate and relocate the existing freight railroad services along the line.

1.4.3.2 BART Core System Parking Analysis

Additional parking for those BART Alternative passengers driving to existing BART core system stations north of the extension would need to be accommodated. It is projected that parking for riders of the SVRTC extension who would board at BART stations north of the extension would require approximately 3,200 spaces in 2025.

1.4.3.3 Minimum Operating Scenarios

In July 2003, the FTA recommended that VTA identify a BART Alternative Minimum Operating Segment (MOS) to include in the EIS/EIR and New Starts process. An MOS translates to constructing the BART Alternative in two phases, which would include an initial operating phase and a final phase to complete the full project. The FTA feels the MOS approach would make the project more competitive in the New Starts program by reducing the initial project cost and federal funding share. Based on FTA's direction, VTA has defined two MOS scenarios for analysis in this EIS/EIR: MOS-1E and MOS-1F.

Under both MOS scenarios, the entire trackway alignment would be built in phase 1 (MOS-1E or 1F) but other project elements, such as certain stations, vehicles, parking spaces, maintenance facility components, and BART core impact modifications, would be deferred to phase 2 (MOS-2E or 2F). It is assumed that the deferred MOS-2E and 2F elements would be completed within three years of initial MOS-1E and 1F phase start-up and may require additional federal funding.

1.4.3.4 Financial Considerations

Total capital costs in 2003 dollars are estimated to be $4,112.0 million[1] for the BART Alternative, assuming the least costly design options. Initial start-up costs could be reduced by $217 to $350 million based on the MOS scenarios. This would reduce BART Alternative costs to between $3,762 to $3,895 million for the MOS scenarios.

The BART Alternative would rely on three key funding sources (2003 dollars): $2,629.0 million from VTA's Measure A local sales tax and other capital funding sources, $649.0 million from the State of California's Traffic Congestion Relief Program, and $834.0 million from Federal Section 5309 New Starts funds.

In 2025, annual operating and maintenance costs for all modes under the BART Alternative are projected to grow by $73.3 million (2003 dollars) in comparison to the No-Action Alternative and $45.1 million

[1] Capital costs for the BART Alternative were estimated at $3,838.0 million in year 2001 dollars, which was the base year for the Major Investment Study/Alternatives Analysis.

relative to the Baseline Alternative. The costs to operate and maintain the BART Alternative in 2025 are estimated at $65.1 million greater than the No-Action Alternative and $64.4 million greater than the Baseline Alternative. Annual operating and maintenance costs for the MOS scenarios would be $60.3 million for MOS-1E in 2025 and $56.1 million in 2015. MOS-1F would cost $59.7 million in 2015 to operate and maintain.

Funding to operate and maintain the BART Alternative would come from a mix of sources such as a county half-cent sales tax, State Transportation Development Act (TDA), State Transit Assistance (STA) Program, passenger fare revenues, Federal Transit Act Section 5307, and other sources (e.g., advertising, rentals, interest earnings, etc.). Potential new funding sources could include ¼ to ½-cent sales tax, broadening the sales tax base, joint development, benefit assessment districts, proposition 42, regional gas tax, and Bay Area bridge tolls.

The financial plan indicates that this extension will need additional revenue in order to be constructed and operated in the time frame described. FTA is approving circulation of this EIS, with a preliminary financial plan, in recognition of the project's inclusion in the current MTC financially constrained regional plan and as support for the public dialogue on the project and its financial plan. The financial plan in the EIS is based on financial projections and governmental actions that are not finalized. As part of the New Starts process, a feasible financial plan will need to be prepared to advance the project into Final Design. In addition, the proposed project is dependent on the completion of the BART Warm Springs Extension Project that does not yet have a final financial plan in place.

1.5 IMPACTS, DESIGN REQUIREMENTS/BEST MANAGEMENT PRACTICES AND PROPOSED MITIGATION OF SVRTC ALTERNATIVES

Table 1.5-1 summarizes the long-term impacts and proposed mitigation of the SVRTC alternatives. Short-term, temporary construction phase impacts and proposed mitigation of the alternatives are summarized in Table 1.5-2. The criteria for determining adverse impacts are provided in each topical section. A number of potential adverse impacts of the Baseline and BART alternatives will be avoided or minimized through design requirements and best management practices, which are required by current standards, codes, and/or guidelines or are already part of VTA's existing construction procedures. These requirements and best management practices are summarized in Tables 1.5-1 and 1.5-2.

In addition, the following pre-construction activities will be implemented by VTA before construction of the Baseline or BART alternatives. The magnitude of this effort would be substantially greater with the BART Alternative than with the Baseline Alternative.

- Undertake detailed geotechnical investigation.
- Prepare Final Design documents and construction contracts.
- Prepare traffic control and detour plans.
- Prepare Construction Impact Mitigation Plan.
- Undertake a pre-construction building data survey.
- Conduct a pre-construction survey.
- Continue ongoing public involvement and coordination activities.
- Establish a construction-related community information/outreach program.
- Acquire necessary property and easements, including temporary construction and long-term underground easements.

Table 1.5-1: Summary of Long-Term Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures			
Impact Category	**No-Action Alternative**	**New Starts Baseline Alternative**	**BART Extension Alternative**
Transportation and Transit	Impacts: Increased transit use from corridor growth and planned projects. Traffic growth would cause increased congestion on most freeways, with unacceptable levels of service at half of study intersections.	Impacts: Beneficial effects; 6,800 new transit trips would result in 2025. Average travel time improvement on selected transit trips would be less than two minutes. Traffic growth from other sources would cause increased congestion on most freeways, with unacceptable level of service at half of study intersections. Mitigation Measures: None required.	Impacts: Beneficial effects; 39,000 new transit trips would result, with 78,000 new BART boardings in 2025. Average travel time improvement on selected transit trips would be 14 minutes. Improved pedestrian and bicycle facilities would be provided. Parking demand at BART Core System stations would be accommodated with additional parking facilities. 30 of 121 intersections would have more congestion in 2025; 22 of 29 freeway segments would have less congestion; increases in congestion on the remaining seven segments would be slight. Design Requirements/Best Management Practices: VTA will continue to coordinate with agencies, cities, and communities to develop parking policies and programs, as appropriate. BART and VTA guidelines will be used to provide bicycle parking facilities. Mitigation Measures: Addition of through and/or turning lanes to improve intersection level of service. Impacts at 13 intersections can be mitigated; mitigation is not feasible for 17 intersections. However, VTA will provide a fair share contribution to traffic improvements at these locations. Great Mall Parkway and Abel Street, Milpitas Boulevard and Montague Expressway, Landess Avenue and Dempsey Road, Oakland Road and Brokaw Road, McKee Road and King Road, San Carlos Street and Almaden Boulevard, San Carlos Street and Market Street, Park Avenue and Race Street, Auzerais Avenue and Delmas Avenue, El Camino Real and San Tomas Expressway, Lafayette Street and Central Expressway, Homestead Road and Monroe Street, and Monroe Street and San Tomas Expressway. In addition, if the South Calaveras Future Station were constructed, the following intersections would also be impacted: Calaveras Boulevard and Abel Street, Calaveras Boulevard and Milpitas Boulevard, Milpitas Boulevard and Montague Expressway, and Milpitas Boulevard and Jacklin Road. The contribution will be made only if feasible traffic mitigation is identified and substantial funding is in place to construct the improvements. VTA will work with the County of Santa Clara and the cities of Milpitas, San Jose, and Santa Clara, as applicable, to develop agreements at the time that mitigation is required.
Air Quality	Impact: Highest criteria pollutant levels based on vehicle miles traveled (VMT) and poor freeway level of service.	Impacts: Beneficial effects; Criteria pollutants show a decrease or are approximately equivalent, (NO_X) is marginally higher, based on reduction in VMT compared to No-Action Alternative. Mitigation Measures: None required.	Impacts: Beneficial effects; Criteria pollutants show greater decrease than under No-Action and Baseline alternatives based on highest reduction in VMT. Mitigation Measures: None required.
Biological Resources: Wetlands	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: About 1.115 acres of seasonal and freshwater emergent wetlands of Wrigley Creek would be affected by its relocation for construction of the South Calaveras Future Station. About 0.128 acre of wetlands would be affected by construction of the Locomotive Wye Milpitas Option. About 0.008 acres of waters of the U.S. would be affected by construction of a bridge crossing Agua Caliente Creek under the East of Rail ROW

Table 1.5-1: Summary of Long-Term Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures			
Impact Category	**No-Action Alternative**	**New Starts Baseline Alternative**	**BART Extension Alternative**
			Option for the south of Warm Springs alignment. This impact would be reduced to 0.002 acres under the Rail ROW Option. About 0.033 acres of waters of the U.S. would be affected by extending existing culvert carrying Toroges Creek under the railroad corridor, and another 0.009 acre as a result of extending the culvert carrying Scott Creek across the railroad corridor. Additionally, construction of future re-located railroad bridges at Calera, Berryessa, and Wrigley Creeks likely will add nominally to the total acreage affected (estimated to be less than 0.1 acre of waters of the U.S.) as a result of temporary construction-phase disturbance and permanent losses due to the extension of pier walls and other support structures. Design Requirements/Best Management Practices: See Special Status Species discussion. Mitigation Measures: Wrigley Creek will be reconstructed and maintained per consultation with the U.S. Army Corps of Engineers (ACOE) to ensure no net loss of wetlands. Measures to achieve no net loss of wetlands and other waters of the U.S. to the extent practicable will be formulated through informal consultations with ACOE.
Biological Resources: Special Status Species	Impacts: No impacts anticipated.	Impacts: Up to 13 acres of suitable habitat for Congdon's tarplant and 13 acres for Western burrowing owl would be affected. Habitat losses could affect Cooper's hawk, white-tailed kite, and various bat species. Possible effects on loggerhead shrike from loss of grassland. Mitigation Measures: Species-specific mitigation measures will be determined through pre-construction surveys and, finalized if necessary, in consultation with USFWS, NOAA Fisheries, and the California Department of Fish and Game (CDFG) to minimize harm to and ensure the continuation of special status species. No compensatory mitigation required for impacts to loggerhead shrike habitat.	Impacts: Up to 14.9 acres of suitable habitat for Congdon's tarplant and 15.6 acres for burrowing owl would be affected. In addition, 2.6 acres of Central Coast Cottonwood Sycamore riparian forest (riparian corridor) would be affected, resulting in potential impacts to California red-legged frog, southwestern pond turtle, Cooper's hawk, white-tailed kite, non-special status raptors, swallows, and various bat species. Sub-optimal habitat for Chinook salmon and steelhead may be affected by construction of the Parking Structure Southwest and Northeast Options for the Berryessa Station and the Railroad/28th Street Option for the Alum Rock Station. Possible effects on loggerhead shrike from loss of grassland. Design Requirements/Best Management Practices: To the maximum extent practicable, keep construction activities and facilities outside aquatic/riparian habitat to avoid impacts to steelhead and Chinook salmon fisheries. Tunneling under Coyote Creek and the Guadalupe River will avoid impacts to fisheries. Best management practices may be stipulated as conditions of the 401 and 404 permit and CDFG Streambed Alteration Agreement. Mitigation Measures: Mitigation measures to minimize harm to and ensure the continuation of special status species will be determined through pre-construction surveys for the species and, if necessary, formulated through consultations with USFWS, National Oceanic and Atmospheric Administration (NOAA Fisheries), and CDFG. No mitigation required for impacts to loggerhead shrike habitat.

