4.13 Water Resources/Hydrology and Water Quality

4.13.1 Regulatory Framework and Methodology

4.13.1.1 Regulatory Framework

The applicable federal, state, and local regulations that are relevant to an analysis of the proposed project's hydrology and water quality impacts are listed below. For additional information regarding these regulations, please see the *Water Resources Technical Report* in Appendix Q of this Draft EIS/EIR.

Federal

- Clean Water Act (Sections 303, 402)
- Executive Order 11988
- Federal Emergency Management Agency (Flood Disaster Protection Act of 1973, National Flood Insurance Reform Act of 1994)
- Rivers and Harbors Act

State

- Porter-Cologne Water Quality Control Act of 1969
- National Pollutant Discharge Elimination System
- Construction General Permit
- Industrial Permit

Local

- Water Quality Control Plan for the Los Angeles Region
- General Waste Discharge Requirements for Low-threat Discharges to Surface Water
- County of Los Angeles Municipal Stormwater NPDES Permit (MS4 Permit)
- Los Angeles County Stormwater Program
- Master Drainage Plan for Los Angeles County
- Standard Urban Stormwater Mitigation Plan
- Stormwater and Runoff Pollution Control Ordinance of the County of Los Angeles
- Los Angeles County Flood Control Act
- Metro Water Action Plan
- City of San Fernando Stormwater Program
- City of Los Angeles Stormwater Program
- City of Los Angeles Municipal Code
- The Los Angeles Specific Plan for Management of Flood Hazards (Ordinance 172081)

- City of Los Angeles Stormwater Ordinance
- City of Los Angeles Low Impact Development Ordinance

4.13.1.2 Methodology

The impact section addresses the adverse effects of the alternatives based on an analysis of the water and hydrologic resources and stormwater conveyance facilities described in the existing conditions section. The analysis considers:

- Construction and operation activities that could affect surface water runoff and drainage;
- Impacts related to surface runoff from impervious surfaces;
- Floodplains and groundwater resources;
- Required permits; and
- Whether project stormwater drainage and water quality requirements are met during construction and operation.

4.13.1.3 Significance Thresholds

Significance thresholds are used to determine whether a project may have a significant environmental effect. The significance thresholds, as defined by federal and state regulations and guidelines, are discussed below.

NEPA

NEPA does not include specific significance thresholds. According to the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA, the determination of significance under NEPA is based on context and intensity.[1]

Context relates to the various levels of society where effects could result, such as society as a whole, the affected region, the affected interests, and the locality. The intensity of an effect relates to several factors, including the degree to which public health and safety would be affected; the proximity of a project to sensitive resources; and the degree to which effects on the quality of the human environment are likely to be highly controversial or involve unique or unknown risks.

Under NEPA, the context and intensity of the project's effects are discussed in this Land Use section regardless of any thresholds levels, and mitigation measures would be included where reasonable.

CEQA

CEQA requires state and local government agencies to identify the significant environmental effects of proposed actions; however, CEQA does not describe specific significance thresholds. According to the 2016 CEQA Guidelines (15064.7. Thresholds of Significance), each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative, or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant.

[1] Code of Federal Regulations. *CEQ – Regulations for Implementing NEPA, 40 CFR Part 1508, Terminology and Index*.

State CEQA Guidelines

The State CEQA Guidelines define a significant effect on the environment as: "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance" (State CEQA Guidelines, Section 15382).

The State CEQA Guidelines do not describe specific significance thresholds. However, Appendix G of the State CEQA Guidelines lists a variety of potentially significant effects, which are often used as thresholds or guidance in developing thresholds for determining impact significance. Accordingly, for the purposes of this EIS/EIR, a project would normally have a significant impact on existing water resources, hydrology, and water quality, under CEQA, if it would:

- Violate any water quality standards or waste discharge requirements
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be 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 which 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 on- 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 on- 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 flood flows
- 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.
- Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.[2]

L.A. CEQA Thresholds Guide

According to the *L.A.CEQA Thresholds Guide,* a project would normally have a significant impact on surface water hydrology if it would:

- Cause flooding during the projected 50-year developed storm event, which would have the potential to harm people or damage property or sensitive biological resources
- Substantially reduce or increase the amount of surface water in a water body
- Result in a permanent, adverse change to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow or

[2] Due to the low risk of seiche, tsunami, or mudflow in the project area, these impacts are not addressed in the Environmental Consequences/Environmental Impacts section below.

- A project would normally have a significant impact on surface water quality if discharges associated with the project would create pollution, contamination or nuisance as defined in Section 13050 of the California Water Code (CWC) or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Basin Plan (i.e., beneficial uses, 303(d)-listed impairments, and water quality objectives) for the receiving water body

4.13.2 Affected Environment/Existing Conditions

4.13.2.1 Surface Hydrology

Precipitation in the San Fernando Valley is characterized by intermittent rain during winter months and negligible rain during summer months; 85 percent of the annual precipitation occurs from November to March. Although precipitation normally occurs as rainfall, winter snow is common in the higher elevations of the San Gabriel Mountains. As is typical of many semi-arid regions, the Los Angeles area experiences a wide variation in monthly and seasonal precipitation totals.

Precipitation may flow into surface reservoirs and groundwater basins or run off to the ocean. Short-term water storage is in surface reservoirs and long-term storage is in groundwater basins. The amount of infiltration to groundwater basins is dependent upon the slope, the soil type, and the intensity and duration of rainfall. Because most of the greater Los Angeles area is either paved or developed, a great deal of runoff occurs. Flood control structures have been constructed to channel runoff through inhabited areas to minimize flooding and to aid in recharging groundwater storage units.

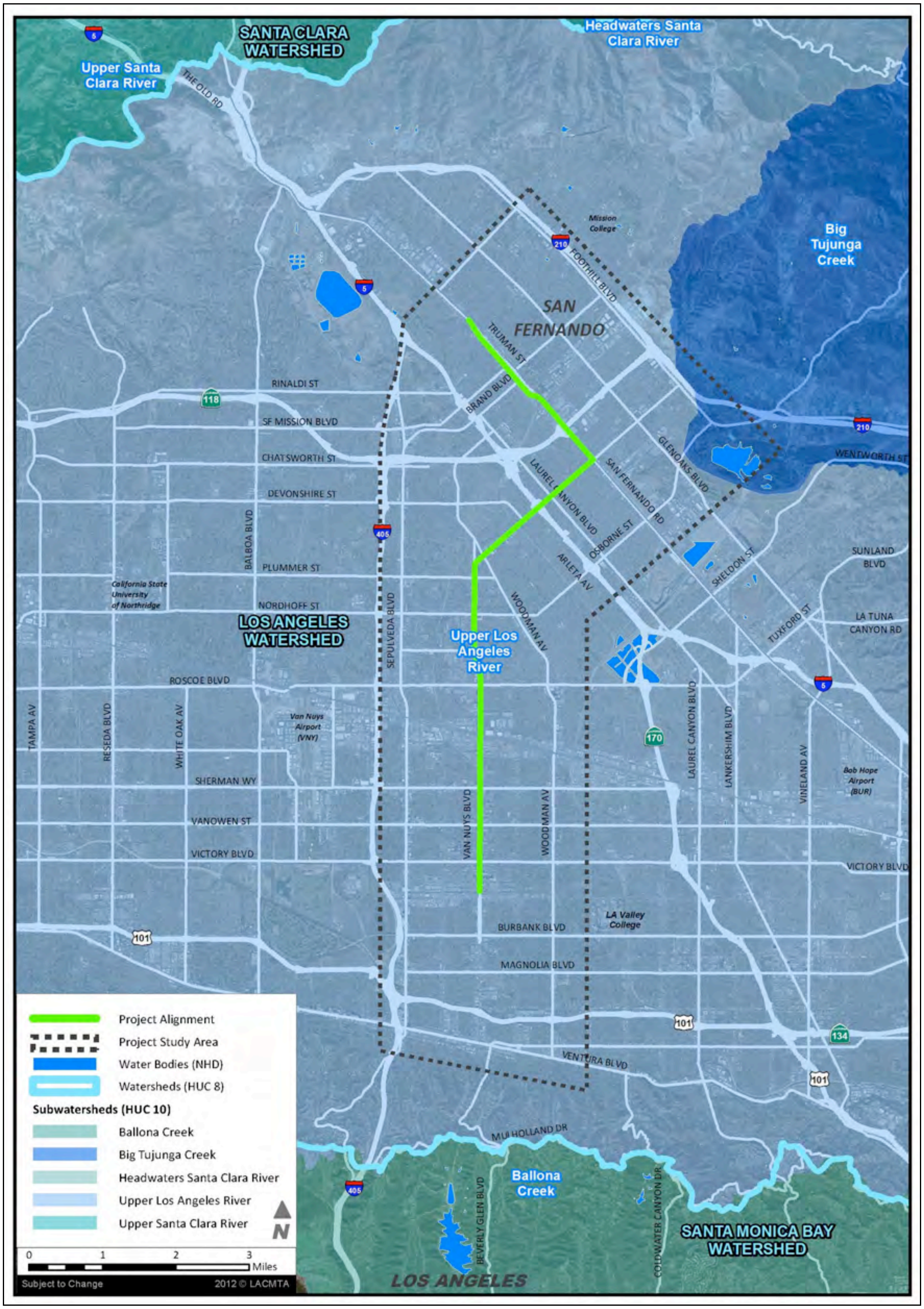
4.13.2.2 Regional Surface Hydrology

The project site is located within the northwestern area of the Los Angeles River Watershed (Upper Los Angeles River Watershed) in the San Fernando Valley. The project is located primarily within the Los Angeles subwatershed within the upper Los Angeles River Watershed. Surface water in the San Fernando Valley drains out of the Valley through the Los Angeles River, which flows in an east-west direction and crosses the project corridor at the south end.

