P. UTILITIES

1. Introduction

This section describes the setting and existing conditions for utilities as they relate to the BART to Livermore Extension Project, discusses the applicable regulations, and assesses the potential impacts to utilities from construction and operation of the Proposed Project and Alternatives.

The study area for utilities includes the service area of the utility providers within the project corridor and generally conforms to the Tri-Valley Area, including the cities of Dublin, Pleasanton, and Livermore. For specific affects related to the potential relocation of utility lines during construction, the study area is defined as the collective footprint—the combined footprints of the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative. In addition, the bus routes and bus infrastructure improvements for the Enhanced Bus Alternative, as well as for the feeder buses for the Proposed Project and other Build Alternatives, which are anticipated to extend along existing streets and within the street right-of-ways, are addressed programmatically in this analysis, as described in Chapter 2, Project Description.

No comments pertaining to utilities were received in response to the Notice of Preparation for this EIR or during the public scoping meeting held for the EIR.

2. Existing Conditions

This subsection describes the utility providers and their facilities within the study area, followed by a description of the major utility lines within the collective footprint. Specific utilities discussed in this subsection are: electrical power and gas, water supply, wastewater, storm drainage, communications, and solid waste.

a. Utility Providers and Facilities

This subsection describes the applicable regional utility providers and associated facilities.

(1) Power and Gas

Pacific Gas & Electric (PG&E) provides electricity and gas service for Alameda County, including the cities of Dublin, Pleasanton, and Livermore.

PG&E's electrical transmission lines transport bulk electricity at high voltages ranging from 21 kilovolts (kV) to 500 kV across the region. These lines are usually supported on

metal towers or wooden poles. Electrical distribution lines carry lower voltage and provide power to neighborhoods.

PG&E's gas transmission pipelines deliver natural gas across the region. These pipelines carry gas at higher pressures and are held to strict safety standards to ensure safe operations. PG&E's neighborhood distribution pipelines branch off from larger regional transmission lines to deliver natural gas to homes and businesses. Distribution pipes are smaller in diameter than transmission pipes and operate at lower pressures.

(2) Water Supply

The Zone 7 Water Agency (Zone 7) of the Alameda County Flood Control and Water Conservation District provides wholesale treated water to local water distributors, including Dublin San Ramon Services District, City of Pleasanton Water, Livermore Municipal Water, and California Water Service Company (Cal Water). It also sells untreated water directly to agricultural and other customers. Zone 7's water sources include both surface water and groundwater.

In 2015, water supply and use in Zone 7 was 35,000 acre-feet per year (afy).[1, 2] Future demand is predicted to increase to 77,300 afy by 2025 and to 92,800 afy by 2035.[3] Zone 7 anticipates that it will have a supply of 88,645 afy in 2025 and 99,500 afy in 2035 and Zone 7 reports that its supply is anticipated to satisfy projected demand.[4]

Zone 7 is the regional groundwater basin manager for the Tri-Valley Area and provides the entitlement of 250,000 acre-feet (af) groundwater, which is the estimated storage capacity of the groundwater basin.

The local water distributors provide retail water service to residential and commercial customers in the study area, as described below.

- Dublin San Ramon Services District provides retail water to the city of Dublin and portions of San Ramon. In 2015, Dublin San Ramon Services District provided 7,445 afy of water to its service area.
- City of Pleasanton Water Services provides retail water to the city of Pleasanton. In 2015, City of Pleasanton Water Services provided 11,355 af of water to its service area.
- Cal Water serves approximately 11.5 square miles of the downtown and western portions of the city of Livermore. The service area is generally defined by Isabel Avenue to the west, Interstate (I-) 580 to the north, First Street to the east, and Stanley

[1] Zone 7 Water Agency, 2016a. 2015 Annual Report.
[2] An acre-foot of water equals 325,851 gallons.
[3] Zone 7 Water Agency, 2016b. 2015 Urban Water Management Plan. March 31.
[4] Ibid.

Blvd to the south. Cal Water would be the main supplier of water for the Isabel South Area, which would include the proposed Isabel Station parking garage. In 2015, Cal Water provided 7,255 af of water to its service area.[5]

- Livermore Municipal Water, which is operated by the City of Livermore Public Works Department and Water Resources Division, serves approximately 23 square miles within the northwest, northeast, and east portions of the city of Livermore. Livermore Municipal Water would be the main supplier of water for the eastern portion of the Isabel Corridor Area, the Isabel North Area, Cayetano Creek Area, and Laughlin Road Area, which would include the proposed Isabel Station, storage and maintenance facility and Laughlin Road parking lot. In 2015, Livermore Municipal Water provided 4,554 af of water to its service area.[6]

As of 2015, the average water demand for the existing Dublin/Pleasanton Station is approximately 1,813,616 gallons per year (gpy) (4,369 gallons per day (gpd) [5.5 afy]).[7]

(3) Wastewater

Wastewater is primarily generated by residential, commercial, and industrial sources and wastewater treatment provides protection for human health and receiving water bodies, preserves the health of aquatic and riparian species, and improves supply reliability through the removal of harmful pollutants from discharges.

Wastewater treatment facilities in the study area are described below.

- Dublin San Ramon Services District provides wastewater collection and treatment services in the study area for the cities of Dublin and Pleasanton, including the Dublin/Pleasanton Station Area and western portion of the I-580 Corridor Area. Dublin San Ramon Services District has a maximum capacity of 17 million gallons per day (mgd) and the average demand is approximately 8.1 mgd.[8]
- The Livermore Water Reclamation Plant, owned by the City of Livermore, provides wastewater treatment facilities in the study area and serves the I-580 Corridor Area, Isabel North and South Areas, Cayetano Creek Area, and the Laughlin Road Area. The City of Livermore's Public Services Department owns, operates, and maintains approximately 294 miles of existing wastewater lines, ranging in diameter from 6 to 48 inches. These facility systems include pipelines, pipe stations, interceptor stations, and discharge stations. The Livermore Water Reclamation Plant currently has a

[5] California Water Service, 2016. 2015 Urban Water Management Plan. June.
[6] Livermore Municipal Water, 2016. 2015 Urban Water Management Plan. June.
[7] Wong, 2016. Personal communication from Norman D. Wong, Environmental Engineer, Office of District Architect, San Francisco Bay Area Rapid Transit District (BART) with Donald Dean, Environmental Coordinator, BART. April 29.
[8] Dublin San Ramon Services District, 2016. 2015 Urban Water Management Plan. June.

maximum capacity of 8.5 mgd and average demand ranges from 4 to 7 mgd.[9, 10] Wastewater is collected and conveyed to the Livermore Water Reclamation Plant, which is located at 101 West Jack London Boulevard, less than 1 mile south of the proposed Isabel Station. Treated wastewater is then sent through the Livermore Amador Valley Water Management Agency pipeline for ultimate disposal by the East Bay Dischargers Authority in San Francisco Bay.[11]

(4) Storm Drainage

Zone 7 manages stormwater conveyances and flood channels within the region and requires that activities within these channels, including discharges of stormwater, obtain an encroachment permit. Zone 7 defers authority for floodplain and floodway encroachment review to the cities in some cases. Zone 7 owns and operates storm drainage systems for the eastern portions of unincorporated Alameda County while the cities of Dublin, Pleasanton, and Livermore own and operate their respective storm drainage systems. Typical components of storm drain systems include inlets and catch basins, open channels and ditches, underground pipelines, and detention ponds. The storm drains typically lead directly into local creeks and watercourses without passing through treatment facilities. Additional information on Zone 7 and storm drain facilities in the study area is provided in Section 3.H, Hydrology and Water Quality.

(5) Communications

A variety of communications lines surround the study area, including fiber optic and telecommunications (television, telephone, internet), which are owned and operated by private providers, including Comcast and AT&T.

(6) Solid Waste

This subsection describes the solid waste collection services, which are contracted by each individual city, followed by the landfills which serve the study area.

(a) Solid Waste Collection Services

Alameda County Waste Management Authority

Within the county, the Alameda County Waste Management Authority and local jurisdictions are responsible for the collection and disposal of solid waste. The Alameda

[9] City of Livermore, 2014. Community Services and Infrastructure Report. Adopted June 23.
[10] City of Livermore, 2016. Water Reclamation Plant. Available at: http://www.cityoflivermore.net/citygov/pw/public_works_divisions/wrd/water_reclamation_plant/default.htm, accessed August 26, 2016.
[11] Ibid.

County Waste Management Authority operates under a joint exercise of powers agreement among each of the 14 cities within the county and two sanitary districts that also provide refuse collection services. Pursuant to State of California (State) law, the Alameda County Waste Management Authority is responsible for the preparation of the county's Integrated Waste Management Plan and Hazardous Waste Management Plan and provides support and assistance to its member agencies in implementing those plans.[12]

City of Dublin

The City of Dublin contracts with Amador Valley Industries for its solid waste collection services for all residents in the city of Dublin. This service area also includes the Dublin/Pleasanton Station.

