6.15 Water Resources, Water Quality, and Floodplains

6.15.1 Introduction

This section discusses existing conditions and the regulatory setting regarding water resources, water quality, and floodplains. It also describes impacts under CEQA that would result from construction and operation of the CEQA Alternatives.

Existing conditions, including climate, topography, surface water hydrology, drainage patterns, and flooding, are discussed in Section 4.17, *Water Resources, Water Quality, and Floodplains*. Water quality, water quality objectives, and beneficial uses for both surface water and groundwater are also discussed in Section 4.17.

6.15.2 Regulatory Setting

The following state and local regulations are relevant to hydrology and water quality and apply to implementation of the BART Extension Alternative and BART Extension with TOJD Alternative unless otherwise specified.

The primary state laws regulating water quality are the California Water Code's Porter-Cologne Water Quality Control Act (Porter-Cologne Act) and the San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) (San Francisco Bay Regional Water Quality Control Board 2015).

6.15.2.1 State Laws and Local Requirements

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. It requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses of surface and/or groundwater of the state. The act, which predates the Clean Water Act (CWA), regulates discharges to waters of the state. The term *waters of the state* includes more than waters of the United States (e.g., groundwater and surface waters that are not considered waters of the United States). Additionally, the act prohibits discharges of *waste*, which is defined more broadly than the CWA definition of *pollutant*. Discharges under the Porter-Cologne Act are permitted by waste discharge requirements, which may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Water Boards) are responsible for establishing the water quality standards (i.e., objectives and beneficial uses) required by the CWA and regulating

discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a project area are contained in the applicable Regional Water Board Basin Plan. In California, Regional Water Boards designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect such uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, the State Water Board identifies waters that have failed to meet standards for specific pollutants, which are then state listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point-source or nonpoint-source controls (National Pollutant Discharge Elimination System [NPDES] permits or waste discharge requirements), the CWA requires the establishment of total maximum daily loads, which specify allowable pollutant loads from all sources (point, nonpoint, and natural) for a given watershed.

6.15.2.2 Local

VTA Stormwater and Landscaping Design Criteria Manual

Design features to address water quality impacts would follow the requirements in the small Municipal Separate Storm Sewer System (MS4) permit. The criteria and standards are similar to those of the Santa Clara Valley Urban Runoff Pollution Prevention Program guidelines. Post-construction stormwater treatment would preferentially utilize site design measures, source-control best management practices (BMPs), and Low-Impact Development (LID) treatment features. Generally, the LID measures would include vegetative improvements, which must comply with VTA's Sustainable Landscaping Policy.

VTA's *Stormwater and Landscaping Design Criteria Manual* (effective June 30, 2015) was developed to assist engineers with incorporating post-construction stormwater treatment into VTA project designs. VTA's *Stormwater and Landscaping Design Criteria Manual* would apply to areas managed by VTA such as the station campuses. However, both VTA and BART would be required to use BMPs and stormwater treatment measures to reduce, infiltrate, and treat runoff because the BART Extension would replace or create more than 5,000 square feet of impervious surfaces.

City of San Jose General Plan

The City of San Jose General Plan guides development and land use within the city. Several policies and measures of the general plan apply directly to hydrology and water quality. Several goals and policies within the Measurable Environmental Sustainability Measure (Water Quality Measure), the Green Building Policy Leadership Measure, the Environmental Resources Element, and the Environmental Considerations/Hazards Element of the City of San Jose General Plan are relevant to the BART Extension and related to water quality, the protection of water resources, groundwater quality and supply, stormwater, and flooding.

City of Santa Clara General Plan

The City of Santa Clara General Plan guides development and land use within the city. Several policies and measures of the general plan apply directly to hydrology and water quality. All policies within the Water Goals and Policies Element (5.10.4) of the general plan are relevant to the BART Extension. Goals and policies within this element are related to water supply, water recycling, and other related policies. Additional policies within the Safety Element, the Prerequisite Policies Element, and the Land Use Element of the general plan are relevant to the BART Extension. These are related to flooding, erosion and sediment control, stormwater and water management, drainage capacity, water and groundwater quality, grading, runoff and nonpoint-source pollution, and streamflow.

Floodplain Management

The Santa Clara Valley Water District (SCVWD) is the public agency responsible for flood protection in Santa Clara County. SCVWD manages two groundwater subbasins, the Santa Clara and Llagas subbasins. Other agencies that have discretionary authority over the BART Extension or aspects of the BART Extension related to flood control are considered responsible agencies and include, but are not limited to, the following.

- Departments of Public Works for the Cities of San Jose and Santa Clara
- U.S. Army Corps of Engineers
- BART

The BART Extension would take place within the jurisdiction of the Cities of San Jose and Santa Clara and be subject to local ordinances for flood control and drainage as applicable. The City of San Jose has several municipal codes related to flooding and floodplain management (Municipal Codes 17.08.070 through 17.08.800). The City of San Jose also has standards for construction within flood zones. These standards conform the flood hazard ordinance to national flood insurance program regulations.