Table 1.5-1: Summary of Long-Term Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures			
Impact Category	**No-Action Alternative**	**New Starts Baseline Alternative**	**BART Extension Alternative**
Community Facilities	Impacts: No impacts anticipated.	Impacts: 40 community facilities would benefit by improved bus service. Mitigation Measures: None required.	Impacts: 51 community facilities would benefit by improved transit access because of the BART Alternative. BART segment just south of the UPRR Milpitas Yard and north of the Great Mall would require a 20' by 100' strip of land from property dedicated by the Parc Metropolitan Development complex to City of Milpitas for a public park. Design Requirements/Best Management Practices: Expand existing mutual aid agreements with cities of Fremont, Milpitas, San Jose, and Santa Clara to ensure appropriate coordination and training; continue to work with Milpitas, San Jose, and Santa Clara in implementing VTA Community Design and Transportation Guidelines to better facilitate pedestrian/bicycle circulation and use of transit to access community facilities. Mitigation Measures: Some combination of the following measures will be implemented through coordination between VTA and City of Milpitas to address the parkland impact: Acquire replacement park property immediately adjacent to parkland site; expand a nearby park; provide additional amenities at the affected parkland site; and/or assist in funding a pedestrian crossing over the railroad corridor that would link and facilitate access to the affected park, possibly at Curtis Avenue. Measures to mitigate impacts to community facilities as a result of air emissions, noise and vibration, and visual changes are described in their respective sections of this table.
Cultural and Historic Resources	Impacts: No impacts anticipated.	Impacts: Zones of moderate archaeological sensitivity identified in vicinity of busway connectors. Mitigation Measures: Subsurface trenching will be conducted in select areas along the Warm Springs Station to I-880 connector and along the Montague Expressway to I-880 connector. If a significant, buried archaeological deposit is encountered, subsequent controlled subsurface excavations will be completed.	Impacts: Eight prehistoric and historic archaeological sites are recorded within the archeological Area of Potential Effect (APE). In addition to the recorded sites, there are numerous other locations where archaeological resources may lie within the APE. Zones of high and moderate archaeological sensitivity were identified in each of the five BART Alternative segments. Entrance elevator, bike parking, and ventilator shaft options at the Market Street Station would have an adverse effect on one historic property, depending on the options selected. Two of the three pedestrian linkage options at the Santa Clara Station would have an adverse effect on one historic property. Design Requirement/Best Management Practices: Continue to coordinate with historic preservation interests, including owners of historic properties potentially affected by the project, throughout the Final Design and construction phases of the project, and ensure the dissemination of information to all interested and affected parties in a timely manner regarding anticipated construction activities. Mitigation Measures: A Memorandum of Agreement (MOA) and supporting Cultural Resources Treatment Plan (CRTP) will be developed for the archaeological sites in consultation with the Native American community, Hispanic historical organizations, appropriate city and county historic preservation bodies, SHPO, and ACHP. Mitigation

Table 1.5-1: Summary of Long-Term Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures			
Impact Category	**No-Action Alternative**	**New Starts Baseline Alternative**	**BART Extension Alternative**
			measures may include subsurface excavations, focused archival research, site protection, on-site monitoring, following procedures in CRTP, curation, and public interpretation. Mitigation measures for the historic properties will be set forth in a MOA to be executed with ACHP, SHPO, and appropriate city and county historic preservation bodies. Mitigation measures may include avoidance, design standards and guidelines, protective measures, recordation, interpretive display, and opportunities for salvage.
Electromagnetic Fields (EMF)	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: EMF intensities and exposures would be below thresholds of concern for health effects. Design Requirements/Best Management Practices: EMF exposure will be a consideration in the Preliminary Engineering and Final Design reviews. An EMF Control and Test Plan will be included in the general contractor specifications. Contractor to notify the Office of Radiology at the San Jose Medical Center of any intent to begin construction within approximately 300 meters (approximately 1,000 feet) of their facility. No interruption of facility operations is anticipated. Mitigation Measures: None required.
Energy	Impacts: Increased auto and bus travel would increase use of petroleum-based fuels or their substitutes.	Impacts: Energy impacts would be similar to the No-Action Alternative or would decrease slightly with increased transit use and transit use of alternative fuels. Design Requirements/Best Management Practices: Facilities and equipment will be designed and specified to ensure energy efficiency. Mitigation Measures: None required.	Impacts: Beneficial impact; annual energy savings from reduced auto travel more than offset additional energy requirements of expanded transit service. Design Requirements/Best Management Practices: Facilities and equipment will be designed and specified to ensure energy efficiency. Mitigation Measures: None required.
Environmental Justice	Impacts: No disproportionately high beneficial or adverse effects on minority or low-income populations.	Impacts: No disproportionately high or adverse effects on minority or low-income populations. Improvements in transit service would benefit low-income residents and businesses. Mitigation Measures: None required.	Impacts: No disproportionately high or adverse effects on minority or low-income populations. Improvements in transit service and reduction in air pollutant emissions would benefit low-income residents and businesses. Mitigation Measures: None required.
Geology, Soils, and Seismicity	Impacts: No impacts anticipated.	Impacts: Potential for fault rupture, strong ground shaking, liquefaction, lateral spreading, ground lurching, cracking, warping, and settlement. Design Requirements/Best Management Practices: Project structures will be designed in accordance with current seismic design	Impacts: Potential for fault rupture, strong ground shaking, liquefaction, lateral spreading, and ground lurching, cracking, warping, and settlement. Design Requirements/Best Management Practices: Project structures will be designed in accordance with current seismic design standards in the CUBC and other applicable building codes. All structures will also be built in compliance with BART's guidelines and criteria for the BART Facilities Standards. Site improvement to reduce liquefaction potential and engineering design to resist movement due to liquefaction.

Table 1.5-1: Summary of Long-Term Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures			
Impact Category	**No-Action Alternative**	**New Starts Baseline Alternative**	**BART Extension Alternative**
		standards in the California Uniform Building Code (CUBC) and other applicable building codes. Site improvement to reduce liquefaction potential and engineering design to resist movement due to liquefaction. Mitigation Measures: None required.	Mitigation Measures: None required.
Hazardous Waste	Impacts: No impacts anticipated.	Impacts: Four recorded hazardous material sites with potential to affect the project were identified. Very small amounts of hazardous materials may be used in maintenance activities. Surface water may be contaminated due to leaks or spills from buses, in wastewater from bus cleaning, or by runoff from the roadway pavements. Impact would be less than from automobile VMT under No-Action Alternative. Design Requirements/Best Management Practices: Comply with federal, state, and local materials handling/waste requirements; test buildings subject to demolition/construction for asbestos and lead; adopt worker health and safety plan; train maintenance personnel in Occupational Safety and Health Act (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) standard; minimize surface water contamination by following best management practices. Mitigation Measures: None required.	Impacts: 21 hazardous material sites with potential to affect the project were identified. Contaminated groundwater may enter retained cuts or tunnels through cracks. Minor amounts of hazardous maintenance chemicals, such as lubricants and hydraulic fluids, may be released onto BART tracks or result from drips or rainfall, which washes off exposed chemicals. Relocation of rail-truck tank car transfer facility to Sno-boy site would remove potential for interaction of hazardous materials with BART workers or riders. Design Requirements/Best Management Practices: Comply with federal, state, and local material handling/waste requirements; test buildings subject to demolition/construction for asbestos and lead; adopt worker health and safety plan; train maintenance personnel in OSHA HAZWOPER standard; minimize surface water contamination by following best management practices; pump out and test accumulated water from tunnels and retained cuts on regular basis; obtain National Pollutant Discharge Elimination System (NPDES) or industrial wastewater discharge permits; equip pump stations to handle contaminated water; and obtain new or amend existing permits to include expansion of rail-truck transfer operations facility at the Sno-boy site. Mitigation Measures: Phase Two site investigations will be performed, as appropriate, prior to construction in areas where groundwater is documented, where groundwater or soil contamination is nearby, or where current information regarding the extent of contamination is inconclusive.
Land Use	Impacts: Not as consistent with local and regional plans and policies as the BART Alternative.	Impacts: Not as consistent with local and regional plans and policies as the BART Alternative. Design Requirements/Best Management Practices: Design to be compatible with surrounding land use. Mitigation Measures: None required.	Impacts: Consistent with local and regional plans and policies, to extend BART, create a unified transit system that encircles the bay, and encourage higher-density, mixed-use development adjacent to proposed transit nodes. Design Requirements/Best Management Practices: Design to be compatible with surrounding land use. Mitigation Measures: None required.
Noise	Impacts: No impacts anticipated.	Impacts: Increased bus noise near Warm Springs BART Station/I-880 busway connectors.	Impacts: Noise from BART trains, relocated freight trains, and BART ancillary facilities would affect residential areas, as follows. For the Dixon Landing Road Alignment, the Aerial Option would have 19 moderate and

