Attachment A

Mitigation Monitoring and Reporting Program on the
Final Supplemental Environmental Impact Statement/Final Environmental Impact Report/Section 4(f) Evaluation
(Final SEIS/SEIR)

VTA'S BART SILICON VALLEY - PHASE II EXTENSION PROJECT

MITIGATION MONITORING AND REPORTING PROGRAM SUMMARY

Transportation

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Construction								
Alum Rock/28th Street Station; Downtown San Jose Station, Diridon Station. Santa Clara Station, Newhall Maintenance Facility, and West Tunnel Portal 13th Street and Stockton Avenue Ventilation Structures TOJDs	TRA-CNST-A	**Develop and Implement a Construction Education and Outreach Plan** VTA will develop a Construction Education and Outreach Plan (CEOP) in coordination with the Cities of San Jose and Santa Clara to foster communication between VTA, various municipalities, and the public during construction. VTA will develop the CEOP after the environmental process is complete and implement it prior to construction. The CEOP will ensure that VTA coordinates construction activities with existing business operations and other development projects to minimize disruption and delays. The CEOP will also establish a process that will address the concerns of businesses and their customers, property owners, residents, and commuters. The CEOP will be incorporated into the plans and specifications of all contracts through which the BART Extension will be implemented. Critical components of the CEOP will include, but	X	X			VTA Community Outreach and Public Engagement	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		are not limited to, the following requirements. • Establish field office(s) accessible to the public with dedicated community outreach staff and defined hours. • Provide and maintain a 24-hour/7-day a week project hotline for emergencies. • Conduct preconstruction operational surveys of businesses located adjacent to construction areas to ascertain hours of operation, access, deliveries, customer base, special circumstances, and key contacts. • Coordinate with cities to obtain information about upcoming adjacent construction projects to minimize disruptions and delays. • Inform and engage partner agencies, stakeholders, including VTA's BART Silicon Valley Phase II Community Working Groups, business organizations, business owners, tenants, the media, and the public on a regular and frequent basis. • Conduct public workshops, meetings, or webinars for community members. Hold regular meetings with the surrounding businesses and residents throughout the course of construction. • Distribute and post project information and advanced construction notification via the project website, social and traditional media, signage, face-to-face visits, flyers, mailers, emails, and						

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		other communication methods as appropriate. • Develop a project signage program identifying project corridor, station areas, construction timeline, and funding. • Display maps and construction schedule information in project field office(s) and around the construction area. • Increase visibility of alternative parking and access via signage, website postings, and other communication methods. • Maintain media relations (i.e., news releases, news articles, and interviews). • Designate community outreach personnel available on site for the duration of the construction project. • Work with property owners and business owners in the station areas to promote access to businesses during construction, including enhanced signage. • Provide marketing assistance, technical business support, and cross-promotional efforts to businesses within the area impacted by construction to encourage customers to shop at businesses during construction. • Establish outreach to stakeholders to provide advanced notice of scheduled utility outages. Throughout development and implementation, the						

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		education and outreach activities will be comprehensive, seeking widespread involvement; proactive, with efforts geared toward obtaining input, as well as disseminating information; responsive to various needs, including multiple languages and alternative formats; and timely, accurate, and results-oriented.						
	TRA-CNST-B	**Develop and Implement a Construction Transportation Management Plan** After the environmental process is complete and prior to beginning any construction activity, VTA will work with the Cities of San Jose and Santa Clara to develop Master Cooperative Agreements that will direct all coordination and partnering efforts between VTA and the cities prior to and during construction of the BART Extension. One element of the Master Cooperative Agreements with the cities will be the Construction Outreach Management Program (COMP). One of the three parts of the COMP is Construction Transportation Management Plan (CTMP). VTA and its General Engineering Contractor will develop and implement the CTMP in partnership with the Cities of San Jose and Santa Clara to coordinate location-specific circulation and access within and around the construction areas for all modes, including automobiles, trucks and construction vehicles, bicyclists, pedestrians, and public transportation such as buses and light rail. The CTMP will be organized according to each of the ten major project elements listed from east to	X	X			VTA Program Planning	VTA Environmental Programs

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		west along the alignment: East Tunnel Portal, Alum Rock/28th Street Station, 13th Street Ventilation Structure, Downtown San Jose Station, Diridon Station, Stockton Avenue Ventilation Structure, West Tunnel Portal, Newhall Maintenance Facility, and Santa Clara Station, and any offsite improvement locations. The CTMP will be tailored to address the site-specific circumstances and sequencing of construction at each of the ten areas. The CTMP will be developed in partnership with the applicable city and incorporated into all plans and specifications of all contracts through which the BART Extension will be implemented. Critical components of the CTMP are as follows. • Sequencing schedule depicting the proposed location and timing of construction activities on a routine basis for the duration of the project. • Proposed phasing of construction, anticipated lane and street closures, detours, temporary signals, and street reconfigurations, including durations of all of the above and signage requirements that the contractor must follow. • Truck haul routes. • Location-specific requirements as applicable. • In addition, VTA will work with the cities to minimize access and circulation construction impacts during special events, including Christmas in the Park, parades, and marathons.						

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			Pre-Construction	Construction	Post-Construction	Operations		
		After the CTMP has been approved, individual Traffic Control Plans (TCPs) will be developed for specific design elements at each of the ten major project elements and throughout the 8-year duration of construction. The TCPs will address all modes including automobiles, trucks, and construction vehicles, bicyclists, pedestrians, and public transportation such as buses and light rail. The TCPs will be prepared by the contractor and approved by VTA and the applicable city prior to construction of the specific design element. The TCPs will include site-specific requirements such as the following. • Alternative access routes where practicable and wayfinding signage for all detours affecting roadway users, including vehicular traffic, trucks and construction vehicles, bicyclists, and pedestrians. • Early signage of potential construction delays for all roadway users to choose alternate routes. • Minimum requirements for pedestrians and bicyclists to provide safe travel corridors within and through construction areas or provide detour routes. • Coordination between VTA and transit providers as necessary prior to construction to ensure that any necessary re-routing of bus routes and temporary relocation of bus stops during construction is done to minimize impacts on bus						

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		riders. • Early signage of potential transit delays for transit riders to plan trips accordingly. • Notification of the Cities of San Jose and Santa Clara, business owners, residents, and key stakeholders regarding lane and road closures that would affect parking, including both off-street and on-street parking. • Maps of all publicly available off-street and on-street parking that will be removed during construction. • Schedule of removal of each parking area. • Requirement that construction workers must park in construction staging areas or other designated areas. • In addition, in coordination with city partners, VTA will work with its contractors and the cities to restore parking as construction nears completion to the extent feasible.						
All project features for BART Extension and TOJDs	TRA-CNST-C	**Prepare and Implement an Emergency Services Coordination Plan** After the environmental process is complete and prior to beginning any construction activity, VTA will work with the Cities of San Jose and Santa Clara to develop Master Cooperative Agreements that will direct all coordination and partnering efforts between VTA and the cities prior to and during construction of the BART Extension. One	X	X			VTA Program Management	VTA Environmental Programs

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		element of the Master Cooperative Agreements with the cities will be the COMP. One of the three parts of the COMP is the Emergency Services Coordination (ESCP). As local emergency service routes and response times could be affected by construction activities, VTA will coordinate with local fire and police services to develop the ESCP to minimize this impact. The ESCP will be incorporated into the plans and specifications of all contracts through which the BART Extension will be implemented. Critical components of coordination are as follows. • VTA will inform the local fire and police departments of the construction schedule, and potential lane and road closures. • VTA will work with emergency providers to ensure emergency access to residents and businesses and to maintain the cities' emergency service response times. • VTA will work with the local fire and police departments on the detour routes. • VTA will provide road signage for detours and provide manual traffic control on detour routes as necessary.						

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Diridon Station	TRA-CNST-D	**Provide Temporary Replacement Parking at Diridon Station** VTA will provide 450 temporary replacement off-street parking spaces during construction to mitigate for parking impacts caused by the BART Extension construction. The temporary replacement parking will be provided prior to the removal of existing parking spaces.	X	X			VTA Program Management	VTA Environmental Programs
Operation								
Santa Clara Station and TOJD in 2035	TRA-A	**Implement Intersection Improvements at Coleman Avenue and Brokaw Road** Change the signal control for Brokaw Road (the east and west legs of this intersection) from Protected Left-Turn phasing to Split Phase. Add a shared through/left-turn lane to the east and west approaches within the existing right-of-way. Change the existing shared through/right-turn lanes to right-turn only lanes on the east and west approaches, and change the eastbound right-turn coding from Include to Overlap, indicating that many eastbound right turns would be able to turn right on red.		X			VTA Program Planning and City of Santa Clara	VTA Environmental Programs