City of San Jose Stormwater Permit and Regulations

The City of San Jose is under the jurisdiction of the San Francisco Bay Regional Water Board, which is responsible for issuing an NPDES Municipal Regional Permit (MRP) to prevent stormwater pollution. To meet MRP permit regulations, the Santa Clara Valley Urban Runoff Pollution Prevention Program shares resources and collaborates on projects of mutual benefit. The MRP permit governs a variety of activities in the City of San Jose (e.g., industrial and commercial businesses, new and redevelopment projects, construction sites, storm drain operation and maintenance, creek monitoring, pesticide applications, illegal dumping of water and pollutants in the city's storm drain). Under the permit, San Jose has a Stormwater Management Plan that outlines activities for protecting creeks and rivers from polluted stormwater runoff.

City of San Jose Grading and Erosion Control Program

To ensure that private property is graded so that it will drain properly, not affect adjacent properties, and not create erosion problems, the City has developed a Grading and Erosion Control Program. Improper grading can result in localized flooding, landslides, and differential settlement that affect not only the graded property but also adjacent properties. To ensure that grading operations do not affect local creeks and storm drainage systems during the winter months, any grading occurring between October 15 and April 15 will require an approved Erosion Control Plan. The City of San Jose also has municipal codes related to grading and drainage (Municipal Code 15.11.1020, Grading Design Plan).

6.15.3 CEQA Methods of Analysis

All BART Extension elements were analyzed by comparing baseline conditions to conditions during construction and/or operation of the BART Extension Alternative and BART Extension with TOJD Alternative. The analysis focused on issues related to surface hydrology, flood hazards, groundwater supply, and surface and groundwater quality. The key construction-related impacts were identified and evaluated qualitatively by considering the physical characteristics of the alignment and the magnitude, intensity, location, and duration of activities.

Surface Water Hydrology. The surface water hydrology impact analysis considered potential changes in the physical characteristics of water bodies, impervious surfaces, and drainage patterns throughout the alignment as a result of BART Extension implementation.

Groundwater Hydrology: Impacts on groundwater supply and recharge were assessed by comparing existing groundwater use as well as recharge capabilities with BART Extension conditions. Recharge is determined by the ability of water to infiltrate into the soil.

Water Quality: Impacts of the BART Extension on surface water and groundwater quality were analyzed by comparing existing water quality conditions with BART Extension conditions. Potential BART Extension-related sources of water contaminants generated by industrial and BART Extension operations (e.g., vehicle use, building maintenance, pesticide use, trash collection, storage or inadvertent release of hazardous materials during construction) may be considered in this analysis. The potential for water quality objectives to be exceeded and beneficial uses to be compromised was also considered.

Flooding: The impact analysis for current flood risk was conducted by using Federal Emergency Management Agency (FEMA) data and historical flood information to determine the existing flood zone and whether the alignment overlaps designated 100-year floodplains; impacts on the drainage system; and the potential for being a flood risk.

6.15.4 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, a project would have a significant effect if it would result in any of the conditions listed below.

- Violate any water quality standards or waste discharge requirements.

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted).
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures that would impede or redirect floodflows.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Contribute to inundation by seiche, tsunami, or mudflow.

6.15.5 Environmental Consequences

This section identifies impacts on water resources, water quality, and floodplains under CEQA and mitigation measures necessary to reduce the level of potentially significant impacts.

6.15.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects), and other land development projects planned by the Cities of San Jose and Santa Clara. The No Build Alternative projects could result in effects on water resources, water quality, and floodplains typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects. Structures associated with the projects would be designed in accordance with current floodplain management requirements, as administered by SCVWD and related city municipal codes. Additionally, hydrologic and hydraulic studies would be performed to identify the appropriate design measures for stormwater management at the stations. All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on water

resources, water quality and floodplains. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.15.5.2 BART Extension Alternative

Impact BART Extension WQ-1: Degrade water quality or violate water quality standards

Construction

The BART Extension would include construction of bored tunnels, underground station facilities, and aboveground facilities, such as parking structures and maintenance facilities; roadway improvements would also be included. Implementation of the BART Extension would include site clearing, new building construction and demolition, paving and repaving for parking lot and transit center expansion, cut-and-fill activities, grading and excavation, and landscaping. These land-disturbing activities and the placement of stockpiles in proximity of storm drain inlets may result in a temporary increase in sediment loads in the Lower San Francisco Bay. Sediment transport to local drainage facilities such as drainage inlets, culverts, and storm drains could also result in reduced stormflow capacity and localized ponding or flooding during storm events.

The delivery, handling, and storage of construction materials and wastes (e.g., concrete debris), as well as the use of heavy construction equipment, could result in stormwater contamination, thereby affecting water quality. In addition, construction activities may involve the use of chemicals or the operation of heavy equipment, which could result in accidental spills of hazardous materials (e.g., fuel, oil) during construction. Such spills could enter the groundwater aquifer or nearby surface water bodies from runoff or storm drains. A spill prevention and cleanup plan would be included in the Storm Water Pollution Prevention Plan (SWPPP) to address these potential impacts.