City of Pleasanton

The City of Pleasanton contracts with Pleasanton Garbage Service for their residential and commercial solid waste collection.

City of Livermore

The City of Livermore contracts with Livermore Sanitation, Inc. for solid waste collection services (including garbage, recyclable materials, and green waste). The service area includes the city of Livermore and certain unincorporated parts of the county. The Isabel North and South Areas, Cayetano Creek Area, and Laughlin Road Area are within this service area. Refuse is hauled directly to Republic Services Vasco Road, LLC Landfill (Republic/Vasco Road Landfill) for disposal. Recyclable and compostable materials are taken to the company's direct transfer facility. In 2014, the City of Livermore disposed of 60,456 tons of solid waste and achieved a waste diversion rate of 76 percent.[13]

(b) Landfills

Two landfills primarily serve the study area—the Altamont Landfill and the Republic/Vasco Road Landfill, described below.

- The Republic/Vasco Road Landfill, at 4001 North Vasco Road in Livermore, is operated by Republic Services and is a Class III disposal site that permits the disposal of municipal solid waste, with separate disposal areas required for asbestos and automobile-shredder waste. The Republic/Vasco Road Landfill also has areas designated for recycling of construction and demolition debris, green waste, wood,

[12] Alameda County Waste Management Authority, 2003. Countywide Integrated Waste Management Plan. Adopted February 26, 2003, amended March 2015.

[13] Stop Waste, 2016. Waste Disposal Tonnages and Diversion Rates for Alameda County Jurisdictions.

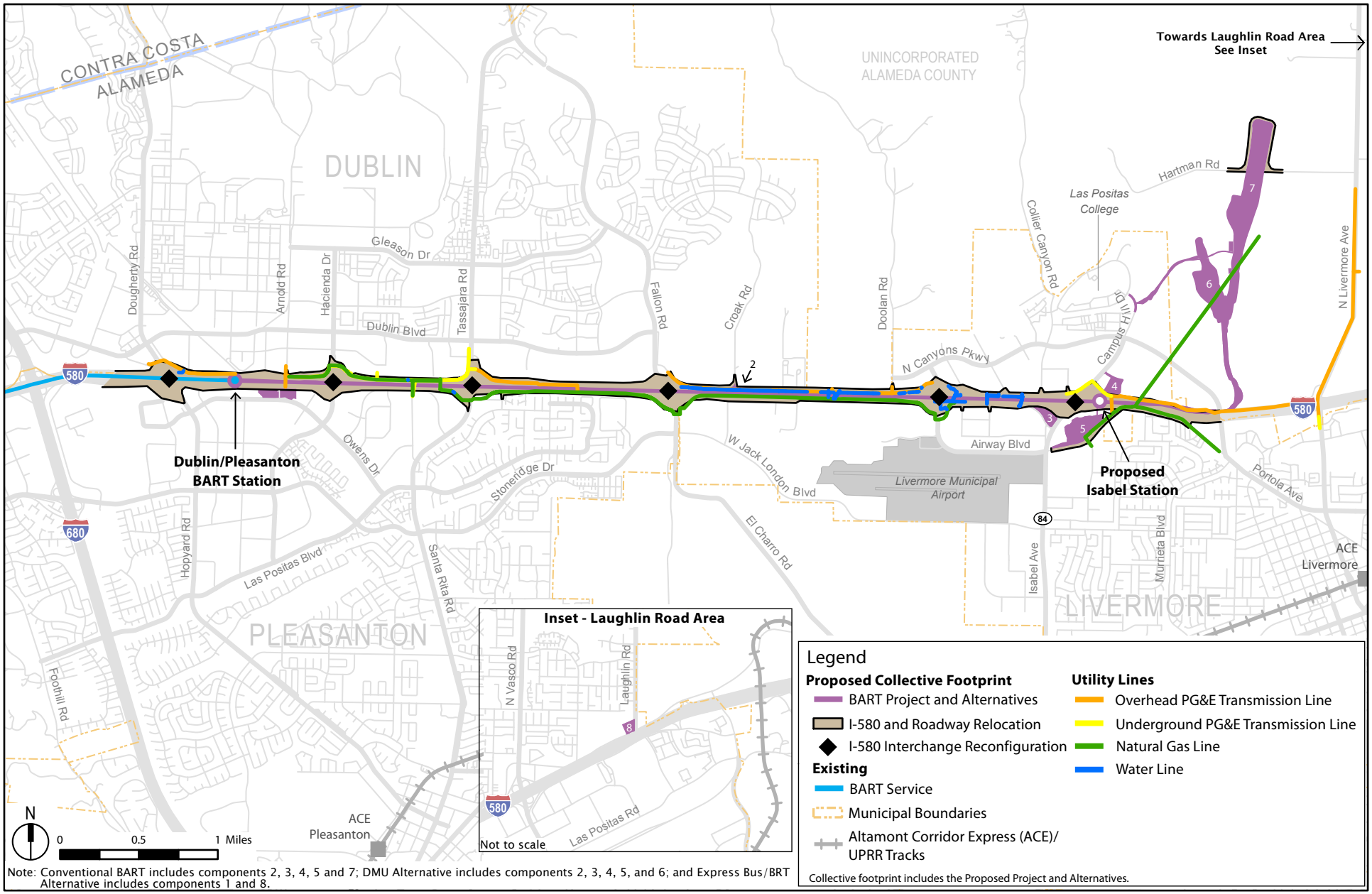
concrete, bricks, and residential recyclable materials. The landfill would serve the eastern portions of I-580 Corridor Area, Isabel North Area, Isabel South Area, Cayetano Creek Area, and the Laughlin Road Area. Currently, the Republic/Vasco Road Landfill receives an average of 885 tons per day (tpd), has a maximum capacity of 2,518 tpd, and is anticipated to reach capacity in 2022.[14]

- The Altamont Landfill, owned and operated by Waste Management Inc., is a Class II disposal site. It is located at 10840 Altamont Pass Road in Livermore on a 2,170-acre site with 472 acres permitted for landfill and currently serves the western portion of the I-580 Corridor Area and the Dublin/Pleasanton Station Area. The Altamont Landfill receives an average of 4,511 tpd, can accommodate 7,000 tpd, and has an expected closure date of 2049.[15]

(7) Utility Lines

There are a number of major utility lines that extend through the collective footprint, as shown in Figure 3.P-1 and listed in Table 3.P-1. These lines include electrical transmission power lines, underground gas lines, communication lines, and water lines.

[14] Alameda County Waste Management Authority, 2003. Countywide Integrated Waste Management Plan. Adopted February 26, 2003, amended March 2015.
[15] Ibid.



Note: Conventional BART includes components 2, 3, 4, 5 and 7; DMU Alternative includes components 2, 3, 4, 5, and 6; and Express Bus/BRT Alternative includes components 1 and 8.

Source: Arup and Anil Verma Associates, Inc., 2017.

Figure 3.P-1
Utilities
Major Utility Lines in the Collective Footprint

TABLE 3.P-1 MAJOR UTILITY LINES IN THE COLLECTIVE FOOTPRINT

Geographic Subarea	City	Line Type
Dublin/Pleasanton Station Area	Dublin	PG&E 21 kV
	Dublin	PG&E 12-inch gas line
	Dublin	36-inch water line
I-580 Corridor Area	Dublin	PG&E 21 kV
	Dublin	PG&E 12-inch gas line
	Dublin	24-inch water line
	Dublin	36-inch water line
	Dublin	42-inch water line
	Pleasanton	PG&E 16-inch gas line
	Pleasanton	24-inch water line
	Livermore	36-inch water line
Isabel North Area	Livermore	PG&E 21 kV
Isabel South Area	Livermore	PG&E 21 kV
	Livermore	PG&E 16-inch gas line
	Livermore	Gas valve compound
Cayetano Creek Area	Livermore	PG&E 24-inch gas line
	Livermore	PG&E 21 kV

Source: Arup and Anil Verma Associates, Inc., 2017.

3. Regulatory Framework

This subsection describes the State and local environmental laws and policies relevant to utilities.

a. State Regulations

(1) California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 (Assembly Bill 939) required local cities and counties to adopt an Integrated Waste Management Plan to establish objectives, policies, and programs relative to waste disposal, management, source reduction, and recycling. Assembly Bill 939 mandated that each jurisdiction adopt a Source Reduction and Recycling Element to specify how the community will meet a 75-percent waste diversion goal by 2020. Each jurisdiction was also required to take measures to reduce solid waste generation and provide for the safe disposal of special and hazardous wastes.

(2) Per Capita Disposal Measurement System Act (Senate Bill 1016)

The Per Capita Disposal Measurement System Act (Senate Bill 1016) further specified the way State agencies measure their progress toward meeting the statutory waste diversion mandates. State agencies now have an individual disposal target (expressed as pounds per person per day) to represent their 75-percent diversion equivalent.

