

2.3 Physical Environment

2.3.1 Water Quality and Stormwater Runoff

2.3.1.1 Regulatory Setting

Federal Laws and Requirements

Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the U.S. from any point source (a discrete conveyance such as a pipe or a man-made ditch) unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). The goal of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request.
- Section 402 establishes NPDES, a permitting system for the discharge (except for dredged or fill material) of any pollutant into waters of the U.S. The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of stormwater from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredged or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE). For more information, please see the *Wetlands and Other Waters* section.

State Laws and Requirements

Porter-Cologne Water Quality Control Act

California’s Porter-Cologne Water Quality Control Act (Porter-Cologne Act), enacted in 1969, provides the legal basis for water quality regulation within California. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. In addition, it prohibits discharges of “waste,” the definition of which is broader than the CWA definition of “pollutant.” Discharges under the Porter-Cologne Act are permitted by waste discharge requirements and may be required even when the discharge is already permitted or exempt under the CWA.

The SWRCB and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set the criteria necessary to protect those uses. In addition, the SWRCB identifies waters that fail to meet standards for specific pollutants. These waters are then state listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point-source or non-point-source controls (NPDES permits or waste discharge requirements), the CWA requires the establishment of total maximum daily loads (TMDLs). TMDL specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights; sets water pollution control policy; issues water board orders on matters of statewide application; oversees water quality functions throughout the state by approving basin plans, TMDLs, and NPDES permits; and regulates projects spanning more than one water board region. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System Program

Municipal Separate Storm Sewer Systems

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of stormwater discharges, including MS4s. An MS4 is defined as “any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over stormwater, that is designed or used for collecting or conveying stormwater.” The SWRCB has identified Caltrans as an owner/operator of an MS4 under federal regulations.

To comply with the permit, the California Department of Transportation (Caltrans) developed a statewide Stormwater Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California.

Construction General Permit

The SWRCB issued a statewide Construction General Permit that regulates stormwater discharges from construction sites that result in a disturbed soil area of 1 acre or greater and/or are smaller sites that are part of a larger common plan of development. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least 1 acre must comply with the provisions of the Construction General Permit. Construction activity that results in soil disturbances of less than 1 acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity, as determined by the RWQCB. Operators of regulated construction sites are required to

develop Stormwater Pollution Prevention Plans (SWPPPs); implement sediment, erosion, and pollution prevention control measures; and obtain coverage under the Construction General Permit. In accordance with Caltrans' SWMP and Standard Specifications, a Water Pollution Control Program is necessary for projects with a disturbed soil area less than 1 acre.

Statewide Trash Provisions

On April 7, 2015, the SWRCB adopted statewide Trash Provisions (SWRCB Resolution No. 2015-0019) to address the adverse impacts of trash on the beneficial uses of surface waters in California. The Trash Provisions establish a statewide water quality objective for trash and prohibit the discharge of trash to surface waters of the state or the deposition of trash where it may be discharged to surface waters of the state. Pursuant to the Trash Provisions, the SWRCB issued a Water Code Section 13383 Order to Caltrans for complying with the trash requirements. The order requires Caltrans to implement full trash-capture (FTC) systems by 2030. The final trash amendments define an FTC system as "a treatment control, or series of treatment controls, including, but not limited to, a multi-benefit project or a low-impact development (LID) control that traps all particles that are 5 millimeters or greater." As part of this order, Caltrans developed and submitted a statewide Trash Implementation Plan that summarized the measures that will be taken to comply with specific trash requirements. Caltrans submitted the statewide Trash Implementation Plan on November 2018 and resubmitted a revised version of the plan to the SWRCB on April 2019. The statewide Trash Implementation Plan identifies Significant Trash Generating Areas (STGAs) in each Caltrans district. Adoption of the 2022 Caltrans MS4 permit (Order No. 2022-0033-DWQ) included trash implementation requirements for Caltrans to meet SWRCB Resolution No. 2015-0019.