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	TRA-B	**Implement Intersection Improvements at Lafayette Street and Lewis Street** Shift the westbound approach lanes on Lewis Street to the south to allow for the current through/right-turn lane to operate as a separate right-turn lane and a separate through lane. A shift of approximately 2 feet would increase the current through/right-turn lane width to 20 feet, which would allow adequate room for right-turning vehicles to proceed past vehicles traveling straight through the intersection and make the right turn onto northbound Lafayette Street. The westbound approach and receiving lanes would be slightly offset as a result, which can be addressed with dashed pavement markings across the intersection.		X			VTA Program Planning and City of Santa Clara	VTA Environmental Programs
	TRA-C	**Implement Intersection Improvements at the Intersection of Coleman Avenue and I-880 Southbound Ramps** Convert the second (center) left-turn lane on the I-880 off-ramp (the intersection's westbound approach) to a shared left/right-turn lane. Replace the lane control signs and the pavement markings on the off-ramp to reflect the new lane usage.		X			VTA Program Planning and City of Santa Clara	VTA Environmental Programs

Air Quality

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			Pre-Construction	Construction	Post-Construction	Operations		
Construction								
All project features for BART Extension and TOJDs	AQ-CNST-A	**Implement Dust Control Measures** VTA will require construction contractors to implement basic construction mitigation measures and additional construction mitigation measures recommended by Bay Area Air Quality Management District (BAAQMD) to reduce fugitive dust emissions. Emission reduction measures will include the following applicable measures or similar performing measures (additional measures may be identified by BAAQMD or the contractor, as appropriate). • The contractor will water all exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, unpaved access roads) two times per day or as needed to control dust. In times of drought, an effective combination of dust controls may be used in lieu of watering, such as soil binders/stabilizers, or watering may be used to form a crust on undisturbed areas. • The contractor will water all exposed surfaces at a frequency that will maintain a minimum soil moisture content of 12 percent. Moisture content can be verified by lab samples or a moisture probe, although such verification is typically visual. No visible dust emissions are permitted to leave the construction area.		X			Contractor	VTA Environmental Programs

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		• The contractor will coveror moisten all haul trucks that transport soil, sand, or other loose material offsite such that there are no dust emissions. • The contractor will remove all visible mud or dirt track-out onto adjacent public roads using wet power vacuum street sweepers at least once per day, or more frequently if needed to control track-out during active soil hauling operations. The use of dry power sweeping is prohibited. • The contractor will limit all vehicle speeds on unpaved roads to 15 mph. • The contractor will complete all paving operations on roadways, driveways, and sidewalks as soon as possible. The contractor will also lay building pads as soon as possible after grading, unless seeding or a soil binder is used. • The contractor will post a publicly visible sign that includes the telephone number and name of the person to contact at VTA regarding dust complaints. This person will respond and take corrective action within 48 hours. The BAAQMD phone number will also be visible to ensure compliance with applicable regulations. • The contractor will suspend all excavation, grading, and/or demolition activities when average wind speeds exceed 20 mph. • The contractor will install windbreaks (e.g.,						

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		fences with screening) on the windward side(s) of disturbed construction areas where feasible. Windbreaks should have 50 percent (maximum) air porosity. • The contractor will plant vegetative ground cover (e.g., fast-germinating native grass seed) in disturbed areas as soon as possible and water appropriately until vegetation is established. • The contractor will limit the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities in the same area. The contractor will phase activities to reduce the amount of disturbed surfaces at any one time. • All trucks and equipment, including their tires, will use designated construction entrances/exits that have been constructed with rock, rumble strips, or other features to remove dirt from tires. • The contractor will install sediment and erosion control devices on sites with a slope greater than 1 percent to prevent silt runoff from entering public roadways. • The contractor will include the following control measures as consistent with BAAQMD permitting requirements during the operation of concrete batch plants: o The construction contractor will ensure that the outlet PM10 grain loading for the baghouse will not exceed 0.01 grains per dry standard cubic foot.						

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		○ The construction contractor will properly maintain the baghouse and keep the baghouse in good operating condition at all times. The construction contractor will equip the baghouse with a device for measuring the pressure drop across the baghouse. ○ The construction contractor will not discharge an air contaminant into the atmosphere for a period or periods aggregating more than 3 minutes in any hour, which is as darkor darker than a Ringelmann 1.0. ○ The construction contractor will abate stockpiles, conveyors and unpaved roads as necessary with water sprays to maintain compliance with BAAQMD rules and regulations.						
	AQ-CNST-B	**Use U.S. Environmental Protection Agency (EPA) Tier 4 or Cleaner Engines** VTA will ensure that all construction contracts stipulate that all off-road, diesel-powered equipment used during construction will be equipped with EPA Tier 4 or cleaner engines, except for specialized construction equipment for which an EPA Tier 4 engine is not available. This mitigation measure assumes emission reductions compared with emissions from an average fleet-wide Tier 2 engine.		X			Contractor	VTA Environmental Programs
	AQ-CNST-C	**Maintain Construction Equipment** The contractor will maintain and properly tune all construction equipment in accordance with the manufacturer's specifications. A certified mechanic		X			Contractor	VTA Environmental Programs

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		will check all equipment to determine proper running condition prior to operation.						
	AQ-CNST-D	**Minimize Idling Times** The contractor will ensure that all idling times are minimized, either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by California Airborne Toxic Control Measures, Title 13, Section 2485 of the California Code of Regulations). The contractor will provide clear signage for construction workers at all access points.		X			Contractor	VTA Environmental Programs
	AQ-CNST-E	**Use Equipment Meeting ARB Certification Standards** All contractors will use equipment that meets ARB's most recent certification standard for off-road heavy-duty diesel engines.		X			Contractor	VTA Environmental Programs
	AQ-CNST-F	**Ensure Heavy-Duty Diesel Trucks Comply with EPA Emissions Standards** VTA and contractors will ensure that construction contracts stipulate that all on-road, heavy-duty diesel trucks with a gross vehicle weight rating of 19,500 pounds or greater will comply with EPA 2007 on-road emission standards for PM10 and NO_X (0.01 and 0.20 gram per brake horsepower hour, respectively). These PM10 and NO_X standards were phased in through the 2007 and 2010 model years on a percentage-of-sales basis (50 percent of sales from 2007 to 2009 and 100 percent of sales in 2010). This mitigation measure assumes that all on-road, heavy-duty diesel trucks will be model year 2010 and		X			Contractor	VTA Environmental Programs

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		newer and compliant with EPA 2007 on-road emission standards.						
	AQ-CNST-G	**Use Low-Sulfur Fuel** The contractor will use low-sulfur fuel (diesel with 15 parts per million or less) in all construction equipment.		X			Contractor	VTA Environmental Programs
	AQ-CNST-H	**Locate Construction Areas Away from Sensitive Receptors** The contractor will locate all construction equipment and staging areas away from sensitive receptors and fresh-air intake vents to buildings and air conditioners, where feasible.		X			Contractor	VTA Environmental Programs
	AQ-CNST-I	**Use Low-Volatile Organic Compound (VOC) Coatings** All contractors will use low-VOC (i.e., ROG) coatings that are beyond BAAQMD requirements (i.e., Regulation 8, Rule 3: Architectural Coatings [VOC content is limited to 100 grams per liter for flat coating and 150 grams per liter for non-flat coating]).		X			Contractor	VTA Environmental Programs
Operation								
		No mitigation is required						

Biological Resources and Wetlands

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Construction								
All project features for BART Extension and TOJD	BIO-CNST-A	**Avoid Nesting Bird Season** To the extent feasible, the contractor will schedule all construction (particularly tree removal and pruning) activities to avoid the bird nesting season (January 1–August 31). If such activities are scheduled to take place outside the nesting season, the contractor will avoid all effects on nesting birds, including raptors, protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code. The nesting season for most birds in Santa Clara County typically extends from February 1 through August 31, although some birds (e.g., raptors and hummingbirds) may nest as early as January 1 if a period of favorable weather persists.		X			Contractor	VTA Environmental Programs
	BIO-CNST-B	**Conduct Preconstruction/Predisturbance Surveys for Nesting Birds** If it is not possible to schedule construction activities that involve tree removal or pruning between September 1 and January 1, then a qualified biologist will conduct preconstruction/predisturbance surveys for nesting birds to ensure that no nests will be disturbed during construction activities. These surveys will be conducted no more than 48 hours prior to the initiation of construction. During each survey, a qualified biologist will inspect all potential nesting	X	X			Qualified Biological Consultant	VTA Environmental Programs

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		habitats (e.g., trees, shrubs, grasslands, and buildings) in accessible areas within 300 feet of impact areas for raptor nests and within 100 feet of impact areas for nests of non-raptors. If an active nest (i.e., a nest with eggs or young, or any completed raptor nest) is found sufficiently close to work areas to be disturbed by these activities, the biologist, in consultation with the California Department of Fish and Wildlife (CDFW), will determine the extent of a disturbance-free buffer zone to be established around the nest (typically 300 feet for raptors and 50 to 100 feet for other species), to ensure that no nests of species protected by the MBTA and California Fish and Game Code will be disturbed as a result of construction activities.						
	BIO-CNST-C	**Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures** ***Trees*** If tree removal or trimming cannot be conducted between September 15 and October 30, qualified biologists will examine trees for suitable bat-roosting habitat before tree removal or trimming. The biologists will identify high-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags, palm trees with intact thatch) and search the area around these features for bats and bat signs (e.g., guano, culled insect parts, staining). Riparian woodland, orchards, and stands of mature broadleaf trees are considered potential habitat for solitary foliage-roosting bat	X	X			Qualified Biological Consultant	VTA Environmental Programs