The Los Angeles River Watershed (HUC12-I80701050206) covers a land area of approximately 834 square miles. The Los Angeles River has evolved from an uncontrolled, meandering river providing a valuable source of water for early inhabitants to a major flood protection waterway. A small area in the northern portion of the project area is located within the Big Tujunga Creek subwatershed in the Hansen Flood Control Basin area as well. Watersheds and subwatersheds within the project vicinity are shown in Figure 4.13-1.

The Los Angeles River flows from the southwest side of the San Fernando Valley through the Los Angeles Coastal Plain to San Pedro Bay. Within the project study area, it is located approximately 0.5 mile north of the Metro Orange Line right-of-way at the west end of the Metro Orange Line corridor, crosses the Metro Orange Line corridor 0.5 mile west of the Balboa Station, and is 1.5 miles south of the Metro Orange Line right-of-way at the east end of the Metro Orange Line corridor. The Los Angeles River, has been channelized, and lined with concrete along most of its course for flood control purposes. Within the Sepulveda Flood Control Basin, the floor of the channel is unlined, allowing percolation of water from the channel into the ground.

Figure 4.13-1: Watersheds and Subwatersheds within the Project Vicinity



Source: ICF International, 2015.

Numerous tributaries, most of which have intermittent flow, discharge into the Los Angeles River. These include the Arroyo Calabasas, Bell Creek, Aliso Wash, Browns Canyon Wash, Chatsworth Creek, Pacoima Wash, Tujunga Wash, and Verdugo Wash. These washes and creeks are primarily concrete-lined within the urban areas. Flows in the Los Angeles River system are highly variable. Dry season flows are comprised chiefly of excess irrigation water applied in urban areas, controlled release of reservoirs, and municipal and industrial wastewater including effluent from the Tillman and Los Angeles-Glendale sewage treatment plants. During the wet season, flows in the Los Angeles River are augmented by stormwater runoff that varies with storm duration, intensity, and frequency.

The Los Angeles Department of Public Works is tasked with finding ways to restore or revitalize the channels within the watershed and, thereby, provide significant opportunities for recreation use and aesthetic improvements along the waterways in the Los Angeles metropolitan area while protecting the Los Angeles Basin from major flooding.

4.13.2.3 Local Surface Water Hydrology

The project area is highly urbanized with few natural areas or drainage features. Hydrological features within the project study area are shown in Figure 4.13-2.

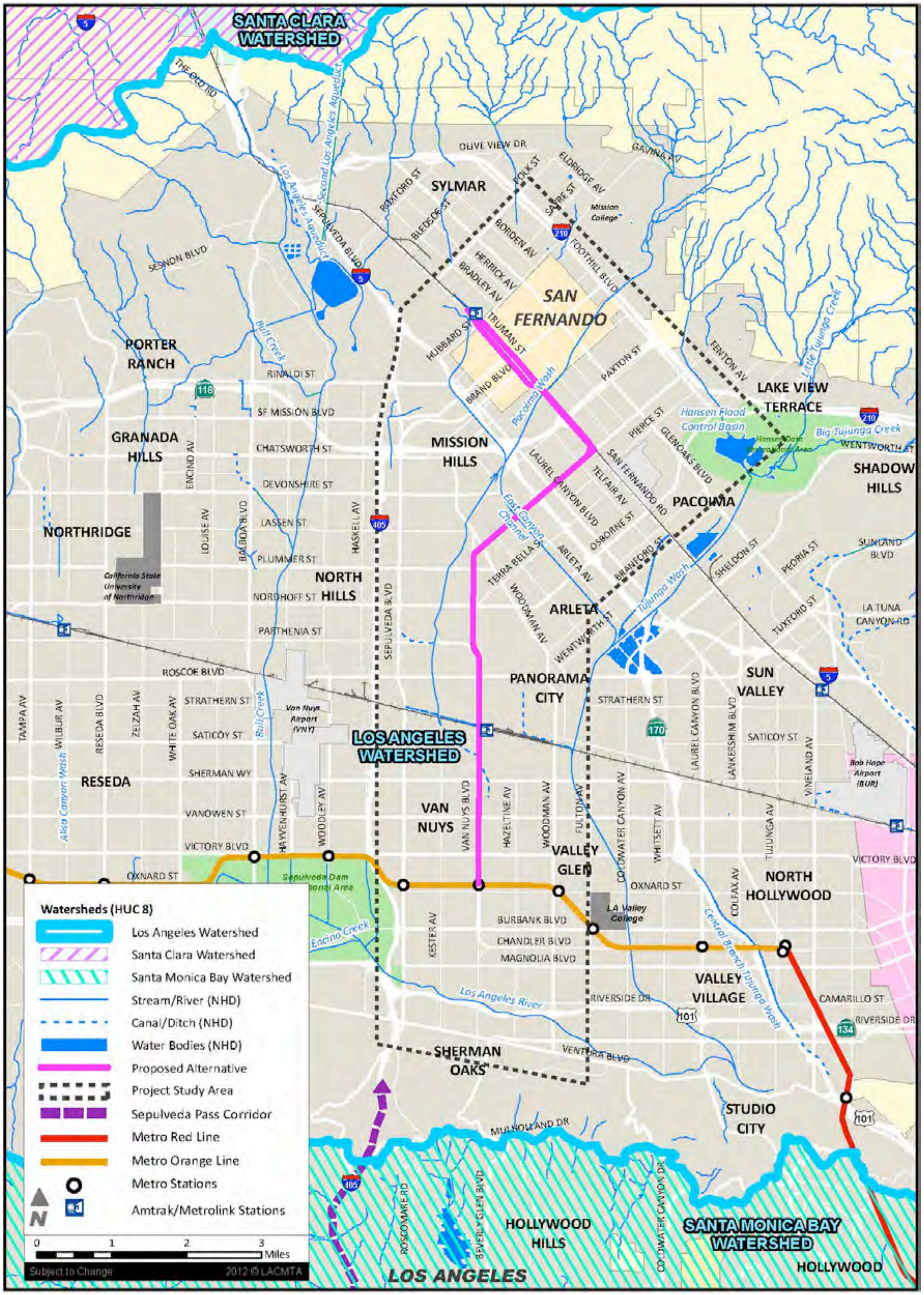
There are four major waterways crossing the project corridor. The crossings are located as follows:

1. Pacoima Wash at San Fernando Road;
2. Pacoima Wash at Van Nuys Boulevard;
3. Pacoima Channel at Van Nuys Boulevard; and
4. Pacoima South Channel at Van Nuys Boulevard

Other major surface water resources in the vicinity of the project corridor are Caballero Creek, Bull Creek, and the Tujunga Wash. Caballero Creek drains an area of approximately 10 square miles, most of which lies within the Santa Monica Mountains. The creek flows only intermittently. It crosses the Metro Orange Line Corridor as a box culvert approximately 0.4 mile east of the Reseda Station and joins the Los Angeles River 1 mile to the north. Bull Creek drains an area of approximately 150 square miles, including large areas within the San Gabriel and Santa Susana Mountains. Bull Creek is regulated by the Upper Van Norman Dam and Lake, which is located approximately 7 miles north of the Metro Orange Line. It crosses the Metro Orange Line as a concrete lined channel 0.2 miles east of the Balboa Station and joins the Los Angeles River 0.6 mile to the south within the Sepulveda Basin. The Tujunga Wash drains an area of approximately 150 square miles, including large areas within the San Gabriel Mountains. The Tujunga Wash is regulated by the Hansen Dam and Flood Control Basin, which is located approximately 5 miles north of the Metro Orange Line. In the vicinity of the Metro Orange Line it flows through two branches; the main concrete-lined flood control channel crosses the project corridor 0.9 miles west of the Laurel Canyon Station, and the Central Branch of the Tujunga Wash crosses the Metro Orange Line corridor 0.4 miles west of the North Hollywood Station as a box culvert. Both branches flow into the Los Angeles River 2 miles to the southeast of the crossings in Studio City.

Drainage within the project area is primarily dependent on a network of existing storm drains and drainage channels. The Pacoima Wash, which is a tributary of the Los Angeles River, begins in the north and flows southerly and crosses the project corridor at San Fernando Road. Beginning from the north on San Fernando Road, the flow is easterly and discharges into Pacoima Wash, then easterly from Pacoima Wash to Van Nuys Boulevard, then southerly on Van Nuys Boulevard and discharges

Figure 4.13-2: Hydrological Features within the Project Vicinity



Source: ICF International, 2015.

Metro

into the I-5 drainage system, then southerly from I-5 and discharges into the Pacoima Channel, then southerly on Van Nuys Boulevard from the Pacoima Channel and discharges into the South Channel of the Pacoima Wash at the Metrolink railroad tracks, then southerly on Van Nuys Boulevard from the Metrolink railroad tracks and discharges into the Los Angeles River, and then surface flow continues southerly on Van Nuys Boulevard from the Los Angeles River and is conveyed northerly in a closed system in Van Nuys Boulevard back to the Los Angeles River. Additionally, surface flows that are not intercepted at intersections on Van Nuys Boulevard, continue to flow in the easterly direction on the cross streets.