Table 1.5-1: Summary of Long-Term Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures			
Impact Category	**No-Action Alternative**	**New Starts Baseline Alternative**	**BART Extension Alternative**
		Design Requirements/Best Management Practices: Maintain tire pressure and keep engines well tuned to minimize noise. Mitigation Measures: A 10-foot-tall noise wall will be constructed on both sides of the elevated structure.	58 severe residential impacts under FTA criteria and 58 impacts with the BART criteria. The Retained Cut Option would have 12 severe FTA and BART criteria impacts. The At-grade Option would have 3 moderate and 12 severe FTA criteria impacts and 12 BART criteria impacts. Beyond Dixon Landing Road, the remaining BART alignment and ancillary facilities would have 79 moderate and 36 severe FTA criteria residential impacts and 84 BART criteria impacts. Design Requirements/Best Management Practices: Maintain track and vehicles regularly to reduce noise levels from trains. Mitigation Measures: Sound walls will be constructed to mitigate noise impacts in compliance with FTA and BART criteria. Special noise-reducing trackwork or other measures will be installed at crossovers. A 12-foot-tall noise barrier will be installed south of Montague/Capitol Station to reduce noise from buses at the nearby apartment complex. Another 12-foot noise barrier, perpendicular to the alignment at Aschauer Court, will mitigate noise from TPSS #6.
Vibration	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: Vibration from BART trains would affect residential areas, as follows: From Warm Springs to Alum Rock, regardless of the Dixon Landing option selected, 250 residences would be impacted under the FTA criteria and 326 residences under BART criteria. For the Alum Rock Alignment, the US 101/Diagonal Option would impact 3 residences under the BART criteria and the Railroad/28th Street Option would impact 20 residences under the FTA criteria impacts and 42 residences under the BART criteria. The corridor tunnel section would have 8 residences impacted under the FTA and BART criteria. The West of Market Street Station Crossover Option would have an estimated 100 FTA and BART criteria hotel unit impacts. For the Diridon/Arena Alignment, the North Option would have 47 FTA and 7 BART criteria impacts and the South Option would have 48 FTA and 8 BART criteria impacts. Design Requirements/Best Management Practices: Maintain track and vehicles regularly to reduce vibration levels from trains. Mitigation Measures: A combination of ballast mats, shredded tire underlay, resilient fasteners, resiliently supported ties, floating slabs, lower tunnel depths, and underground barriers will be used to reduce vibration effects to comply with FTA and BART criteria. However even with the mitigation proposed, 12 residences located north of Berryessa Road would be potentially exposed to vibration levels exceeding FTA and/or BART criteria.
Security and System Safety	Impacts: No impacts anticipated.	Impacts: Potential for security and safety incidents with expanded bus service.	Impacts: Potential for security and safety incidents with expanded BART service.

Table 1.5-1: Summary of Long-Term Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures			
Impact Category	**No-Action Alternative**	**New Starts Baseline Alternative**	**BART Extension Alternative**
		Design Requirements/Best Management Practices: Utilize security and safety measures already in place for existing VTA bus facilities and operations. Mitigation Measures: None required.	Design Requirements/Best Management Practices: Implement national and state codes, regulations, and guidelines. In addition, the BART Police Department, in coordination with local jurisdictions, will implement BART's System Safety Program Plan and Emergency Plan. Comply with applicable BART system safety requirements for pedestrian and vehicle safety and security on BART trains and in station areas, parking lots, and along the BART ROW. Design and implement appropriate and cost-effective treatments for safety where BART will operate in close proximity with freight operations. Mitigation Measures: None required. Implementation of the design requirements /best management practices will provide a safe and secure environment.
Socioeconomics	Impacts: No impacts anticipated.	Impacts: Two businesses are identified for possible relocation, along with one ad sign. Design Requirements/Best Management Practices: All displacement and relocation activities will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 and the VTA's Relocation Program. Mitigation Measures: None required.	Impacts: Displacement of 46 to 101 businesses, 1 to 5 residential units, 400 flea market stalls, 1,025 storage tenants, 2 ad signs, and 1 utility facility depending on design options. Design Requirements/Best Management Practices: All displacement and relocation activities will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 and the VTA's Relocation Program. Mitigation Measures: None required.
Utilities	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: Relocation of some existing utilities primarily due to cut-and-cover excavation. Design Requirements/Best Management Practices: Coordination with utility providers during Preliminary Engineering, Final Design, and construction stages to minimize utility conflicts. Careful scheduling of utility impacts to limit disruptions in time duration and geographic extent. Adjacent property owners or occupants will be notified prior to any temporary changes to utility service. Mitigation Measures: None required.
Visual Quality and Aesthetics	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: Changes would be consistent with the existing visual quality of the corridor. No impacts to scenic vistas are anticipated. Pedestrian crossing options at the Santa Clara Station are in close proximity to the historic Santa Clara Caltrain Station and historic Santa Clara Tower. Design Requirements/Best Management Practices: Lighting will be designed to focus on BART facilities, minimize spillover of light and glare into neighboring areas, and ensure that stations and parking structures will not be vivid at night or affect the unity of nighttime views. Landscaping will soften the visual effect and reduce potential glare.

Table 1.5-1: Summary of Long-Term Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures			
Impact Category	**No-Action Alternative**	**New Starts Baseline Alternative**	**BART Extension Alternative**
			Mitigation Measures: No mitigation is required except for the pedestrian crossing options discussed under Cultural and Historic Resources.
Water Resources, Water Quality, and Floodplains	Impacts: No impacts anticipated.	Impacts: Minor increase in volume of surface water runoff. Design Requirements/Best Management Practices: Incorporate practices consistent with SCVURPPP, ACCWP, and the NPDES General Industrial Storm Water Permit and comply with Sections 401 and 402 of the CWA. Mitigation Measures: None required.	Impacts: Increased surface runoff from construction of impervious surfaces at parking structures, stations, sidewalks, etc. Some encroachment on 100-year floodplain that is not possible to avoid, given location of existing railroad corridor and activity centers that BART would serve. Design Requirements/Best Management Practices: BART Design Criteria will be implemented to minimize effects on groundwater, surface water, and in floodplains. Incorporate practices consistent with SCVURPPP, ACCWP, and the NPDES General Industrial Storm Water Permit and comply with Sections 401 and 402 of the CWA. The retained-cut and tunnel segment structure will be designed to facilitate groundwater flow direction and pathways and to minimize groundwater contamination. Drainage ways will be designed to convey the surface flow generated by a 10-year storm event. Stormwater treatment best management practices consistent with stormwater management guidance documents and permits will be implemented. The design of all parking and roadway areas will be submitted to the appropriate regulatory agencies for approval. Facilities including bridges, culverts, alignment, and supporting structures will be designed for 100-year flood events. Trackways will be protected by means of retaining walls, portal walls, wall extensions, and beams. Critical facilities will be set above the 500-year floodplain. Drainage lines crossing above or under the subway structure will be designed for the 10-year flood or to the minimum requirements of the cities, whichever is greater. Other jurisdictional features to minimize floodplain impacts will be incorporated as appropriate. Incorporate features of the local flood control projects into Final Design. Mitigation Measures: None required.
Cumulative Effects	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: Consistent with General Plans of Fremont, Milpitas, San Jose, and Santa Clara. None beyond those already identified for specific topic areas. Design Requirements/Best Management Practices: None beyond those already identified for specific topic areas. Mitigation Measures: None required beyond those already included for specific topic areas.

Table 1.5-2: Summary of Construction Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures

Impact Category	No-Action Alternative	New Starts Baseline Alternative	BART Extension Alternative
Transportation and Transit	Impacts: No impacts anticipated.	Impacts: Temporary disruption of local circulation by construction equipment and vehicles at Warm Springs BART Station and I-680/Montague busway connection. Design Requirements/Best Management Practices: Traffic control plans will be developed in cooperation with local jurisdictions. Capacity will be maintained in appropriate directions to the extent possible, particularly during peak traffic hours. Coordinate construction with other major construction projects within a one-mile radius. Residents and business will be notified of construction activity. Advance public notice of traffic detours for affected cities. Mitigation Measures: None required.	Impacts: Temporary disruption of local circulation by construction equipment and vehicles at station sites and along alignment; detours and increased congestion from partial or complete street closures for cut-and-cover construction in downtown San Jose and for construction of grade separations at streets crossing the alignment in rest of project area. Closure durations for cut-and-cover would vary from one month to three months for total closures to up to 3 ½ years for partial closures. Increased congestion would occur at many downtown intersections. Closure durations for grade separation construction would last 18 to 24 months for partial closures and about one year if total closure is required. Temporary impacts to LRT and bus services, including detours for buses to avoid closed streets. Minor temporary inconvenience to local residents and businesses from additional parking demand. During cut-and-cover construction, street parking would be disrupted. There would be disruption of Caltrain and HP Pavilion parking over a period of four and a half to five years while the Diridon/Arena Station is being built and replacement parking garages are being constructed. Design Requirements/Best Management Practices: Traffic control plans will be developed in cooperation with local jurisdictions. Capacity will be maintained in appropriate directions to the extent possible, particularly during peak traffic hours. Coordinate construction with other major construction projects within a one-mile radius. Residents and business will be notified of construction activity. Advance public notice of traffic detours for affected cities. Advance notice of proposed transit route, stop, and service changes. Construction activities would be scheduled to maintain LRT service. To avoid impacts to pedestrians and bicyclists, provisions for non-motorized access will be made in construction areas. Mitigation Measures: VTA and the City of San Jose will develop specific plans for the temporary relocation of displaced parking and loading zones along East/West Santa Clara Street. These plans will be included in the Construction Impact Mitigation Plan. Provisions will be incorporated into the construction contracts to avoid construction worker parking impacts to residential areas or businesses under the Baseline or BART alternatives, as well as the MOS scenarios. Interim replacement parking will be provided for the Diridon/Arena Station parking disrupted by construction.
Air Quality	Impacts: No impacts anticipated.	Impacts: Temporary emissions of carbon monoxide (CO), reactive organic gases, nitrogen oxides (NO_x), and dust (suspended particulate matter [PM_{10}]).	Impacts: Temporary emissions of CO, reactive organic gases, NO_x, and PM_{10}.