Regional and Local Requirements

Regional Water Quality Control Boards

The Project is within the jurisdiction of the Santa Ana RWQCB (Region 8) and the San Diego RWQCB (Region 9), which have prepared Water Quality Control Plans (Basin Plans) to preserve and enhance water quality and protect the beneficial uses of state waters. A Basin Plan is more than just a collection of water quality goals and policies, descriptions of conditions, and discussions of solutions. It is also the basis for RWQCB regulatory programs. The Basin Plan establishes water quality standards for groundwater and surface waters of the region. The term "water quality standards," as used in the federal CWA, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan that describes the actions of the RWQCBs, and others, that are necessary to achieve and maintain the water quality standards. Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all beneficial uses of the water to be met, plans for improving water quality are included.

Local Regulations

The area surrounding the Project falls under the Orange County MS4 NPDES permits issued by the San Diego RWQCBs. The Orange County Stormwater Program is a cooperative of the County of Orange, Orange County Flood Control District, and all 34 Orange County cities. The Project will comply with Caltrans' NPDES permit for stormwater discharges and meet the requirements under the County of Orange MS4 permit for implementing LID strategies consistent with Caltrans' guidance documents.

LID is a stormwater management strategy aimed at maintaining or restoring the natural hydrologic functions of a site to achieve natural resource protection objectives. Specifically, LID employs a variety of natural and engineered features that reduce the rate of runoff, filter pollutants out of runoff, and facilitate the infiltration of water into the ground.

2.3.1.2 Affected Environment

Surface Water Features

Regional Hydrology

The Project area is within the Aliso Creek and San Diego Creek watersheds. Specifically, it lies within the San Juan Hydrologic Unit (HU) and the Aliso Creek Hydrologic Sub-Area (901.13) of the San Diego RWQCB (Caltrans n.d.) and the Santa Ana River HU and the East Coastal Plain Hydrologic Sub-Area (801.11) of the Santa Ana RWQCB. The Aliso Creek and San Diego Creek watersheds are in southern Orange County, approximately 50 miles south of Los Angeles and 65 miles north of San Diego.

Aliso Creek is a 35-square-mile watershed that receives discharges from Aliso Viejo, Laguna Beach, Laguna Hills, Laguna Niguel, Laguna Woods, Lake Forest, and Mission Viejo. The creek's headwaters originate in the Cleveland National Forest, then drain into a long, narrow coastal canyon that ultimately discharges into the Pacific Ocean at Aliso Beach. Tributaries to Aliso Creek include English Canyon, Sulphur Creek, and Wood Canyon (Orange County Public Works 2006).

The San Diego Creek watershed covers 112 square miles in central Orange County. It receives discharges from Irvine and parts of Aliso Viejo, Laguna Hills, Laguna Woods, Lake Forest, Orange, Santa Ana, and Tustin. The creek originates in the foothills of the Santa Ana Mountains near Lake Forest and Laguna Woods and flows west toward Irvine. La Cañada Creek, Serrano Creek, Borrego Creek, Agua Chinon Creek, Bee Canyon Wash, and Marshburn Channel are tributaries that feed into San Diego Creek before the confluence at Peters Canyon Wash. The creek changes direction to the south/southwest and ultimately feeds into Upper Newport Bay near Bonita Creek.

Local Hydrology

Runoff from the Project area sheet flows toward Caltrans storm drains within Interstate (I-) 5 and the El Toro Road interchange. This storm drain system connects to local city and/or county flood control drainage systems that outfall toward Aliso Creek and Cañada Channel. I-5 runoff from 1,000 feet north of the El Toro Road interchange to

Los Alisos Boulevard drains into an underground storm drain system (J06P01) that outfalls to Dairy Fork (J06) at Moulton Parkway. Dairy Fork meets at the Aliso Creek confluence just south of Laguna Hills Drive.

Runoff from I-5 from 1,000 feet north of the El Toro Road interchange to Ridge Route Drive drains toward the Veeh storm drain and Veeh Reservoir. The Veeh Reservoir discharges to Cañada Channel and eventually connects with San Diego Creek just south of Bake Parkway and Lake Forest Drive.