A major storm drain line runs through the Van Nuys Boulevard corridor and San Fernando Road Corridor within the project study area. The typical tributary area captured by these main storm drain lines are within two city blocks of the corridor. Storm drain pipe sizes range from 42 to 72 inches. Maintenance and jurisdiction of these facilities varies between the City of Los Angeles and County of Los Angeles. The Pacoima Wash Control Channel crosses the project corridor along San Fernando Road approximately 0.5 mile west of SR-118. The crossing is a single-span bridge. The channel is a trapezoidal concrete lined channel with a 12-foot bottom width and 1.5:1 side slopes with a depth of 16 feet.

The project alignment crosses the Pacoima Wash Diversion Channel 600 feet west of Arleta Avenue. The channel is a trapezoidal concrete lined channel. The depth of the channel is 20.4 feet. The bottom width is 30 feet with 2.25:1 side slopes.

The project alignment crosses the South Channel of the Pacoima Wash along Van Nuys Boulevard at the under crossing of the Metrolink right-of-way near the Van Nuys Metrolink Station. The South Channel is north of the Metrolink right-of-way and transitions to the south of the Metrolink right-of-way on the east side of Van Nuys Boulevard.

The project alignment crosses the Pacoima Wash Channel along Van Nuys Boulevard at mid-block between Covello Street and Valero Street. At this location, the open channel transitions to a box culvert that proceeds west underneath Van Nuys Boulevard.

Surface Water Quality

The project area is highly urbanized which generally captures contaminants from roads, vehicles and household wastes. Urbanized impervious surfaces are known for concentrating and redirecting flows that carry such contaminants into local waterways. In more recent years, municipalities have been implementing best management practices (BMPs) to help protect water quality.

In accordance with the federal CWA and state Porter-Cologne Water Quality Control Act, TMDLs have been developed and incorporated into the Basin Plan for some pollutants identified on the 303(d) list as causing contamination in project sites receiving waters. For other pollutants listed on the 303(d) list (e.g., Section 303[d] of the Clean Water Act), TMDLs are scheduled for development, undergoing development, or in the process of review by the SWRCB.

CWA Section 303(d) List of Impaired Waters within the project vicinity are listed in the *Water Resources Technical Report* (see Appendix Q). The Pacoima Wash and Pacoima Diversion Channel are not listed as being impaired for anything on the 303(d) List.

Groundwater Supply and Recharge

The study area is located within the San Fernando Valley Groundwater Basin (Department of Water Resources Groundwater Basin Number: 4-12), which is part of the South Coast Hydrologic Region. The San Fernando Basin is the largest of the four basins in the Upper Los Angeles River Area

(ULARA). The basin consists of 112,000 acres and comprises 91.2 percent of the total valley fill in the ULARA. It is bounded on the east and northeast by the San Rafael Hills, the Verdugo Mountains, and the San Gabriel Mountains; on the north by the San Gabriel Mountains and the eroded south limb of the Little Tujunga Syncline, which separates it from the Sylmar Basin; on the northwest and west by the Santa Susana Mountains and Simi Hills; and on the south by the Santa Monica Mountains.

The City of Los Angeles Department of Water and Power (LADWP) provides customers with water from three sources: local groundwater and water imported through the State Water Project (SWP) and Metropolitan Water District of Southern California, which transports water from the California Aqueduct and Colorado River Aqueduct. In areas where local groundwater is available, LACWD owns and operates groundwater production wells that are used to pump the water from the groundwater basin to the surface. All of the groundwater pumped by the City of San Fernando is extracted from the Sylmar Basin. However, groundwater has been found to be contaminated in the San Fernando Groundwater Basin, as described below.

The elevation of groundwater within a basin varies with the amount of water being pumped out of the basin and the amount of recharge returning water to the basin. The basin is adjudicated, and therefore pumping of groundwater is controlled by the ULARA Watermaster in order to prevent groundwater levels from declining. Despite this, groundwater levels in the San Fernando Basin have undergone a general decline during recent years. Probable causes of this decline include increased urbanization and runoff leaving the basin, reduced artificial recharge, and continued groundwater extractions by the three major pumping parties in the basin—the Cities of Los Angeles, Burbank, and Glendale. The ULARA Watermaster continues to monitor this situation, and efforts to reverse this trend are underway. The long-term solution will require the close cooperation of the three major pumping parties (Upper Los Angeles River Area Watermaster 2013).

Groundwater flow in the San Fernando Valley is generally eastward, parallel to the course of the Los Angeles River. The highly non-uniform character of the soils in the San Fernando Valley results in local "perched" aquifers that are not connected to deeper groundwater. A geotechnical survey conducted for the proposed project found that groundwater depths in the vicinity of the project varied from 15 to more than 100 feet below the ground surface during the dry season, with depth to groundwater generally increasing from west to east. Groundwater levels are shallow at the southern end of the project area near the Los Angeles River and become deeper at the northern end of the project area near the foothills, as shown in Figure 3-3 of the *Water Resources Technical Report* (see Appendix Q).

Groundwater Quality

The groundwater quality in the basin is characterized as having a calcium sulfate-bicarbonate water type in the western part of the basin and calcium bicarbonate in the eastern part of the basin. Groundwater impairments based on a number of investigations have determined there is volatile organic compounds (VOCs) contamination in the basin. Such VOCs include trichloroethylene (TCE), and perchloroethylene (PCE). In addition, petroleum compounds, chloroform, nitrate, sulfate and heavy metals are all other impairments in the basin.

The beneficial uses of the groundwater in the San Fernando Basin are described in the *Water Resources Technical Report* (see Appendix Q).

Groundwater in the ULARA Basins has significant contamination issues. A number of the groundwater production wells are located with the bounds of a Superfund area. Elevated concentrations of VOCs, such as TCE and PCE, as well as other contaminants, such as hexavalent chromium have prompted the City of Los Angeles to discontinue pumping at numerous production wells (MWD, 2007). Emerging contaminants, such as 1.4 dioxane, have also been found in concentrations high enough to necessitate the alteration of groundwater pumping operations.

In addition, perchlorate, a constituent of regional concern has been detected in 2 wells above the notification level of 6 µg/L, one in the Sylmar Basin and one in the eastern end of the San Fernando Basin (MWD 2007). In these areas of contamination, wells have been removed from service or the groundwater is being blended or treated to meet state drinking water standards as discussed below. In the San Fernando Basin, the estimated capacity of all the wells that have been removed from service due to elevated contamination levels is approximately 200 cfs or 396 AF/day (MWD 2007). In addition to the contaminants in the San Fernando groundwater basin, one well was removed from service in the Sylmar basin due to elevated TCE levels.

Flooding

A few small areas within the project study area were identified as being within the FEMA 100-year flood zone (Zone A); one of which crosses the proposed project alignment, as shown in Figure 4.13-3. However, the FEMA maps indicate that the 100-year storm event is fully contained within the County flood channels and drainage facilities. The following areas within the project study area are FEMA-designated Flood Zone A:

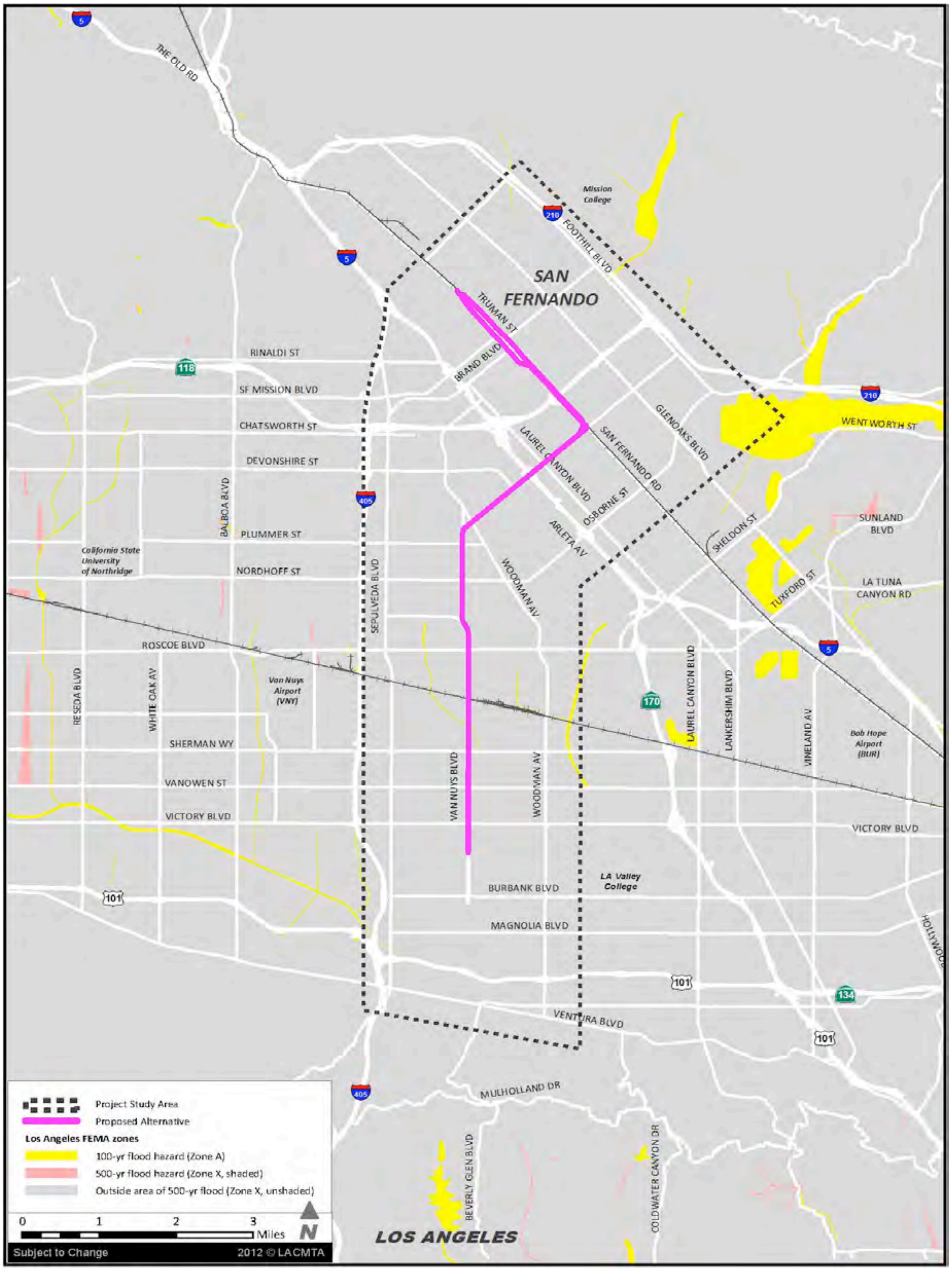
- A portion of the Pacoima Wash Channel that begins just west of the proposed project alignment and then crosses it just north of Sherman Way.
- A portion of the Pacoima Wash in the north of the project study area near Foothill Boulevard.
- An unnamed drainage ditch near the Metrolink Railroad Tracks just east of the proposed project alignment.
- A portion of the Tujunga Wash Control Channel east of the proposed project alignment.
- A small portion of the Los Angeles River near the Sepulveda Dam. The part of the Metro Orange Line that is within the Sepulveda Flood Control Basin lies above the maximum design flood elevation everywhere except for a 1,000-foot stretch immediately west of the Woodley Station.
- The Hansen Flood Control Basin in the northeast portion of the project study area.