All construction activities would be subject to existing regulatory requirements. Because land disturbance associated with the BART Extension would affect more than 1 acre, coverage under a Construction General Permit would be required. The Construction General Permit contains standards to ensure that water quality is not degraded. As part of compliance with the Construction General Permit, standard erosion control measures and other BMPs would be identified in a SWPPP. These measures would be implemented during construction to reduce contamination and sedimentation in waterways.

Construction activities could result in short-term surface and groundwater impacts, such as sediment loads that exceed water quality objectives or chemical spills into storm drains or groundwater aquifers, if proper minimization measures are not implemented. However, the BART Extension would develop and implement a SWPPP specific to the BART Extension and be in compliance with the Construction General Permit, local stormwater ordinances, and other related requirements. In addition, the BART Extension would implement Mitigation Measure BIO-CNST-D to protect riparian habitat (see Chapter 5, Section 5.5.4, *Biological*

Resources and Wetlands). Under this measure, VTA will design the BART Extension to avoid temporary and permanent adverse effects on riparian habitat, wetlands, and waters of the United States to the maximum extent practicable. Therefore, potential water quality impacts from construction activities would be *less than significant*, and no further mitigation is required.

Operation

Under the BART Extension, four transit stations, parking lot structures, kiss-and-ride (i.e., passenger drop-off) facilities, and a Newhall Maintenance Facility, including train washing, would be constructed; landscaping would also be included. The operation of new facilities could increase existing pollutants in storm drains and introduce new pollutants. Operation and maintenance (O&M) activities under the BART Extension would be similar to existing O&M activities (e.g., landscape maintenance, building maintenance, storage of materials and substances, vehicle use) with the addition of new transit stations and maintenance at two new ventilation facilities and along associated transit tracks. Good housekeeping practices, such as regular litter and trash collection and sweeping, would continue to be implemented on site. In addition, BMPs would be implemented as required under the Industrial General Storm Water Permit to maintain stormwater quality from O&M activities at the Newhall Maintenance Facility.

The estimated disturbed soil area (DSA) for the BART Extension is approximately 130.18 acres with the Downtown San Jose Station East Option and 128.11 acres with the Downtown San Jose Station West Option. The total amount of added impervious area (AIA) would be approximately 46.16 acres with the Downtown San Jose Station East Option and 46.09 acres with the Downtown San Jose Station West Option because of the construction staging areas and new stations that would be part of the BART Extension. Table 6.15-1 provides a summary of changes to impervious and pervious areas by watershed. The increase in impervious areas would most likely result in higher volumes and velocities for stormwater flows to downstream receiving water bodies. The AIA created by the BART Extension may also result in minimal increases in low-flow and peak-flow velocities. New drainage systems would most likely be required to capture drainage from the BART Extension (WRECO 2016a).

The BART Extension would be designed in accordance with the Phase II MS4 Permit, Section F.5.g, for post-construction stormwater management. BART would operate the system in accordance with the Phase II MS4 Permit for the guideway and systems and other facilities that they are operating. VTA would apply the MS4 Permit for the station campuses and other facilities where BART is not the operator.

VTA developed a *Stormwater and Landscaping Design Criteria Manual* (effective June 30, 2015) to assist VTA engineers with incorporating the post-construction stormwater requirements in the small MS4 permit into VTA-operated facilities. Under the VTA's *Stormwater and Landscaping Design Criteria Manual*, VTA would implement BMPs and post-construction stormwater treatment measures into VTA-managed facilities because the

BART Extension would replace or create more than 5,000 square feet of impervious surfaces. The criteria and standards are similar to those of the Santa Clara Valley Urban Runoff Pollution Prevention Program guidelines. Stormwater treatment designs would preferentially utilize site design measures, source-control BMPs, and LID treatment features. Generally, the LID measures would include vegetative improvements, which must comply with VTA's Sustainable Landscaping Policy.

Under the Phase II MS4 Permit, BART and VTA would be required to implement BMPs and post-construction stormwater treatment measures, because it would replace or create more than 5,000 square feet of impervious surfaces. Stormwater management measures for the BART Extension would utilize LID techniques to reduce pollutant discharges and impacts on water quality and beneficial uses. In addition, the BART Extension would be designed in accordance with the post-construction stormwater treatment measures. Source controls and LID measures would be implemented, as well as vegetative treatment features such as bioretention basins for "biotreatment" of runoff.

VTA's *Stormwater and Landscaping Design Criteria Manual* would apply to VTA-managed facilities and presents methods to help evaluate, during the planning phase, whether sufficient land area has been allocated for stormwater treatment. As such, the size of the needed biotreatment area was determined by assuming a surface area equal to 4 percent of the contributing impervious area, known as the *simplified sizing method*. The simplified method for sizing bioretention areas and flow-through planters, known as the *4 percent method*, is based on a runoff inflow of 0.2 inch per hour, with an infiltration rate through biotreatment soil of 5 inches per hour. The 4 percent method requires the treatment measure to be 4 percent of the impervious area that drains to it.

The estimated biotreatment surface area for the different BART Extension features is provided in Table 6.15-2. The total biotreatment surface area required for the BART Extension would be approximately 107,000 square feet, which includes impervious areas for the BART Extension and related service roads and would vary depending on the station options chosen.