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		species. Because signs of bat use are not easily found, and trees cannot be completely surveyed for bat roosts, VTA will implement the protective measures listed below for trees containing high-quality habitat features. • The contractor will not remove or disturb trees providing bat roosting habitat between April 1 and September 15 (the maternity period) to avoid effects on pregnant females and active maternity roosts (whether colonial or solitary). • The contractor will limit the removal of trees that provide bat roosting habitat to between September 15 and October 30, which corresponds to when bats have not yet entered torpor or would be caring for nonvolant young (i.e., young that are unable to fly). • The contractor will remove trees in pieces rather than felling an entire tree. • If a maternity roost is found, whether solitary or colonial, the contractor will ensure that roost remains undisturbed until September 15 or until a qualified biologist has determined the roost is no longer active. • If avoidance of non-maternity roost trees is not possible, and tree removal or trimming must occur between October 30 and August 31, qualified biologists will monitor tree trimming/removal of the habitat. If possible, tree						

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		trimming or removal should occur in the late afternoon or evening when it is closer to the time that bats would normally arouse. Prior to trimming or removal of trees providing suitable roosting habitat, the contractor will shake each tree gently and allow several minutes to pass before felling trees or removing limbs to allow bats time to arouse and leave the tree. Biologists should search downed vegetation for dead and injured bats. The contractor will report the presence of dead or injured bats that are species of special concern to CDFW. The biologist will prepare a biological monitoring report, which will be provided to VTA and CDFW. ***Buildings*** Prior to the building removal or demolition, qualified biologists will conduct daytime surveys to assess the building(s) for potential bat roosting habitat, and to look for bats and bat sign. Qualified biologists will have knowledge of the natural history of the species that could occur and sufficient experience determining bat occupancy in buildings and bat survey techniques. The biologists will examine both the inside and outside of the buildings for potential roosting habitat, as well as routes of entry to the buildings. The biologists will note and map on drawings of the buildings the locations of any roosting bats, signs of bat use, and entry and exit points. The biologists will also photograph roost sites as feasible. The habitat assessment						

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		surveys should be conducted as far in advance of demolition as possible to allow time for planning and coordinating with CDFW, should bats be found. Depending on the results of the habitat assessment, VTA and its representatives will take the following steps. • If the building(s) can be adequately assessed (i.e., all areas of the building can be examined) and no habitat or limited habitat for roosting bats is present and no signs of bat use are present, qualified biologists will conduct a preconstruction survey of the interior and exterior of the building(s) within 24 hours of demolition. If bats are found roosting during the preconstruction survey, biologists will contact CDFW for direction on how to proceed. • If moderate or high potential habitat is present but there are no signs of bat use, VTA will implement measures under the guidance of a qualified bat biologist to exclude bats from using the building(s) as a roost site, such as sealing off entry points. Prior to installing exclusion measures, qualified biologists will re-survey the building(s) to ensure that no bats are present. Additionally, biologists will conduct a preconstruction survey of the interior and exterior of the building(s) within 24 hours of demolition to confirm that no bats are present. If bats are found roosting during the preconstruction survey, biologists will contact CDFW for direction on						

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		how to proceed. • If moderate or high potential habitat is present and bats or bat sign are observed, or if exclusion measures are not installed as described above, or the building(s) provides suitable habitat but could not be adequately assessed, VTA will implement the following protective measures. o Biologists will conduct follow-up surveys to determine if bats are still present. If species identification is required by CDFW, biologists will use night vision goggles and active acoustic monitoring using full spectrum bat detectors during the surveys. VTA will determine a survey plan (number, timing, and type of surveys) in coordination with CDFW. o Based on the timing of demolition, the extent of bat sign or occupied habitat, and the species present (if determined), the qualified biologists will work with VTA and CDFW to develop a plan to discourage or exclude bat use prior to demolition. The plan may include installing exclusion measures or using light or other means to deter bats from using the building to roost. o Biologists will conduct a preconstruction survey of the interior and exterior of the building within 24 hours of demolition. Depending on the species of bats present, size of the						

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		bat roost, and timing of the demolition, additional protective measures may be necessary. VTA will determine appropriate measures in coordination with CDFW. These measures may include those listed below. • To avoid effects on maternity colonies or hibernating bats, the contractor will not demolish a building while bats are present, generally between April 1 and September 15 (maternity season) and from October 30 to March 1 (hibernation). • The contractor will remove only roosting habitat following the maternity season and prior to hibernation, generally between September 15 and October 30, unless the contractor first installs exclusionary devices (as described below). The contractor may use other measures, such as using lights to deter bat roosting, if developed in coordination with and approved by CDFW. • The contractor will install exclusion devices before the maternity season and prior to hibernation, generally from March 1–30 or September 15–October 30 to preclude bats from occupying a roost site during demolition. Exclusionary devices will only be installed by or under the supervision of an experienced bat biologist. CDFW may require compensatory mitigation for the loss of roosting habitat depending on the species						

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		present and size of the bat roost. Compensation, if required, will be determined in consultation with CDFW, and may include construction and monitoring of suitable replacement habitat on or near the BART Extension site.						
All project features for BART Extension and TOJD	BIO-CNST-D	**Protect Riparian Habitat** VTA will design all BART Extension facilities to avoid temporary and permanent adverse effects on riparian habitat. VTA will signify as environmentally sensitive areas on plans all riparian forest areas identified along the Guadalupe River and Los Gatos Creek and will ensure such habitat is marked with protective orange fencing or flagging during construction to avoid disturbance or accidental intrusion by workers or equipment. Contractors will not use night lighting for construction activities and staging in the riparian area.		X			Contractor	VTA Environmental Programs
	BIO-CNST-E	**Conduct Preconstruction Tricolored Blackbird Nesting Surveys and Determine Appropriate Action** There are and have been no known tricolored blackbird nesting colonies in the BART Extension area within the last 5 years. However, to avoid direct effects of construction activities on potential nesting tricolored blackbird colonies, VTA will implement the following procedures. This mitigation measure incorporates survey, avoidance, and minimization guidelines taken directly from Condition 17 of the Santa Clara Valley Habitat Plan (SCVHP) (Santa Clara County 2012).	X				Qualified Biological Consultant	VTA Environmental Programs

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		A qualified biologist will conduct a field investigation to identify and map potential nesting substrate. Nesting substrate generally includes flooded, thorny, or spiny vegetation (e.g., cattails, bulrushes, willows, blackberries, thistles, or nettles). If potential nesting substrate is found, VTA may revise the construction staging areas to avoid all areas within a 250-foot buffer around the potential nesting habitat, and biologists will conduct appropriate surveys. If VTA chooses not to avoid the potential nesting habitat and the 250-foot buffer, biologists will conduct additional nesting surveys. Prior to any ground disturbance related to BART Extension activities, a qualified biologist will perform the following: 1. Make his/her best effort to determine if there has been nesting at the site in the past 5 years. This includes checking the California Natural Diversity Database (CNDDB), contacting local experts, and looking for evidence of historical nesting (i.e., old nests). 2. If no nesting in the past 5 years is evident, conduct a preconstruction survey in areas identified in the habitat survey as supporting potential tricolored blackbird nesting habitat. Biologists will conduct surveys at the appropriate times of year when nesting use is expected to occur. The surveys will document the presence or absence of nesting colonfies of tricolored						

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		blackbird. Surveys will conclude no more than two calendar days prior to construction. To avoid last minute changes in schedule or contracting that may occur if an active nest is found, VTA may also conduct a preliminary survey up to 14 days before construction commences. If a tricolored blackbird nesting colony is present (through step 1 or 2 above), VTA will apply a 250-foot buffer from the outer edge of all hydric vegetation associated with the site, and the contractor will avoid the site plus buffer (see below for additional avoidance and minimization details). VTA will notify CDFW, the U.S. Fish and Wildlife Service (USFWS), and the Santa Clara Valley Habitat Agency (SCVHA) immediately of nest locations. ***Avoidance and Minimization*** Construction activities must avoid tricolored blackbird nesting habitat that is currently occupied or that has been used in the past 5 years. If tricolored blackbird colonies are identified during the breeding season, the contractor will prohibit all construction activities within a 250-foot no-activity buffer zone around the outer edge of all hydric vegetation associated with the colony. A qualified biologist may reduce this buffer in areas with dense forest, buildings, or other habitat features between the construction activities and the active nest colony, or where there is sufficient topographic relief to protect the colony from excessive noise or						

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		visual disturbance. Depending on site characteristics, the sensitivity of the colony, and surrounding land uses, a qualified biologist may increase the buffer zone. A qualified biologist will observe land uses potentially affecting a colony to verify that construction activity is not disrupting the colony. If it is, the biologist will increase the buffer. VTA staff will coordinate with CDFW, USFWS, and SCVHA and evaluate exceptions to the minimum no-activity buffer distance on a case-by-case basis. ***Construction Monitoring*** If construction takes place during the breeding season when an active colony is present, a qualified biologist will monitor construction to ensure that the 250-foot buffer zone is enforced. If monitoring indicates that construction outside of the buffer is affecting a breeding colony, the biologist will increase the buffer if space allows (e.g., move staging areas farther away). If space does not allow, the contractor will cease construction until the colony abandons the site or until the end of the breeding season, whichever occurs first. The biological monitor will also conduct training of construction personnel on the avoidance procedures, buffer zones, and protocols in the event that tricolored blackbirds fly into an active construction zone (i.e., outside the buffer zone).						