Los Angeles County historic flooding records show that since 1811, the Los Angeles River has flooded 30 times (on average once every 6.1 years). But averages are deceiving, for the Los Angeles Basin goes through periods of drought and then periods of above average rainfall. Between 1889 and 1891 the river flooded every year, and from 1941 to 1945, the river flooded five times. Conversely, from 1896 to 1914, a period of 18 years, and again from 1944 to 1969, a period of 25 years, the river did not have serious floods.

Dams and Levees

There are reservoirs and associated dams located within the project vicinity. Although the likelihood is low, dams within the project vicinity may be at risk of failure should a major earthquake or other catastrophic event occur. If they fail, it could cause flooding within the project study area. As shown in Figure 4.13-4, the City of Los Angeles Safety Element (1996) summarizes inundation potential from dam failures and water storage facility failures.

Figure 4.13-3: FEMA Flood Zones within the Project Vicinity



Source: ICF International, 2015.

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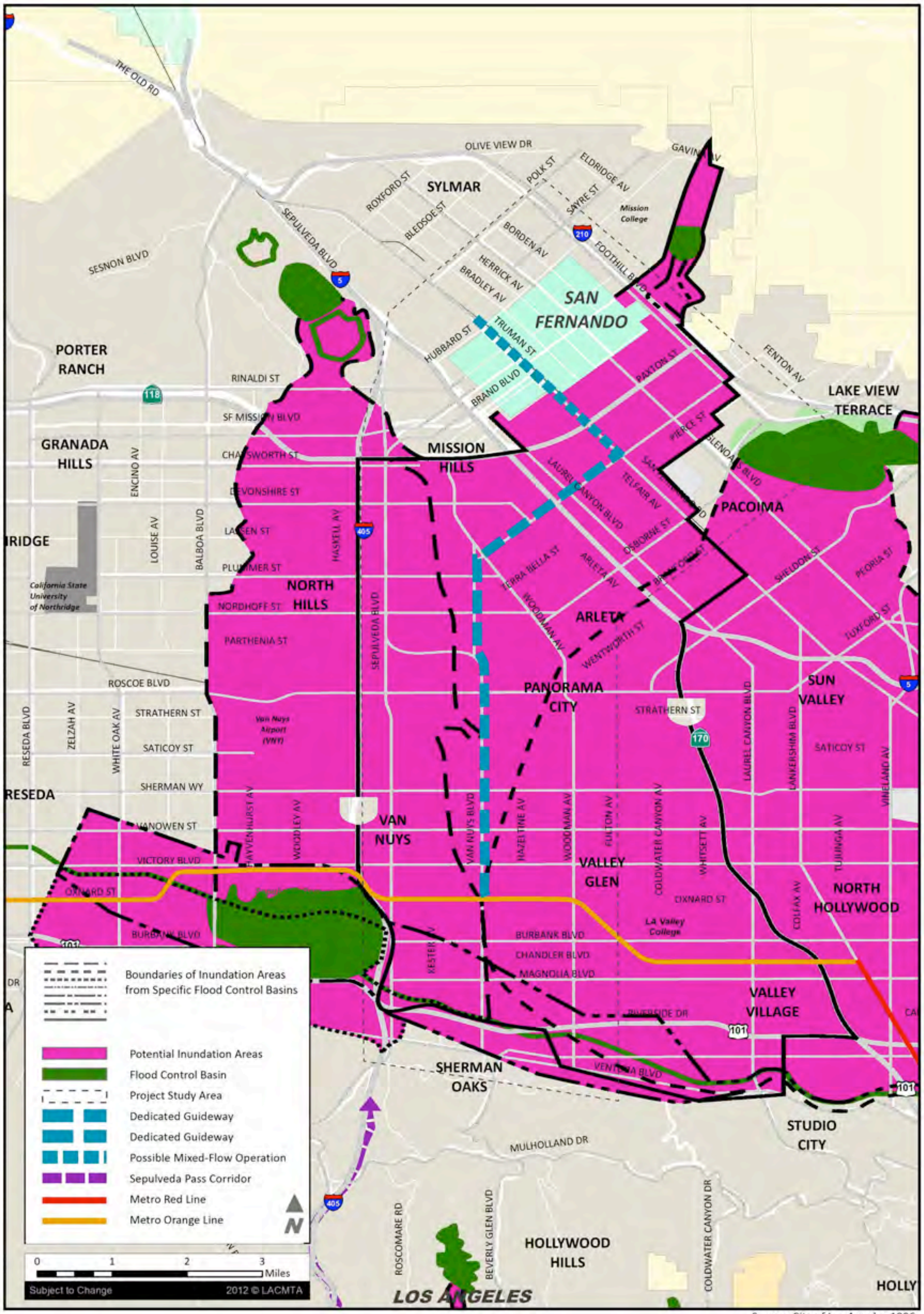
Figure 4.13-4: Inundation Areas within the Project Vicinity



Source: City of Los Angeles 1996.

Source: Diaz•Yourman & Associates, 2015.

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There are eight reservoirs located upstream and downstream of the project and they are as follows:

- Chatsworth Reservoir;
- Sepulveda Flood Control Basin[3];
- Upper Van Norman Lake;
- Lower Van Norman Reservoir;
- Los Angeles Reservoir;
- Pacoima Spreading Grounds;
- Hansen Flood Control Basin; and
- Encino Reservoir.

Only portions of the Sepulveda and Hansen Flood Control Basins are located in the project study area.

The Los Angeles River is partially located within the Sepulveda Dam and the Flood Control Basin. Both are owned and maintained by the USACE, who constructed the facilities in 1941 following the Flood Control Act of 1936. The Sepulveda Dam is an earth filled structure consisting of an earth embankment with a concrete spillway near the center. The dam is 15,444 feet long and has a maximum height of 57 feet above the streambed. The basin has a storage capacity of 17,425 acre feet at the crest of the raised spillway, which is located at an elevation of 710 feet above sea level. During a maximum design flood (greater magnitude the 100-year flood event), the basin can hold 17,563 acre feet of water, cresting at an elevation of 717 feet.

The Hansen Dam and Flood Control Basin was constructed in 1940 and lies within the Tujunga Wash system. The dam is an earth-filled structure with a maximum height above streambed of 97 feet. The dam has a storage capacity of 33,348 acre-feet at spillway crest (elevation 1060 feet) based on the November 2004 topographic survey. The Dam embankment extends in a general east and west direction at right angles to Tujunga Wash. All of the major inflow and impoundment events in project history have resulted from winter storms. Inflow rates drop rapidly between storms, and inflow during the dry summer season is usually less than 10 cfs.

According to a query of the USACE National Levee Database, there are no levees located within the project study area. There are no levees associated with either Tujunga or Pacoima Wash. The Los Angeles River appears to be bordered by levees in certain locations, but the nearest levees are located south of the project study area where it is likely outside of the levee failure inundation area.

Seiches, Tsunamis, and Mudflows

Seiches are large waves generated in enclosed bodies of water, such as lakes, induced by ground shaking. Tsunamis are large waves generated at sea by significant disturbance of the ocean flow, causing the water column above the point of disturbance to displace rapidly. Mudflows result from the down-slope movement of soil and/or rock under the influence of gravity, and are also often caused by earthquakes. The Hansen Flood Control Basin is the only reservoir located completely within the project study area. However, it is fairly small and only fills up during a wet winter season, and therefore, wave action is minimal and seiches would most likely not be large enough to present a flood risk. The project study area is located approximately 9 miles from Santa Monica Bay; and therefore, it is outside of tsunami potential inundation area, and, due to the relatively flat terrain, is not prone to mudflows.