(3) California Government Code

California has established laws to protect infrastructure from damage caused by construction activities. According to the California Government Code (Sections 4216–4216.9), contractors are required to notify and coordinate with appropriate groups before beginning ground-disturbing construction activities. Contractors are required to paint the area to be disturbed and notify Underground Service Alert at least 2 days before starting any digging activities. Underground Service Alert then notifies its subscribing members of the proposed excavation.

b. BART Facilities Standards

BART has adopted requirements for environmental design and sustainability, described in the BART Facilities Standards. The objective of these requirements is to encourage the integration of sustainable design with facility development and maintenance by setting standards applicable to water conservation, energy efficiency, and other station improvements. Some of these requirements include using water efficient irrigation systems, utilizing water efficient plumbing fixtures, and minimizing vehicle washer water usage. See Chapter 2, Project Description, for additional discussion of sustainable project features.

4. Impacts and Mitigation Measures

This subsection lists the standards of significance used to assess impacts, discusses the methodology used in the analysis, summarizes the impacts, and then provides an in-depth analysis of the impacts with mitigation measures identified as appropriate.

a. Standards of Significance

For the purposes of this EIR, impacts on utilities are considered significant if the Proposed Project or one of the alternatives would result in any of the following:

- Exceed wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board

- Require or result in new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- Require or result in new stormwater drainage facilities, or expansion of existing facilities, the construction of which would cause significant environmental effects
- Exceed water supplies available to serve the project from existing entitlements and resources
- Result in a determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the projected demand in addition to existing commitments
- Be served by a landfill with insufficient permitted capacity to accommodate the solid waste disposal needs of the project
- Violate applicable federal, State, or local statutes and regulations related to solid waste
- Substantially disrupt utility services, including electrical power, natural gas, communications, drinking water supplies, wastewater transport, or stormwater transport during construction

b. Impact Methodology

The methodology used to evaluate the significance of utilities impacts is described below under each respective impact analysis. The Electrical Multiple Unit (EMU) Option would result in the same impacts as the Diesel Multiple Unit (DMU) Alternative, and therefore the analysis and conclusions for the DMU Alternative also apply to the EMU Option.

The analysis of the Enhanced Bus Alternative, which addresses the potential impacts of construction of the bus infrastructure improvements and operation of the bus routes at a programmatic level, would also apply to the bus improvements and feeder bus service under the Proposed Project and other Build Alternatives. Therefore, the analyses and conclusions for the Enhanced Bus Alternative also apply to the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, and are not repeated in the analysis of the Proposed Project and other Build Alternatives.

c. Summary of Impacts

Table 3.P-2 summarizes the impacts of the Proposed Project and Alternatives described in the analysis below.

TABLE 3.P-2 SUMMARY OF UTILITIES IMPACTS

	Significance Determinations[a]				
Impacts	**No Project Alternative**	**Conventional BART Project[b]**	**DMU Alternative (with EMU Option)[b]**	**Express Bus/BRT Alternative[b]**	**Enhanced Bus Alternative**
Construction					
Project Analysis					
Impact UTIL-1: Substantially disrupt utility services, including power, natural gas, communications, drinking water supplies, wastewater transport, or stormwater transport during construction	NI	LSM	LSM	LSM	LS
Impact UTIL-2: Result in the construction of new stormwater drainage facilities that would cause environmental effects	NI	LS	LS	LS	LS
Cumulative Analysis					
Impact UTIL-3(CU): Substantially disrupt utility services, including power, natural gas, communications, drinking water supplies, wastewater transport, or stormwater transport during construction under Cumulative Conditions	NI	LS	LS	LS	LS
Impact UTIL-4(CU): Result in the construction of new stormwater drainage facilities that would cause environmental effects under Cumulative Conditions	NI	LS	LS	LS	LS

TABLE 3.P-2 SUMMARY OF UTILITIES IMPACTS

Impacts	Significance Determinations[a]				
	No Project Alternative	Conventional BART Project[b]	DMU Alternative (with EMU Option)[b]	Express Bus/BRT Alternative[b]	Enhanced Bus Alternative
Operational					
Project Analysis					
Impact UTIL-5: Exceed water supplies and wastewater capacity, or trigger the need for additional water or wastewater facilities	NI	LS	LS	LS	LS
Impact UTIL-6: Be served by a landfill with insufficient capacity or violate applicable solid waste regulations	NI	LS	LS	LS	LS
Cumulative Analysis					
Impact UTIL-7(CU): Exceed water supplies and wastewater capacity, or trigger the need for additional water or wastewater facilities under Cumulative Conditions	NI	LS	LS	LS	LS
Impact UTIL-8(CU): Be served by a landfill with insufficient capacity or violate applicable solid waste regulations under Cumulative Conditions	NI	LS	LS	LS	LS

Notes: NI=No impact; LS=Less-than-Significant impact, no mitigation required; LSM=Less-than-Significant impact with mitigation.
DMU = diesel multiple unit; EMU = electrical multiple unit; BRT = bus rapid transit
[a] All significance determinations listed in the table assume incorporation of applicable mitigation measures.
[b] The analysis of the Enhanced Bus Alternative also applies to the feeder bus service and bus improvements under the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, as described in the Impact Methodology subsection above.

d. Environmental Analysis

Impacts related to project construction are described below, followed by operations-related impacts.

(1) Construction Impacts

Potential impacts pertaining to project construction are described below, followed by cumulative construction impacts.

(a) Construction – Project Analysis

Impact UTIL-1: Substantially disrupt utility services, including electrical power, natural gas, communications, drinking water supplies, wastewater transport, or stormwater transport during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: LS)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the Livermore-Amador Valley Transit Authority would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including both residential and commercial. Construction of these improvements and development projects could potentially disturb utilities services in the study area. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project is considered to have no impacts related to utility services during construction. **(NI)**

Conventional BART Project, DMU Alternative, and Express Bus/BRT Alternative. Construction of the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative could entail several of the following activities that have potential to disturb utilities (depending on the alternative): (1) grading for the installation of tracks and associated horizontal infrastructure; and (2) excavation and grading for the construction of aerial and bridge structures, the proposed Isabel Station, including the pedestrian touchdown

structures and parking facilities, transfer platforms at the Dublin/Pleasanton Station and parking garage, storage and maintenance facility, and Laughlin Road parking lot.

Many of these construction-related activities could require the relocation or temporary disruption of overhead and underground electric lines, water pipelines, and natural gas pipelines. As shown in Table 3.P-1, there are numerous utility lines within the collective footprint. These utilities would require relocation under the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative. Prior to starting construction, BART would be required to notify and coordinate with affected utility providers per California Government Code (Sections 4216–4216.9). However, services could be temporarily disrupted, which could result in a significant impact, depending on the duration of the interruption and the inconvenience to affected customers.

Implementation of the following mitigation measures would reduce potential impacts as follows: **Mitigation Measure UTIL-1.A** would restrict service interruptions to off-peak periods; **Mitigation Measure UTIL-1.B** would require temporary backup services for interruptions during peak periods; and **Mitigation Measure UTIL-1.C** would notify customers of scheduled service interruptions. With implementation of these measures, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, would not substantially disrupt utility services, including electrical power, natural gas, communications, drinking water supplies, wastewater transport, or stormwater transport during construction and would have a less-than-significant impact. **(LSM)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would require limited excavation or grading for construction of bus shelters, bus bulbs, and installation of signage. Any potential utility service disruptions would be minor. Prior to the start of construction, BART would be required to notify and coordinate with affected utility providers per California Government Code (Sections 4216–4216.9). Thus, the Enhanced Bus Alternative would have less-than-significant construction-related impacts to utility services, and no mitigation measures are required. **(LS)**

Mitigation Measures. As described above, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative could have potentially significant impacts by causing the temporary interruption of utilities. However, with implementation of **Mitigation Measure UTIL-1.A,** which would require service interruptions to off-peak periods, **Mitigation Measure UTIL-1.B,** which would require temporary backup service, and **Mitigation Measure UTIL-1.C,** which would notify customers of service interruptions, potential impacts would be reduced to a less-than-significant level.

As described above, the Enhanced Bus Alternative would not have significant impacts; therefore, no mitigation measures are required for this alternative.

Mitigation Measure UTIL-1.A: Restrict Service Interruptions to Off-Peak Periods (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

BART shall ensure that the contractor schedules utility work to be performed during periods of off-peak service demand. Low-demand periods typically occur during late evening and early morning hours.

Mitigation Measure UTIL-1.B: Arrange Temporary Backup Service (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

If it is not feasible to schedule service interruption to avoid inconveniencing customers and to avoid off-peak service hours, BART shall ensure that the contractor coordinates with the responsible utility provider to arrange alternate means of providing service.

Mitigation Measure UTIL-1.C: Notify Customers of Service Interruptions (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

Notifications to commercial and residential customers shall be mailed at least two weeks in advance of service interruption and shall contain information on the selected BART extension alternative, expected schedule for service interruption, likely duration of service interruption, and individuals to contact regarding utility service or other construction-related issues.