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Newhall Maintenance Facility	BIO-CNST-F	**Conduct Preconstruction Burrowing Owl Surveys and Determine Appropriate Action** To avoid or minimize direct effects of construction activities on burrowing owls, VTA will implement the procedures described below. This mitigation measure incorporates survey, avoidance, and minimization guidelines taken directly from Condition 15 of the SCVHP (SCVHA 2012). Prior to any ground disturbance related to BART Extension Alternative activities, a qualified biologist will conduct preconstruction surveys in all suitable habitat areas as identified by SCVHA. The purpose of the preconstruction surveys is to document the presence or absence of burrowing owls on the construction site, particularly in areas within 250 feet of construction activity. To maximize the likelihood of detecting owls, the preconstruction survey will last a minimum of 3 hours. The survey will begin 1 hour before sunrise and continue until 2 hours after sunrise (3 hours total) or begin 2 hours before sunset and continue until 1 hour after sunset. Additional time may be required at large construction sites. The biologist will conduct a minimum of two surveys (if owls are detected on the first survey, a second survey is not needed). The biologist will count all owls observed and map their location. Surveys will conclude no more than 2 calendar days prior to construction. Therefore, the project	X	X			Qualified Biological Consultant	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		proponent must begin surveys no more than 4 days prior to construction (2 days of surveying plus up to 2 days between surveys and construction). To avoid last minute changes in schedule or contracting that may occur if burrowing owls are found, VTA may also conduct a preliminary survey up to 14 days before construction. This preliminary survey may count as the first of the two required surveys as long as the second survey concludes no more than 2 calendar days in advance of construction. In order to allow covered activities to go forward in burrowing owl habitat, VTA will employ avoidance measures described below to ensure that direct take does not occur. ***Avoidance Measures*** *Breeding Season* If evidence of burrowing owls is found during the breeding season (February 1–August 31), VTA will avoid all nest sites that could be disturbed by construction during the remainder of the breeding season or while the nest is occupied by adults or young (occupation includes individuals or family groups foraging on or near the site following fledging). Avoidance will include establishment of a 250-foot non-disturbance buffer zone around nests. Construction may occur outside of the 250-foot non-disturbance buffer zone. Construction may take place inside of the 250-foot non-disturbance buffer during the breeding season if the following occurs:						

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		• The nest is not disturbed, and • VTA develops an avoidance, minimization, and monitoring plan that will be reviewed by CDFW, USFWS, and SCVHA prior to construction based on the following criteria: o CDFW, USFWS, and the SCVHA approves the avoidance and minimization plan provided by VTA. o A qualified biologist monitors the owls for at least 3 days prior to construction to determine baseline nesting and foraging behavior (i.e., behavior without construction). o The same qualified biologist monitors the owls during construction and finds no change in owl nesting and foraging behavior in response to construction activities. o If there is any change in owl nesting and foraging behavior as a result of construction activities, these activities will cease within the 250-foot buffer. Construction cannot resume within the 250-foot buffer until the adults and juveniles from the occupied burrows have moved out of the construction area. o If monitoring indicates that the nest is abandoned prior to the end of the nesting season and the burrow is no longer in use by owls, the non-disturbance buffer zone may be						

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		removed. The biologist will excavate the burrow to prevent reoccupation after receiving approval from CDFW, USFWS, and SCVHA. CDFW, USFWS, and SCVHA will have 21 calendar days to respond to a request from VTA to review the proposed construction monitoring plan. If these parties do not respond within 21 calendar days, it will be presumed that they concur with the proposal and work can commence. *Non-Breeding Season* During the non-breeding season (September 1–January 31), VTA will establish a 250-foot non-disturbance buffer around occupied burrows as determined by a qualified biologist. Construction activities outside of this 250-foot buffer are allowed. Construction activities within the non-disturbance buffer are allowed if the following criteria are met in order to prevent owls from abandoning important overwintering sites. • A qualified biologist monitors the owls for at least 3 days prior to construction to determine baseline foraging behavior (i.e., behavior without construction). • The same qualified biologist monitors the owls during construction and finds no change in owl foraging behavior in response to construction activities. • If there is any change in owl nesting and foraging						

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		behavior as a result of construction activities, these activities will cease within the 250-foot buffer. • If the owls are gone for at least 1 week, VTA may request approval from CDFW, USFWS, and SCVHA for a qualified biologist to excavate usable burrows to prevent owls from re-occupying the site. After all usable burrows are excavated, the buffer zone will be removed and construction may continue. Monitoring must continue as described above for the non-breeding season as long as the burrow remains active. ***Construction Monitoring*** Based on the avoidance, minimization, and monitoring plan developed (as required above), during construction, VTA will establish and maintain the non-disturbance buffer zones if applicable. A qualified biologist will monitor the site consistent with the requirements described above to ensure that buffers are enforced and owls are not disturbed. The biological monitor will also conduct training of construction personnel on the avoidance procedures, buffer zones, and protocols in the event that a burrowing owl flies into an active construction zone.						

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Operation								
		No mitigation is required						

Cultural Resources

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Construction								
Area of potential effect of all project features for BART Extension and TOJD	CUL-CNST-A	**Implement Programmatic Agreement and Archaeological Resources Treatment Plan** A Programmatic Agreement (PA) and a supporting Archaeological Resources Treatment Plan (ARTP) have been developed and will be executed in consultation with interested Native Americans, the California State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, the California Department of Transportation (Caltrans) District 4, the Cities of San Jose and Santa Clara, the Peninsula Corridor Joint Powers Board, and the South Bay Historical Railroad Society. The PA and ARTP will be implemented prior to and during construction of the BART Extension.	X	X			VTA Environmental Programs	FTA and SHPO

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		The ARTP specifies the National Register of Historic Places criteria applicable for evaluation, procedures to implement the Section 106 process in the field, and standards of evaluation that will be appropriate given the locations and kinds of cultural properties predicted. The ARTP presents methods that combine pre-testing where possible (i.e., on open lots or undeveloped lands); testing after demolition of extant structures but before new ground-disturbing construction begins; construction-phase monitoring where appropriate; and standards for data recovery. Areas within the Area of Potential Effects (APE) where potential resources have been identified, or that are designated as highly sensitive for buried resources, will be field investigated, concentrating on, but not confined to, the area of direct effect. The ARTP meets The Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (U.S. Department of the Interior, National Park Service, 1983, as amended and annotated).						

Geology, Soils, and Seismicity

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Construction								
All project features for BART Extension and TOJD	GEO-CNST-A	**Incorporate Design Specifications to Minimize Effects from Liquefaction Hazards** If BART Extension stations, system facilities, or portions of the alignment are determined to be in areas exceeding pertinent codes and standards including the California Building Code and BART Facilities Standards Design Criteria for liquefaction, VTA will implement the following methods during construction to minimize the potential impacts. VTA will determine the exact methods to reduce impacts from liquefaction during final engineering. • VTA will use pile foundations as a means of ground densification as a cost-effective mitigation measure for the seismic liquefaction hazard. • VTA will support parking garages at the stations on piles. • For shallow foundations for other peripheral facilities around the stations and pavement and parking lot, VTA will implement the following if necessary. o Use additional reinforcement, construction joints, and grade beams. o Integrate subgrade improvements (using geotextile fabric and structural fill), and other methods to accommodate potential ground settlements.	X	X	X		Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		• To mitigate potential liquefaction-related uplift of the BART Extension's underground tunnels and stations situated below the water table in liquefiable soils, VTA will ensure that the construction contractor either applies anchors or designs the structures' concrete foundations and walls thick enough to make the total weight of the structures large enough to completely counteract the liquefaction-related uplift force. • Other liquefaction hazard mitigation measures used in previous BART projects that may be considered for the BART Extension are as follows. o In-situ treatment/densification with vibro-replacement stone columns. o Load transfer to underlying bearing layers, which are non-liquefiable with soil/cement columns. o Over-excavation and replacement of liquefaction prone soils with compacted engineered fill.						
	GEO-CNST-B	**Implement Preconstruction and Post-Construction Building Condition Surveys for Settlement** VTA will conduct preconstruction building condition surveys of the interiors and exteriors of select structures, both historic and non-historic buildings, within the settlement trough along the tunnel alignment and within the limit of influence around the cut-and-cover excavations to assess the baseline	X	X	X		Contractor	VTA Environmental Programs, FTA, SHPO, ACHP

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		condition of each property that could be affected by project-induced settlement. These surveys will include written and photographic (video and still) records, including written descriptions and photos of any cracks. VTA will also conduct post-construction building condition surveys of the same structures. VTA will compare the results of these surveys with the preconstruction condition surveys so that any construction-related effects of tunneling and cut-and-cover construction on structures can be assessed. For historic structures, the Condition Assessment Report, in accordance with Section 106, will be prepared along with the preconstruction building condition surveys. Results will be used by a structural engineer in coordination with the historic Qualified Professional (QP) to identify structural settlement thresholds for each historic structure prior to construction. If anticipated maximum settlement due to tunneling or cut-and-cover activities would cause more than cosmetic damage, then ground treatment technologies outlined in Section 5.3.1.4, *Ground Treatment*, will be employed to further reduce settlement to within building-specific structural settlement thresholds. In the event of inadvertent, construction-related damage to historic buildings, repairs will be conducted in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* and consistent with 36 CFR 800.13(b). VTA and the historic QP will implement these repairs in consultation with FTA and SHPO.						