Table 6.15-1: Added Impervious Area by Watershed

Watershed	BART Extension Feature	Feature Type	Total Impervious Area per Feature (acres)	Net Added Impervious Area (acres)	DSA[b]
Coyote Creek	Mabury Road and US 101 CSA	CSA[a]			25.25
Lower Silver Creek	Alum Rock/28th Street Station	Station	9.25	2.54	17.68
	Alum Rock/28th Street Station CSA	CSA			3.31
Guadalupe River	Downtown San Jose Station East Option	Station	0.77	0.10	10.42
	Downtown San Jose Station West Option	Station	0.40	0.03	8.35
	Newhall Maintenance Facility		43.86[a]	41.86	46.93
	Santa Clara Station	Station	3.59	0.46	13.04
Los Gatos Creek	Diridon Station South Option	Station	3.47	Negligible	10.67
	Diridon Station North Option	Station	3.14	Negligible	10.49

[a] Assumed entire construction staging area (CSA) is impervious.
[b] DSA is the entire CSA; it was not divided into station and transit-oriented joint development (TOJD).

Table 6.15-2: Estimated Biotreatment Area

BART Extension Option	Total Impervious Area (acres)	Simplified Sizing Method Treatment Area (square feet)
Alum Rock/28th Street Station	9.25	16,117
Downtown San Jose Station East Option	0.87	1,516
Downtown San Jose Station West Option	0.43	749
Diridon Station South Option	3.47	6,046
Diridon Station North Option	3.14	5,486
Newhall Maintenance Facility	43.86	76,422
Santa Clara Station	4.05	7,057

Source: WRECO 2016a.

LID techniques would be used in the design to reduce the impact on water quality and beneficial uses. Examples of these post-construction stormwater treatment measures include self-treating areas and self-retaining areas, as well as an increased pervious pavement areas. These are some of the options mentioned in the Phase II MS4 Permit. There are other ways to reduce stormwater flooding and improve water quality, as elaborated in the manual, that might be considered in the design phase. Some of these include capturing surface flow with bioretention basins and rain gardens or using tree wells or and other media filters if vegetative treatment is infeasible. These treatment measures would be incorporated into the aesthetics of the landscape. The measures would include an overflow to convey more intense, less frequent rainfall events safely.

Potential surface water quality impacts from operation would be *less than significant*.

Mitigation Measure 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.

Impact BART Extension WQ-2: Deplete groundwater supplies or interfere with groundwater recharge

Construction

Groundwater is anticipated to be encountered during excavation for the underground stations and tunnel structures. As a result, dewatering of the shallow groundwater zone would be required. The tunnels would be constructed below the water table, at an average depth of 40 feet below ground at the crown (i.e., top of the tunnel) for the Twin-Bore Option and an average depth of 70 feet below ground at the crown for the Single-Bore Option. However, the BART Extension would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge because it would not increase groundwater demand or decrease groundwater recharge areas. The methods for dewatering could include installing a well-based dewatering system and/or pumping water from low spots at the excavation site. As a result, the potential exists for reducing the volume of water in the local aquifer table. However, dewatering would be temporary (i.e., during the construction phase) and would not result in a loss of water that would deplete groundwater supplies.

A Dewatering Plan would be required as part of the contractor's SWPPP for any dewatering of up to 10,000 gallons per day. Prior to any discharge into the sanitary sewer, storm drainage system, or downstream receiving water bodies, water quality sampling and analysis would be required. For areas of known contamination and where pumping will exceed 10,000 gallons per day, the Construction General Permit may not be used for dewatering. A separate NPDES permit for structural dewatering, as well as groundwater that has been contaminated with volatile organic compounds, and/or a project-specific waste discharge requirements permit would be needed to address potential contamination of groundwater and provide treatment prior to discharge.

The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would come from nearby hydrants, existing surface supplies at the site, water trucks, or dewatering effluent, if appropriate. As discussed in Chapter 5, Section 5.5.11,

Hazards and Hazardous Materials, Mitigation Measure HAZ-CNST-A would be implemented, ensuring that site-specific Remedial Action Plans would be prepared and implemented to reduce impacts on the environment, including impacts on groundwater that could result from the disturbance of hazardous materials in soil and ballast materials during construction.

Groundwater flow direction and pathways may be affected by the tunnel structures and underground stations, potentially causing the diversion of the normal flow of groundwater, the mounding of groundwater, or the localized rise of the water table. The water table in the area was measured at approximate depths of 14 to 18 feet below the ground surface. Tunnels for the Twin-Bore Option would be constructed below the water table at a minimum depth of 20 feet below ground at the tunnel crown, while tunnels for the Single-Bore Option would be constructed at an even greater depth. Therefore, groundwater would be able to flow above and below the tunnel structure. Dewatering would be necessary inside the retained cuts, underground stations, and tunnels; the quantity of water is anticipated to be minimal. In addition, construction in the tunnels would adhere to the SCVWD 2012 Groundwater Management Plan and protect groundwater from existing and potential contamination. Therefore, there would be no potential for reducing the volume of water in the local aquifer, and impacts on groundwater supplies from construction activities would be *less than significant*. No further mitigation is required.