Impact UTIL-2: Require or result in new stormwater drainage facilities or expansion of existing facilities, the construction of which would cause significant environmental effects.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: LS)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, construction of the planned and programmed transportation improvements and continued land use development, including construction of residential and commercial uses under the No Project Alternative could result in new or altered stormwater drainage facilities. The effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to

adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to stormwater drainage facilities. **(NI)**

Conventional BART Project and DMU Alternative. Several of the components of the Proposed Project and DMU Alternative would result in the relocation of existing or construction of new stormwater drainage facilities such as pipes, drains, manholes, and culverts. Under the Conventional BART Project and DMU Alternative, new impermeable surfaces would be constructed, including the relocated I-580 lanes, surface frontage roads, proposed Isabel Station and parking facilities, and the bus transfer facility at Isabel Station. Culverts would also be modified to accommodate the relocated I-580 right-of-way at a number of overcrossings. In addition, the tail tracks would be designed with culverts or drainage ways at regular intervals under the track to disperse stormwater runoff evenly along the trackway and maintain drainage to Cayetano Creek and vernal pools in the area.

The environmental impacts resulting from the relocation of existing storm drainage facilities and construction of new facilities for the Proposed Project and DMU Alternative are analyzed in **Impacts HYD-3, HYD-5,** and **HYD-6** as described in Section 3.H, Hydrology and Water Quality.

However, none of these proposed new stormwater drainage facilities would result in a significant environmental impact as stated in **Impact HYD-3**. For these reasons, impacts under the Proposed Project and the DMU Alternative to stormwater drainage facilities would be less than significant, and no mitigation is needed. **(LS)**

Express Bus/BRT Alternative. Under the Express Bus/BRT Alternative, existing stormwater drains would be required to be relocated and new drainages facilities such as pipes, drains, manholes would be constructed. These facilities would be at the Dublin/Pleasanton Station Area and the Laughlin Road Area. Components with new impermeable surfaces include the bus transfer platforms, replacement parking facility at the Dublin/Pleasanton Station, and the Laughlin Road parking lot. The environmental impacts resulting from the relocation of existing storm drainage facilities and construction of new facilities for the Express Bus/BRT Alternative are analyzed in **Impacts HYD-3, HYD-5,** and **HYD-6** as described in Section 3.H, Hydrology and Water Quality.

In addition, the Express Bus/BRT Alternative would involve modification (relocation) of Line G-2, to a tributary of Chabot Canal, as it extends along the south side of I-580 at the Dublin/Pleasanton Station. However, as stated in **Impact HYD-3**, this modification would not result in significant impacts to stormwater.

As described above, storm drainage facilities would be subject to Zone 7 and the City of Livermore's Flood Protection and Storm Water Drainage Development Impact Fee and would not result in significant environmental impacts. For these reasons, impacts under

the Express Bus/BRT Alternative to stormwater drainage facilities would be less than significant, and no mitigation is needed. **(LS)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would include new bus infrastructure, such as bus shelters and bus bulbs that may require the relocation of existing storm drains or manholes. These improvements would be constructed within existing street rights-of-way and would not be anticipated to substantially increase impervious surfaces or require new drainage facilities, as described in **Impacts HYD-3, HYD-5,** and **HYD-6** (Section 3.H, Hydrology and Water Quality). Therefore, impacts under the Enhanced Bus Alternative to stormwater drainage facilities would be less than significant, and no mitigation is needed. **(LS)**

Mitigation Measures. As described above, the Proposed Project and Alternatives would not result in significant impacts related to construction of storm drainage facilities, and no mitigation measures are required.

(b) Construction – Cumulative Analysis

As described in Section 3.A, Introduction to Environmental Analysis and Appendix E, cumulative projects that may be under construction concurrently with the Proposed Project and Build Alternatives include: the Isabel Neighborhood Plan (INP); Dublin Crossing Specific Plan; Kaiser Dublin Medical Center; Ikea Retail Center; Hyatt Hotel; Johnson Drive Economic Development Zone; Residences at California Center; Crosswinds site; Los Positas College; and ACEforward.

Impact UTIL-3(CU): Substantially disrupt utility services, including electrical power, natural gas, communications, drinking water supplies, wastewater transport, or stormwater transport during construction under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: LS)

No Project Alternative. As described in **Impact UTIL-1** above, the No Project Alternative would have no impacts related to utilities services during construction. Therefore, the No Project Alternative would not contribute to cumulative impacts. **(NI)**

Conventional BART Project and Build Alternatives. The concurrent construction of multiple cumulative projects, including the INP, as well as the Proposed Project and Build Alternatives, could result in overlapping needs for temporary relocation or disruption of utilities. However each of these projects, including the Proposed Project and Build Alternatives, would be required to notify and coordinate with affected utility providers per California Government Code (Sections 4216–4216.9). Furthermore, as described in **Impact UTIL-1** above, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative

would implement **Mitigation Measure UTIL-1.A** (which would require service interruptions to off-peak periods), **Mitigation Measure UTIL-1.B** (which would require temporary backup service), and **Mitigation Measure UTIL-1.C** (which would notify customers of service interruptions), thereby minimizing any potential impacts on utilities during construction.

Overall, the Proposed Project and Build Alternatives, together with the cumulative projects, would not substantially disrupt utility services, including electrical power, natural gas, communications, drinking water supplies, wastewater transport, or stormwater transport during construction and would have less-than-significant cumulative impacts. **(LS)**

Mitigation Measures. As described above, the Proposed Project and Alternatives in combination with past, present, or probable future projects, would not result in significant cumulative impacts related to disruption of utilities during construction, and no mitigation measures are required.

Impact UTIL-4(CU): Require or result in new stormwater drainage facilities or expansion of existing facilities, the construction of which would cause significant environmental effects under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: LS)

No Project Alternative. As described in **Impact UTIL-2** above, construction of the No Project Alternative would not have any new physical impacts associated with the provision of or need for new or physically altered stormwater drainage facilities. Therefore, the No Project Alternative would not contribute to cumulative impacts. **(NI)**

Conventional BART and Build Alternatives. Cumulative development within the study area would result in increases in impervious surface and likely require the construction of storm drainage facilities, including pipes, drains, manholes, and culverts. As described in **Impact UTIL-2** above, the Proposed Project and Build Alternatives would require the relocation of existing storm drainage facilities and construction and modification of stormwater drainage facilities. Further, the INP, which is assumed to be implemented in conjunction with the Proposed Project and DMU Alternative, would increase impervious surfaces and require the construction of stormwater drainage facilities.

As with the Proposed Project and Build Alternatives, cumulative development projects within the study area would be subject to water quality orders and regulations (see **Impacts HYD-3, HYD-5,** and **HYD-6**) that require the implementation of stormwater treatment and runoff volume control measures. The regulations typically require minimizing the introduction of new impervious surfaces and encouraging on-site

infiltration. These features include low-impact development stormwater measures such as vegetated swales, pervious paving, and detention basins, which have proven effective in controlling stormwater pollutants and minimizing increases in runoff volumes.

While many of these cumulative projects would increase impermeable surfaces, they would be required to have adequate storm drainage facilities to accommodate stormwater runoff, and would be required to include treatment measures and design approaches measures for on-site infiltration of stormwater runoff such as vegetated swales, pervious paving, and landscaping. If any of the cumulative projects were to require the expansion of stormwater drainage facilities, the respective project would be required to address potential impacts associated with the construction of the facilities under its own environmental review.

Therefore, the Proposed Project and Build Alternatives, in combination with the cumulative projects, would have less-than-significant cumulative impacts related to construction of new stormwater drainage facilities or expansion of existing facilities. **(LS)**

Mitigation Measures. As described above, the Proposed Project and Alternatives, in combination with past, present, or probable future projects, would not result in significant cumulative impacts relative to storm drainage, and no mitigation measures are required.

(2) Operational Impacts

Potential impacts related to project operations are described below, followed by cumulative operations impacts.

(a) Operations – Project Analysis

Impact UTIL-5: Require or result in (1) new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; (2) water demand that exceeds available water; (3) wastewater that exceeds treatment capacity; or (4) wastewater that exceeds treatment requirements.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: LS)

Estimates of water consumption and wastewater generation from the Proposed Project and Build Alternatives are shown in Table 3.P-3 and Table 3.P-4, respectively. These

TABLE 3.P-3 WATER CONSUMPTION – CONVENTIONAL BART AND BUILD ALTERNATIVES

	Gallons per Year			
Project Component	**Conventional BART Project**	**DMU Alternative (with EMU Option)**	**Express Bus/ BRT Alternative**	**Enhanced Bus Alternative**
Existing Dublin/ Pleasanton Station (net increase)	252,529	436,186	1,101,944	688,715
Isabel Station	1,813,616	1,813,616	--	--
Storage and Maintenance Facility	3,217,572	733,593	--	--
Wayside Facilities (Croak Road and Kitty Hawk Road)	204,400	204,400	--	--
Total (Gallons per Year)	**5,488,117**	**3,187,795**	**1,101,944**	**688,715**
Total (Acre-Feet per Year)	**16.8**	**9.8**	**3.4**	**2.1**

Notes: -- = not applicable.
Source: Wong, 2016 and 2017.