[3] This reservoir is located within two miles of the project area.

4.13.3 Environmental Consequences, Impacts, and Mitigation Measures

4.13.3.1 No-Build Alternative

Construction Impacts

The No-Build Alternative would result in no project-related improvements and as a consequence it would not result in any construction impacts to water resources and water quality.

Operational Impacts

The No-Build Alternative would result in no project-related improvements and as a consequence it would not result in any operational impacts to water resources and water quality.

Cumulative Impacts

The No-Build Alternative would not result in any adverse environmental impacts or effects under CEQA or NEPA; therefore, it would not contribute to any cumulative environmental impacts.

Mitigation Measures

Compliance Requirements and Design Features

No compliance requirements and design features are required.

Construction Mitigation Measures

No construction mitigation measures are required.

Operational Mitigation Measures

No operational mitigation measures are required.

Impacts Remaining After Mitigation

NEPA Finding

No adverse effect under NEPA would occur.

CEQA Determination

No impact under CEQA would occur.

4.13.3.2 TSM Alternative

Construction Impacts

Any construction activities required under the TSM Alternative would be minimal (e.g., construction of bus stop amenities, signage, and minor roadway improvements); therefore, no or very minor construction impacts/effects would occur.

Operational Impacts

The TSM Alternative operational improvements could result in increases in bus vehicle miles traveled, which could increase pollutants such as fallout from air pollution (e.g., nitrous oxides, hydrocarbons/VOCs, lead, particulates), heavy metals from brake pads, oils, greases, and other vehicle lubricants in surface water runoff from roadway surfaces. However, given that the bus vehicle miles traveled are not expected to substantially increase and given the possibility that operational improvements may increase bus patronage with a corresponding decrease in passenger car vehicle miles traveled, the pollutant impacts/effects on water quality are expected to be less than significant under CEQA and non-adverse under NEPA.

This alternative would require increased bus maintenance including washing of buses; however, the increase in water usage would be relatively minor and would not substantially deplete groundwater supplies. Additionally, no or very minimal increases in impervious surfaces could occur under this alternative due to construction of bus stop amenities/improvements; therefore, the TSM Alternative would not substantially interfere with groundwater recharge.

The TSM Alternative would result in very minor physical improvements and thus would not alter drainage patterns in the study area and would have no or negligible impacts on the amount of surface water runoff.

No structures would be constructed under this alternative that would be located within a designated 100-year floodplain and consequently it would not impede or redirect floodwater flows or cause flooding during a 50-year storm event. The project alignment is located in a potential inundation area that could be affected or flooded due to dam failures. However, this alternative would include only minor improvements to existing bus facilities and would not include significant new structures that could put property or persons at risk as a result of a dam or water storage facility failure.

The project corridor is not located in an area that would be subject to inundation hazards due to tsunami or mudflow. The potential for a catastrophic seiche event at the Hanson Flood Control Basin reservoir is low.

Cumulative Impacts

The TSM Alternative would not result in adverse water resources, hydrological, or water quality impacts. Therefore, it would not result in any meaningful contributions to cumulative impacts in these areas, and no further discussion is required.

Mitigation Measures

Compliance Requirements and Design Features

No compliance requirements and design features are required.

Construction Mitigation Measures

No construction mitigation measures are required.

Operational Mitigation Measures

No operational mitigation measures are required.

Impacts Remaining After Mitigation

NEPA Finding

No adverse effects would occur.

CEQA Determination

No or less than significant impacts would occur.

4.13.3.3 BRT Alternatives (Build Alternatives 1 and 2)

Alternative 1 – Curb-Running BRT

Construction Impacts

Water Quality

Construction of Alternative 1 would include reconstruction of sidewalks, paving, and striping, which would result in an increase in surface water pollutants such as sediment, oil and grease, and miscellaneous wastes. Water quality would be temporarily affected if disturbed sediments were discharged via existing stormwater collection systems. Increased turbidity and other pollutants resulting from construction-related discharges can ultimately introduce compounds toxic to aquatic organisms, increase water temperature, and stimulate the growth of algae.

The delivery, handling, and storage of construction materials and wastes, along with use of construction equipment, could also introduce the risk of stormwater contamination. Staging areas or building sites can be sources of pollution because of the storage and use of paints, solvents, cleaning agents, and concrete during construction. Larger pollutants, such as trash, debris, and organic matter, are additional pollutants that could be associated with construction activities. Without implementation and maintenance of BMPs, construction impacts on water quality are potentially significant under CEQA and adverse under NEPA and could lead to exceedance of water quality objectives or criteria.

Groundwater Supplies and Recharge

Existing utilities that would interfere with construction of the corridor improvements would be removed and relocated for continuing service. A geotechnical survey found that groundwater depths in the vicinity of the project alignment varied from 15 to more than 100 feet below the ground surface during the dry season, with depth to groundwater generally increasing from west to east. Excavation for utility improvements may result in contact with groundwater depending on the season and location within the corridor. Should dewatering be necessary, a General Dewatering Permit would be obtained from the Los Angeles RWQCB. Residual contaminated groundwater could be encountered during dewater activities. Groundwater extracted during dewatering activities would either be treated prior to discharge or disposed of at a wastewater treatment facility.

Local groundwater is one of several sources of water supplies to the City of Los Angeles. If groundwater is used during construction for dust control, concrete pouring, etc., the amount would be minimal and temporary, and therefore would not result in substantial depletion of groundwater supplies.

Adherence to dewatering requirements of the Los Angeles RWQCB, and minimal water use during construction would ensure that impacts on groundwater would be less than significant under CEQA and the effects would not be adverse under NEPA.

Stormwater and Drainage

Construction activities, such as grading and excavation, could result in increased erosion. In addition, minor modifications to City street storm drains would be required. However, these modifications would not include culvert widening or conversion of open channels to closed conduits and drainage patterns would remain approximately the same as currently exists. Additionally, construction of the proposed project would not alter the course of any streams or rivers.

Flooding and Flood Hazards

A few small areas within the project study area were identified as being within the FEMA 100-year flood zone (Zone A). However, these areas are fully contained within county flood channels and drainage facilities. Therefore, the project study area is not highly prone to flooding during a 100-year storm event. Additionally, no construction would occur within the areas designated as 100-year floodplains, and construction activities would not place structures that would impede or redirect flood flows as mapped on any flood hazard delineation map.

There are no levees located within the project study area, and therefore no associated flood impacts with levee failure would occur. The proposed Curb-Running BRT Alternative, however, would be located in an inundation zone area, as shown on Figure 3-5, which would be caused by a dam failure. Portions of the Sepulveda and Hansen Flood Control Basins (and the associated dams) are located in the project study area, and therefore there is risk of dam failure. However, project construction activities would not increase the present risk of dam failure, which is considered low, and would not place construction workers, equipment, or temporary structures in an area where there is a significant risk and high probability of flooding.

Seiche, Tsunami, and Mudflow Hazards

As noted above, the project study area is outside of potential tsunami inundation areas and, due to the relatively flat terrain, is not prone to mudflows. The potential for a catastrophic seiche event at the Hanson Flood Control Basin reservoir is low. Therefore, construction activities are not expected to substantially affect or be affected by seiche, tsunami, or mudflow hazards. Construction impacts/effects due to the Curb-Running BRT Alternative would be less than significant under CEQA and non-adverse under NEPA.

Surface Water Use and Flows

Construction of Alternative 1 would not require the use of substantial volumes of surface water. Additionally, construction activities would not substantially change the overall impervious area, nor would construction substantially change stormwater flows that could affect either the volume or movement of water in surface water bodies. Impacts and effects would be less than significant under CEQA and non-adverse under NEPA.

Operational Impacts

Water Quality

Operational impacts on water quality due to Alternative 1 would be the same as existing conditions because the project would result in a negligible change in impervious area and there would be no major sources of new pollutants. Because the project area is currently a transportation corridor, the water runoff from roadway surfaces would contain the same types of pollutants as expected under existing conditions. However, enhanced bus frequencies could result in small increases in potential pollutants from bus operations. Typical water quality pollutants associated with transportation corridors include: fallout from air pollution (e.g., nitrous oxides, hydrocarbons/VOCs, lead, particulates), heavy metals from brake pads, oils, greases, and other vehicle lubricants.

As per the County's SUSMP requirements as part of the stormwater program, because the project would replace 5,000 square feet or more of impervious surface area on an already developed site, SUSMP and Site-Specific Stormwater Mitigation Plans must be incorporated into project plans. Compliance with these regulations would require the inclusion of post-construction stormwater measures and low-impact development (LID) measures designed to minimize runoff flows and water quality degradation.

Alternative 1 would be accommodated by the existing Metro Division 15 MSF and therefore would not require the creation of a new MSF. The existing MSF collects and treats stormwater in compliance with its existing Industrial General Permit and associated Industrial SWPPP and would continue to do so under this alternative. Metro will submit an application for coverage under the new Industrial General Permit, which becameeffective on July 1, 2015, and update the existing SWPPP to reflect changes in permit requirements.

With compliance with the county's stormwater program, City of San Fernando and City of Los Angeles stormwater requirements, and the Industrial General Permit, impacts and effects on water quality during project operation would be less than significant under CEQA and non-adverse under NEPA. No mitigation is required.

Groundwater Supplies and Recharge

For all of the alternatives, including Alternative 1, the existing area that would be occupied by the proposed project facilities is mostly impervious and does not contribute substantially to groundwater recharge. This alternative would result in a negligible change to impervious surface area, and therefore, would not substantially interfere with groundwater recharge. Operational impacts or effects would be less than significant under CEQA and would not be adverse under NEPA.