Surface Water Quality Objectives and Standards

Surface flows within Aliso Creek and San Diego Creek consist primarily of perennial creek flows and ephemeral flows from smaller tributaries of the watersheds. The Aliso Creek watershed is mainly an urbanized area, with the exception of Cleveland National Forest in the upper watershed and Aliso Wood Canyon Regional Park in the lower watershed. The San Diego Creek watershed is heavily urbanized, including a master-planned residential and commercial development. Approximately 80 percent of the Newport Bay watershed receives runoff from the San Diego Creek watershed.

The San Diego and Santa Ana RWQCB Basin Plans have designated the following beneficial uses for Aliso Creek and San Diego Creek at the Project location, as summarized in Table 2.3.1-1 and defined in the bullets after the table.

Table 2.3.1-1. Aliso Creek and San Diego Creek Beneficial Uses

Inland Surface Waters	HU Basin Number	MUN	AGR	GWR	REC1	REC2	WARM	WILD
Aliso Creek (San Diego RWQCB)	1.13	+	•		○	•	•	•
San Diego Creek Reach 2 (Santa Ana RWQCB)	801.11	+	•	•	•	•	•	•

Table Notes: • Existing Beneficial Use; ○ Potential Beneficial Use; + Excepted from MUN

- **Municipal and Domestic Supply (MUN):** Waters for community, military, or individual water supply systems, including, but not limited to, drinking water.
- **Agriculture Supply (AGR):** Waters for farming, horticulture, or ranching. These uses include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
- **Ground Water Recharge (GWR):** Waters for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
- **Water Contact Recreation (REC-1):** Waters for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs.

- **Non-Contact Water Recreation (REC-2):** Waters for recreational activities involving proximity to water but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities
- **Warm Freshwater Habitat (WARM):** Waters that support warmwater ecosystems, which may include, but are not limited to, areas for the preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
- **Wildlife Habitat (WILD):** Waters that support wildlife habitats, which may include, but are not limited to, areas for the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.

List of Impaired Waters

Based on the 2024 California Integrated Report (CWA Section 303(d) List/305(b) Report), partially approved by the SWRCB and U.S. Environmental Protection Agency, Aliso Creek is on the 2024 CWA 303(d) list of water-quality-limited segments requiring TMDLs for benthic community effects, indicator bacteria, malathion, nitrogen, phosphorus, selenium, and toxicity from unknown sources. Discharges to the Veeh storm drain at the Project location ultimately discharges to Veeh Reservoir/Cañada Creek, a tributary to San Diego Creek (Reach 2), which is listed in the 2024 integrated report as impaired for unknown sources of benthic community effects, indicator bacteria, nutrients, sedimentation/siltation, and toxicity.

Aliso Creek ultimately discharges to the Pacific Ocean 9 miles downstream from the Project location. The creek falls under the established TMDL for indicator bacteria (Project I – Twenty Beaches and Creeks in the San Diego Region, Including Tecolote Creek). The San Diego RWQCB adopted Resolution No. R9-2010-0001, which incorporated the TMDL into the San Diego Basin Plan, as identified in Attachment D of the Caltrans statewide NPDES MS4 permit (Order No. 2022-0033-DWQ). Because the Project would discharge to a water body with an established TMDL, as identified in Attachment D of the Caltrans NPDES permit, any runoff treated in excess of the runoff treated by the new impervious area created by the Project may be claimed to meet Caltrans NPDES permit requirements for achieving the TMDL compliance strategy.

Groundwater

The Project location is within the South Coast Hydraulic Region, which covers approximately 6.78 million acres of the Southern California watershed that drains to the Pacific Ocean. Groundwater is found in unconfined alluvial aquifers in most basins of the Santa Ana and Los Angeles sub-regions. In larger basins, groundwater occurs in multiple aquifers that create confined groundwater conditions; the coastal basins in the hydraulic region are prone to intrusion of seawater.