Table 1.5-2: Summary of Construction Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures

Impact Category	No-Action Alternative	New Starts Baseline Alternative	BART Extension Alternative
		Design Requirements/Best Management Practices: Maintain equipment in good order and minimize idling time to reduce exhaust emissions. The Bay Area Air Quality Management District's (BAAQMD) recommended control measures for PM_{10} emissions will be implemented as follows: water active construction areas; cover trucks hauling loose materials or require trucks to maintain two feet of freeboard; pave, apply water three times daily, or apply (non-toxic) soil stabilizers in unpaved areas; sweep streets; apply hydroseed or soil stabilizers to inactive construction areas; enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles; limit traffic speeds on unpaved roads to 15 mph; replant vegetation as quickly as possible; install wheel washers; and suspend earth moving activity when winds exceed 25 mph. Mitigation Measures: None required.	Design Requirements/Best Management Practices: Maintain equipment in good order and minimize idling time to reduce exhaust emissions. The BAAQMD's recommended control measures for PM_{10} emissions will be implemented as follows: water active construction areas; cover trucks hauling loose materials or require trucks to maintain two feet of freeboard; pave, apply water three times daily, or apply (non-toxic) soil stabilizers in unpaved areas; sweep streets; apply hydroseed or soil stabilizers to inactive construction areas; enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles; limit traffic speeds on unpaved roads to 15 mph; replant vegetation as quickly as possible; install wheel washers; and suspend earth moving activity when winds exceed 25 mph. Mitigation Measures: None required.
Biological Resources: Special Status Species	Impacts: No impacts anticipated.	Impacts: Temporary disturbance of suitable habitat for Western burrowing owl, Congdon's tarplant, Cooper's hawk, white-tailed kite, various bat species and loggerhead shrike. Design Requirements/Best Management Practices: Ensure that construction materials are not allowed to enter open waterways or to impede water flow and fish passage; all natural communities will be temporarily fenced off and designated as Environmentally Sensitive Areas (ESAs); only those trees and plants designated for removal will be removed; and excavation techniques will ensure stability of subsurface materials and retention of excavated materials within construction areas. Mitigation Measures: Construction phase mitigation measures will be determined from pre-construction surveys and, as appropriate, consultation with USFWS, NOAA Fisheries, and CDFG. Construction phase mitigation measures will include: Providing a riparian corridor buffer zone along the banks of creeks. Where riparian vegetation will be affected unavoidably, habitat quality will be assessed and confirmed with regulatory agencies. The size of the area and the quality of the resources that will be affected will determine the requirements of the compensatory mitigation to be	Impacts: Temporary disturbance of suitable habitat for Western burrowing owl, Congdon's tarplant, California red-legged frog, southwestern pond turtle, Cooper's hawk, white-tailed kite, non-special status raptors, swallows, various bat species, and loggerhead shrike. Some encroachment on riparian corridors. Design Requirements/Best Management Practices: Ensure that construction materials are not allowed to enter open waterways or to impede water flow and fish passage; all natural communities will be temporarily fenced off and designated as ESAs; plans will be consistent with VTA's Fish Friendly Channel Design Guidelines; only those trees and plants designated for removal will be removed; and excavation techniques will ensure stability of subsurface materials and retention of excavated materials within construction areas. Central Coast cottonwood-sycamore riparian forest areas along Berryessa Creek in the Montague/Capitol Station area, along Upper Penitencia and Coyote creeks at the Berryessa Station, and in the vicinity of the proposed construction laydown area at Mabury Road near Coyote Creek will be identified and marked with orange fencing to avoid disturbance or accidental intrusion. Mitigation Measures: Construction phase mitigation measures will be determined from pre-construction surveys and, as appropriate, consultation with USFWS, NOAA Fisheries, and CDFG. Construction phase mitigation measures will include: Providing a riparian corridor buffer zone along the banks of creeks. Where riparian

Table 1.5-2: Summary of Construction Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures

Impact Category	No-Action Alternative	New Starts Baseline Alternative	BART Extension Alternative
		carried out. The site-specific mitigation plan will assure replacement, or enhancement, of habitat values, such as the density of the overstory vegetation, reintroduction of native species, and development of complex vegetation structure, to the maximum extent practicable; Complying with ACOE nationwide permit conditions associated with pre-construction notification, such as proposed compensatory mitigation and restoration plans; Conducting pre-construction surveys for Congdon's tarplant during the June to November flowering periods. Any identified areas will be marked as ESAs and protected with orange fencing until after seed-set to prevent accidental intrusion by construction workers and equipment. Coordination of specific compensatory mitigation measures will be carried out with CDFG to address any unavoidable impacts. Avoiding areas occupied by Congdon's tarplant or other special status species plants to the maximum extent practicable; Where impacts to areas found to support Congdon's tarplant populations, collecting seeds to be stored and grown for plant conservation following CNPS and CDFG plant protection guidelines; Conducting pre-construction surveys in burrowing owl habitat areas within established limits of the project area of disturbance no earlier than two weeks prior to the start of construction and stipulation of measures to be followed before proceeding with construction if owls are found; Delaying construction within specified distances from occupied burrows if it is determined that construction would disrupt nesting behavior until the owls are not nesting or juvenile owls are self-sufficient; Surveying vegetation and structures that could support nests or roosts of species such as migratory raptors, songbirds and non-game mammals, such as bats, prior to the onset of construction activities; A combination of avoidance, installation of exclusion	vegetation will be affected unavoidably, habitat quality will be assessed and confirmed with regulatory agencies. The size of the area and the quality of the resources that will be affected will determine the requirements of the compensatory mitigation to be carried out. The site-specific mitigation plan will assure replacement, or enhancement, of habitat values, such as the density of the overstory vegetation, reintroduction of native species, and development of complex vegetation structure, to the maximum extent practicable; Complying with ACOE nationwide permit conditions associated with pre-construction notification, such as proposed compensatory mitigation and restoration plans; Conducting pre-construction surveys for Congdon's tarplant during the June to November flowering periods. Any identified areas will be marked as ESAs and protected with orange fencing until after seed-set to prevent accidental intrusion by construction workers and equipment. Coordination of specific compensatory mitigation measures will be carried out with CDFG to address any unavoidable impacts. Avoiding areas occupied by Congdon's tarplant or other special status species plants to the maximum extent practicable; Where impacts to areas found to support Congdon's tarplant populations, collecting seeds to be stored and grown for plant conservation following CNPS and CDFG plant protection guidelines; Conducting pre-construction surveys in burrowing owl habitat areas within established limits of the project area of disturbance no earlier than two weeks prior to the start of construction and stipulation of measures to be followed before proceeding with construction if owls are found; Delaying construction within specified distances from occupied burrows if it is determined that construction would disrupt nesting behavior until the owls are not nesting or juvenile owls are self-sufficient; Surveying vegetation and structures that could support nests or roosts of species such as migratory raptors, songbirds and non-game mammals, such as bats, prior to the onset of construction activities; A combination of avoidance, installation of exclusion devices, and monitoring to assure protection of migratory birds and non-game mammals; Educating construction workers regarding the sensitive plant and wildlife species in the project vicinity, including methods to avoid or minimize impacts to biological resources; and Conducting pre-construction surveys will be conducted for California red-legged

Table 1.5-2: Summary of Construction Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures

Impact Category	No-Action Alternative	New Starts Baseline Alternative	BART Extension Alternative
		devices, and monitoring to assure protection of migratory birds and non-game mammals; Educating construction workers regarding the sensitive plant and wildlife species in the project vicinity, including methods to avoid or minimize impacts to biological resources; and Conducting pre-construction surveys will be conducted for alkali milkvetch and diamond-petaled California poppy both plants during their bloom period (March to June and March to April). If plants are found, they will be marked as ESAs and protected by orange safety fencing, and compensatory measures will be coordinated with CDFG. These measures will prevent declines of core populations. Other specific measures may be identified during consultations with regulatory and resources agencies. It is anticipated that project-specific special conditions will be stipulated as part of the ACOE Section 404 permit and CDFG Streambed Alteration Agreement. The Section 401 Water Quality Certification also may stipulate waste discharge requirements.	frog, southwestern pond turtle, alkali milkvetch and diamond-petaled California poppy both plants during their bloom period (March to June and March to April). If plants are found, they will be marked as ESAs and protected by orange safety fencing, and compensatory measures will be coordinated with CDFG. These measures will prevent declines of core populations. Other specific measures may be identified during consultations with regulatory and resources agencies. It is anticipated that project-specific special conditions will be stipulated as part of the ACOE Section 404 permit and CDFG Streambed Alteration Agreement. The Section 401 Water Quality Certification also may stipulate waste discharge requirements.
Biological Resources: Wetlands	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: Approximately 0.074 acres of wetlands and 0.019 acres of waters of the U.S. temporarily affected by construction activities. Design Requirements/Best Management Practices: All wetland areas will be temporarily fenced off and designated as ESAs; construction within wetlands will be avoided during the rainy season; materials and fluids generated by construction activities will be placed away from wetland areas or drainages until they could be disposed of at a permitted site. Mitigation Measures: None required.
Community Facilities, Schools, and Religious Institutions	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: May involve temporary detours or street closures in the vicinity of the project. Design Requirements/Best Management Practices: Coordinate with local emergency service providers in developing detour plans. Notify emergency service providers in advance of any road closures and detour routes. Mitigation Measures: None required.
Cultural and Historic Resources	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: May disturb historic and cultural resources, particularly in areas of high sensitivity, or where cultural deposits are known to exist. Mitigation Measures: CRTP and MOA will be developed and implemented (see Table 1.5-1, Cultural and Historic Resources.

