2.9 Water Quality and Stormwater Runoff

2.9.1 Regulatory Setting

2.9.1.1 Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source[1] 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). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit scheme. 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 (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. 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 dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional Permits are issued for a general category of activities when they are similar in nature and cause minimal

[1] A point source is any discrete conveyance such as a pipe or a man-made ditch.

environmental effect. Nationwide Permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE's Individual Permits. There are two types of Individual Permits: Standard Permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with the U.S. Environmental Protection Agency's (USEPA) Section 404 (b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230) and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the USEPA in conjunction with the USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative that would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[1] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements (see 33 CFR 320.4). A discussion of the LEDPA determination, if any, for the document is included in Section 2.17, Wetlands and Other Waters.

2.9.1.2 State 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. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the State. 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. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the

[1] The USEPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (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. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then State-listed in accordance with CWA Section 303(d). If the State determines that waters are impaired for one or more constituents and the standards cannot be met through point-source or nonpoint-source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, nonpoint, and natural) for a given watershed.

2.9.1.3 State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application. It also oversees water quality functions throughout the State by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs 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 storm water, that is designed or used for collecting or conveying storm water." The SWRCB has identified the California Department of

Transportation (Caltrans) as an owner/operator of an MS4 under federal regulations. Caltrans' MS4 permit covers all Caltrans rights-of-way (ROWs), properties, facilities, and activities in the State. The SWRCB or the RWQCB issues NPDES permits for 5 years, and permit requirements remain active until a new permit has been adopted.

Caltrans' MS4 Permit, Order No. 2022-0033-DWQ NPDES No. CAS000003, (adopted on June 22, 2022, and effective on January 1, 2023) regulates stormwater and nonstormwater discharges from Caltrans properties and facilities associated with operation and maintenance of the State highway system. It contains four basic requirements:

1. Caltrans must comply with the requirements of the Construction General Permit (see below);
2. Caltrans must implement a year-round program in all parts of the State to effectively control stormwater and nonstormwater discharges;
3. Caltrans stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs) and other measures deemed necessary by the SWRCB and/or other agency having authority reviewing the stormwater component of the project; and
4. Caltrans shall comply with the prohibition of discharge of trash to surface waters of the State or deposition of trash where it may be discharged into surface waters of the State through compliance with the requirements of Attachment E of the MS4 Permit (with a demonstration of full compliance by December 2, 2030).

To comply with the permit, Caltrans developed the Statewide Storm Water Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing stormwater management procedures and practices, as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in stormwater and nonstormwater discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed Project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address stormwater runoff.

At the time of the preparation of the *I-5 Managed Lanes Project Environmental Impact Report/Environmental Assessment*, the SWMP was being updated to meet the requirements of the adopted 2022 Caltrans MS4 Permit and Construction General Permit. The project will follow the guidelines in the 2016 SWMP except where the 2022 permit requirements differ from the 2016 SWMP.

Construction General Permit

The Construction General Permit (CGP), Order No. 2022-0057-DWQ, NPDES No. CAS000002, was adopted on September 8, 2022, and becomes effective on September 1, 2023. The CGP regulates stormwater discharges from construction sites which result in a Disturbed Soil Area (DSA) of 1 acre or greater and/or are smaller sites that are part of a larger common plan of development.

- For all projects subject to the CGP, the applicant is required to hire a Qualified Stormwater Pollution Prevention Plan (SWPPP) Developer (QSD) to develop and implement an effective SWPPP. A Qualified SWPPP Practitioner (QSP) may be hired as well to assist in field work. All Project Registration Documents (PRDs), including the SWPPP, Risk Level (RL) Determinations, and site map and postconstruction treatment documents, are required to be uploaded into the SWRCB's online Stormwater Multiple Application and Report Tracking System (SMARTS). A Waste Discharge Identification (WDID) number will be issued within 10 business days after the State Waterboard receives a complete Notice of Intent (NOI) package.
- The 2022 CGP requires postconstruction treatment permit registration documents to be submitted in SMARTS with the NOI to include: (1) an attachment or web source containing the NPDES MS4 postconstruction requirements, and (2) the postconstruction plans and calculations (preliminary postconstruction plans and calculations may be submitted as a Permit Registration Document, as long as the approved plans and calculations are submitted within 14 days of approval by the municipal stormwater permittee through a Change of Information [COI] in SMARTS). Additionally, a COI in SMARTS must be submitted for any revisions to postconstruction plans and calculations prior to submitting the Notice of Termination (NOT).

Waiver From Construction General Permit

Projects that disturb over 1 acre but less than 5 acres of soil may qualify for a waiver of CGP coverage. This occurs whenever the Rainfall Erosivity—(R) in the Revised Universal Soil Loss Equation (RUSLE)—is less than 5. When the R

factor is below the numeric value of 5, projects can be waived from coverage under the CGP and are instead covered by the Caltrans Statewide MS4 permit. Refer to the CGP, Attachment D1, Risk Determination Worksheet of the CGP.

In accordance with the SWMP, a Water Pollution Control Plan (WPCP) is necessary for construction of a Caltrans project not covered by the CGP.

Construction activity that results in soil disturbances of less than 1 acre is subject to this CGP 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 a SWPPP, to implement soil erosion and pollution prevention control measures, and to obtain coverage under the CGP.