Operation

Natural groundwater recharge of the Santa Clara subbasin occurs primarily through infiltration from streambeds and percolation of precipitation that falls directly on the ground surface. Because implementation of the BART Extension would result in an increase in impervious surface area of approximately 44.99 acres, there would be a decrease in groundwater recharge potential along the alignment.

Stormwater management measures that utilize LID techniques (e.g., self-treating areas, increased pervious pavement areas) are being considered for the BART Extension. Additional landscape design features that are being considered at station areas and potentially BART trackways include planting native, drought-resistant plants; using low-flow fixtures; increasing pervious surfaces with porous paving and unit pavers; capturing surface flows with bioretention basins and rain gardens; and using oil-water separators and other filters. These landscape and LID stormwater features, along with implementation of the City of San Jose Grading and Erosion Control Program, would allow for increased groundwater infiltration. Native grasses would expose native soils, and new vegetation zones would slow water, allowing it to percolate into the ground and thus provide increased benefits for groundwater recharge. Therefore, the BART Extension's impact on groundwater supplies and recharge would be *less than significant*, and no mitigation is required.

Impact BART Extension WQ-3: Alter the drainage pattern in a way that causes erosion, siltation, or flooding

Construction

BART Extension construction activities would alter existing drainage patterns and could result in local (onsite), temporary erosion and siltation. Although drainage patterns on the alignment would be altered, drainage would ultimately be improved because of the new drainage systems that would most likely be required to capture drainage as well as the stormwater management measures and LID techniques (e.g., increased pervious surfaces, bioswales, rain gardens) that are being considered for the BART Extension. These features would minimize runoff volumes and the potential for ponding and other drainage issues on site.

Preparation and implementation of the Grading and Erosion Control Program and the SWPPP would reduce the potential for substantial erosion or siltation onsite or offsite as well as flooding onsite or offsite as a result of altering existing drainage patterns. This would also reduce the potential for substantially increasing the rate or amount of runoff to a level that would result in substantial erosion, siltation, or flooding onsite or offsite. The BART Extension would be in compliance with existing NPDES permits and City of San Jose and City of Santa Clara stormwater permits and regulations. Additionally, construction of the BART Extension would not involve work within surface waters and, therefore, would not alter the course of an existing stream or river. The impact would be *less than significant*, and no mitigation is required.

Operation

Operation of the BART Extension would require soil stabilization (e.g., vegetation, other protective cover, stabilized slopes and fills) in accordance with the post-construction requirements included in the Construction General Permit and the Phase II MS4 NPDES Permit. Other applicable NPDES requirements and municipal codes would be applied when facilities are built within other agencies' fee owned right-of-way (for example, City streets and/or Caltrans jurisdiction) and when constructing facilities that would be subject to the Industrial General Permit (for example, the Newhall Maintenance Facility), which would reduce erosion and sediment transport. Because of the increase in impervious surface area relative to existing conditions, there would be an increased potential for erosion and siltation with respect to the drainage characteristics of the BART Extension. The BART Extension would not alter the course of an existing stream or river because operation of the BART Extension would occur underground. Therefore, implementation of the BART Extension would have a less-than-significant impact with regard to resulting in substantial erosion or siltation through alterations to existing drainage patterns. A new drainage system may be required to capture stormwater from the alignment. This would apply to all BART Extension locations. In addition, BMPs and LID measures would be implemented to minimize erosion, siltation, and/or flooding (WRECO 2016a).

Because the BART Extension would ultimately reduce the risk of flooding by incorporating LID measures, such as bioretention areas, the BART Extension would not result in flooding onsite or offsite as a result altering existing drainage patterns or substantially increasing the rate or amount of runoff. Therefore, it would also prevent substantial erosion or siltation through alterations to existing drainage patterns associated with increased flood flows. In addition, the BART Extension would not alter the course of an existing stream or river. The impact would be *less than significant*, and no mitigation is required.

Impact BART Extension WQ-4: Exceed the capacity of existing or planned stormwater drainage systems or provide sources of polluted runoff

New and renovated facilities would be drained by a combination of existing, new, and modified storm drains. Although the BART Extension would increase total impervious surface area relative to existing conditions, drainage improvements and LID measures would be implemented that would ultimately reduce the volume of stormwater runoff into the storm drain system.

The final design for the stormwater management and storm drainage system would be required to meet several criteria (e.g., Phase II MS4 Permit criteria, 100-year flood criteria) to ensure sufficient storm drain capacity. Therefore, runoff due to the BART Extension would not exceed the capacity of existing or planned stormwater drainage systems. This impact would be *less than significant,* and no mitigation is required.

Impact BART Extension WQ-5: Create a flood hazard or impede floodflows

Construction activities could impede or redirect localized floodflows. However, there would be minimal fill in the floodplain. Minimization measures at the Alum Rock/28th Street Station would include balancing pre-fill and post-fill in the floodplain to minimize the amount of fill and prevent flood storage from being lost. The floodflow pattern would be maintained as much as possible by incorporating and providing a flow-through area in the station campus. Storage and detention would be proposed as necessary to make up for storage lost. The alignment is currently developed or zoned for development; therefore, the Extension would not significantly change the land use (WRECO 2016b).