The Project location is situated between the Coastal Plain of Orange County (Basin 8-1) and the San Juan Valley Basin (Basin 9-1). Groundwater within the Project location would be available in the shallow depths of Aliso Creek, which drains a long, narrow coastal canyon from the headwaters in Cleveland National Forest to the ultimate discharge point at the Pacific Ocean.

Groundwater Quality and Objectives and Standards

The San Diego RWQCB Basin Plan has designated beneficial uses for groundwater of the San Juan HU (1.00). The existing beneficial uses for groundwater in Aliso Hydrologic Sub-area (1.13) are:

- **Municipal and Domestic Supply (MUN):** Waters for community, military, municipal, or individual water supply systems. These uses may include, but are not limited to, drinking water.
- **Agriculture Supply (AGR):** Waters for farming, horticulture, or ranching. These uses include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.

The following numeric water quality objectives were listed in the San Diego RWQCB Basin Plan for the Aliso Hydrologic Sub-area of the San Juan HU:

- **Total Dissolved Solids:** 1,200 milligrams per liter (mg/L)
- **Chloride:** 400 mg/L
- **Sulfate:** 500 mg/L
- **Percent Sodium (Na):** 60 percent
- **Nitrate:** 45 mg/L
- **Iron:** 0.3 mg/L
- **Manganese:** 0.05 mg/L
- **Methylene Blue Active Substances:** 0.5 mg/L
- **Boron:** 0.75 mg/L
- **Turbidity:** 5 nephelometric turbidity units
- **Fluoride:** 1 mg/L

2.3.1.3 Environmental Consequences

Temporary Impacts

Build Alternatives

Build Alternative 1

The short-term or temporary impacts on water quality and drainage patterns that can be anticipated during construction of Build Alternative 1 are associated with soil-disturbing activities such as excavation and trenching, soil compaction, cut-and-fill activities, grading, demolition, and bridge construction. Build Alternative 1 includes reconfiguration or realignment of on-ramps, off-ramps, and/or intersections or the construction of new on-ramps, off-ramps, and/or intersections. Retaining walls and soundwalls, as well as structures for a flyover, are proposed. With interchange realignment or new construction, there would be a need for reconstructing drainage facilities as well as constructing new permanent treatment best management practices (BMPs) for post-construction runoff. The disturbed soil area (DSA) created by these activities would be susceptible to high rates of erosion from wind and rain, resulting in sediment transport during rain events in stormwater runoff. The estimated DSA for Build Alternative 1 is 10.35 acres.

The Project would have to manage materials and waste associated with construction, such as oil and grease. It would also be required to manage spills or leaks from the heavy equipment or vehicles used for construction, trash from workers and construction activities, petroleum products from construction equipment and/or vehicles, sanitary waste from portable toilets, and any other chemicals used for construction, such as coolants used for equipment, concrete curing compounds, and/or dry and wet concrete waste.

It is anticipated that the Project would not encounter groundwater during construction. If the Project requires groundwater encountered/extracted during the construction of structures (e.g., bridges, retaining walls, soundwalls, sign foundations) to be discharged, the discharge must comply with Project Feature **PF-WQ-7** to minimize any temporary impact due to the discharge of groundwater to surface water.

PF-WQ-7 If dewatering is required, construction site dewatering must comply with the General Waste Discharge Requirements for Groundwater Extraction Discharges to Surface Waters within the San Diego Region (Order No. R9-2015-0013, NPDES No. CAG919003) and any subsequent updates to the permit at the time of construction. This permit addresses temporary dewatering operations during construction. Dewatering BMPs must be used to control sediment and pollutants, and the discharges must comply with the waste discharge requirements issued by the San Diego RWQCB.

The DSA for Build Alternative 1 would be more than 1.0 acre, thereby requiring the Project to comply with the NPDES Construction General Permit. Specifically, the Build Alternative would be required to prepare and implement a SWPPP and determine a risk level, based on the potential for erosion and transport to receiving waters. The SWPPP would identify temporary BMPs to address the potential temporary impacts on water

quality. The BMPs identified in the SWPPP would include temporary soil stabilization measures, linear sediment barriers (e.g., silt fences, gravel-bag berms, fiber rolls), and construction site waste management (e.g., concrete wash-out, construction material storage, litter/waste management, construction site dewatering). Project Features **PF-WQ-2** and **PF-WQ-3** would minimize any temporary impacts on the receiving waters.