TABLE 3.P-4 WASTEWATER GENERATION – CONVENTIONAL BART AND BUILD ALTERNATIVES

	Gallons per Day			
Wastewater Treatment Facility/Project Components	**Conventional BART Project**	**DMU Alternative (with EMU Option)**	**Express Bus/ BRT Alternative**	**Enhanced Bus Alternative**
Dublin San Ramon Services District				
Dublin/Pleasanton Station	692	1,195	3,019	1,887
Livermore Water Reclamation Plant				
Isabel Station, Storage and Maintenance Facility, Wayside Facilities	9,936	6,534	--	--
Total (Gallons per Day)	**10,628**	**7,729**	**3,019**	**1,887**

Notes: -- = not applicable; All water used (see Table 3.P-3) was conservatively assumed to be treated as wastewater, except approximately 50 percent of water used at the storage and maintenance facility, which would be recycled.
Source: Wong, 2016 and 2017.

estimates are for the horizon year 2040, as this would present the highest demand on service providers in comparison to opening year 2025.[16] All estimates are based on estimates of existing or proposed BART facilities.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with the Proposed Project or any of the Build Alternatives. However, construction of the planned and programmed transportation improvements and continued land use development, including construction of residential and commercial uses under the No Project Alternative could result in increased demand for water supply/treatment or wastewater treatment. The effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to the provision or alternation of water or wastewater facilities, water demand, wastewater generation, or wastewater treatment requirements. **(NI)**

Conventional BART Project. Water use and wastewater generation for the Proposed Project would result from increased ridership at the existing Dublin/Pleasanton Station, operation of the proposed Isabel Station, operation of the storage and maintenance facility, and to a limited degree, wayside facilities.

- **Water Use.** Activities that would generate demand for water include facility cleaning, restrooms, drinking fountains, BART car maintenance activities, and landscaping. Water consumption estimates for the Proposed Project are shown in Table 3.P-3 and are described by facility below:
    - **Dublin/Pleasanton Station.** This analysis incorporates the net increase in water consumption above existing conditions for the Dublin/Pleasanton Station, associated with the increase in ridership at the station, above existing conditions. As stated in Section 3.B, Transportation, an average of 7,900 BART riders[17] exited at the Dublin/Pleasanton Station daily in 2016 and is anticipated to increase by approximately 14 percent, or 1,100 average daily riders, to a total of 9,000 in

[16] Water supply estimates from the Zone 7 2015 Urban Water Management Plan are through 2035. Because this information is only available until the year 2035, the analysis compares the horizon year (2040) to Zone 7's 2035 projections.

[17] Ridership refers to the number of linked trips on the BART system; a passenger boarding the Dublin/Pleasanton-Daly City line at Dublin/Pleasanton Station and transferring at Coliseum to the Richmond-Fremont line would count as one trip.

2040. As of 2015, the Dublin/Pleasanton Station used a total of 1,813,616 gpy.[18] With the projected increased number of riders at the station by 2040, water consumption is likely to increase by approximately 14 percent. Thus, the net increase in water usage at Dublin/Pleasanton Station would be 252,529 gpy (above existing water consumption at the station).

- **Isabel Station.** Demand for water supply at the proposed Isabel Station is estimated based on average water demand at the Dublin/Pleasanton Station (1,813,616 gpy), which is a comparable station.
- **Storage and Maintenance Facility.** Demand for water supply at the storage and maintenance facility under the Proposed Project is estimated based on the average water demand from BART's other comparable maintenance facilities. Under the Proposed Project, the storage and maintenance facility would include a BART car washing facility in addition to a number of water consuming activities such as showers and faucets. Estimates show that approximately 3,217,572 gpy will be used at the storage and maintenance facility for a fleet size of approximately 172 BART cars.
- **Wayside Facilities.** The wayside facilities at Croak Road and Kitty Hawk Road would generate limited demand for water associated with activities similar to those described above (i.e., restrooms, cleaning, and landscaping). Their combined water consumption would be comparable to one single-family household (approximately 204,400 gpy).[19]

In addition, the Proposed Project would include two new bus routes and four bus modified routes, as described in Chapter 2, Project Description. This would likely incrementally increase the number of buses in the regional bus system, resulting in an incremental increase in water consumption and wastewater generation in the study area. Overall, this additional feeder bus service would be anticipated to result in an incremental increase in water demand and wastewater generation.

It is conservatively estimated that the Proposed Project would generate increased demand for approximately 5,488,117 gpy of water (16.8 afy). By way of comparison,

[18] Wong, 2017. Personal communication from Norman D. Wong, Environmental Engineer, Office of District Architect, San Francisco Bay Area Rapid Transit District with Don Dean, Environmental Coordinator, BART. April 29.

[19] East Bay Municipal Utility District, 2017. Save Like a Pro. Available at: http://www.ebmud.com/water-and-drought/conservation-and-rebates/residential/save-pro/, accessed May 4, 2017.

5,488,117 gpy is similar to the amount of water consumed by approximately 54 single-family homes.[20]

As described in the Existing Conditions subsection above, water use in Zone 7 is anticipated to increase to 92,800 afy and have a supply of 99,500 afy in 2035, resulting in a surplus available supply 6,700 afy in 2035.[21] The estimated increase in water demand by 16.8 afy from the Proposed Project would represent less than 0.3 percent of projected surplus available supply in 2035.

Furthermore, BART Facilities Standards require projects to implement water-reduction measures, as described in the Regulatory Framework subsection above, which would further reduce water demand at BART facilities. These measures include sustainable landscaping (using xeriscaping and drought-tolerant plants and irrigation design specifications that are low-water flow), and low flow toilets meeting the green building code. In addition, BART uses reclaimed water for washing sidewalks and plazas at stations.

- **Wastewater Generation.** For the purposes of the wastewater assessment, it is conservatively assumed that all water used by the Proposed Project would be treated at a wastewater treatment plant, with the exception that approximately 50 percent of water used at the storage and maintenance facility would be recycled back into the facility's return systems for reuse.[22]As shown in Table 3.P-4, the Proposed Project would generate approximately 10,628 gpd. Wastewater generation from the Proposed Project is described below for the respective wastewater treatment providers.
  - **Dublin San Ramon Services District.** Wastewater from the Dublin/Pleasanton Station is treated at the Dublin San Ramon Services District, which currently has a maximum capacity of 17 mgd, a current demand of 8.1 mgd, and remaining capacity of 8.9 mgd. The estimated additional wastewater generated at the station would be 692 gpd, which would be less than 0.05 percent of the remaining wastewater capacity for the Dublin San Ramon Services District.
  - **Livermore Water Reclamation Plant.** Wastewater generated by the proposed Isabel Station, wayside facilities, and storage and maintenance facility would be treated at the Livermore Water Reclamation Plant, which currently has a maximum

[20] A typical single-family home uses approximately 102,200 gallons per year. East Bay Municipal Utility District, 2017. Save Like a Pro. Available at: http://www.ebmud.com/water-and-drought/conservation-and-rebates/residential/save-pro/, accessed May 4, 2017.

[21] Zone 7 Water Agency, 2016b. 2015 Urban Water Management Plan. March 31.

[22] Typically, water used for landscaping would not flow to the wastewater treatment plant, but would be discharged through the storm drain system. However, because water demand has not been disaggregated among the various types of consumption, it is not possible to estimate how much of the water consumed would be conveyed to a wastewater treatment plant versus a storm drain.

capacity of 8.5 mgd, a current demand ranging from 4 to 7 mgd, and a remaining wastewater capacity of 1.5 mgd or greater.[23] The proposed Isabel Station, wayside facilities, and storage and maintenance facility would generate approximately 9,936 gallons of wastewater per day, which would be less than 0.2 percent of the available treatment capacity of the Livermore Water Reclamation Plant.

No new or additional water or wastewater facilities would be required to meet the estimated water and wastewater demand from the Proposed Project.

In summary, as described above, the Proposed Project would have a negligible contribution to the increase in water demand and wastewater generation and would not require: (1) new water or wastewater treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects; (2) water demand that exceeds available water; (3) wastewater that exceeds treatment capacity; or (4) wastewater that exceeds treatment requirements. Therefore, the Proposed Project would result in less-than-significant impacts to water demand and wastewater generation, and no mitigation is needed. **(LS)**

DMU Alternative. The DMU Alternative would use water and generate wastewater in ways similar to the Proposed Project. However, rather than an additional 172 BART cars, the DMU Alternative would have 12 DMU trains at the storage and maintenance facility.