Stormwater and Drainage

Alternative 1 would not substantially alter the existing drainage pattern and no stream or river would be altered. Currently, stormwater drains to a major storm drain line that runs through the Van Nuys Boulevard corridor and San Fernando Road Corridor and crosses the Pacoima Wash Channel and Pacoima Wash Control Channel. Under the Curb-Running BRT Alternative, stormwater would continue to drain into the existing storm drain line and according to SUSMP requirements, the drainage design would limit the design water surface elevations and velocities to no greater than the existing conditions or to what can be handled by the existing conditions within the project area. Therefore, drainage would remain the same as existing conditions and no substantial erosion, siltation, or flooding would occur on- or offsite as a result of Alternative 1. Impacts would be less than significant under CEQA and effects under NEPA would not be adverse.

Flooding and Flood Hazards

As shown in Figure 4.13-3, a few small areas within the project study area were identified as being within the FEMA 100-year flood zone (Zone A). However, these areas are fully contained within the county flood channels and drainage facilities. Therefore, the project study area is not highly prone to flooding during a 100-year storm event. In addition, operation of the BRT Alternatives would not place structures that would impede or redirect flood flows as mapped on any flood hazard delineation map.

The project study area is located within 100-year flood risk hazard areas. However, operation of Alternative 1 would not place structures that would impede or redirect flood flows and the proposed project would not increase the present risk of dam failure. There would be no substantial increase in impervious area and overall drainage patterns would remain the same; therefore, flood capacities would not be affected. Furthermore, because the project is in a highly urbanized area, it is not expected that Alternative 1 would indirectly result in substantial increases in population or employment densities within the project study area. Therefore, flood impacts or effects would be less than significant under CEQA and non-adverse under NEPA.

There are no levees located within the project study area, and therefore no associated flood impacts with levee failure would occur. The project study area, however, is located in a dam-failure inundation zone area. The maintenance of the dams and associated reservoirs within the project vicinity is shared between the County of Los Angeles Department of Public Works and USACE. Portions of the Sepulveda and Hansen Flood Control Basins (and the associated dams) are located in the project study area. Therefore, Alternative 1 facilities could be adversely affected in the event of failure of these dams. However, the project itself would not increase the present risk of dam failure and new structures for human occupancy would be limited to new and relocated bus stops. Therefore, Alternative 1 would not result in significant new structures that could put property or persons at risk as a result of a dam or water storage facility failure.

Also, as noted above, Alternative 1 would not substantially increase the amount of impervious area and overall drainage patterns would remain the same; therefore flood capacities would not be affected. Therefore, the impacts or effects would be less than significant under CEQA and non-adverse under NEPA.

Seiche, Tsunami, and Mudflow Hazards

The project study area is outside of tsunami potential inundation areas and, due to the relatively flat terrain, is not prone to mudflows. The potential for a catastrophic seiche event at the Hanson Flood Control Basin reservoir is low. Therefore, impacts/effects would be less than significant under CEQA and non-adverse under NEPA.

Surface Water Use and Flows

Alternative 1 would not create or utilize substantial volumes of surface water during project operations and no surface water body would be altered. As discussed previously, the Curb-Running BRT Alternative would not substantially change the overall impervious area; therefore, stormwater volumes are not anticipated to change. In addition, with the exception of possible minor increases in water to maintain new buses, a substantial increase in consumptive use of water from nearby reservoirs is not expected. Therefore, Alternative 1 would not appreciably reduce or increase the amount of surface water in surrounding water bodies nor would it result in a substantial adverse change in the current or direction of water flows. Therefore, impacts or effects would be less than significant under CEQA and would not be adverse under NEPA.

Cumulative Impacts

The study area for this cumulative impacts discussion is the San Fernando Valley in Los Angeles County and generally encompasses the area from Ventura Boulevard in the south, in the City of Los Angeles, to the City of San Fernando and the Sylmar/San Fernando Metrolink station in the north.

The analysis of cumulative water resources impacts is based on the list of related projects included in Chapter 2.

All of the build alternatives would result in the same contributions to cumulative impacts, which are described below.

Water Quality

Development of the project and other development within the study area would potentially degrade stormwater quality by contributing pollutants during construction and operation. Stormwater quality varies according to surrounding land uses, impervious surface area, and topography, as well as with the intensity and frequency of rainfall or irrigation. Runoff can contain grease, oil, and metals accumulated in streets and driveways, as well as sediment and other particulates, animal waste, pesticides, herbicides, fertilizer, and trash.

Cumulative development could affect water quality if the land use change, the intensity of land use changes, and/or drainage is altered such that the introduction of pollutants to surface water or groundwater is facilitated. Land use changes would potentially alter the type and concentration of pollutants in stormwater runoff, and increased intensity of land use would potentially increase pollutant concentrations. The most common sources of stormwater pollutants in urban areas are from construction sites, streets, parking lots, large landscaped areas, and household and industrial materials dumped into storm drains.

When the effects of the project on water quality are considered in combination with the potential effects of other projects in the area, there would be the potential for cumulative impacts to surface, stormwater and groundwater quality. The incremental water quality impact contribution from implementation of the project would be minor for the reasons as discussed above. The combined effects on water quality from the project and other projects in the study area could result in a cumulatively significant impact. However, new projects within the study area are subject to the requirements of the associated Los Angeles MS4 Permit, the Construction General Permit, and City municipal codes as they relate to water quality; these regulatory requirements have been designed to be protective of water quality. Additionally, development projects may be subject to an environmental review process, which would identify potential site- and/or project-specific water quality impacts, and any feasible measures to mitigate potential significant impacts. Adherence to regulatory and permit requirements would minimize the proposed and related project's adverse water quality impacts. Therefore, there would be a less than significant cumulative impact on water quality as a result of project implementation.

Groundwater Recharge and Supplies

The study area is located in the San Fernando Valley groundwater subbasin, which generally flows eastward, parallel to the course of the Los Angeles River. Because the area is heavily developed, cumulative projects would be in-fill development projects (see Table 2-3 in Chapter 2 for a list of cumulative development projects). Cumulative development would not be expected to substantially increase the amount of impervious surfaces, so groundwater recharge potential from percolating rainfall would not be adversely affected, and indirect lowering of the local groundwater table is not likely to occur. As a result, groundwater recharge would not be adversely affected. The project's contribution to cumulative groundwater recharge impacts would not be cumulatively considerable, and there would be a less than significant cumulative impact.

Stormwater and Drainage

Cumulative development in the study area could increase the volume and rate of stormwater runoff. Such increases could cause localized flooding if the storm drainage capacity is exceeded or if flows exceed channel capacities and are conveyed to overbank areas where flood storage may not be available. For the most part, the cumulative projects in the study area would occur in developed areas with impervious surfaces, and these projects would not be expected to substantially increase the amount of impervious surfaces. All cumulative projects within the study area would be required to include design features to reduce flows to pre-project conditions. If improvements to storm drainage capacity are needed, the project applicants would be required to coordinate with local city agencies to ensure the appropriate conditions of approval for storm drainage improvements are identified. Therefore, the proposed project would not likely contribute to the cumulative exceedance of the study area's storm drainage capacity, and there would be a less than significant cumulative impact.

Flooding and Flood Hazards

Cumulative development in the study area could increase the exposure of people and structures to flood risks if County flood channels or dams in the project area failed. However, the potential for failure of these channels or dams is considered low. Therefore, the proposed project would not contribute to a cumulative exposure of people and structures to risks of flooding, and there would be a less than significant cumulative impact.

Compliance Requirements and Design Features

Water Quality – Construction

Because construction activities would disturb more than 1 acre, preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) would be required, in accordance with the statewide National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction Activity (Order No. 2009-0009-DWQ, NPDES No. CAR000002) (Construction General Permit). The SWPPP would list BMPs that would be implemented to protect stormwater runoff and include monitoring of the BMP's effectiveness. At a minimum, BMPs would include practices to minimize contact of construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives, concrete) with stormwater. The SWPPP would specify properly designed, centralized storage areas to keep these materials covered or out of the rain. If land disturbance activities must be conducted during the rainy season, the primary BMPs selected would focus on erosion control (i.e., keeping sediment on the site). Construction activities would temporarily cease during rain events.

The SWPPP would specify BMPs to ensure that water quality standards or waste discharge requirements are not violated. BMPs selected would be designed to comply with the requirements of the Los Angeles Regional Water Quality Control Board[4] (RWQCB) and may be subject to review and approval by the Cities of Los Angeles and San Fernando. BMPs during construction may include, but not be limited to, the following:

- Silt fences
- Fiber rolls
- Street sweeping and vacuuming
- Stockpile management
- Vehicle and equipment maintenance
- Erosion control mats and spray-on applications
- Desilting basins
- Gravel bag berms

[4] The Los Angeles Regional Water Quality Control Board covers a regional geographic area that encompasses most of Los Angeles County and all of Ventura County.

- Sandbag barriers
- Spill prevention and control
- Concrete waste management
- Water conservation practices

Such measures are routinely developed for construction sites and are proven to be effective in reducing pollutant discharges from construction activities. Implementation of the SWPPP during construction would ensure that water quality objectives, standards, and wastewater discharge thresholds would not be violated. The SWPPP would be prepared by the project applicant (i.e., Metro) or the construction contractor and approved by the Cities of Los Angeles and San Fernando prior to commencement of construction activities (i.e., approval of grading plans).