PF-WQ-2 The Project will comply with the provisions of the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order No. 2022-0057-DWQ, NPDES No. CAS000002) and any subsequent permits in effect at the time of construction.

PF-WQ-3 The Project will comply with the Construction General Permit by preparing and implementing a SWPPP to address construction-related activities that have the potential to affect water quality. The SWPPP will identify sources of pollutants that may affect the quality of stormwater and include BMPs to control the pollutants, such as sediment controls, catch basin inlet protection, construction materials management, and non-stormwater BMPs. All work must conform to the construction site BMPs specified in the latest edition of the Stormwater Quality Handbooks: Construction Site Best Management Practices Manual to control and minimize the impacts of construction and construction-related activities, materials, and pollutants on the watershed. The BMPs involve, but are not limited to, temporary sediment controls, temporary soil stabilization, scheduling, waste management, materials handling, and other non-stormwater BMPs.

Design Variation: Build Alternative 1a

Temporary impacts on water quality under Build Alternative 1a would be the same as those described for Build Alternative 1, including impacts involving soil-disturbing activities (e.g., excavation, trenching, grading, demolition, and bridge construction), erosion and sediment transport, and construction material/waste management.

As with Build Alternative 1, the Project would include interchange reconfiguration, reconstruction of drainage facilities, and implementation of permanent post-construction treatment BMPs. Groundwater is not anticipated to be encountered; however, if dewatering is required, compliance with applicable waste discharge requirements and implementation of BMPs (**PF-WQ-7**) would minimize impacts, consistent with Build Alternative 1.

The estimated DSA for Build Alternative 1a is approximately 10.35 acres, which is the same as Build Alternative 1. Therefore, as with Build Alternative 1, the Project would be required to comply with the NPDES Construction General Permit, prepare and implement a SWPPP, and implement temporary BMPs to minimize impacts on receiving waters (**PF-WQ-2** and **PF-WQ-3**).

No additional or substantially different temporary water quality impacts are anticipated under Build Alternative 1a compared to Build Alternative 1.

Build Alternative 3

Alternative 3 includes stand-alone Transportation System Management (TSM)/Transportation Demand Management (TDM) improvements. TSM strategies increase the efficiency of existing facilities; they are actions that increase the number of vehicle trips a facility can carry without increasing the number of through lanes. TDM focuses on regional means of reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy; this includes technological improvements. No physical or geometric improvements are proposed. A layout plan is not provided for Build Alternative 3 because it includes only technological improvements; no physical or geometric improvements are proposed. Ground disturbance would not be required under Build Alternative 3; therefore, Build Alternative 3 would not result in a DSA.

No-Build Alternative

The No-Build Alternative would not result in temporary impacts on water quality because no new impervious surfaces or drainage modifications would be constructed.

Permanent Impacts

Build Alternatives

Build Alternative 1

Build Alternative 1 proposes constructing new intersections, realigning on-ramps and off-ramps, constructing new on-ramps, and constructing retaining walls and/or soundwalls as necessary, bridge structures, and drainage facilities. The new impervious surface created by Build Alternative 1 would cover 7.68 acres.

Construction of Build Alternative 1 would include minor grading, cut-and-fill work, the construction of new storm drain systems, demolition of existing structures, and the construction of new structures, retaining walls, and/or soundwalls. The construction of the interchange improvements would also include the construction of permanent source-control BMPs, also known as design pollution prevention BMPs (e.g., slope/surface protection systems [vegetated surfaces, benching/terracing, slope rounding, hard surfaces], concentrated flow conveyance systems [rock slope protection, ditches, berms, dikes, swales, overside drains, flared culvert end sections, velocity dissipation devices such as riprap], preservation of existing vegetation), to address any long-term impacts associated with construction of the Project.