Table 1.5-2: Summary of Construction Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures

Impact Category	No-Action Alternative	New Starts Baseline Alternative	BART Extension Alternative
Electromagnetic Fields (EMF)	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.
Geology, Soils and Seismicity	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: Some settling from tunneling and lowering of groundwater table. Design Requirements/Best Management Practices: Evaluate quantity and rate of settlement. Design compatible systems that can tolerate the estimated settlement. Shore existing structures and underpin buildings. Mitigation Measures: None required.
Hazardous Waste	Impacts: No impacts anticipated.	Impacts: Possible worker exposure to small amount of contaminated soil. Evaporation of volatile organic compounds (VOCs) upon excavation and exposure to ambient air. Possible surface water contamination due to rainwater runoff, contaminated soil, spilled hazardous materials, or spills of untreated contaminated groundwater generated during dewatering. Design Requirements/Best Management Practices: Train personnel in HAZWOPER per the OSHA. Develop and implement worker health and safety plan. Segregate soil according to contaminant and follow proper disposal procedures. Spray soil with dust control water or other dust palliatives. Notify emergency response teams when hazardous materials or wastes are or are not present on-site. Minimize amount of hazardous materials at construction sites. Adhere to conditions of General Construction Permit including a Storm Water Pollution Prevention Plan (SWPPP). Periodically inspect sites to identify releases. Mitigation Measures: Characterize soil contaminant levels before excavation. Comply with the "Site Management Plan Former Ford Automobile Assembly Plant Formerly 1100 South Main Street Milpitas, California" (SMP) and RWQCB requirements for ongoing and future development activities at the Great Mall.	Impacts: Possible worker exposure to existing contamination from both near-surface and deeper soil. Evaporation of VOCs upon excavation and exposure to ambient air. Possible worker exposure to asbestos, PCBs, and lead in renovation or demolition of structures. Possible worker contact with contaminated groundwater including chlorinated solvents, heavy metals, and petroleum hydrocarbons. Possible surface water contamination due to rainwater runoff, contaminated soil, spilled hazardous materials, or spills of untreated contaminated groundwater generated during dewatering. Design Requirements/Best Management Practices: Train personnel in HAZWOPER per OSHA. Develop and implement worker health and safety plan. Segregate soil according to contaminant and follow proper disposal procedures. Spray soil with dust control water or other dust palliatives. Notify emergency response teams when hazardous materials or wastes are or are not present on-site. Follow proper handling procedures for asbestos, lead-based paint, lighting ballasts containing PCBs, or other hazardous materials built into existing structures. Employ HAZWOPER-trained personnel using site-specific health and safety plan and personal protective equipment. Minimize amount of hazardous materials at construction sites. Adhere to conditions of General Construction Permit including a SWPPP. Periodically inspect sites to identify releases. Mitigation Measures: During Final Design, a Phase Two site assessment will be performed for areas where hazardous material contamination is anticipated. Prior to the start of excavation, a detailed characterization of soil contamination levels in all soil to be excavated will be performed. The detailed characterization will serve to identify the lateral and vertical extent of contamination, characterize contaminated material for disposal, evaluate all chemicals of concern in each area, and determine the potential for any health and safety effects and the remediation requirements per

Table 1.5-2: Summary of Construction Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures

Impact Category	No-Action Alternative	New Starts Baseline Alternative	BART Extension Alternative
			local, state, and federal regulations. Best management practices for hazardous materials encountered during demolition or renovation operations of existing structures will focus on proper handling of hazardous building materials, such as asbestos, lead-based paint, or lighting ballasts containing PCBs. Prior to the start of demolition, properly certified personnel will perform a detailed evaluation of building materials to determine if any hazardous materials are present. The evaluation will identify suspect building materials and samples will be collected and analyzed for the presence of hazardous materials of concern. If at least 100 square feet of hazardous materials are found to have asbestos content of more than 0.1 percent, abatement must be performed by a certified California Asbestos Contractor (Title 8 CCR Section 1529). Asbestos abatement includes proper personal protective equipment for workers and negative pressure to prevent the emission of fibers. Also, asbestos levels in worker breathing zones must be maintained below permissible exposure limits defined by OSHA. Abatement of other hazardous building materials is usually performed at the same time as asbestos abatement. Through the adoption of these mitigation measures, the net impact of hazardous materials encountered in demolition or renovation operations can be reduced to near zero. As with soil contamination, groundwater contaminant levels in each area will be characterized and this information will be used to design groundwater treatment systems for use during project construction. Both the ACFCWCD and the SCVWD require permits for monitoring well installation. Contaminated groundwater collected during dewatering will be treated prior to discharge under an appropriate discharge permit. A site-specific NPDES permit or a functionally equivalent permit will be required. Measures will be taken to ensure that the volume of water discharged does not overwhelm the water drainage system, especially in storm drains or sewer pipes. Treatment necessary before discharge and other measures to mitigate impacts will be consistent with regulatory agency input and consolidation. Comply with the "Site Management Plan Former Ford Automobile Assembly Plant Formerly 1100 South Main Street Milpitas, California" (SMP) and RWQCB requirements for ongoing and future development activities at the Great Mall.
Noise and Vibration	Impacts: No impacts anticipated.	Impacts: Noise and vibration from construction activities could intrude on nearby noise-sensitive receptors. Primary impacts caused by impact pile driving to place supports Design Requirements/Best Management Practices: Comply with FTA noise construction criteria. Comprehensive construction noise and vibration specifications will be	Impacts: Noise and vibration from construction activities could intrude on nearby noise-sensitive receptors. Primary impacts caused by impact pile driving to place supports. Design Requirements/Best Management Practices: Comply with FTA noise construction criteria. Comprehensive construction noise and vibration specifications will be incorporated into bid documents. Monitor noise levels. Locate stationary

Table 1.5-2: Summary of Construction Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures

Impact Category	No-Action Alternative	New Starts Baseline Alternative	BART Extension Alternative
		incorporated into bid documents. Monitor noise levels. Locate stationary equipment as far as possible from noise-sensitive sites. Route construction-related traffic so that it will cause the least disturbance to residents. Minimize truck idling and reversing near noise sensitive areas. Comply with local construction time periods to the extent feasible. Notify public of particularly disruptive activities. Establish a complaint resolution procedure to rapidly address problems. Mitigation Measures: Temporary noise barriers will be constructed as needed in areas between noisy activities and noise-sensitive receivers. Temporary barriers can reduce construction noise by 5 to 12 dB, depending on the height and placement of the barrier. To be most effective, the barriers will be placed as close as possible to the noise source or the sensitive receptor. Temporary barriers tend to be particularly effective because they can be easily moved as work progresses to optimize their performance.	equipment as far as possible from noise-sensitive sites. Route construction-related traffic so that it will cause the least disturbance to residents. Minimize truck idling and reversing near noise sensitive areas. Comply with local construction time periods to the extent feasible. Notify public of particularly disruptive activities. Establish a complaint resolution procedure to rapidly address problems. Mitigation Measures: Temporary noise barriers will be constructed as needed in areas between noisy activities and noise-sensitive receivers. Temporary barriers can reduce construction noise by 5 to 12 dB, depending on the height and placement of the barrier. To be most effective, the barriers will be placed as close as possible to the noise source or the sensitive receptor. Temporary barriers tend to be particularly effective because they can be easily moved as work progresses to optimize their performance. Impact pile driving near noise and vibration sensitive areas will be avoided where possible. Drilled piles, or the use of a sonic or vibratory pile driver, or other "quiet piling" techniques are quieter alternatives and may be used where geological conditions permit.
Security and System Safety	Impacts: No impacts anticipated.	Impacts: Security and safety issues associated with construction site. Design Requirements/Best Management Practices: Apply recognized safety practice requirements for heavy equipment use and movement of construction materials. Construction manager will be responsible for safety and security during construction. Fence and light construction and staging areas. Notify local emergency response personnel of construction activities and of any transportation network disruptions of detours. Mitigation Measures: None required.	Impacts: Security and safety issues associated with construction site. Design Requirements/Best Management Practices: Apply recognized safety practice requirements for heavy equipment use and movement of construction materials. Construction manager will be responsible for safety and security during construction. Fence and light construction and staging areas. Notify local emergency response personnel of construction activities and of any transportation network disruptions of detours. Mitigation Measures: None required.
Utilities	Impacts: No impacts anticipated.	Impacts: No impacts anticipated. Design Requirements/Best Management Practices: Coordinate with utility providers during construction to minimize utility conflicts. Detailed plans will be submitted to utility providers for review and comment prior to any utility relocation work. Utility disruptions will be short-term and carefully scheduled with advance notice to customers.	Impacts: Relocation and disturbance of utilities resulting in disruption of service. Design Requirements/Best Management Practices: Coordinate with utility providers during construction to minimize utility conflicts. Detailed plans will be submitted to utility providers for review and comment prior to any utility relocation work. Utility disruptions will be short-term and carefully scheduled with advance notice to customers. Mitigation Measures: Underground utilities that do not need to be relocated either temporarily or permanently will be uncovered and reinforced, if necessary, and supported in place during construction by hanging from support beams spanning across the excavation.