Other impacts on water quality that can occur during construction projects include discharges of dredged or fill material into waters of the United States. These impacts could affect beneficial uses of wetlands, including estuarine and wildlife habitat. None of the alternatives, including the Curb-Running BRT Alternative, would require in-water work or work that would affect wetlands.

With compliance with the Construction General Permit, grading permits, and other relevant regulations, impacts/effects from construction on water quality would be less than significant under CEQA and would not be adverse under NEPA.

Stormwater and Drainage – Construction

Temporary drainage facilities could be required to redirect runoff from work areas during utility relocations. These facilities would be sized according to City standards to avoid any exceedance of the capacity of existing or planned stormwater drainage systems. Storm drain relocation may require the need for groundwater dewatering at locations with a high water table. Residual contaminated groundwater may be encountered during dewatering activities. As described above, if dewatering is necessary, the project contractor would be required to comply with Los Angeles RWQCB's General Dewatering Permit. Groundwater extracted during dewatering activity would either be treated prior to discharge or disposed of at a wastewater treatment facility. In compliance with the Construction General Permit and SWPPP, BMPs would be implemented during construction to prevent or minimize the potential for erosion or sedimentation on- or off-site and discharges of polluted runoff into storm drains. Because the proposed project would be in compliance with the conditions of the Construction General Permit and other relevant regulations, impacts/effects related to erosion and siltation and impacts on stormwater runoff would be less than significant under CEQA and non-adverse under NEPA.

Because the temporary drainage facilities would redirect runoff from work areas and be sized according to City standards to avoid any exceedance of the capacity of existing or planned stormwater drainage systems, overall drainage patterns would remain the same. Therefore, construction activities are not expected to have a substantial effect on flood capacities due to temporary changes in drainage patterns or facilities. The impacts/effects during construction related to flooding and flood hazards would be less than significant under CEQA and would not be adverse under NEPA.

Mitigation Measures

Construction Mitigation Measures

No construction mitigation measures are required.

Operational Mitigation Measures

No operational mitigation measures are required.

Impacts Remaining After Mitigation

NEPA Finding

Alternative 1 would not result in adverse effects to hydrology and water resources during construction and operation.

CEQA Determination

Alternative 1 would result in less-than-significant impacts to hydrology and water resources during construction and operation.

Alternative 2 – Median-Running BRT

Construction Impacts

Construction impacts under this alternative would be the same as those described above for Alternative 1.

Operational Impacts

Operational impacts under this alternative would be the same as those described above for Alternative 1.

Cumulative Impacts

All of the build alternatives would result in the same contributions to cumulative impacts. See discussion of cumulative impacts described for Alternative 1.

Compliance Requirements and Design Features

The same compliance requirements and BMPs for water quality and drainage, described under Alternative 1, also apply to Alternative 2.

Mitigation Measures

Construction Mitigation Measures

No construction mitigation measures are required.

Operational Mitigation Measures

No operational mitigation measures are required.

Impacts Remaining After Mitigation

NEPA Finding

Alternative 2 would not result in adverse effects to hydrology and water resources during construction and operation.

CEQA Determination

Alternative 2 would result in less-than-significant impacts to hydrology and water resources during construction and operation.

4.13.3.4 Rail Alternatives (Build Alternatives 3 and 4)

Alternative 3 – Low-Floor LRT/Tram

Construction Impacts

Water Quality

Construction activities for Alternative 3 would include pavement removal; utilities relocation; excavation; construction of at-grade trackwork and stations, including station platforms and reconstruction of sidewalks; construction of pedestrian access ways; installation of specialty system work, such as overhead contact electrification systems and communications and signaling systems; construction of TPSS facilities; reconstruction of sidewalks paving and striping; and subgrade preparation and placement of rail ballast. Construction of Alternative 3 could result in an increase in surface water pollutants such as sediment, oil and grease, and miscellaneous wastes from construction activities. Because Alternative 3 also includes the construction of a new MSF and the relative area of soil disturbance would be greater to install the tracks and construct the stations, the potential for water quality degradation is greater than for the BRT alternatives. However, the General Construction Permit would still apply and a SWPPP would be developed. The SWPPP would specify BMPs to ensure that water quality standards or waste discharge requirements are not violated even for a larger area of disturbance.

As discussed above for Alternative 1, SWPPPs and the associated BMPs are routinely developed for construction sites and are proven to be effective in reducing pollutant discharges from construction activities. Implementation of the SWPPP during construction would ensure water quality objectives, standards, and wastewater discharge thresholds would not be violated. The SWPPP would be prepared by the project applicant (i.e., Metro) or its construction contractor and approved by the City of Los Angeles and City of San Fernando prior to commencement of construction activities. As selection of the appropriate BMPs is a standard process of the engineering review and grading plan approval, impacts/effects from construction on water quality would be less than significant under CEQA and non-adverse under NEPA.

None of the alternatives, including Alternative 3, would require in-water work or work that would affect wetlands.

Groundwater Supplies and Recharge

Alternative 3 may require excavation to greater depths than what is required for the BRT alternatives in order to relocate utilities or construct Low-Floor LRT/Tram facilities including the MSF. Excavation may result in contact with groundwater depending on the season and location within the corridor. Should dewatering be necessary, a General Dewatering Permit would be obtained from the Los Angeles RWQCB. Residual contaminated groundwater could be encountered during dewater activities. Groundwater extracted during dewatering activities would either be treated prior to discharge or disposed of at a wastewater treatment facility.

Local groundwater is one of several sources of water supplies to the City of Los Angeles. If groundwater is used during construction for dust control, concrete pouring, etc., the amount would be greater than required for the BRT alternatives but still relatively minimal and temporary, and therefore, would not result in substantial depletion of groundwater supplies.

Adherence to dewatering requirements of the Los Angeles RWQCB, and minimal water use during construction would ensure that impacts on groundwater would be less than significant under CEQA and the effects would not be adverse under NEPA.

Stormwater and Drainage

As discussed above for Alternative 1, construction activities, such as grading and excavation, could result in increased erosion that could adversely affect the water quality of stormwater runoff from the construction sites. As noted above, Alternative 3 may require excavation to greater depths than is what is required for the BRT alternatives in order to relocate utilities or construct Low-Floor LRT/Tram facilities including the MSF. However, the proposed project would be in compliance with the Construction General Permit, and a SWPPP that contains temporary construction site BMPs would be prepared and implemented. These BMPs would be implemented during construction to prevent, or minimize the potential for erosion sedimentation onsite or offsite, impacts to the water quality of stormwater runoff, and the potential for flooding on- or off-site. Because the proposed project would be required to comply with the conditions of the Construction General Permit, impacts/effects would be less than significant under CEQA and would not be adverse under NEPA.

Temporary drainage facilities would be required to redirect runoff from work areas during utility relocations. The temporary drainage facilities would be sized according to City standards to avoid any exceedance to the capacity of existing or planned stormwater drainage systems. Storm drain relocation may require the need for groundwater dewatering at locations with a high water table. Residual contaminated groundwater may be encountered during dewatering activities. As described above for Alternative 1, if dewatering is necessary, the project contractor would be required to comply with Los Angeles RWQCB's General Dewatering Permit.

Flooding and Flood Hazards

The 100-year flood zone areas within the project study area are fully contained within County flood channels and drainage facilities. No construction is proposed in these 100-year flood zones; therefore, construction of Alternative 3 would not place structures that would impede or redirect flood flows as mapped on any flood hazard delineation map.

There are no levees located within the project study area, and therefore no flood impacts associated with levee failure would occur that could affect construction activities, workers, or equipment. Alternative 3, however, would be located in a dam failure inundation zone area, as shown on Figure 3-5. Portions of the Sepulveda and Hansen Flood Control Basins (and the associated dams) are located in the project study area. Therefore, Alternative 3 could be adversely affected if these dams fail. However, project construction activities would not increase the present risk of dam failure, which is considered low, and would not place construction workers, equipment, or temporary structures in an area where there is a significant risk and high probability of flooding.

As noted above for Alternative 1, temporary drainage facilities could be required to redirect runoff from work areas. The temporary drainage facilities would be sized according to City standards to avoid any exceedance to the capacity of existing or planned stormwater drainage systems. As a consequence, overall drainage patterns would remain the same and construction activities are not expected to have a substantial effect on flood capacities due to temporary changes in drainage patterns or facilities. Therefore, the construction impacts/effects during construction related to flooding and flood hazards would be less than significant under CEQA and non-adverse under NEPA.

Seiche, Tsunami, and Mud Flows

The project study area is outside of tsunami potential inundation areas and, due to the relatively flat terrain, is not prone to mudflows. The potential for a catastrophic seiche event at the Hanson Flood Control Basin reservoir is low. Therefore, construction activities are not expected to substantially affect or be affected by seiche, tsunami, or mudflow hazards. Construction impacts/effects due to Alternative 3 would be less than significant under CEQA and non-adverse under NEPA.

Surface Water Use and Flows

Construction of Alternative 3 would require use of more water than the BRT alternatives because of construction of an MSF; however, the amounts are not expected to be substantial and they would be temporary. As a consequence, construction activities are not expected to substantially reduce the amount of surface water in water bodies. Additionally, construction activities would not substantially change the overall impervious area, nor would construction substantially change stormwater flows that could affect either the volume or movement of water in surface water bodies. Impacts and effects would be less than significant under CEQA and non-adverse under NEPA.