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		For the cut-and-cover activities, surveys will be performed prior to any construction in the cut-and-cover work area to establish the baseline building condition. For construction of the tunnel via Tunnel Boring Machine (TBM), surveys will be performed as close to the planned dates of tunneling as possible so that the results are as current as possible. Therefore, surveys will be performed prior to passage of the TBMs, with some surveys conducted once tunneling has commenced. For historic structures, surveys prior to either cut-and-cover or tunneling will be performed enough in advance of the construction to allow adequate time for any necessary ground treatment that may be required to reduce settlement to be performed.						
	GEO-CNST-C	**Monitor Ground Surface during Tunneling Activities** The contractor will conduct ground surface monitoring prior to and after tunneling by licensed land surveyors. The contractor will mount survey monitoring points on potentially affected structures and representative historic buildings, including the most susceptible structures, select utilities susceptible to settlement, and in representative locations immediately adjacent to streams within the settlement trough along the tunnel alignment to monitor ground movements and effects of tunnel boring. The contractor must obtain approval from VTA and the historic QP to install any monitoring devices or crack gauges on or in historic buildings that require alteration of the building. The contractor	X	X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		will provide settlement monitoring data to VTA immediately upon completion of the field survey and use the data to assist in minimizing adverse effects along the tunnel alignment.						
	GEO-CNST-D	**Monitor Settlement Effects around Cut-and-Cover Excavations** For the cut and cover activities, the contractor will perform building and ground surface monitoring prior to, during, and after construction to survey the effects of cut-and-cover activities on structures, historic buildings, and utilities. The contractor will mount survey monitoring points on all potentially affected structures and historic buildings, including the most susceptible structures, select utilities susceptible to settlement, and in representative locations within the limit of influence around the cut-and-cover excavations to monitor any effects of settlement. The contractor must obtain approval from VTA and the historic QP to install any monitoring devices or crack gauges on or in historic buildings that require alteration of the building. Survey monitoring points will be field surveyed by licensed land surveyors at a frequency determined by the preconstruction building survey or Condition Assessment Report (for historic buildings). The contractor will provide settlement field survey monitoring data to VTA immediately upon completion of the field survey. The data will be used to direct real-time modifications to shoring and ground treatment practices and procedures as appropriate to minimize adverse effects within the limit of influence around the cut-and-cover	X	X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		excavations.						
	GEO-CNST-E	**Implement Preconstruction Condition Surveys for Utilities** The contractor will conduct preconstruction condition surveys of utilities deemed to be potentially at risk due to surface settlement or ground movement at BART Extension and TOJD sites. The contractor will monitor major utilities deemed to be at risk during construction and will coordinate with utility providers prior to installation of utility monitoring points.	X	X			Contractor	VTA Environmental Programs
	GEO-CNST-F	**Minimize Excavation Bottom Failure Impacts** If excavation bottom fails due to bottom heave, piping, or blow-out, the contractor will implement the following measures. • Remove water found in the pervious sand layer via dewatering. • Install deep sheeting. The sheet pile may also function as a cut-off to prevent sand boiling at the bottom of excavation due to excessive hydrostatic pressure within the loose soils. • Based on the boring data, encountering of the loose soils at the foundation subgrade may be anticipated at isolated locations for excavation of the stations. Deeper shoring may be required to penetrate through the aquifer to prevent the occurrence of the sand boiling condition. Deep soil mixing may have to be considered under this condition if drivability of the shoring sheet pile through the dense to very dense sand at depths is	X	X	X		Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		a geotechnical concern due to the vibration and/or noise impact on the surrounding environment.						
	GEO-CNST-G	**Minimize Disturbance of Sensitive Deposits at the Excavation Subgrade** In areas where clay and saturated sand deposits are sufficiently disturbed during construction activities at the bottom of an excavation and soft and loose saturated soil deposits are encountered, VTA will ensure that the contractor constructs a working platform as described below. • Over-excavate 18 inches below the native subgrade. • Place a stabilizing geotextile fabric or a geogrid at the bottom of the over-excavation. • Backfill the over-excavation with Class 2 Aggregate Base, Structural Backfill, or other bridging material. • Overlap the ends of the geotextile fabric on top of the bridging material for a minimum distance of 2 feet.		X			Contractor	VTA Environmental Programs
	GEO-CNST-H	**Incorporate Design Specifications to Minimize Effects from Expansive Soils** VTA will ensure that the following specifications are incorporated into the BART Extension's final design when encountering expansive soils. • Deepen foundations to below the zone of moisture fluctuation. • Use mat foundations that are designed to resist the	X	X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		deflections associated with expansive soil. • Design perimeter footings to a minimum depth of 24 inches below the lowest adjacent grade to reduce the impact from the uplift pressure in expansive soils. • For any expansive soil in the upper 18 inches of building pads, lime treat or replace with low to non-expansive soil with a Plasticity Index of 12 or less. • Use moisture barriers to minimize the variation of change in the moisture content within the expansive soil.						
	GEO-CNST-I	**Stop Construction if Paleontological Resources are Discovered and Determine Appropriate Action** If suspected paleontological resources are encountered during grading and site preparation activities, the contractor will halt all work in the immediate vicinity of the find until a qualified paleontologist can evaluate the find and make recommendations. Paleontological resource materials may include resources such as fossils, plant impressions, or animal tracks preserved in rock. If the qualified paleontologist determines that the discovery represents a potentially significant paleontological resource, additional investigations and fossil recovery may be required to mitigate adverse impacts from implementation of the BART Extension. Construction will not resume until the resource-appropriate measures are recommended or the materials are determined to be not significant.	X	X			Contractor	VTA Environmental Programs, FTA, SHPO, ACHP

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Operation								

Greenhouse Gas Emissions

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Construction								
All project features for BART Extension and TOJD	AQ-CNST-B	**Use U.S. Environmental Protection Agency (EPA) Tier 4 or Cleaner Engines** VTA will ensure that all construction contracts stipulate that all off-road, diesel-powered equipment used during construction will be equipped with EPA Tier 4 or cleaner engines, except for specialized construction equipment for which an EPA Tier 4 engine is not available. This mitigation measure assumes emission reductions compared with emissions from an average fleet-wide Tier 2 engine.		X			Contractor	VTA Environmental Programs
	AQ-CNST-C	**Maintain Construction Equipment** The contractor will maintain and properly tune all construction equipment in accordance with the manufacturer's specifications. A certified mechanic		X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		will check all equipment to determine proper running condition prior to operation.						
	AQ-CNST-D	**Minimize Idling Times** The contractor will ensure that all idling times are minimized, either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by California Airborne Toxic Control Measures, Title 13, Section 2485 of the California Code of Regulations). The contractor will provide clear signage for construction workers at all access points.		X			Contractor	VTA Environmental Programs
	AQ-CNST-E	**Use Equipment Meeting ARB Certification Standards** All contractors will use equipment that meets ARB's most recent certification standard for off-road heavy-duty diesel engines.		X			Contractor	VTA Environmental Programs
	AQ-CNST-F	**Ensure Heavy-Duty Diesel Trucks Comply with EPA Emissions Standards** VTA and contractors will ensure that construction contracts stipulate that all on-road, heavy-duty diesel trucks with a gross vehicle weight rating of 19,500 pounds or greater will comply with EPA 2007 on-road emission standards for PM10 and NO_X (0.01 and 0.20 gram per brake horsepower hour, respectively). These PM10 and NO_X standards were phased in through the 2007 and 2010 model years on a percentage-of-sales basis (50 percent of sales from 2007 to 2009 and 100 percent of sales in 2010). This mitigation measure assumes that all on-road, heavy-duty diesel trucks will be model year 2010 and newer and compliant with EPA 2007 on-road		X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		emission standards.						
	AQ-CNST-G	**Use Low-Sulfur Fuel** The contractor will use low-sulfur fuel (diesel with 15 parts per million or less) in all construction equipment.		X			Contractor	VTA Environmental Programs
Operation								
For TOJDs	GHG-A	**Implement Energy Efficiency Measures** TOJD energy efficiency shall be 15 percent better than the 2013 Title 24, Part 11 requirements or shall meet the Title 24, Part 11 requirements that are applicable at the time of issuance of the building permits for individual phases, whichever is more stringent.		X		X	Contractor	VTA Environmental Programs
	GHG-B	**Participate in Food Waste Programs** Restaurants shall be required to participate 100 percent in any extant City food waste programs. This mitigation measure shall be included as a mandatory performance standard for all agreements with developers of the TOJDs.				X	Contractor	VTA Environmental Programs
	GHG-C	**Utilize Electrical Landscaping Equipment** TOJDs shall include installation of electrical outlets near all maintained landscaping areas to allow for the use of electrical landscaping equipment. This mitigation measure shall be included as a mandatory performance standard for all agreements with developers of the TOJDs.				X	Contractor	VTA Environmental Programs
	GHG-D	**Provide Preferential Parking for Electric Vehicles** TOJDs shall provide preferential parking in all		X		X	Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		parking lots for electric vehicles and shall also provide charging equipment, as follows. This mitigation measure shall be included as a mandatory performance standard for all agreements with developers of the TOJDs. a) Residential Use: A total of 10 percent of the required parking spaces shall be provided with a listed cabinet, box, or enclosure and connected to a conduit that links the parking spaces to the electrical service in a manner approved by the building and safety official. Of the listed cabinets, boxes, or enclosures provided, 50 percent shall have the necessary electric vehicle supply equipment installed to provide active charging stations that are ready for use by residents. The remainder shall be installed at such time as they are needed for use by residents. Electrical vehicle batteries and charging technology may change substantially over the next 15 years. As such, the local jurisdiction shall have the discretion to modify the specific requirements for this measure over time, provided that 10 percent of the spaces have electrical service and 5 percent have active charging, depending on what the technology at the time requires. b) Commercial Use: New commercial uses shall provide the electrical service capacity necessary as well as all conduits and related equipment necessary to serve 2 percent of the parking spaces with charging stations. Of these parking						