- **Water Use.** Water consumption estimates for the DMU Alternative are shown in Table 3.P-3 and described below:
  - **Dublin/Pleasanton Station.** Under the DMU Alternative ridership is anticipated to increase by approximately 24 percent, or 1,900 average daily riders, to a total of 9,800 in 2040 under the DMU Alternative. With the projected increased number of riders at the station, water consumption is likely to increase by approximately 24 percent above existing conditions. Thus, the net increase in water usage at the Dublin/Pleasanton Station would be 436,186 gpy.
  - **Isabel Station.** Demand for water supply at the proposed Isabel Station would be similar to that of the Proposed Project (1,813,616 gpy).
  - **Storage and Maintenance Facility.** Demand for water supply at the storage and maintenance facility is estimated based on projected demand at the proposed eBART Hillcrest maintenance yard. Under the DMU Alternative, water consuming activities at the storage and maintenance facility would be similar to that of the Proposed Project's storage and maintenance facility. Estimates show that a total of

[23] City of Livermore, 2013. Livermore Water Reclamation Plant 2012 Master Plan Update, November.

733,593 gpy would be used at the storage and maintenance facility for a fleet size of 12 rail vehicles.[24]

- **Wayside Facilities.** Wayside facilities water consumption would be similar to that described above for the Proposed Project (204,400 gpy).

The new and modified bus routes under the DMU Alternative would be the same as under the Proposed Project and result in an incremental increase in water demand and wastewater generation.

It is conservatively estimated that the DMU Alternative would generate increased demand for approximately 3,187,795 gpy of water (9.8 afy). By way of comparison, this would be similar to the amount of water consumed by approximately 31 single-family homes.[25]

As described above, water use in Zone 7 is anticipated to increase to 92,800 afy and have a supply of 99,500 afy in 2035, resulting in a surplus available supply 6,700 afy in 2035. The estimated increase in water demand by 9.8 afy from the DMU Alternative would represent less than 0.2 percent of available supply in 2035.

- **Wastewater Generation.** Similar to the Proposed Project, it is conservatively assumed that all water used would flow to the wastewater treatment plant and that 50 percent of water used at the storage and maintenance facility would be recycled back into their return systems. As shown in Table 3.P-4, the DMU Alternative would generate approximately 7,729 gpd. Wastewater generation from the DMU Alternative is described below for the respective wastewater treatment providers.
  - **Dublin San Ramon Services District.** Wastewater from the Dublin/Pleasanton Station is treated at the Dublin San Ramon Services District, which currently has a maximum capacity of 17 mgd, a current demand of 8.1 mgd, and remaining capacity of 8.9 mgd. The estimated additional wastewater generated at the station would be 1,195 gpd, which would be less than 0.1 percent of the remaining wastewater capacity for the Dublin San Ramon Services District.
  - **Livermore Water Reclamation Plant.** Wastewater generated by the proposed Isabel Station, wayside facilities, and storage and maintenance facility would be treated at the Livermore Water Reclamation Plant, which currently has a maximum capacity of 8.5 mgd, a current demand ranging from 4 to 7 mgd, and a remaining wastewater capacity of 1.5 mgd or greater. The proposed Isabel Station, wayside facilities, and storage and maintenance facility would generate approximately

[24] San Francisco Bay Area Rapid Transit District (BART), 2011. eBART Hillcrest Maintenance Facility Sanitary Sewer Loads.

[25] A typical single-family home uses approximately 102,200 gallons per year. East Bay Municipal Utility District, 2017. Save Like a Pro. Available at: http://www.ebmud.com/water-and-drought/conservation-and-rebates/residential/save-pro/, accessed May 4, 2017.

6,534 gpd of wastewater, which would be less than 0.1 percent of the available treatment capacity of the Livermore Water Reclamation Plant.

No new or additional water or wastewater facilities would be required to meet the estimated water and wastewater demand from the DMU Alternative.

In summary, as described above, the DMU Alternative would have a negligible contribution to the increase in water demand and wastewater generation and would not require: (1) new water or wastewater treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects; (2) water demand that exceeds available water; (3) wastewater that exceeds treatment capacity; or (4) wastewater that exceeds treatment requirements. Therefore, the DMU Alternative would result in less-than-significant impacts to water demand and wastewater generation, and no mitigation is needed. **(LS)**

Express Bus/BRT Alternative. The Express Bus/BRT Alternative would not include a new station or other BART facilities. However, under this alternative ridership levels at the Dublin/Pleasanton Station would increase and would likely result in an increase in demand for water and wastewater generation at the station.

- **Water Use.** Activities that would generate demand for water include facility cleaning, restrooms, drinking fountains, and landscaping. Water consumption for the Express Bus/BRT Alternative are shown in Table 3.P-3 and described below:
  - **Dublin/Pleasanton Station.** Under the Express Bus/BRT Alternative, ridership is anticipated to increase by approximately 61 percent, or 4,800 average daily riders, to a total of 12,700 in 2040. With the projected increased number of riders at the station by 2040, water consumption is likely to increase by 61 percent above existing conditions. Thus, the net increase in water usage at the Dublin/Pleasanton Station would be 1,101,944 gpy.

  The new and modified bus routes under this alternative result in an incremental in water demand and wastewater generation, similar to the Proposed Project.

  It is conservatively estimated that the Express Bus/BRT Alternative would generate increased demand for approximately 1,101,944 gpy (3.4 afy). By way of comparison, 1,101,944 gpy is similar to the amount of water consumed by approximately 11 single-family homes.[26]

[26] A typical single-family home uses approximately 102,200 gallons per year. East Bay Municipal Utility District, 2017. Save Like a Pro. Available at: http://www.ebmud.com/water-and-drought/conservation-and-rebates/residential/save-pro/, accessed May 4, 2017.

As described above water usage in Zone 7 is anticipated to increase to 92,800 afy and have a supply of 99,500 afy in 2035, resulting in a surplus available supply 6,700 afy in 2035. The estimated increase in water demand by 3.4 afy from the Express Bus/BRT Alternative would represent less than 0.1 percent of projected available surplus available supply in 2035.

- **Wastewater Generation.** For the purposes of the wastewater assessment, it is conservatively assumed that all water used would flow to the wastewater treatment. Therefore, wastewater under the Express Bus/BRT Alternative is conservatively estimated to be the same as the water consumed.
    - **Dublin San Ramon Services District.** Wastewater from the Dublin/Pleasanton Station is treated at the Dublin San Ramon Services District, which currently has a maximum capacity of 17 mgd, a current demand of 8.1 mgd, and remaining capacity of 8.9 mgd. The estimated additional wastewater generated at the station would be approximately 3,019 gpd, which would be less than 0.1 percent of the remaining wastewater capacity for the Dublin San Ramon Services District.

No new or additional water or wastewater facilities would be required to meet the estimated water and wastewater demand from the Express Bus/BRT Alternative.

In summary, as described above, the Express Bus/BRT Alternative would have a negligible contribution to the increase in water demand and wastewater generation and would not require: (1) new water or wastewater treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects; (2) water demand that exceeds available water; (3) wastewater that exceeds treatment capacity; or (4) wastewater that exceeds treatment requirements. Therefore, the Express Bus/BRT Alternative would result in less-than-significant impacts to water demand and wastewater generation, and no mitigation is needed. **(LS)**

Enhanced Bus Alternative. Similarly to the Express Bus/BRT Alternative, the Enhanced Bus Alternative would not include any additional BART facilities that would create an increased demand in water consumption or wastewater generation. However, under this alternative ridership levels at the Dublin/Pleasanton Station would increase and would likely result in an increase in demand for water and wastewater generation.

- **Water Use.** Activities that would generate demand for water are similar to that of the Express Bus/BRT Alternative. Water consumption for the Enhanced Bus Alternative are shown in Table 3.P-3 and are described by facility below:
    - **Dublin/Pleasanton Station.** Under the Express Bus/BRT Alternative ridership is anticipated to increase by approximately 38 percent, or 3,000 average daily riders, to a total of 10,900 riders. With the projected increased number of riders at the station by 2040, water consumption is likely to increase by approximately 38

percent above existing conditions. Thus, the net increase in water usage at the Dublin/Pleasanton Station would be 688,715 gpy.

In addition, the new and modified bus routes under this alternative would result in an incremental increase in water demand and wastewater generation.

It is conservatively estimated that the Enhanced Bus Alternative would generate increased demand approximately 688,715 gpy of water (2.1 afy). By way of comparison, 688,715 gpy is similar to the amount of water consumed by approximately seven single-family homes.[27]

As described above, water use in Zone 7 is anticipated to increase to 92,800 afy and have a supply of 99,500 afy in 2035, resulting in a surplus available supply 6,700 afy in 2035. The estimated increase in water demand by 2.1 afy from the Enhanced Bus Alternative would represent approximately 0.1 percent of available supply in 2035.

- **Wastewater Generation.** As described above, for the purposes of the wastewater assessment, it is conservatively assumed that all water used would flow to the wastewater treatment. Wastewater under the Enhanced Bus Alternative is conservatively estimated to be the same as the water consumed.
  - **Dublin San Ramon Services District.** Wastewater from the Dublin/Pleasanton Station is treated at the Dublin San Ramon Services District, which currently has a maximum capacity of 17 mgd, a current demand of 8.1 mgd, and remaining capacity of 8.9 mgd. The estimated additional wastewater generated at the station would be approximately 1,887 gpd, which would be less than 0.1 percent of the remaining wastewater capacity for the Dublin San Ramon Services District.