Operational Impacts

Water Quality

Operational impacts on water quality for Alternative 3 would be the same as existing conditions because the project would result in very minor increases in the amount of impervious area.

Unlike Alternatives 1 and 2, Alternative 3 (and Alternative 4) would require the construction of a new MSF. Although the MSF would not substantially increase the amount of impervious area, maintenance facilities are subject to the conditions of the Industrial General Permit because any type of vehicle maintenance, such as fueling, cleaning, repairing, etc., has the potential to degrade water quality. The most common pollutant source from maintenance areas is spills/leaks of fuel and other liquids. Additionally, pollutants in train wash water are likely to include surfactants, suspended solids, oil and grease, asbestos (from brake pads), heavy metals, and lead.

The Industrial General Permit requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT). The Industrial General Permit also requires the development of an SWPPP and a monitoring plan. Through the Industrial SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce stormwater pollution are described.

As per the County's SUSMP requirements as part of the stormwater program, because the project would create or replace 5,000 square feet or more of impervious surface area on an already developed site, SUSMP and Site-Specific Stormwater Mitigation Plans must be incorporated into project plans. Compliance with these regulations would require the inclusion of post-construction stormwater measures and LID measures designed to minimize runoff flows and water quality degradation.

With compliance with the county's stormwater program, City of San Fernando and City of Los Angeles stormwater requirements, and the Industrial General Permit, impacts/effects on water quality during project operation would be less than significant under CEQA and non-adverse under NEPA.

Groundwater Supplies and Recharge

Operational impacts on groundwater for Alternative 3 would be the same as those stated above for the BRT alternatives. Alternative 3 would not result in substantially more impervious surface area than the BRT alternatives because the existing area that would be developed is currently mostly impervious. Therefore, groundwater recharge would not be substantially affected and impacts/effects would be less than significant under CEQA and non-adverse under NEPA.

Stormwater and Drainage

Operational impacts on drainage for Alternative 3 would be the same as those stated above for Alternatives 1 and 2. Drainage would not be substantially altered from the existing pattern and no stream or river would be altered. Therefore, impacts/effects would be less than significant under CEQA and non-adverse under NEPA.

Adherence to the project's SUSMP, as described above, would ensure that the appropriate treatment BMPs are applied to the project so that there would not be additional sources of polluted runoff. Therefore, project operation impacts/effects on runoff would be less than significant under CEQA and non-adverse under NEPA.

Flooding and Flood Hazards

The 100-year flood zone areas within the project study area are fully contained within County flood channels and drainage facilities. In addition, operation of the Low-Floor LRT/Tram Alternative (Alternative 3) would not place structures that would impede or redirect flood flows as mapped on any flood hazard delineation map. Potential locations for 11 TPSSs were determined through an extensive search of aerial imagery in addition to multiple site visits to the project area. These structures would be protected from floodwaters. The stations for the Low-Floor LRT/Tram Alternative would be at grade. All existing as well as new stations and crosswalks would be located to keep pedestrians as much as possible away from stepping down or up at catch basins and deep gutter flows. The finish floor of the MSF and other occupied structures would be protected from floodwaters. Drainage systems would be prepared according to Metro's design criteria. Therefore, flood impacts/effects would be less than significant under CEQA and non-adverse under NEPA.

As stated above for Alternative 1, there are no levees located within the project study area; and therefore, no associated flood impacts with levee failure would occur. However, the project alignment is located in a dam failure inundation zone area. Portions of the Sepulveda and Hansen Flood Control Basins (and the associated dams) are located in the project study area. Therefore, Alternative 3 facilities could be adversely affected in the event of dam failure. Although Alternative 3 would be located within an inundation zone area, the project itself would not increase the present risk of dam failure. Additionally, new structures for human occupancy would be limited to new stations and the MSF. The MSF would be constructed on a site currently occupied by existing industrial uses. Although Alternative 3 would result in some new structures that could put property or persons at risk as a result of a dam or water storage facility failure, the risk of dam failure is considered to be low.

There would be no substantial increase in impervious area and overall drainage patterns would remain the same; therefore, flood capacities would not be affected. Furthermore, because the project is in a highly urbanized area, it's not anticipated that the project would indirectly result in substantial increases in population or employment densities within the project study area. Therefore, impacts/effects would be less than significant under CEQA and non-adverse under NEPA.

Seiche, Tsunami, and Mudflow Hazards

The project study area is outside of tsunami potential inundation areas and, due to the relatively flat terrain, is not prone to mudflows. The potential for a catastrophic seiche event at the Hanson Flood Control Basin reservoir is low. Therefore, impacts/effects due to Alternative 3 would be less than significant under CEQA and non-adverse under NEPA.

Surface Water Use and Flows

Operation of the MSF would result in the use of water by MSF employees and for washing and maintaining the Low-Floor LRT/Tram Alternative vehicles at the MSF. Sources of water supplied to the City of Los Angeles include the Los Angeles aqueducts, local groundwater, and supplemental water purchased from the Metropolitan Water District of Southern California (MWD). Water is stored in large in-city open reservoirs. The net increase in water consumption due to the Low-Floor LRT/Tram Alternative would depend on the location of the MSF site that is selected and the amount of water that is consumed by existing uses on the site that would be demolished to construct the new MSF. As described previously, two of the candidate MSF sites are currently occupied by light industrial uses (mostly automotive repair and service), and one site is currently occupied by commercial fast food and retail shopping uses. Nonetheless, it's not expected that the proposed project, by itself, would increase water consumption to the extent required to result in an appreciable reduction in the amount of water in local City of Los Angeles reservoirs. Additionally, as noted above, Alternative 3 would not substantially change the overall impervious area; therefore, stormwater volumes are not anticipated to change. Therefore, Alternative 3 would not appreciably reduce or increase the amount of surface water in surrounding water bodies, nor would it result in a substantial adverse change in the current or direction of water flows. Therefore, impacts or effects would be less than significant under CEQA and non-adverse under NEPA.

Cumulative Impacts

All of the build alternatives would result in the same contributions to cumulative impacts. See discussion of cumulative impacts described for Alternative 1.

Compliance Requirements and Design Features

The same compliance requirements and BMPs for water quality and drainage, described under Alternative 1, also apply to Alternative 3.

Mitigation Measures

Construction Mitigation Measures

No construction mitigation measures are required.

Operational Mitigation Measures

No operational mitigation measures are required.

Impacts Remaining After Mitigation

NEPA Finding

Alternative 3 would not result in adverse effects to hydrology and water resources during construction and operation.

CEQA Determination

Alternative 3 would result in less-than-significant impacts to hydrology and water resources during construction and operation.

Alternative 4 – LRT

Construction Impacts

Construction of the LRT Alternative would result in the same impacts as those described above for Alternative 3 with the exceptions pertaining to groundwater supplies and recharge, as described below.

Alternative 4 includes underground stations, which would require excavation, and a tunnel under the Pacoima Wash. High groundwater elevations at this location range from approximately 120 feet below ground surface at the northern portal of the tunnel to approximately 60 feet below ground surface near Sherman Way at the southern portal of the tunnel.

The reinforced concrete box (RCB) found under Van Nuys Boulevard would be realigned so there would be no conflict during trenching associated for the proposed underground tunnel. The RCB would continue to be routed to the same storm drain network and would not be increased in size/capacity. Therefore, it’s realignment would not result in a substantial change in terms of existing water hydrology. The drainage patterns could be temporarily altered during construction if the drainage is routed to a different location (i.e., nearby storm drain) during the realignment. However, the drainage would still be going to the same overall storm drain network, and BMPs would be implemented to ensure that no impacts of drainage (i.e. erosion, etc.) would occur during the temporary change in drainage inlet. The proposed work would be done during the dry season to keep drainage volumes at a minimum.

Dewatering would most likely be required for the underground stations and could potentially be required for utility relocation or replacement depending on local groundwater levels. As discussed previously, residual contaminated groundwater could be encountered during dewater activities. The project contractor would be required to comply with Los Angeles RWQCB General Dewatering General Permit. Groundwater extracted during dewatering activity would either be treated prior to discharge or disposed of at a wastewater treatment facility.

Adherence to dewatering requirements of the Los Angeles RWQCB, and minimal water use during construction would ensure that impacts on groundwater would be less than significant under CEQA and the effects would not be adverse under NEPA.

Operational Impacts

Operational impacts of Alternative 4 would be the same as Alternative 3, described above, with one exception. There is a potential for flooding at the underground stations proposed under the LRT Alternative. The stations for Alternative 4 would be at grade except for three station structures, which would be constructed approximately 25 feet below grade and would be approximately 1,450 feet long from portal to portal. The subway tunnel portion of Alternative 4 would be located north of Vanowen Boulevard and South of Parthenia Street. The portals of the stations would be designed to ensure their protection from floodwaters. With proper design, the impacts/effects would be less than significant under CEQA and non-adverse under NEPA.

Cumulative Impacts

All of the build alternatives would result in the same contributions to cumulative impacts. See discussion of cumulative impacts described for Alternative 1.

Compliance Requirements and Design Features

The same compliance requirements and BMPs for water quality and drainage, described under Alternative 1, also apply to Alternative 4.

Mitigation Measures

Construction Mitigation Measures

No construction mitigation measures would be required.

Operational Mitigation Measures

No operational mitigation measures would be required.

Impacts Remaining After Mitigation

NEPA Finding

Alternative 4 would not result in adverse effects to hydrology and water resources during construction and operation.

CEQA Determination

Alternative 4 would result in less-than-significant impacts to hydrology and water resources during construction and operation.