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		spaces, 50 percent shall initially be provided with the equipment necessary to function as online charging stations upon completion of development. The remainder shall be installed at such time as they are needed for use by customers, employees, or other users. Electrical vehicle batteries and charging technology may change substantially over the next 15 years. As such, the local jurisdiction shall have the discretion to modify the specific requirements for this measure over time, provided that 2 percent of the spaces have electrical service and 1 percent have active charging, depending on what the technology at the time requires.						

Hazardous Materials

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Construction								
All project features for BART Extension and TOJD	HAZ-CNST-A	**Prepare Remedial Action Plans** Prior to construction, VTA will prepare new and/or amended remedial action plans (RAPs) for the BART Extension, which will be approved by the	X	X	X		Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		Regional Water Quality Control Board (RWQCB). The RAPs will satisfy the key objectives of the Containment Management Plan (CMP) (e.g., characterization of soil and ballast quality relative to the maximum acceptable contaminant levels for reuse) and incorporate measures for managing soil, ballast, and groundwater from the CMP (e.g., sampling and analysis, health and safety, stockpiling, offsite disposal, and treatment) to address all known and potential sources of environmental contamination identified in the October 2015 *VTA's BART Silicon Valley Phase II Extension Project Initial Site Assessment* (ISA). VTA will provide measures to satisfy regulatory notification requirements and approval measures (e.g., additional sampling and analysis), if necessary, for soil excavation and/or dewatering associated with land-use covenants near the Diridon and Santa Clara Stations and over the tunnel alignments between these stations. The RAPs will also include an assessment of potential vapor intrusion concerns for indoor residents and workers from groundwater contaminant plumes, such as chlorinated solvents. In coordination with the RWQCB, selected remedial measures to protect human health may include, but are not limited to, source removal of contaminated materials, in-situ treatment, and implementation of engineering controls (e.g., vapor barriers) and/or institutional controls prior to building occupancy.						

Noise and Vibration

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Alum Rock/28th Street Station, 13th Street Ventilation Structure, Downtown San Jose Station; Diridon Station; Stockton Avenue Ventilation Structure, West Portal Tunnel Structure, and Newhall Maintenance Facility, and Santa Clara Station TOJDs	NV-CNST-A	**Incorporate FTA Criteria Compliant Construction Noise and Vibration Specifications** VTA will incorporate a comprehensive construction noise and vibration specification into all construction bid documents requiring compliance with FTA criteria. VTA will emphasize the existence and importance of noise and vibration control specifications at pre-bid and preconstruction conferences.	X	X			Contractor	VTA Environmental Programs
	NV-CNST-B	**Locate Equipment as Far as Feasible from Sensitive Sites** The contractor will locate stationary equipment, such as generators and compressors as far as feasible from noise and vibration sensitive sites, and will acoustically treat such equipment. The contractor will also locate grout batch plants, grout silos, mixers, pumps, diesel pumping equipment, and similar noise and vibration generating equipment as far as feasible from noise sensitive sites, and acoustically treat the same if necessary.		X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
	NV-CNST-C	**Construct Temporary Noise Barriers** The contractor will install temporary noise barriers or noise control blankets in areas between noisy activities and noise-sensitive receptors, where practical and effective. Temporary noise barriers can reduce construction noise by 5 to 15 dB, depending on the height of the barrier and the placement of the barrier. To be most effective, the contractor will place the barrier 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 performance. If temporary noise barriers and site layout do not result in compliance with the noise limit, the contractor may consider retrofitting existing windows and doors with new acoustically rated units for the residential structures.	X	X			Contractor	VTA Environmental Programs
	NV-CNST-D	**Operate Equipment to Minimize Annoying Noise and Vibration** Contractors will implement the following measures: • Use electric instead of diesel-powered equipment, hydraulic tools instead of pneumatic impact tools, and electric instead of air- or gasoline-driven saws, where feasible. • Use an augering drill-rig for setting piles in lieu of impact pile drivers, where feasible. • Operate equipment so as to minimize banging, clattering, buzzing, and other annoying types of noises, especially near residential areas during		X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		nighttime hours. • Turn off idling equipment, whenever possible. • Line haul truck beds with rubber or sand to reduce noise, if needed and requested by VTA. Line or cover hoppers, conveyor transfer points, storage bins, and chutes with sound-deadening material. • During nighttime and weekends, use strobe warning lights and/or back-up observers during any back-up operations, where permitted by the local jurisdiction.						
	NV-CNST-E	**Route Construction Trucks along Truck Routes Least Disturbing to Residents** The contractor will route construction-related truck traffic along truck routes and roadways that would cause the least disturbance to residents. The contractor will lay out loading and unloading zones to minimize truck idling near sensitive receptors and to minimize truck reversing so back-up alarms are minimized near residences.		X			Contractor	VTA Environmental Programs
	NV-CNST-F	**Secure Steel and Concrete Plates over Excavated Holes and Trenches** The contractor will secure steel and/or concrete plates over excavated holes and trenches to reduce rattling when vehicles pass over. If complaints are received, the contractor will use thicker plates, stiffer beams beneath the plates, and/or rubber gaskets between the beams and plates to further reduce rattling noise and vibration.		X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
	NV-CNST-G	**Use Best Available Practices to Reduce Excess Noise and Vibration** The contractor will use the best available practices to reduce the potential for exceedances of noise and vibration criteria due to construction activities. This may require the use of equipment with special exhaust silencers, construction of temporary enclosures or noise barriers around activities, and tracks for the tracked vehicles to be in good condition.		X			Contractor	VTA Environmental Programs
	NV-CNST-H	**Adhere to Local Jurisdiction Construction Time Periods, to the Extent Feasible** The contractor will adhere to local jurisdiction construction time periods, to the extent feasible, recognizing that nighttime and weekend construction may be necessary and/or preferred by VTA and local jurisdictions to reduce other related environmental effects such as traffic. VTA will coordinate with the cities of San Jose and Santa Clara on construction operations during nighttime and weekends, and where feasible adhere to local ordinances. San Jose Ordinance 26248, 26594 restricts construction to between 7 a.m. and 7 p.m. Santa Clara Ordinance 1549 § 1, 7-15-86; Ord. 1556 § 1, 9-16-86. Formerly § 18-32.3 restricts construction to between 7 a.m. and 6 p.m. on weekdays, and between 9 a.m. and 6 p.m. on Saturday.		X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
	NV-CNST-I	**Perform Preconstruction Ambient Noise Measurements at All CSAs** The contractor will perform preconstruction ambient noise measurements at all construction staging areas, which include the tunnel portals, stations, and mid-tunnel ventilation sites. These measurements will document the noise environment just prior to start of construction at representative locations along the alignment. These measurements will be performed continuously over a minimum of 10 days (240 hours).	X				Contractor	VTA Environmental Programs
	NV-CNST-J	**Implement a Construction Noise Control and Monitoring Plan** The contractor will submit a Noise Control and Monitoring Plan to VTA for approval. The plan will be prepared by a qualified acoustical engineer whose qualifications and proposed noise control and monitoring activities will be subject to approval of VTA prior to construction activities. The contractor will update the Noise Control and Monitoring Plan every 3 months and will include all the pertinent information about construction equipment and site layout, the projected noise levels, and the noise mitigation measures that may be required to comply with the noise limits for each sensitive receptor. The Noise Control and Monitoring Plan will also outline the monitoring equipment and procedures the contractor will use to perform noise measurements and to identify noise-sensitive receptors in the immediate vicinity of construction operations,	X	X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		including details regarding the noise measurement locations, frequency, and duration of measurements. The contractor will document the results of noise monitoring and submit the documentation to VTA weekly. In the event that levels exceed allowable noise limits, VTA will ensure that contractually required corrective measures consistent with the Noise Control and Monitoring Plan are implemented.						
	NV-CNST-K	**Require Minimum Qualifications for the Acoustical Engineer** The minimum qualifications for the Acoustical Engineer will be a Bachelor of Science or Engineering degree, from a qualified program in engineering or physics offered by an accredited university or college, and 5 years in noise control engineering and construction noise analysis.	X	X			Contractor	VTA Environmental Programs
	NV-CNST-L	**Prohibit Operation of Noise-Generating Equipment Prior to Acceptance of Noise Control and Monitoring Plan** The contractor will not operate noise-generating equipment at the construction site prior to acceptance of the Noise Control and Monitoring Plan.		X			Contractor	VTA Environmental Programs
	NV-CNST-M	**Install Long-Term Noise Monitors at CSAs during all Construction Phases** The contractor will install stationary noise monitors at all construction staging areas, which include the tunnel portals, stations, and mid-tunnel ventilation sites, during all the construction phases. Noise	X	X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		sampling will be performed continuously at representative monitoring locations nearest the most sensitive receptor at each location. A minimum of two stationary monitors will be required at the Downtown San Jose Station and Diridon Station locations. The monitoring locations may be moved as the construction work progresses. If required, additional noise monitoring site(s) may be added by the VTA to address any specific situation or concern. At the Alum Rock/28th Street Station and the West Portal staging area, stationary noise monitors will also be initially installed and may be removed if the noise levels are in compliance with the noise limits when the full-production construction activities are closest to the sensitive receptors. All data gathered by the contractor will be continuously available to VTA and submitted weekly to VTA for approval. In addition to these stationary noise monitors, the contractor will conduct 30-minute noise sampling with hand-held monitors weekly at the station sites and at other construction sites, including the ventilation shafts and gap breaker stations, to ensure compliance with the noise criteria. If required, additional noise monitoring site(s) may be added by VTA to address any specific situation or concern. The contractor will submit noise data to VTA for approval on a weekly basis, and will include details on location and type of construction activity and details, photographs, and sketches of noise monitoring locations. A qualified acoustical						