No new or additional water or wastewater facilities would be required to meet the estimated water and wastewater demand from the Enhanced Bus Alternative.

In summary, as described above, the Enhanced Bus Alternative would have a negligible contribution to the increase in water demand and wastewater generation and would not require: (1) new water or wastewater treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects; (2) water demand that exceeds available water; (3) wastewater that exceeds treatment capacity; or (4) wastewater that exceeds treatment requirements. Therefore, the Enhanced Bus Alternative would result in less-than-significant impacts to water demand and wastewater generation, and no mitigation is needed. **(LS)**

[27] A typical single-family home uses approximately 102,200 gallons per year. East Bay Municipal Utility District, 2017. Save Like a Pro. Available at: http://www.ebmud.com/water-and-drought/conservation-and-rebates/residential/save-pro/, accessed May 4, 2017.

Mitigation Measures. As described above, the Proposed Project and Alternatives would not result in significant impacts related to water demand and wastewater capacity or require additional water and wastewater facilities, and no mitigation measures are required.

Impact UTIL-6: Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs or violate applicable federal, State, and local statutes and regulations related to solid waste.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: LS)

Solid waste generation estimates for the Proposed Project and Build Alternatives are shown in Table 3.P-5. These estimates are for the horizon year 2040, as this would present the highest demand on service providers in comparison to opening year 2025.

TABLE 3.P-5 SOLID WASTE GENERATION – CONVENTIONAL BART AND BUILD ALTERNATIVES

	Tons per Year			
Project Component	**Conventional BART Project**	**DMU Alternative (with EMU Option)**	**Express Bus/ BRT Alternative**	**Enhanced Bus Alternative**
Dublin/Pleasanton Station (net increase)	37.9	65.4	165.3	103.3
Isabel Station (new)	272.0	272.0	--	--
Storage and Maintenance Facility (new)	578.5	40.4	--	--
Total (Tons per Year)	**888.4**	**377.8**	**165.3**	**103.3**
Total (Tons per Day)	**2.4**	**1.0**	**0.5**	**0.3**

Notes: -- = not applicable.
Source: Wong, 2016 and 2017.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with the Proposed Project or any of the Build Alternatives. However, construction of the planned and programmed transportation improvements and continued land use development, including construction of residential and commercial uses under the No Project Alternative could result in increased solid waste generation and increased demand on landfills. The effects of the other projects associated with the No

Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to solid waste or landfills. **(NI)**

Conventional BART Project. Solid waste generation from the Proposed Project would result from increased ridership at the existing Dublin/Pleasanton Station, operation of the proposed Isabel Station and operation of the storage and maintenance facility. Waste at the Isabel Station would be generated by both BART staff and patrons.

- **Solid Waste**. Solid waste generation estimates for the Proposed Project are shown in Table 3.P-5 and are described by facility below:
    - **Dublin/Pleasanton Station.** This analysis incorporates the net increase in solid waste generation above existing conditions for the Dublin/Pleasanton Station, associated with the increase in ridership at the station, above existing conditions. As stated in Section 3.B, Transportation, an average of 7,900 BART riders exited at the Dublin/Pleasanton Station daily in 2016 and is anticipated to increase by approximately 14 percent, or 1,100 average daily riders, to a total of 9,000 in 2040. As of 2015, the Dublin/Pleasanton Station generated a total of 22 tons of recycled materials and 272 tons of solid waste.[28] With the projected increased number of riders at the station by 2040, solid waste generation is likely to increase by approximately 14 percent. Thus, the net increase in solid waste generation at Dublin/Pleasanton Station would be 37.9 tpy (above existing solid waste generation at the station).
    - **Isabel Station.** Solid waste generation at the proposed Isabel Station is estimated based on existing solid waste generation at the Dublin/Pleasanton Station (272 tpy), which is a comparable station.
    - **Storage and Maintenance Facility.** Activities associated with BART employees, BART car cleaning, and other BART car maintenance would all generate solid waste. Solid waste generation at the storage and maintenance facility under the Proposed Project is estimated based on the average solid waste generated from BART's other comparable maintenance facilities—approximately 3.36 tons per BART car per year. Based on a fleet size of 172 BART cars, approximately 578 tpy would be generated at the storage and maintenance facility.

  It is conservatively estimated that the Proposed Project would generate increased demand on landfills by approximately 888.4 tpy (2.4 tpd).

[28] Wong, 2016. Personal communication from Norman D. Wong, Environmental Engineer, Office of District Architect, San Francisco Bay Area Rapid Transit District with Don Dean, Environmental Coordinator, BART. April 29.

- **Landfill Capacity.** The Altamont Landfill is the primary landfill serving the Dublin/Pleasanton Station and the Republic/Vasco Road Landfill is the primary landfill serving the area of the proposed Isabel Station, wayside facilities, and storage and maintenance facility.
    - **Altamont Landfill.** The Altamont Landfill has a maximum capacity of 7,000 tpd, a current demand of 4,511 tpd, and remaining available capacity of 2,489 tpd. The estimated increase of 37.9 tpy (0.1 tpd) in solid waste from the Dublin/Pleasanton Station would be less than 0.01 percent of the landfill's remaining available daily capacity.
    - **Republic/Vasco Road Landfill.** The Republic/Vasco Road Landfill has a current demand of 885 tpd and has a maximum capacity of 2,518 tpd, and a remaining available capacity of 1,633 tpd. The estimated increase 850.5 tpy (2.3 tpd) in solid waste from the proposed Isabel Station and storage and maintenance facility would be less than 0.2 percent of the landfill's remaining available daily capacity.

  However, the Republic/Vasco Road Landfill is anticipated to reach capacity in 2022, and would most likely be closed by 2025 when the Proposed Project is anticipated to be in operation.[29] Despite this, the county has a remaining landfill capacity of 45.6 million tons as of 2014. Furthermore, while the Republic/Vasco Road Landfill is anticipated to reach capacity in 2022, the Altamont Landfill is expected to have capacity through 2049. As stated in the Countywide Integrated Waste Management Plan, the county has sufficient landfill capacity until 2049.[30]

As described above, the Proposed Project would be served by a landfill with sufficient capacity. Furthermore, solid waste recycling and disposal for the Proposed Project would be contracted with the appropriate local service providers to ensure compliance with applicable regulations. Therefore, the Proposed Project would have less-than-significant impacts on local landfill capacity and would not violate applicable statutes and regulations. No mitigation is needed. **(LS)**

DMU Alternative. The DMU Alternative would generate solid waste similar to the Proposed Project. However, the DMU Alternative would have 12 DMU trains at the storage and maintenance facility.

- **Solid Waste**. Solid waste generation estimates for the DMU Alternative are shown in Table 3.P-5 and are described by facility below:
    - **Dublin/Pleasanton Station.** Under the DMU Alternative, ridership is anticipated to increase by approximately 24 percent, or 1,900 average daily riders, to a total of

[29] Alameda County Waste Management Authority, 2003. Countywide Integrated Waste Management Plan. Adopted February 26, 2003, amended March 2015.
[30] Ibid.

9,800 in 2040 under the DMU Alternative. With the projected increased number of riders at the station by 2040, solid waste generation is likely to increase by approximately 24 percent above existing conditions. Thus, the net increase in solid waste generation at the Dublin/Pleasanton Station would be 65.4 tpy or 0.2 tpd.

- **Isabel Station.** Solid waste generation at the proposed Isabel Station would be similar to that of the Proposed Project (272 tpy).
- **Storage and Maintenance Facility.** Similar to the BART cars, DMU vehicles would also generate waste at a rate of 3.36 tpy per vehicle. Thus, approximately 40.4 tpy would be generated at the storage and maintenance facility for a fleet size of 12 DMU trains.

It is conservatively estimated that the DMU Alternative would generate increased demand on landfills by approximately 377.8 tpy (1 tpd).

- **Landfill Capacity.** Landfills serving the facilities under the DMU Alternative would be the same as under the Proposed Project.
  - **Altamont Landfill.** The Altamont Landfill has a maximum capacity of 7,000 tpd, a current demand of 4,511 tpd, and remaining available capacity of 2,489 tpd. The estimated increase of 65.4 tpy (0.2 tpd) in solid waste from the Dublin/Pleasanton Station would be less than 0.01 percent of the landfill's remaining available daily capacity.
  - **Republic/Vasco Road Landfill.** The Republic/Vasco Road Landfill has a current demand of 885 tpd and has a maximum capacity of 2,518 tpd, and a remaining available capacity of 1,633 tpd. The estimated increase 312.4 tpy (0.9 tpd) in solid waste from the Isabel Station and storage and maintenance facility would be less than 0.1 percent of the landfill's remaining available daily capacity.

  As stated under the Proposed Project, the Republic/Vasco Road Landfill is anticipated to reach capacity in 2022; however, the county has sufficient landfill capacity through 2049.