Build Alternative 1 consists of constructing new roadways and interchanges, which would result in an increase in impervious surface area and, therefore, an increase in stormwater runoff rates and volumes. The increase in impervious surface area would also result in long-term impacts, such as an alteration in drainage patterns on roadways as well as long-term discharges of the pollutants typically generated by operation of a transportation facility. However, the types of pollutants would be similar to the types discharged under existing conditions (i.e., oil and grease, gasoline, metals).

The existing impervious surface at the Project location covers approximately 50 acres, including the existing El Toro Road interchange, on-ramps and off-ramps, and mainline I-5 within the Project limits. Reconstruction of the interchange, on-ramps, and off-ramps

as well as the construction of new ramps and/or new lanes or bridge structures would result in an increase in new impervious surface area totaling 7.68 acres. This is calculated by adding the net new impervious surface and the replaced impervious surface. The net new impervious surface and the replaced impervious surface are 2.74 acres and 4.94 acres, respectively. The majority of the new impervious surface is replaced impervious surface, which is defined by Caltrans as the area where the underlying soil or pervious subgrade is exposed from during construction. Because the majority of the existing Project sites is pervious, the majority of the impervious surface that was calculated for Build Alternative 1 consists of replaced impervious surface.

The impervious surface area under Build Alternative 1 would increase due to the widening, reconfiguration, and/or reconstruction of the interchange. Although the increase in net new impervious surface constructed for Build Alternative 1 would be relatively small, most of the impervious surface would consist of replaced impervious surface. Stormwater discharges from this existing replaced impervious surface consist of the pollutants typically generated during operation of a transportation facility (e.g., sediment/turbidity, nutrients, trash and debris, bacteria and viruses, oxygen-demanding substances, organic compounds, oil and grease, pesticides, and metals). Because the Project's net new impervious surface would be minor, the additional pollutant loading that is typically found with the addition of a new impervious surface would be minor because most of the new impervious surface would be replaced impervious surface or existing impervious surface (pre-existing impervious surface) that would be replaced because the underlying soil would be exposed. Although the net new impervious surface would be relatively small, the Project would evaluate post-construction treatment BMPs, consistent with the Caltrans statewide NPDES MS4 permit for the new impervious surface created by the Project. Treatment BMPs may include biofiltration, design pollution prevention infiltration areas, infiltration devices, detention devices, media filters, a multi-chamber treatment train, wet basins, and an open graded friction course. Project Features **PF-WQ-1** and **PF-WQ-5** would minimize any permanent impacts on water quality.

PF-WQ-1 The Project will comply with the provisions of the NPDES permit and waste discharge requirements for Caltrans (Order No. 2022-0033-DWQ, NPDES No. CAS00003) and any subsequent permits in effect at the time of construction.

PF-WQ-5 Caltrans-approved treatment BMPs will be implemented consistent with the requirements of the NPDES permit and waste discharge requirements for Caltrans (Order No. 2022-0033-DWQ, NPDES No. CAS00003) and any subsequent permits in effect at the time of construction. Treatment BMPs may include biofiltration, design pollution prevention infiltration areas, infiltration devices, detention devices, dry-weather flow diversion, gross solids removal devices, media filters, bioretention, an open graded friction course, and wet basins.

As a linear project, the Project would have many discharge points to distribute the additional runoff, with minimal downstream effects. The Caltrans NPDES permit mandates that a Rapid Stability Assessment (RSA) be conducted during planning and

design for all projects that with 1 acre or more of net new impervious surface and any new impervious portion of a project that drains to a stream crossing within the project limits. The Project does not meet the criteria for preparing an RSA for hydromodification and channel protection. Build Alternative 1 does not have an net new impervious surface of 1 acre or more that would discharge to a stream crossing within the Project limits. If the Project meets the criteria for preparing an RSA at later phases, the Project would prepare an RSA and conduct higher-level analysis for hydromodification.

In addition to addressing the increase in impervious surfaces, the Project must comply with the SWRCB adopted statewide Trash Provisions (SWRCB Resolution No. 2015-0019) and Attachment E of the Caltrans NPDES permit to address the adverse impacts from trash on the beneficial uses of surface waters in California. Caltrans has committed to the SWRCB that roadways identified as STGAs will implement FTC devices.