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		engineer will determine whether work was within thresholds or not, and indicate any steps taken during monitoring to lower noise levels to within limits.						
	NV-CNST-N	**Ensure Equipment is Pre-certified to Meet Noise Limits** For major equipment to be used at the surface of the construction site for a total duration greater than 5 days, the contractor will ensure that the equipment is pre-certified by the acoustical engineer during field measurements at a test site or guaranteed by the equipment vendor to meet the noise limits developed for construction equipment as shown in Table 5-8. VTA will re-examine and develop the final limits to be applied during the engineering phase, and the contractor will verify these limits during initial and active performance of the work when the equipment arrives on site. The contractor will retest construction equipment at 6-month intervals while in use onsite. Any equipment used during construction may be subject to confirmatory noise level testing while performing the work at the request of VTA.	X	X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
	NV-CNST-O	**Implement a Complaint Resolution Procedure** The contractor will implement a complaint resolution procedure to rapidly address any noise and vibration problems that may develop during construction. After a complaint is received, the contractor will assign the complaint a case number and will contact the person making the complaint to receive further clarification on the concern. The contractor will then discuss the issue with the construction team to determine the appropriate action to resolve the issue. The contractor will then again contact the person making the complaint to describe how the issue has been resolved.	X	X			Contractor	VTA Environmental Programs
Tunnel construction	NV-CNST-P	**Implement a Construction Vibration Control and Monitoring Plan** The contractor will be required to submit a Construction Vibration Control and Monitoring Plan to VTA for approval. The plan will be prepared by a qualified Vibration specialist whose qualifications and proposed vibration control and monitoring activities will be subject to approval of VTA prior to construction activities. The Construction Vibration Control and Monitoring Plan will be updated every 3 months and include all the pertinent information about construction equipment and site layout, the projected vibration levels, and the vibration control measures that may be required to comply with the vibration limits as outlined in this measure for each building type. The Construction Vibration Control and Monitoring	X	X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		Plan will also outline the monitoring equipment and procedures the contractor will use to perform vibration measurements for vibration-sensitive receptors in the vicinity of construction operations, including details regarding the vibration measurement locations, frequency, and duration of measurements at each location. The plan will outline the protocol for monitoring existing cracks in buildings over time, to determine any construction-related impacts. At a minimum, crack gauges will be installed on existing cracks prior to construction, and monitoring of the gauges will be performed continuously over the course of construction to assess whether new construction-related damage has occurred. The contractor must obtain approval from VTA and the QP to install any crack gauges on or in historic buildings that require alteration of the building. The results of vibration monitoring will be documented and submitted to VTA weekly. In the event that levels exceed allowable vibration limits, the work will be halted immediately to ensure that no structural damage occurs, and additional required corrective measures consistent with the Construction Vibration Control and Monitoring Plan will be implemented. The contractor will initially conduct vibration monitoring daily at the nearest affected buildings during any construction activities that could induce vibration impacts, typically within 100 feet of any						

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		building. Vibration will also be monitored where vibration is expected to approach the applicable limit based on the building type and condition, as determined by VTA in coordination with the structural engineer for non-historic buildings, and VTA and the historic QP for historic buildings. Monitoring of utilities that are sensitive to vibration will be coordinated with the utility companies and performed for the nearest affected vibration-sensitive utilities during any construction activities that could induce vibration impacts. The contractor will perform monitoring continuously at the closest receptor during all demolition and construction activities to ensure vibration levels will not exceed the FTA construction vibration damage criteria for applicable building type, as follows: 0.12 peak particle velocity (PPV) (inches/second) for buildings that are extremely susceptible to vibration damage, 0.2 PPV (inches/second) for non-engineered timber and masonry buildings, 0.3 PPV (inches/second) for engineered concrete and masonry (no plaster) buildings and 0.5 PPV (inches/second) for reinforced-concrete, steel or timber (no plaster) buildings. For historic buildings, the vibration threshold will likely be between 0.12 to 0.2 PPV (inches/second) depending on the buildings' condition. The results of the preconstruction surveys and building Conditions Assessment Report as outlined in Mitigation Measure **NV-CNST-R** will be utilized to confirm the structure types and determine which vibration						

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		thresholds apply in consultation with a qualified structural engineer and the historic QP. For utilities, vibration thresholds will follow industry standards in coordination with utility companies, and typically adhere to a 0.5 PPV (inches/second) threshold. The contractor will measure vibration in buildings in the vertical direction on the ground surface or building floor and for utilities in accordance with meter instructions and industry best practices. Vibration levels will be measured continuously during daily construction operations to ensure that peak vibration-generating work is captured. Daily monitoring will be performed during a continuous work shift (typically 8 hours) that includes the closest and most vibration-inducing work. The contractor will compare vibration in buildings against both structural damage and nuisance thresholds in terms of velocity levels in dB or PPV. Vibration for utilities will be compared against structural damage thresholds in terms of PPV. If the measured vibration data are in compliance with the vibration limits after work has completed start-up and entered full-production mode (typically within 2 weeks to 30 days), vibration monitoring may be performed once a week instead of continuously each day if approved by VTA. For non-historic structures, if construction vibration exceeds the structural or nuisance threshold, the contractor must stop construction and adjust construction methods to meet appropriate vibration						

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		limits so that the threshold is not exceeded again. For historic structures, if construction vibration approaches the structural damage threshold, the historic QP will be notified immediately, in real time. If construction vibration exceeds the structural damage threshold, Contractor must notify the historic QP and VTA immediately, in real time, and stop all vibration-inducing construction work immediately to adjust methods. The contractor will adjust work methods and techniques to meet appropriate vibration limits so that the threshold is not exceeded again before work is restarted. In the event of inadvertent, construction-related damage to historic buildings, repairs will be conducted in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* and consistent with 36 CFR 800.13(b). VTA and the historic QP will implement these repairs in consultation with FTA and SHPO.						
	NV-CNST-Q	**Perform Vertical Direction Vibration Monitoring** The contractor will perform continuous vertical direction vibration (root mean square) monitoring on the ground at the nearest representative residential structure during muck extraction and supply train operations in the tunnels. These measurements will be repeated for a minimum of 1 week at approximately 1-mile intervals along the tunnel construction until it is demonstrated that the levels are below the FTA thresholds.		X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
	NV-CNST-R	**Implement Preconstruction and Post-Construction Building Condition Surveys for Vibration** Prior to construction or release of the TBM and cut-and-cover construction contract(s), the contractor will survey all structures that may be potentially impacted by construction vibration and submit the results to VTA for approval. Surveys will be conducted in all historic buildings or structures where vibration is expected to approach the applicable limit, and in non-historic buildings based on the building type and condition. VTA will determine the list of historic structures that may be affected by the project in consultation with a qualified structural engineer and the historic QP. Preconstruction building condition surveys of the interiors and exteriors of these structures will be conducted by independent surveyors to assess the baseline condition of each property that could be affected by construction vibration. The surveys will include written and photographic (video and still) records, including written descriptions and photos of any cracks. For historic structures, the Condition Assessment Report in accordance with Section 106 will be prepared along with the preconstruction building condition surveys. The surveys will be performed prior to any vibration-inducing construction to establish baseline building conditions. The results of the preconstruction surveys will be utilized to establish the structure types and determine which vibration thresholds	X	X	X		Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		apply in consultation with a qualified structural engineer and a qualified architectural historian or a historic architect, as outlined in Mitigation Measure **NV-CNST-P**. Vibration will be monitored as required in Mitigation Measure **NV-CNST-P** to avoid adverse effects on properties during construction activities. The post-construction survey results will be compared with preconstruction condition surveys so that any construction vibration effects on structures can be assessed. For historic structures, a Condition Assessment Report in accordance with Section 106, will be conducted after construction is complete. In the event of inadvertent, construction-related damage to historic buildings, repairs will be conducted in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* and consistent with 36 CFR 800.13(b). VTA and the historic QP will implement these repairs in consultation with FTA and SHPO.						
	NV-CNST-S	**Implement Measures to Reduce Vibration from Muck Extraction and Supply Trains** The contractor will ensure that muck extraction and supply train operations do not result in groundborne vibration in excess of 72 VdB at nearby residences. Measures that can be implemented include, but are not limited to, placement of ballast mats underneath tracks on which the muck extraction train rides or the use of a conveyor in place of a train.		X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Operation								
Ventilation Structures, Traction Power Substations, Emergency Backup Generators	NV-A	**Implement Noise Reduction Treatments at Ancillary Facilities** The contractor will implement noise reduction treatments at ancillary facilities such as tunnel ventilation shafts, pressure relief shafts, traction power substations, and emergency backup generators such that noise levels comply with applicable Cities of San Jose and Santa Clara noise criteria at nearby developed land uses. Treatments that will be implemented, if necessary, include but are not limited to: • Sound attenuators and acoustical absorptive treatments in ventilation shafts and facilities. • Sound attenuators for the tunnel emergency ventilation fans. • Perimeter noise walls (nominally an 8 -foot - high wall) placed around emergency generators.		X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Timeframe for Implementation				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
All project features for BART Extension and TOJDs	NV-B	**Reduce Groundborne Noise Levels** The contractor will implement an Isolated Slab Track (IST) as the mitigation strategy for groundborne noise. An IST is a form of floating slab track (FST). The IST system is constructed with a continuous elastomeric mat instead of discrete elastomeric pads that are typically used for an FST system. An IST can be designed to provide from 10 to 13 dBA of noise reduction. This strategy can also be used under a crossover. The locations for implementing this measure are shown in Tables 4.12-21 through 4.12-25. The project's final design will determine the specific mitigation strategy, which could include alternative strategies that similarly achieve the FTA groundborne noise criteria.		X			Contractor	VTA Environmental Programs