Some of the staging areas would be within the base floodplains. However, these areas would be used only temporarily during construction of the BART Extension. It is anticipated that they would not result in permanent impacts on the base floodplain; therefore, mitigation is not required.

Five of the station options (Alum Rock/28th Street Station, Downtown San Jose Station East and West Options, and Diridon Station South and North Options) would be underground and therefore would not extend into floodplain. The Santa Clara Station would be aboveground. However, the Santa Clara Station would be within flood Zone X (shaded [an area of moderate flood hazard]), and no BART Extension features would be within the 100-year floodplain. The track alignment would not encroach upon any base floodplains because it

would not be within any base floodplain areas or would be underground. There would be *no impacts* on the base floodplain.

Station entrances and access points should be 6 inches to 1 foot above the base flood elevation of 89 feet (North American Vertical Datum of 1988 [NAVD 88]). In addition, the location of electrical, communication, and other critical facilities would be above the 0.2 percent floodplain elevation. With the minimization measures mentioned above (e.g., balancing fill and storage capacity, providing a flow-through area to ensure the floodflow is maintained), mitigation measures would not be required at the Alum Rock/28th Street Station (WRECO 2016b).

The BART Extension would ultimately reduce the risk of flooding through incorporation of pervious landscaping, bioretention areas, and stormwater infrastructure improvements. Therefore, the BART Extension would not create a flood hazard or impede floodflows, the impact would be *less than significant*, and no mitigation is required.

Impact BART Extension WQ-6: Expose people or structures to a risk of flooding

The BART Extension be designed to withstand a 10 percent annual storm event, and specific facilities shall be designed to withstand 1 percent and 0.2 percent annual storm events, as required by BART Facility Standards (Bay Area Rapid Transit 2011). Critical facilities would be set a minimum of 1 foot above the 0.2 percent water surface elevation and have an overland flood release path that would result in no more than 1 foot of ponding, which is required for critical facilities including traction power substations, gap breaker stations, train control and communications buildings, and ventilation shaft openings. The retained cut sections, retained fill sections, station entrances, and access points should have a freeboard of 6 inches to 1 foot above the base flood elevation. Where the locations of critical facilities are not above the 0.2 percent flood elevation, the facilities would be raised above the 0.2 percent floodplain level (WRECO 2016b).

The Newhall Maintenance Facility is a critical facility and therefore would be designed in accordance with the standards and requirements for critical facilities. The facility would be within Zones D and X (shaded), areas that are not considered part of a base floodplain. Minimization measures would be implemented at the Alum Rock/28th Street Station (e.g., balancing fill and storage capacity, providing a flow-through area) to ensure that floodflow is maintained (WRECO 2016b). Therefore, there would be no floodplain impacts as a result.

The Santa Clara Station would add approximately 4.61 acres of structures in Zone X (shaded), an area of moderate flood hazard, and approximately 0.46 acre of AIA to the floodplain. However, the BART Extension would remove the adjacent building that currently occupies approximately 3.42 acres, also within the same floodplain. The Downtown San Jose Station East and West Options and Diridon Station South and North Options would be underground. These stations, as well as the Santa Clara Station, which would be aboveground, would not be within a Special Flood Hazard Area or 100-year floodplain. Therefore, there would be no risk of exposing people or structures to flooding.

SCVWD, in cooperation with the Natural Resources Conservation Service and the Guadalupe Coyote Resource Conservation District, proposed an approximately 4.4-mile-long section of Lower Silver Creek, between its confluence with Coyote Creek and Lake Cunningham, for flood protection related to a 1 percent annual chance event. Construction of Reach 1 through Reach 3 of this six-reach flood control project was completed in 2006. A Hydrologic Engineering Centers River Analysis System model was developed by SCVWD in 2003 for the *improvement in progress* condition of Lower Silver Creek between Coyote Creek and Interstate 680. The model indicated that a 100-year discharge in Lower Silver Creek would be contained within the creek channel (Earth Tech 2003). Therefore, the area northeast of the US 101/Lower Silver Creek crossing is no longer within a floodplain. However, the area south of Lower Silver Creek remains within the base floodplain because this area is within the blended floodplain of both Lower Silver Creek and Coyote Creek. Work on Reaches 4 through 6 is ongoing and will run through December 2017. Upon completion of the work along all six reaches of Lower Silver Creek and Lake Cunningham, SCVWD and the City of San Jose will be able to demonstrate to FEMA that all homes and businesses that were subject to a 1 percent annual chance flood from Lower Silver Creek have been protected (WRECO 2016b).

The BART Extension would ultimately reduce the risk of flooding with incorporation of pervious landscaping, bioretention areas, and stormwater infrastructure improvements. Therefore, the BART Extension would not expose people or structures within a 100-year flood hazard area to a risk of flooding. The impact would be *less than significant*. No mitigation measures are required.

6.15.5.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD WQ-1: Degrade water quality or violate water quality standards

Construction

The construction impacts of the BART Extension with TOJD Alternative would be similar to those discussed in Impact BART Extension WQ-1, above, and Mitigation Measure BIO-CNST-D (Chapter 5, Section 5.5.4, *Biological Resources and Wetlands*) would be implemented. No further mitigation is required. Potential water quality impacts from construction activities would be *less than significant*.