As described above, the DMU Alternative would be adequately served by a landfill with sufficient capacity. Similar to the Proposed Project, solid waste recycling and disposal would be contracted with the appropriate local service providers to ensure compliance with applicable regulations. Therefore, the DMU Alternative would have less-than-significant impacts on local landfill capacity and would not violate applicable statutes and regulations. No mitigation is needed. **(LS)**

Express Bus/BRT Alternative. The Express Bus/BRT Alternative would provide increased access to the existing Dublin/Pleasanton Station via the proposed bus transfer platforms, but would not include a new BART stations or a storage and maintenance facility.

- **Solid Waste**. Under the Express Bus/BRT Alternative, solid waste would be generated at the Dublin/Pleasanton Station**.** Solid waste generation estimates are shown in Table 3.P-5. Under the Express Bus/BRT Alternative ridership is anticipated to increase by approximately 61 percent, or 4,800 average daily riders, to a total of 12,700 riders in 2040. With the projected increased number of riders at the station by 2040, solid waste generation is likely to increase by approximately 61 percent above existing conditions. Thus, the net increase in solid waste generation at Dublin/Pleasanton Station would be approximately 165.3 tpy (0.5 tpd).
- **Landfill Capacity.** The Altamont Landfill is the primary landfill serving the Dublin/ Pleasanton Station. The Altamont Landfill has a maximum capacity of 7,000 tpd, a current demand of 4,511 tpd, and remaining available capacity of 2,489 tpd. The estimated increase of 165.3 tpy (0.5 tpd) in solid waste from the Dublin/Pleasanton Station would be less than 0.1 percent of the landfill's remaining available daily capacity.

As described above, the Express Bus/BRT Alternative would be adequately served by a landfill with sufficient capacity. Furthermore, solid waste recycling and disposal would be contracted with the appropriate local service providers to ensure compliance with applicable regulations. Therefore, the Express Bus/BRT Alternative would have less-than-significant impacts on local landfill capacity and would not violate applicable statutes and regulations. No mitigation is needed. **(LS)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would result in minor bus infrastructure improvements and new/modified bus routes, with a limited increase in bus ridership.

- **Solid Waste**. Under the Enhanced Bus Alternative, solid waste would be generated at the Dublin/Pleasanton Station**.** Solid waste generation estimates are shown in Table 3.P-5. Ridership at the station is anticipated to increase by approximately 38 percent, or 3,000 average daily riders, to a total of 10,900 riders. With the projected increased number of riders at the station by 2040, solid waste generation is likely to increase by approximately 38 percent above existing conditions. Thus, the net increase in solid waste generation at Dublin/Pleasanton Station would be 103.3 tpy (0.3 tpd).
- **Landfill Capacity.** The Altamont Landfill is the primary landfill serving the Dublin/Pleasanton Station. The Altamont Landfill has a maximum capacity of 7,000 tpd, a current demand of 4,511 tpd, and remaining available capacity of 2,489 tpd. The estimated increase of 103.3 tpy (0.3 tpd) in solid waste from the Dublin/Pleasanton Station would be less than 0.1 percent of the landfill's remaining available daily capacity.

As described above, the Enhanced Bus Alternative would be adequately served by a landfill with sufficient capacity. Furthermore, solid waste recycling and disposal would be contracted with the appropriate local service providers to ensure compliance with applicable regulations. Therefore, the Express Bus/BRT Alternative would have less-than-significant impacts on local landfill capacity and would not violate applicable statutes and regulations. No mitigation is needed. **(LS)**

Mitigation Measures. As described above, the Proposed Project and Alternatives would not result in significant impacts related to landfill capacity and would not violate any applicable solid waste regulations, and no mitigation measures are required.

(b) Operations – Cumulative Analysis

The geographic study area for the cumulative analysis of utility impacts includes the service area of the utility providers within the project corridor and generally conforms to the Tri-Valley Area, including the cities of Dublin, Pleasanton, and Livermore, as described in the Introduction subsection above.

The cumulative condition includes the population and employment growth projections assumed through 2040, which account for the growth forecasts provided in the general plans for the various jurisdictions in the study area and in Plan Bay Area. Specific projects and plans include those listed in Section 3.A, Introduction to Environmental Analysis and Appendix E.

Impact UTIL-7(CU): Require or result in (1) new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; (2) water demand that exceeds available water; (3) wastewater that exceeds treatment capacity; or (4) wastewater that exceeds treatment requirements under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: LS)

No Project Alternative. As described in **Impact CS-5** above, the No Project Alternative would have no new physical impacts associated with the provision of or need for new or physically altered water or wastewater treatment facilities, increased demand for water, increased generation of wastewater, and would not violate local wastewater treatment requirements. Therefore, the No Project Alternative would not contribute to cumulative impacts. **(NI)**

Conventional BART Project and Build Alternatives. Development of the cumulative plans and projects listed in Section 3.A, Introduction to Environmental Analysis and Appendix E, could substantially increase demand for water and wastewater services in future years by increasing the population and employment in the study area. The Proposed Project and Build Alternatives would also increase demand on water and wastewater capacity,

although the demand is anticipated to be minor relative to available supplies/treatment capacity, as described in **Impact UTIL-5** above. Further, the INP, which is assumed to be implemented in conjunction with the Proposed Project or DMU Alternative, would shift growth in the city of Livermore to the INP area, resulting in greater density in the area. However, it would not increase the city's projected water demand as the overall development would be consistent with the city's General Plan.

The 2015 Urban Water Management Plan estimates demand in 2035 will be 92,800 afy and available supply will be 99,500 afy, resulting in a remaining available supply of 6,700 afy.[31] Furthermore, demand for future water use on a per capita basis has been declining and is expected to continue to decline due to water conservation efforts. In addition, water conservation programs by local water supply retailers are anticipated to reduce demand and recycled water projects would increase supply in Zone 7's service area.[32] The projected water supply is anticipated to be adequate for the Proposed Project and Build Alternatives in conjunction with the INP and other cumulative projects.

The Dublin San Ramon Services District and the city of Livermore, through its Livermore Water Reclamation Plant, provide wastewater treatment services in the study area. The Dublin San Ramon Services District currently has a maximum capacity of 17 mgd, a current demand of 8.1 mgd, and remaining capacity of 8.9 mgd. The Livermore Water Reclamation Plant currently has a maximum capacity of 8.5 mgd, a current demand ranging from 4 to 7 mgd, and a remaining wastewater capacity of 1.5 mgd or greater. Therefore, the available capacity for wastewater treatment at these facilities is anticipated to be adequate for the projected future demand with the Proposed Project and Build Alternatives in conjunction with the INP and other cumulative projects.

The Proposed Project and Build Alternatives and cumulative projects would not trigger the need for the construction of new, or the expansion of existing, water or wastewater facilities, beyond that already accounted for in the respective water and wastewater provider's planning documents. Therefore, the Proposed Project and Build Alternatives in combination with the cumulative projects would have a less-than-significant cumulative impact on water supply and wastewater treatment capacity. **(LS)**

Mitigation Measures. As described above, the Proposed Project and Alternatives, in combination with past, present, or probable future projects, would not result in significant cumulative impacts related to water demand and water capacity or require additional water and wastewater facilities, and no mitigation measures are required.

[31] Zone 7 Water Agency, 2016b. 2015 Urban Water Management Plan. March 31.
[32] Zone 7 Water Agency, 2016c. Water Supply Evaluation Update. February.

Impact UTIL-8(CU): Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs or violate applicable federal, State, and local statutes and regulations related to solid waste under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: LS)

No Project Alternative. As described in **Impact CS-5** above, the No Project Alternative would have no impacts associated with solid waste or landfills. Therefore, the No Project Alternative would not contribute to cumulative impacts. **(NI)**

Conventional BART Project and Build Alternatives. Development of the cumulative plans and projects could substantially increase demand for solid waste disposal in the study area. In addition, the Proposed Project and Build Alternatives would also result in an incremental increase demand for solid waste disposal, as described in **Impact UTIL-6** above. Further, the INP, which is assumed to be implemented in conjunction with the Proposed Project and DMU Alternative, would also increase demand.

As described above, the Alameda County Waste Integrated Management Plan analyzes landfill capacity by examining the aggregate total for all landfills within the county. The county has a remaining landfill of 45.6 million tons, as of 2014. Furthermore, while the Republic/Vasco Road Landfill is anticipated to reach capacity in 2022, the Altamont Landfill is expected to have capacity through 2049. As stated in the Countywide Integrated Waste Management Plan, the county has sufficient landfill capacity until 2049.[33]

Development along the project corridor would be required to contract with proper service providers that continue to abide by and facilitate current and future laws for solid waste disposal. Therefore, the Proposed Project and Build Alternatives, together with cumulative developments, would have a less-than-significant impact on local landfill capacities and would not violate applicable statutes and regulations. **(LS)**

Mitigation Measures. As described above, the Proposed Project and Alternatives, in combination with past, present, or probable future projects, would not result in significant cumulative impacts related to landfill capacity or solid waste regulations, and no mitigation measures are required.

[33] Alameda County Waste Management Authority, 2003. Countywide Integrated Waste Management Plan. Adopted February 26, 2003, amended March 2015.