Utilities

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Construction								
		No mitigation is required						

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Operation								
All project features for BART Extension and TOJDs	UTIL-A	**Prepare a San Jose Water Supply Infrastructure Capacity Assessment and Participate in the Improvements** VTA will coordinate with San Jose Water Company (SJWC) and prepare a Cooperative Agreement to establish the BART Extension Alternative's participation in improvements to offsite water supply infrastructure. The SJWC may conduct a detailed engineering study and flow analysis to determine the extent of these impacts. The contractor will implement capacity-relief upgrades during the utility relocation phase of construction in accordance with SJWC requirements. The contractor will ensure that all construction activities follow the provisions outlined in this environmental document, including implementation of Mitigation Measure **TRA-CNST-A** to reduce potential impacts and increase participation.	X		X		VTA Program Planning	VTA Environmental Programs
	UTIL-B	**Prepare a Santa Clara Water Supply Infrastructure Capacity Assessment and Participate in the Improvements** VTA will coordinate with the City of Santa Clara Water and Sewer Utility (SCWSU) and prepare a Cooperative Agreement to establish the BART Extension Alternative's participation in improvements to offsite water supply infrastructure. The SCWSU may conduct a detailed engineering study and flow analysis to determine the extent of these impacts and participation. The contractor will implement capacity-relief upgrades during the utility relocation phase of construction in accordance with Chapter 17.15.210 of the Santa Clara City Code. The contractor will	X		X		VTA Program Planning	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		ensure that all construction activities follow the provisions outlined in this environmental document, including implementation of the construction education and outreach plan, to reduce potential impacts.						
	UTIL-C	**Prepare a San Jose Sewer Capacity Assessment and Participate in the Improvements** VTA will coordinate with the San Jose Department of Public Works (SJPW) to prepare a Cooperative Agreement to establish the BART Extension Alternative's participation in improvements to offsite sanitary sewer capacity deficiencies. SJPW may conduct a detailed engineering study and hydraulic analysis to determine the extent of these impacts. VTA will mitigate impacts on downstream sewer systems in San Jose through payment of the Sanitary Sewer Connection Fee, as required, which is used to rehabilitate and enhance sewer capacity through San Jose's Sanitary Sewer Capital Improvement Program. If payment to the Sanitary Sewer Connection Fee does not adequately mitigate potential offsite sewer capacity impacts related to the BART Extension, VTA will be responsible for direct upgrades to the sewer system. If sewer system overcapacity is a result of projected cumulative development, San Jose and VTA will develop a Cooperative Agreement to determine the BART Extension Alternative's participation in upgrades to the current system. The contractor will implement capacity-relief upgrades during the BART Extension's construction phase in accordance with applicable San Jose standards regarding sewer infrastructure	X		X		VTA Program Planning	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		improvements. Generally, the contractor will locate sewer infrastructure improvements within the existing public right-of-way, with minimal potential to impact sensitive environmental resources. The contractor will ensure that construction activities follow the provisions outlined in this environmental document, including implementation of the construction education and outreach plan, to reduce potential impacts.						
	UTIL-D	**Prepare a Santa Clara Sewer Capacity Assessment and Participate in the Improvements** VTA will coordinate with SCWSU to prepare a Cooperative Agreement to establish the BART Extension Alternative's participation in improvements to offsite sanitary sewer capacity deficiencies. SCWSU may conduct a detailed engineering study and hydraulic analysis to determine the extent of these impacts. VTA will mitigate impacts on downstream sewer systems in Santa Clara through payment of the Sanitary Sewer Connection Charge, as required, which is used to rehabilitate and enhance sewer capacity through Santa Clara's Capital Improvement Program. If payment to the Sanitary Sewer Connection Charge does not adequately mitigate potential offsite sewer capacity impacts related to the BART Extension, VTA will be responsible for direct upgrades to the sewer system. If sewer system overcapacity is a result of cumulative development, Santa Clara and VTA will develop a Cooperative Agreement to determine the BART Extension Alternative's proportional participation to the upgrades to current system capacity. The contractor will implement capacity-relief	X		X		VTA Program Planning	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		upgrades improvements during the BART Extension's construction phase in accordance with Chapter 17.15.210-280 of the Santa Clara City Code. Generally, the contractor will locate sewer infrastructure improvements within the existing public right-of-way, with minimal potential to impact sensitive environmental resources. The contractor will ensure that construction activities follow the provisions outlined in this environmental document, including implementation of the construction education and outreach plan, to reduce potential impacts.						

Visual Quality and Aesthetics

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Construction								
All project features for BART Extension and TOJDs	AES-CNST-A	**Replace Trees** The contractor will inventory trees that will be removed due to construction activities and will note each tree on construction plans before construction begins. VTA will compensate for any trees removed according to the following ratios. VTA will replace all urban trees that are to be	X	X			Contractor	VTA Environmental Programs

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
		removed or lost as a result of the BART Extension to the extent feasible. VTA will replace trees with a diameter of less than 12 inches at a 2:1 ratio, and trees with a diameter of 12 inches or more at a 3:1 ratio. If urban trees (nonnatives and ornamentals) are replaced with native trees, VTA will use a reduced mitigation ratio of 1:1 for all trees smaller than 12 inches in diameter, and 2:1 for all trees with a diameter of 12 inches or more. VTA will irrigate and maintain these trees for a period of no less than 3 years. If VTA cannot replace trees at the stated ratios along the alignment, VTA will pay in-lieu fees. For any landscaping adjacent to the creeks and on VTA right of-way (ROW), VTA will adhere to the SCVWD's Guidelines and Standards for Land Use Near Streams regarding the use of native species near the creeks.						
Operation								
For TOJDs	AES-A	**Minimize Light and Glare** For the TOJDs, the contractor will install low-profile, low-intensity outdoor lighting directed downward to minimize light and glare where feasible. The contractor will also install shielded fixtures for street and pedestrian lighting to minimize glare.		X		X	Contractor	VTA Environmental Programs

Water Resources, Water Quality, and Floodplains

Station/Option	Measure #	Mitigation Measure	Mitigation Timing				Responsibility for Implementation	Oversight for Implementation
			Pre-Construction	Construction	Post-Construction	Operations		
Construction								
		No mitigation is required						
Operation								
All project features for BART Extension and TOJDs	WQ-A	**Design and Implement Stormwater Control Measures** The BART Extension will be designed in accordance with the Phase II MS4 Permit, Section F.5.g, for post-construction stormwater management. Post-construction stormwater controls shall be implemented to reduce total runoff rates and associated pollutant discharges. VTA managed facilities will follow the VTA's *Stormwater and Landscaping Design Criteria Manual*. After designs are finalized, a Stormwater Management Report, including detailed hydrologic and hydraulic calculations, analysis, and conclusions, shall be prepared to document the final design for stormwater management and the storm drain system and for obtaining the requisite approvals, and will outline all required Operation and Maintenance needs recommended by the designer for the post-construction stormwater management facilities.	X	X	X	X	Contractor	VTA Environmental Programs