Operation

The BART Extension with TOJD Alternative would result in approximately 138.5 acres of DSA. Approximately 46.19 acres would be net AIA due to new buildings and parking lots associated with the BART Extension with TOJD Alternative (WRECO 2016a). Table 6.15-3 provides a summary of changes to impervious and pervious areas by watershed and BART Extension with TOJD Alternative feature and option.

Table 6.15-3: Added Impervious Area by Watershed

Watershed	BART Extension with TOJD Alternative Features	Feature Type	Total Impervious Area per Feature (acres)	Net Added Impervious Area (acres)	DSA[c]
BART Extension					
Coyote Creek	Mabury Road and US 101 CSA	CSA[a]			25.25
Lower Silver Creek	Alum Rock/28th Street Station	Station	9.25	2.54	17.68
	Alum Rock/28th Street Station CSA	CSA			3.31
Guadalupe River	Downtown San Jose Station East Option	Station	0.77	0.10	10.42
	Downtown San Jose Station West Option	Station	0.40	0.03	8.35
	Newhall Maintenance Facility		43.86[a]	41.86	46.93
	Santa Clara Station	Station	3.59	0.46	13.04
Los Gatos Creek	Diridon Station South Option	Station	3.47	Negligible	10.67
	Diridon Station North Option	Station	3.14	Negligible	10.49
TOJD					
Lower Silver Creek	Alum Rock/28th Street Station	TOJD	5.09	0.77	
Guadalupe River	Santa Clara and 13th Street Ventilation Facility	TOJD	1.15[a]	0.11	1.15
	Downtown San Jose Station East Option	TOJD	3.17	0.11	
	Downtown San Jose Station West Option	TOJD	0.35	0.10	
	Stockton Avenue Ventilation Facility[b]	TOJD	1.73	Negligible	1.73
	Santa Clara Station	TOJD	3.53	0.11	
Los Gatos Creek	Diridon Station South Option	TOJD	2.24	Negligible	
	Diridon Station North Option	TOJD	2.24	Negligible	

[a] Assumed entire construction staging area (CSA) is impervious.
[b] Utilized largest of the three lots for analysis.
[c] DSA is the entire CSA; it was not divided into station and TOJD.

Regulatory requirements similar to those discussed under Impact BART Extension WQ-1 would be implemented. The BART Extension with TOJD Alternative would also be required to comply with the Phase II MS4 Permit. VTA's *Stormwater and Landscaping Design Criteria Manual* would apply to VTA-managed facilities and includes methods to help evaluate, during the planning phase, whether sufficient land area has been allocated for stormwater treatment. The estimated biotreatment surface area for the different BART Extension with TOJD Alternative features is provided in Table 6.15-4. The total biotreatment surface area required is approximately 139,000 square feet for the BART Extension with TOJD Alternative, which includes impervious areas for the BART Extension, related service

roads, and TOJD sites (WRECO 2016a) and would vary depending on the station options chosen. Therefore, potential surface water quality impacts from BART Extension with TOJD Alternative operations would be *less than significant*, and no mitigation is required.

Table 6.15-4: Estimated Biotreatment Area

BART Extension with TOJD Alternative Features and Options	Total Impervious Area (acre)	Simplified Sizing Method Treatment Area (square feet)
Alum Rock/28th Street Station	9.25	16,117
Downtown San Jose Station East Option	0.87	1,516
Downtown San Jose Station West Option	0.43	749
Diridon Station South Option	3.47	6,046
Diridon Station North Option	3.14	5,486
Newhall Maintenance Facility	43.86	76,422
Santa Clara Station	4.05	7,057
TOJD Sites		
Alum Rock/28th Street Station	5.86	10,210
Santa Clara and 13th Street Ventilation Facility	1.15	2,004
Downtown San Jose Station East Option	3.17	5,523
Downtown San Jose Station West Option	0.35	610
Diridon Station South Option	2.24	3,903
Diridon Station North Option	2.24	3,903
Stockton Avenue Ventilation Facility	1.73	3,014
Santa Clara Station	3.53	6,151

Impact BART Extension + TOJD WQ-2: Deplete groundwater supplies or interfere with groundwater recharge

Construction

Regulatory requirements, construction activities, and impacts on groundwater supplies and recharge would be similar to those discussed under Impact BART Extension WQ-2. There would be no potential for reducing the volume of water in the local aquifer table, and impacts on groundwater supplies from construction activities would be *less than significant*. No mitigation is required.

Operation

Regulatory requirements and operational impacts on water supplies and recharge would be similar to those discussed under Impact BART Extension WQ-2. Therefore, the BART Extension with TOJD Alternative's impact on groundwater supplies and recharge would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD WQ-3: Alter the drainage pattern in a way that causes erosion, siltation, or flooding

Construction

Regulatory requirements, construction activities, and impacts on the drainage pattern would be similar to those discussed under Impact BART Extension WQ-3. Construction of the BART Extension with TOJD Alternative would not involve work within surface waters; it would not alter the course of an existing stream or river. Therefore, impacts would be *less than significant*. No mitigation is required.