Table 1.5-2: Summary of Construction Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures

Impact Category	No-Action Alternative	New Starts Baseline Alternative	BART Extension Alternative
			It is anticipated that the recently constructed 72-inch trunk sanitary sewer line near the center of 6th Street in San Jose will be supported in place during construction, rather than being relocated. The support could be a temporary overhead bridge with suspended cables, or a permanent beam under the pipe spanning the BART subway. Alternatively, a detour or "shoo-fly" could be constructed adjacent to the pipe while the subway is excavated, and the pipe replaced after the subway is complete. The precise method will be investigated during later design stages of the project.
Visual Quality and Aesthetics	Impacts: No impacts anticipated.	Impacts: Visual signs of construction including heavy equipment and stockpiling of construction materials. Design Requirements/Best Management Practices: Contractors will maintain construction site in an orderly manner, properly dispose of construction and worker debris, and properly store and stockpile materials and equipment. Nighttime lighting will be directed onto the work site to minimize spillover of light and glare. Mitigation Measures: None required.	Impacts: Visual signs of construction including heavy equipment and stockpiling of construction materials. Design Requirements/Best Management Practices: Contractors will maintain construction site in an orderly manner, properly dispose of construction and worker debris, and properly store and stockpile materials and equipment. Nighttime lighting will be directed onto the work site to minimize spillover of light and glare. Mitigation Measures: Visual screening will be erected at construction sites as appropriate.
Water Resources, Water Quality, and Floodplains	Impacts: No impacts anticipated.	Impacts: Possible minor contamination of soil and groundwater from accidental spills. No impacts to drinking water are anticipated. Accidental releases of sediment and/or chemicals onto ground, into storm drainage system, or directly into watercourses. Excavated soil could release contaminated sediments into surface water. Runoff causing erosion and increased sediment deposits into water bodies. Direct discharge of dewatering effluent could contaminate downstream drainages and the Bay. Design Requirements/Best Management Practices: To the extent feasible, materials used in construction will be non-hazardous. Prepare and implement dewatering plan. Conduct groundwater monitoring program and remediate impacts. Submit erosion and sediment control plan to the San Francisco Bay Regional Water Quality Control Board (RWQCB), Alameda County Flood Control and Water Conservation District (ACFCWCD), and Santa Clara Valley Water District (SCVWD) for review, comment, and implementation. Schedule earthwork outside rainy season when possible. Install sediment traps. Inspect and repair	Impacts: Possible minor contamination of soil and groundwater from accidental spills. No impacts to drinking water are anticipated. Possible percolation of soil contaminants into shallow groundwater in Milpitas from excavation of 20-foot trench. Dewatering impacts from cut-and-cover construction may include minor subsidence from decrease in groundwater levels and changes in migration of existing contaminated groundwater. Accidental releases of sediment and/or chemicals onto ground, into storm drainage system, or directly into watercourses. Excavated soil could release contaminated sediments into surface water. Runoff causing erosion and increased sediment deposits into water bodies. Direct discharge of dewatering effluent could contaminate downstream drainages and the Bay. Design Requirements/Best Management Practices: To the extent feasible, materials used in construction will be non-hazardous. Prepare and implement dewatering plan. Conduct groundwater monitoring program and remediate impacts. Submit erosion and sediment control plan to RWQCB, ACFCWCD, and SCVWD for review, comment, and implementation. Schedule earthwork outside rainy season when possible. Install sediment traps. Inspect and repair erosion control structures after rainstorms. Coordinate with appropriate water agencies during construction phase. Comply with requirements of NPDES General Construction Permit. Implement the SWPPP as required. Mitigation Measures: None required.

Table 1.5-2: Summary of Construction Impacts, Design Requirements/Best Management Practices, and Proposed Mitigation Measures

Impact Category	No-Action Alternative	New Starts Baseline Alternative	BART Extension Alternative
		erosion control structures after rainstorms. Coordinate with appropriate water agencies during construction phase. Comply with requirements of NPDES General Construction Permit. Implement the SWPPP as required. Mitigation Measures: None required.	
Cumulative Effects	Impacts: No impacts anticipated.	Impacts: No impacts anticipated.	Impacts: None beyond those already identified for specific topic areas. Design Requirements/Best Management Practices: None beyond those already identified for specific topic areas. Mitigation Measures: None required beyond those already included for specific topic areas.

- Develop interagency cooperative agreements related to construction.
- Advance utility relocations.
- Acquire all necessary environmental permits and approvals.

1.5.1 BASELINE ALTERNATIVE

The Baseline Alternative would have environmental impacts related to habitat for special status species, geologic and seismic conditions, noise levels, business relocations, and construction. All of these impacts can be reduced through implementation of the design requirements and best management practices and/or with mitigation measures as identified in this document. Impacts to habitat for special status species would be minimized by providing protection during construction and implementing replacement or enhancement measures pursuant to agreements with appropriate resource agencies. Geologic and seismic impacts would be avoided through appropriate design and construction techniques. Noise levels will be reduced to below FTA and BART criteria with the installation of sound walls. Relocations of businesses will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 and VTA's Relocation Program. During construction, design requirement/best management practices and mitigation measures will be implemented to reduce traffic, air quality, biological resources, hazardous materials, noise and vibration, visual, and water resources impacts.

1.5.2 BART ALTERNATIVE

The BART Alternative would have impacts to localized traffic, wetlands and habitat for special status species, historic and cultural resources, geologic and seismic conditions, noise and vibration levels, business and residential relocations, and utilities, and from construction activities. All of these impacts can be reduced through implementation of the design requirements and best management practices and/or mitigation measures identified except for the following: 1) impacts to local traffic circulation near the proposed BART stations, 2) vibration impacts to 12 residences north of Berryessa Road, 3) impacts to properties determined or apparently eligible for the National Register of Historic Places, and 4) impacts to local traffic resulting from construction activities.

Roadway and intersection improvements will be constructed to reduce traffic impacts at intersections around BART stations; however, mitigation is not practicable at 17 of the affected intersections. Replacement or enhancement measures will be implemented pursuant to agreements with appropriate resource agencies to mitigate impacts to habitat areas and wetlands and other waters of the U.S. Impacts to historic and cultural resources would be addressed in accordance with a Memorandum of Agreement (MOA) and supporting Cultural Resources Treatment Plan to be achieved in consultation with the State Historic Preservation Officer (SHPO) and Advisory Council on Historic Preservation (ACHP). Geologic and seismic impacts would be avoided through appropriate design and construction methods. Noise and vibration levels will be reduced below FTA and BART criteria thresholds through the installation of sound walls, ballast mats, resilient fasteners, track structures (e.g., resilient ties, floating slabs), shredded tire underlay, and/or underground barriers with the exception of vibration impacts to 12 residences north of Berryessa Road. Relocation of businesses and residents will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 and VTA's Relocation Program. Utilities along the corridor will need to be relocated, and VTA will coordinate closely with local utility providers to avoid unscheduled interruptions in service.

During construction of the BART Alternative, design requirements/best management practices, and mitigation measures will be implemented to reduce temporary traffic, air quality, habitat, wetland and

other waters, cultural and historical resources, hazardous materials, noise and vibration, utility, visual, and water resource impacts.

1.6 SUMMARY OF ALTERNATIVES

Table 1.6-1 provides a summary of the information for each alternative contained within the various sections and chapters of the EIS/EIR. The summary table includes service and operating characteristics, ridership and traffic, environmental issues project costs, and cost effectiveness measures, to compare the SVRTC alternatives.

1.6.1 BASELINE ALTERNATIVE

The Baseline Alternative proposes expansion of bus services both within the SVRTC and extending to the Central Valley. It includes the construction of 2.75 miles of exclusive guideway to facilitate express bus connections from Santa Clara County to the planned BART Warm Springs Station in southern Fremont. Express buses would operate on varying service frequencies, ranging from three to 30 minutes. An estimated 60 additional buses would be required to operate proposed new or improved transit services under this alternative. The estimated total capital cost to implement the Baseline Alternative is $379.0 million in 2003 dollars. Total annual operating costs in 2025 are estimated to be $796.2 million for all transit modes and $28.2 million (both in 2003 dollars) for proposed bus service improvements only.

The Baseline Alternative would generate on the order of 1,686,200 transit trips on the average weekday in 2025. This compares to 1,679,400 Year 2025 transit trips for the No-Action Alternative, or an increase of approximately 6,800 riders. The new transit trips associated with the Baseline Alternative would remove approximately 3,600 peak-period auto (or light truck) trips from service area roadways. The shift in travel from auto to transit would reduce roadway congestion moderately, with a resulting savings in daily travel time of approximately 9,700 hours for all users of the service area transportation network. There would also be a moderate savings in vehicle energy consumption resulting from a shift from less energy efficient travel modes (e.g., autos and trucks) to higher capacity, more energy efficient transit modes. Transportation energy use would decrease by approximately 80 billion British thermal units (BTUs) annually compared to the No-Action Alternative, equivalent to just under 724,638 annual gallons of gasoline saved, in 2025. There would be a reduction of 529.7 pounds per day (ppd) for carbon monoxide (CO), 9.0 ppd for reactive organic gases (ROG), 1.5 ppd for sulfur dioxide (SO_2), 14.3 ppd for suspended particulate matter (PM_{10}), and an increase of 5.8 ppd for nitrogen oxides (NO_x) when compared to the No-Action Alternative.

The Baseline Alternative would also affect 13 acres of non-native grassland affording habitat for federal and state species of concern. This habitat loss will be mitigated to minimize harm to and ensure the continuation of the affected species.

Comparing the ridership benefits of the Baseline Alternative with its costs, by most measures the Baseline Alternative is the least cost effective of the three alternatives evaluated in this EIS/EIR. Farebox recovery of all transit modes included in the Baseline is estimated to be 51.1 percent in 2025, or lower than the 51.6 percent farebox recovery of the No-Action Alternative. A higher farebox recovery indicates that passenger revenues cover a greater proportion of system operating costs. The operating cost per passenger-mile of the Baseline Alternative would be slightly higher than that of the No-Action Alternative as would be the operating cost per passenger. The annualized capital and operating costs for carrying each new rider on Baseline Alternative service are equivalent to $30.12.