The Project limits are within an STGA on I-5; therefore, the Project would evaluate FTC devices within the STGA to comply with the SWRCB Trash Provisions. Project Feature **PF-WQ-6** would minimize any permanent impacts on water quality to meet SWRCB Trash Provisions.

PF-WQ-6 Caltrans FTC devices, other treatment controls, and/or institutional controls will be implemented within STGAs consistent with the requirements of Attachment E of the NPDES permit and waste discharge requirements for Caltrans (Order No. 2022-0033-DWQ, NPDES No. CAS000003) and the Caltrans statewide Trash Implementation Plan to meet SWRCB trash provisions (SWRCB Resolution No. 2015-0019).

To address long-term impacts under Build Alternative 1, the Project would incorporate Caltrans-approved treatment BMPs and/or evaluate LID strategies, consistent with the Caltrans statewide NPDES permit. In addition to evaluating and incorporating treatment BMPs, Caltrans would evaluate and incorporate FTC devices and design pollution prevention (source-control) BMPs, ensuring that adequate measures would be included to minimize pollutant sources such as trash and erosion from Project improvements. Project Feature **PF-WQ-4** would minimize any permanent impacts on water quality.

PF-WQ-4 Design pollution prevention BMPs will be implemented, such as preservation of existing vegetation; slope/surface protection systems (permanent soil stabilization); concentrated flow conveyance systems such as ditches, berms, dikes, and swales; overside drains; flared end sections; and outlet protection/velocity dissipation devices.

Design Variation: Build Alternative 1a

Permanent impacts on water quality under Build Alternative 1a would be the same as those described for Build Alternative 1. This includes increases in impervious surface area, associated increases in stormwater runoff rates and volumes, alterations to drainage patterns, and long-term discharges of the pollutants typically generated by transportation facilities (e.g., oil and grease, metals, other roadway-related pollutants).

As with Build Alternative 1, Build Alternative 1a would result in approximately 7.68 acres of new impervious surface, consisting of both net new impervious surface and replaced impervious surface. Because the majority of the new impervious surface would be replaced impervious surface and the net new impervious surface would be relatively small, increases in pollutant loading would be minor and consistent with those described for Build Alternative 1.

Implementation of permanent design pollution prevention (source-control) BMPs and treatment BMPs would be the same as described for Build Alternative 1, consistent with the Caltrans statewide NPDES MS4 permit. Project Features **PF-WQ-1**, **PF-WQ-4**, and **PF-WQ-5** would minimize permanent impacts on water quality.

As described for Build Alternative 1, the Project would not meet the criteria for preparation of an RSA for hydromodification. The Project would comply with the statewide Trash Provisions, and FTC devices would be evaluated within the identified STGA (**PF-WQ-6**).

Permanent water quality impacts under Build Alternative 1a would be similar to those described for Build Alternative 1; therefore, Build Alternative 1a would not result in substantial adverse permanent impacts on water quality.

Build Alternative 3

Alternative 3 includes stand-alone TSM/TDM improvements. TSM strategies increase the efficiency of existing facilities; they are actions that increase the number of vehicle trips a facility can carry without increasing the number of through lanes. TDM focuses on regional means of reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy. Alternative 3 includes only technological improvements; no physical or geometric improvements are proposed. Because no new or replaced impervious surfaces or drainage modifications are proposed, Build Alternative 3 would not result in permanent impacts on water quality.

No-Build Alternative

The No-Build Alternative would not result in permanent impacts on water quality because no new impervious surfaces or drainage modifications would be constructed.

2.3.1.4 Avoidance, Minimization, and/or Mitigation Measures

The Project would incorporate Project Features and standardized measures that include temporary and permanent BMPs, as outlined in Section 2.3.1.3. With implementation of these Project Features, no adverse impacts on water quality would occur. No Project-specific avoidance, minimization, and/or mitigation measures are required.

This page intentionally left blank.