Operation

Operational impacts on groundwater supplies and recharge would be similar to those discussed under Impact BART Extension WQ-3. Impervious surfaces would increase by approximately 46.19 acres following BART Extension with TOJD Alternative development. The increase in impervious area has the potential to affect water quality permanently, thereby possibly increasing the volume and velocity of stormwater discharges. New drainage systems may be required to capture drainage from the BART Extension with TOJD Alternative. This would apply to all BART Extension with TOJD Alternative locations. In addition to the BMPs and LID measures noted under Impact BART Extension WQ-3, BMPs and LID measures would be implemented to minimize erosion, siltation, and/or flooding (WRECO 2016a).

The regulatory requirements discussed under Impact BART Extension WQ-3 would also be implemented. The BART Extension with TOJD Alternative would not alter the drainage pattern in a way that would cause erosion, siltation, or flooding. The impact would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD WQ-4: Exceed the capacity of existing or planned stormwater drainage systems or provide sources of polluted runoff

Construction activities and operational impacts on the capacity of existing or planned stormwater drainage systems would be similar to those discussed under Impact BART Extension WQ-4. Runoff due to the BART Extension with TOJD Alternative would not exceed the capacity of existing or planned stormwater drainage systems. This impact would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD WQ-5: Create a flood hazard or impede floodflows

Construction activities and operational impacts related to flood hazards or impeding floodflows would be similar to those discussed under Impact BART Extension WQ-5. Runoff due to the BART Extension with TOJD Alternative would not exceed the capacity of existing or planned stormwater drainage systems. This impact would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD WQ-6: Expose people or structures to a risk of flooding

Construction activities and operational impacts that would expose people or structures to a risk of flooding would be similar to those discussed under Impact BART Extension WQ-6. In addition to the structures noted under Impact BART Extension WQ-6, TOJD structures have the potential to be placed within a floodplain.

The Alum Rock/28th Street Station TOJD would be within the Alum Rock/28th Street Station campus, which occupies approximately 5.09 acres and is entirely within the floodplain of Coyote Creek/Lower Silver Creek. However, the BART Extension with TOJD Alternative would remove adjacent buildings that currently occupy approximately 1.07 acres, also within the same floodplain. The BART Extension with TOJD Alternative would add approximately 0.77 acre of AIA to the floodplain area. As discussed under Impact BART Extension WQ-6, upon completion of the work along all six reaches of Lower Silver Creek and Lake Cunningham, SCVWD and the City of San Jose will be able to demonstrate to FEMA that all homes and businesses that were subject to a 1 percent annual chance flood from Lower Silver Creek have been protected. In addition, minimization measures would be implemented at the Alum Rock/28th Street Station (e.g., balancing fill and storage capacity, providing a flow-through area) to ensure that floodflow is maintained. The same minimization measures for Alum Rock/28th Street Station should be used for the Alum Rock/28th Street Station TOJD. These include minimizing fill in the floodplain, maintaining flood storage capacity, and proposing that the floor elevation of all buildings should be above the base flood elevation of 89 feet (NAVD 88). The area of the structures within the base floodplain would be insignificant compared with the overall floodplain area for Coyote Creek/Lower Silver Creek (approximately 28,160 acres) (WRECO 2016b). Therefore, the BART Extension with TOJD Alternative would not significantly change the base floodplain water surface elevation at this location. Floodplain impacts as a result of the BART Extension with TOJD Alternative would be minimal at the Alum Rock/28th Street Station TOJD. No mitigation measures are required.

The Santa Clara Station (South and North Option) TOJD would be within the station campus. The TOJD would be within Zone X (shaded), an area with a moderate flood hazard, and the 0.2 percent floodplain. However, improvements to the Guadalupe River would increase the capacity of the river. Once all improvements under the Upper Guadalupe Project have been completed, SCVWD and the City of Santa Clara will be able to demonstrate to FEMA that the area has been protected (WRECO 2016b). There would be no base floodplain impacts as a result of the BART Extension with TOJD Alternative at this location. Mitigation is not required.

The Santa Clara and 13th Streets Ventilation Facility TOJD, the Downtown San Jose Station East Option TOJD, the Downtown San Jose Station West Option TOJD, the Diridon Station South Option TOJD, the Diridon Station North Option TOJD, and the Stockton Avenue Ventilation Facility TOJD would be within Zone D, an area where flooding is undetermined

but possible. Flood Zone D is not considered a base floodplain. Therefore, no structures would be placed within a base floodplain as a result of the BART Extension with TOJD Alternative at this location. The BART Extension with TOJD Alternative would not expose people or structures within a 100-year flood hazard area to a risk of flooding. The impact would be *less than significant*, and no mitigation is required.

6.15.6 CEQA Conclusion

Implementation of Mitigation Measure WQ-A and adherence to City of Santa Clara and City of San Jose General Plan policies, a SWPPP, the Construction General Permit, and VTA's *Stormwater and Landscaping Design Criteria Manual* as applicable would reduce potential effects related to water quality, groundwater supply or recharge, drainage patterns, erosion, flood risk, and water resources to a *less-than-significant* level for both the BART Extension Alternative and BART Extension with TOJD Alternative.