Table 1.6-1: Summary of Alternatives, 2025			
	Alternatives		
	No-Action	**Baseline**	**BART**
Service and Operating Characteristics			
Exclusive Guideway (miles)	NA [1]	2.75	16.3
Average Headways (minutes)	NA [1]	3 to 30	6
Number of Vehicles	NA [1]	60	106 to 126
Number of Stations	NA [1]	multiple bus stops	7 + 1 future
Ridership and Traffic (2025)			
Average Weekday Trips	NA [1]	22,600	83,600
New Transit Trips	NA [1]	6,800	39,300
Daily Travel Time Savings for All Users (hours saved)	NA [1]	9,700	66,900
Peak-Period Trips Removed from Roadways	NA [1]	3,600	25,500
Environmental Issues			
Net Change in Air Pollutant Emissions (pounds/day)	---	-529.7 CO	-4,507.1 CO
• Carbon Monoxide (CO)	---	-9.0 ROG	-607.0 ROG
• Reactive Organic Gases (ROG)	---	+5.8 NO_X	-486.4 NO_X
• Nitrogen Oxides (NO_X)	---	-1.5 SO_2	-12.2 SO_2
• Sulfur Dioxide (SO_2)			
• Suspended Particulate Matter (PM_{10})	---	-14.3 PM_{10}	-120.6 PM_{10}
Impact to Wetlands and Threatened/Endangered Species			
• Acres of Non-Native Grassland	NA [1]	Up to 13	Up to 15.6
• Acres of Wetlands/Other Waters of the US	NA [1]	0	1.24 [2] / 0.05 [2]
Historic and Archaeological Sites Affected	NA [1]	0	Up to 99
Change in Vehicle Energy Consumption (billion BTUs/year)	NA [1]	-80	-1,110
Level of Noise/Vibration Impacts (# of Residential Impacts)	NA [1]	0	12
Businesses / Households Displaced	NA [1]	2 / 0	Up to 101 / 1 to 5
Project Costs (2003 dollars in millions)			
Total Capital Costs	NA [1]	$379.0	$4,112.0
Total Annual Operating and Maintenance Costs			
• All Modes in Corridor (bus, light rail, and BART)	$768.0	$796.2	$841.3
• Mode Specific	NA [1]	$28.2	$65.1
Cost Effectiveness (2003 dollars)			
Farebox Recovery Ratio			
• All Modes in Corridor (bus, light rail, and BART)	51.6%	51.1%	54.2%
• Mode Specific	NA [1]	26.2%-34.7%	71.2%
Operating Cost per Passenger-Mile	$0.300	$0.301	$0.276
Cost per Passenger	$1.52	$1.64	$2.24
Cost per New Rider (compared to No-Action)	NA [1]	$30.12	$32.83
Cost per Hour of User Benefit (compared to Baseline)			
• All Users	NA [1]	NA [1]	$26.35
• Transit Users Only	NA [1]	NA [1]	$40.99

Notes:

[1] NA = No impact or not applicable.

[2] Impacts reflect highest-impact options. Impacts to wetlands would be reduced to 0.13 acres if the South Calaveras Future Station were not included; and impacts to waters of the U.S. would be reduced to 0.04 acres if the East of Rail ROW Option were not chosen.

Source: Manuel Padron & Associates, Parsons Corporation, 2003.

1.6.2 BART ALTERNATIVE

The BART Alternative proposes a 16.3-mile extension of BART service from southern Fremont into Santa Clara County and improvements to corridor bus services, mainly by providing better access to existing and new BART stations. All of the BART alignment would be in exclusive guideway; seven new stations would be constructed, plus one future station in Milpitas. BART trains would operate on average headways of six minutes, based on 2025 service levels. From 106 to 126 new transit vehicles would be required to operate the BART extension. The total estimated capital cost for BART Alternative improvements is $4,112 million in 2003 dollars. Total annual operating costs in 2025 are estimated to be $841.3 million for all modes and $65.1 million (both in 2003 dollars) for the BART Alternative service only.

BART would serve approximately 1,718,700 total linked transit trips on the average weekday in 2025 with 83,600 on the BART Alternative extension itself. Linked transit trips exclude transfer boardings. This represents an increase of 39,300 trips compared to the No-Action Alternative and 32,500 trips compared to the Baseline Alternative. The shift of travel to BART and other modes under this alternative would remove an estimated 25,500 peak period trips from study area roadways. By reducing roadway congestion, this alternative results in substantial travel time savings for all transportation system users, approximately 66,900 hours daily relative to the No-Action Alternative.

The BART Alternative is estimated to result in substantial reductions in air pollutant emissions and transportation system vehicle energy requirements compared to both the No-Action and Baseline alternatives. In 2025, emissions of air pollutants would be reduced by 4,507.1 ppd for CO, 607.0 ppd for ROG, 486.4 ppd for NO_X, 12.2 ppd for SO_2, and 120.6 ppd for $PM_{10,}$ when compared to the No-Action Alternative. Transportation system vehicle operating energy would be reduced by approximately 1,110 billion BTUs annually compared to the No-Action Alternative (equivalent to 10.0 million gallons of gasoline) and by 1,030 billion BTUs annually compared to the Baseline Alternative (9.3 million gallons of gasoline).

The BART Alternative would result in environment impacts in several areas. Approximately 15.6 acres of non-native grasslands and 0.13 acres of wetlands would be removed (1.24 acres if the South Calaveras Future Station were to be built). The habitat loss will be mitigated to minimize harm to and ensure the continuation of the affected species. The wetlands will be fully replaced by enhancement, replacement, or creation of wetlands to ensure no net loss. The alternative would also potentially affect an estimated 99 historic and archaeological properties/sites and displace a number of businesses and several households. Numerous residences would be affected by noise and/or vibration from the operation of BART trains. While these impacts are greater than those associated with the Baseline Alternative, they will be reduced for the most part by design requirements and best management practices and mitigation measures except for 12 residences north of Berryessa Road.

The BART Alternative is the most cost effective alternative based on farebox recovery and operating cost per passenger mile. It is estimated to have the highest system and mode-specific farebox recovery ratios and the lowest operating cost per passenger-mile. The mode-specific farebox recovery for the BART extension is projected to be at least twice that of the Baseline Alternative.

The BART Alternative does not perform as well as the No-Action or Baseline alternatives in terms of cost per passenger and cost per new rider. The BART Alternative cost per passenger, at $2.24 in 2025, would be from $0.60 to $0.72 higher than for the other alternatives; the cost per new rider would be approximately $2.71 higher than under the Baseline Alternative. The higher costs, however, would be in part offset by the better revenue performance of the BART Alternative.

The BART Alternative is estimated to recover over 71 percent of operating costs from fares. Thus, approximately $46 million of the $65.1 million in annual operating costs of the BART extension in 2025 would be covered by fares, leaving about $19 million to be covered from other sources of revenues. The Baseline Alternative, for comparison, would recover up to 35 percent of operating costs from fares, or $10 million of the $28.2 million in additional bus service costs in 2025. This would leave approximately $18 million to be covered from other revenue sources. The BART Alternative, however, would attract over 39,000 new transit trips while the Baseline Alternative would generate only 6,800 new transit trips. The net (of fares) operating cost per new rider is therefore substantially less under the BART Alternative. Over the long-term, comparing net annual operating costs to the numbers of riders carried, the BART Alternative performs substantially better than the Baseline Alternative.

1.6.3 MINIMUM OPERATING SEGMENT SCENARIOS

A comparison of the two MOS scenarios to the "full-build" BART Alternative is presented in Table 1.6-2. The table compares various project elements and characteristics, including the alignment, stations, ridership, parking, fleet size, maintenance facility needs, property requirements, operating plan, and cost estimates. The full-build BART Alternative is based on a year 2025 planning horizon, while MOS-1E is presented for the year 2025 and 2015. MOS-1F was developed for the year 2015 to identify initial start-up needs.

Table 1.6-2: MOS Scenarios Compared with the Full-build BART Alternative

Project Element and Characteristics	"Full-build" BART Alternative in 2025	MOS-1E in 2025 and 2015	MOS-1F in 2015
Alignment	16.32 miles	Same as full-build BART Alternative	Same as full-build BART Alternative
Stations	7 stations	5 stations (defers Berryessa and Civic Plaza/SJSU stations)	Same as full-build BART Alternative
Average Weekday Transit Trips	83,585 (2025)	82,130 (2025) 71,176 (2015)	71,785 (2015)
Parking Spaces at BART Alternative Stations	9,957 (2025)	7,457 (2025) 7,340 (2015)	8,660 (2015)
Parking Spaces at BART Core System Stations	3,235 (2025)	3,090 (2025) 2,865 (2015)	2,890 (2015)
Fleet Size	106 to 126 vehicles	0 to 20 fewer vehicles (2025) 16 to 30 fewer vehicles (2015)	16 to 30 fewer vehicles
Maintenance Facility Needs	Accommodates 240 BART vehicles	Accommodates 200 BART vehicles, with reduced maintenance facilities (2025) Accommodates 180 BART vehicles, with reduced maintenance facilities (2015)	Accommodates 180 BART vehicles, with reduced maintenance facilities
Property Requirements	Property purchased for all seven stations, maintenance facility, ancillary facilities, and construction staging	Same as full-build BART Alternative	Same as full-build BART Alternative
Operating Plan	San Francisco-Fremont and Richmond-Fremont BART lines, with combined six-minute headways	Same as full-build BART Alternative	Same as full-build BART Alternative
Total Capital Costs (2003 dollars)	$4.112 billion (2025)	$3.822 billion (2025) $3.762 billion (2015)	$3.895 billion (2015)
Annual Operating and Maintenance Costs (2003 dollars)	$65.1 million (2025)	$60.3 million (2025) $56.1 million (2015)	$59.7 million (2015)

For the most part, the MOS scenarios would have similar environmental benefits and impacts as the full-build BART Alternative. However, deferring project elements under the MOS scenarios would result in minor changes to ridership, traffic, air quality, biological resources, community facilities, energy, land use, socioeconomics, visual, construction, and cost. These benefits and impacts would be temporarily delayed until MOS-2 is completed and the project is fully implemented.

Differences in the environmental benefits and impacts are primarily attributed to the MOS-1E scenario, which defers two stations. In 2025, ridership would be slightly less for MOS-1E in comparison to the full-build BART Alternative. This would result in traffic level of service changes only near the Berryessa and Alum Rock stations. MOS-1E would also have a minor increase in pollutant emissions. Impacts to biological resources and water resources would be similar to the BART Alternative. The deferral of the Berryessa Station would defer impacts to three potentially affected archaeological resources. MOS-1E is estimated to have a small increase in energy consumption as well. Furthermore, MOS-1E would not be as compatible with land use plans and policies due to the deferral of two stations, which would have promoted intensified land uses and livable communities. It would also serve fewer people, jobs, and households. However, some property acquisitions and displacements would be deferred if the Berryessa Station was not initially built, and the existing visual character would be maintained without the parking structure. Construction impacts would be postponed at the Berryessa Station, maintenance facility, and parking facilities. Finally, the capital and operating costs would be reduced for all MOS scenarios.

1.7 PUBLIC AND AGENCY INVOLVEMENT

VTA conducted an extensive public involvement and agency coordination program for the MIS/AA, with ongoing outreach efforts continuing during the preparation of the EIS/EIR. These efforts have involved the establishment of several committees and forums to jointly plan for the SVRTC during the MIS/AA and EIS/EIR phases. The Policy Advisory Board (PAB) consists of representatives from the VTA Board, the BART Board, Santa Clara and Alameda counties, and the cities within the corridor. The PAB provides important policy guidance and decision-making. The VTA/BART Coordination Committee meets regularly to ensure a collaborative staff effort between BART and VTA. The Technical Advisory Committee (TAC) provides coordination and technical input from local, regional, state, and federal agencies. In addition, Project Development Teams (PDT) for Fremont, Milpitas, San Jose, and Santa Clara were formed to address city specific issues at a staff level. VTA also meets periodically with the FTA to provide project updates.

VTA also is working with four Community Working Groups (CWGs) representing Milpitas, the Hostetter/Alum Rock area in San Jose, Downtown San Jose, and Santa Clara. Members include representatives of neighborhood and business associations, community organizations, advocacy groups, major property owners, and planning commissioners. In addition, public meetings were held at key study milestones during the project development process and presentations were made to neighborhood and business associations, city groups, and other committees upon request.

In January 2002, VTA began the state environmental process by issuing the Notice of Preparation (NOP) for the EIR to meet CEQA requirements. The NOP was subsequently reissued in January 2003 to address BART core system parking. The FTA published the Notice of Intent (NOI) for the EIS in early February 2002 as required under NEPA. Public and agency meetings were held thereafter in February 2002 as part of the scoping process. The public scoping meetings were conducted on February 7, 2002 in Milpitas; February 11, 2002 in San Jose; and February 13, 2002 in Santa Clara. In addition, a TAC Scoping Meeting was held on February 12, 2002 and an agency scoping meeting was held on February 13, 2002. The purpose of the scoping process was to determine the scope, focus, and content of the EIS/EIR. They provided a useful opportunity to obtain information from the public, interested agencies, and other parties on the proposed project alternatives, the proposed topics of evaluation, and potential impacts and mitigation measures to be considered.

1.8 AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

The state CEQA Guidelines Section 15123 (b) requires that areas of controversy known to the lead agency and issues to be resolved be included in an EIR. These issues are addressed in the following sections.

1.8.1 AREAS OF CONTROVERSY

A detailed compilation of public and agency concern is provided in the *Environmental Scoping Report, May 2002.* The major areas of controversy relate to the BART Alternative are listed below.

- Traffic impacts during construction and around stations.
- Parking spillover into communities at BART station sites.
- Noise and vibration impacts at both aboveground and belowground segments.
- Visual impacts from elevated portions and parking structures.
- Cultural resource impacts to Five Wounds Church, downtown San Jose, Caltrain Diridon Station, and Caltrain Santa Clara Station.
- Station locations in Milpitas and downtown San Jose.
- Downtown San Jose stations entrance locations.
- Impacts on property values.
- Construction impacts in downtown San Jose.
- Construction coordination with other transit and development projects.
- Overall financing of the BART Alternative.

1.8.2 ISSUES TO BE RESOLVED

The primary issue to be resolved is the selection of the preferred alternative. However, if the BART Alternative were selected, decisions would also need to be made on the design options to be carried forward. The BART Alternative design options are listed below.

- Design Option 1: South of Warm Springs Alignment
  - Rail Right-Of-Way Option
  - East of Rail Right-of-Way Option
- Design Option 2: Warren Avenue Alignment
  - Underpass Option (BART At-grade)
  - At-grade Option (BART Aerial)
- Design Option 3: Locomotive Wye Location
  - Fremont Option
  - Milpitas Option
- Design Option 4: Dixon Landing Alignment
  - BART Aerial Option

  - BART Retained Cut Option
  - BART At-grade Option
- Design Option 5: South Calaveras Future Station
  - Parking Structure North Option
  - Parking Structure South Option
  - Parking Structure North Option with Parallel Bus Transit Center
- Design Option 6: Montague/Capitol Station
  - Roadway Transit Center Option with At-grade Concourse
  - Roadway Transit Center Option with Elevated Concourse
  - South Bus Transit Center Option with At-grade Concourse
  - South Bus Transit Center Option with Elevated Concourse
- Design Option 7: Berryessa Station
  - Parking Structure Southwest Option
  - Parking Structure Northeast Option
- Design Option 8: Alum Rock Alignment and Station
  - Railroad/28th Street Option
  - US 101/Diagonal Option
- Design Option 9: Civic Plaza/San Jose State University Station
  - Station Entrance Locations
- Design Option 10: Downtown San Jose Crossover Location
  - West of Civic Plaza/San Jose State University Station Crossover Option
  - West of Market Street Station Crossover Option
- Design Option 11: Market Street Station
  - Station Entrance Locations
- Design Option 12: Diridon/Arena Alignment and Station
  - North Option
  - South Option
  - Station Entrance Locations
- Design Option 13: Santa Clara Station
  - Parking Structure North Option
  - Parking Structure South Option
- Design Option 14: Santa Clara Station Pedestrian Crossing
  - Aerial Walkway North Option
  - Aerial Walkway South Option
  - Underground Walkway Option
- Design Option 15: Airport Connection
  - At-grade Profile Beyond De La Cruz Boulevard Option
  - Lowered Profile for Potential Future Airport Connection Option

1.9 NEXT STEPS

1.9.1 PUBLIC CIRCULATION OF DRAFT EIS/EIR

The Draft EIS/EIR was circulated for public comments for a period of 60 days, beginning March 16, 2004 and ending May 14, 2004. Public hearings were held on April 12, 14, and 19, and May 10, 2004 at the locations noted below to take comments from interested parties and the public regarding the alternatives, impacts, and proposed mitigation measures. The times and locations of the public hearings were announced in direct mailings, in display advertisements in local newspapers of general circulation in the SVRTC, and in the Federal Register. All substantive comments received in writing prior to the close of the public comment period or entered into the public record at the public hearings include written responses in Volume II of the EIS/EIR. VTA and FTA will consider all of the public comments in concert with the information presented in this document prior to approval of a Preferred Investment Strategy/Locally Preferred Alternative for the SVRTC.

The times and locations of the public hearings were:

Santa Clara Public Hearing	San Jose Public Hearings	Milpitas Public Hearing
April 12, 2004	April 14, 2004 and May 10, 2004	April 19, 2004
6:00 – 8:00 p.m.	6:00 – 8:00 p.m.	6:00 – 8:00 p.m.
Santa Clara Senior Center	First Methodist United Church	Joseph Weller Elementary School
1303 Fremont Street	24 North 5th Street	345 Boulder Street
Santa Clara, CA	San Jose, CA	Milpitas, CA

1.9.2 PREFERRED INVESTMENT STRATEGY/LOCALLY PREFERRED ALTERNATIVE

As previously stated, the VTA Board of Directors selected the BART Extension to Milpitas, San Jose, and Santa Clara (BART Alternative) as the Preferred Investment Strategy/Locally Preferred Alternative for the SVRTC following completion of a MIS/AA in November 2001. Multiple alignment and station options for the BART Alternative are currently being considered in the EIS/EIR. Furthermore, a No-Action Alternative and a Baseline Alternative are being evaluated in comparison to the BART Alternative.

The EIS/EIR alternatives and associated design options were developed to provide the policy-makers and the public with information of how different project components would affect the environment. As a result, the policy-makers could select the alternatives/design options for the Preferred Investment Strategy/Locally Preferred Alternative based on information provided in the EIS/EIR. A decision on the alternatives/design options to be included in the Preferred Investment Strategy/Locally Preferred Alternative would be made between the publication of the Draft and Final EIS/EIR. The public would have the opportunity to comment on the alternatives/design options at four CWG meetings and four public hearings held during the circulation of the Draft EIS/EIR. Once the Preferred Investment Strategy/Locally Preferred Alternative was identified and approved, the Final EIS/EIR would be prepared.

On Wednesday, May 26, 2004, after the circulation of the Draft EIS/EIR, the PAB approved the selection of recommended alignment and station options for the refinement of the Preferred Investment Strategy/Locally Preferred Alternative. The recommended alternatives/design options are included in the Locally Preferred Alternative for the Final EIS/EIR. The refined Locally Preferred Alternative is described in Volume II, Chapter 2.0, *Recommended Project*.

After the VTA Board of Directors certifies the EIR and approves the project, FTA would issue a Record of Decision on the EIS. The Record of Decision is a separate document from the EIS itself. This document states the decision, states the reasons for the decision, identifies all alternatives, identifies all adopted mitigation measures, and states compliance with applicable laws.

1.9.3 PROJECT IMPLEMENTATION

Upon VTA's certification of the EIR and FTA's Record of Decision on the EIS, VTA would continue with the Preliminary Engineering phase, during which the facilities for the preferred alternative would be engineered with more precision. VTA could also begin to acquire ROW for the project. Following Preliminary Engineering, VTA would initiate the Final Design phase. Once the project is fully designed, FTA and VTA would negotiate and execute a Full Funding Grant Agreement for the preferred project.

VTA would continue to coordinate with local cities, other jurisdictional entities, and the public in developing the preferred project throughout the EIS/EIR, Preliminary Engineering, Final Design, and construction phases of the project.