Risk Level Inspection and Sampling Requirements

The CGP contains a risk-based permitting approach by establishing three levels of risk possible for a construction site. RLs are determined during the planning, design, and construction phases, and are based on project risk of generating sediments and receiving water risk of becoming impaired. Requirements apply according to the RL determined, with additional monitoring and reporting requirements for higher-risk projects with detailed requirements listed in Attachment D of the CGP. Requirements include:

- Visual inspections weekly, prior to Qualifying Precipitation Events (QPEs), during QPEs (every 24 hours), and post-QPEs. A qualifying Storm Event (QPE) is defined as a forecasted 50 percent probability of precipitation of 0.5 inch or more within a 24-hour period and continues on subsequent 24-hour periods when 0.25 inch or more is forecast.
- RL 2 and 3 projects have sampling requirements for pH and Turbidity.
- Additionally, sampling for Numeric Action Levels (NALs) and Numeric Effluent Limits (NELs) is required for all RL projects for TMDL-related nonvisible pollutants listed in Attachment H of the CGP, if there is a discharge due to failure to implement a BMP, a container spill or leak, or a BMP breach or malfunction.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with State water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404

permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

2.9.1.4 Regional and Local Requirements

Caltrans' 2022 MS4 Permit incorporated the requirements of the State Water Board Resolution 2015-0019, which amended the Water Quality Control Plan for Ocean Waters of California and the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California to include trash-related requirements, referred to in the Order as the "Trash Provisions." Implementation of the Trash Provisions includes the following:

- Caltrans shall install, operate, and maintain any combination of full-capture systems, other treatment controls, and/or institutional controls for all storm drains that capture runoff from Significant Trash Generating Areas (where trash accumulates in substantial amounts as defined in Section E4). Caltrans shall develop and implement monitoring plans that demonstrate that such combinations achieve full-capture system equivalency.
- Caltrans shall coordinate efforts with municipal separate storm sewer system permittees subject to NPDES permits that implement the Trash Provisions, to install, operate, and maintain full-capture systems, other treatment controls, and/or institutional controls in Significant Trash Generating Areas and/or Priority Land Uses.

As required by the Porter-Cologne Act, the Santa Ana and the Los Angeles RWQCBs have established water quality objectives (WQOs) for waters within their jurisdiction to protect the beneficial uses of those waters and published them in their respective Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) (Santa Ana RWQCB 1995) and the Coastal Watershed of Los Angeles and Ventura Counties (Los Angeles RWQCB 2014). The Basin Plan also identifies implementation

programs to achieve these WQOs and requires monitoring to evaluate the effectiveness of these programs. WQOs must comply with the State anti-degradation policy (State Board Resolution No. 68-16), which is designed to maintain high-quality waters while allowing some flexibility if beneficial uses are reasonably affected.

The Project lies within the boundaries of the Santa Ana RWQCB and the Los Angeles RWQCB, which make water quality decisions for their respective regions. Their responsibilities include setting standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions.

Regional Water Quality Control Board (RWQCB) Basin Plan

All projects within the Santa Ana and Los Angeles regions are subject to the requirements of the Santa Ana RWQCB and Los Angeles RWQCB, respectively. The Santa Ana RWQCB and Los Angeles RWQCB have prepared a Basin Plan to help preserve and enhance water quality and to protect the beneficial uses of State waters. The Basin Plan designates beneficial uses for surface and ground waters, and it sets qualitative and quantitative objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State's anti-degradation policy. The Basin Plan also describes implementation programs to protect the beneficial uses of all waters in the region, as well as surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan.

Dewatering Activities

Care is required for the removal of nuisance water because of high turbidity and other pollutants resulting from construction activities such as dewatering. The Santa Ana RWQCB's Dewatering Permit is identified as Order No. R8-2020-0006 (NPDES No. CAG998001). This permit covers General Waste Discharge Requirements for Discharges to Surface Water which Pose an Insignificant (De Minimus) Threat to Water Quality from dewatering activities.

The Los Angeles RWQCB has established three dewatering NPDES permits. The proposed Project would be required to comply with the dewatering NPDES permit described below if there is a potential for discharging pollutants through release of construction water directly to the environment.

- **RWQCB Order No. R4-2018-0125 (NPDES NO. CAG994004).** This water quality order was adopted by the Los Angeles RWQCB on September 13, 2018;

became effective on November 13, 2018; and will expire on November 13, 2023. This water quality order covers the General Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties.

2.9.2 Affected Environment

This section is based on the *Water Quality Assessment Report* (April 2023) prepared for the proposed Project.

2.9.2.1 Surface Water

Regional and Local Hydrology

There are five watersheds within the Study Area: the Lower San Gabriel River Watershed, the Santiago Creek Watershed, the Lower Santa Ana River Watershed, the Bolsa Chica Channel-Frontal Huntington Harbor Watershed, and the San Diego Creek Watershed.

For regulatory purposes, the Santa Ana and Los Angeles RWQCBs designate watershed areas in Hydrologic Units (HUs), which are further divided into Hydrologic Areas (HAs) and Hydrologic Subareas (HSAs) as presented in Table 2.9.1. As designated by the Santa Ana RWQCB, the Study Area is in the Santa Ana River HU; the San Gabriel River HU; the Lower Santa Ana River HA; the Anaheim HA; the Lower San Gabriel River HA; the East Coast Plain HSA; the Central (Split) HSA, and an undefined HSA. The HSAs cover approximately 315,747 acres.

Table 1.9.1: I-5 Managed Lanes Project Hydrologic Units

Hydrologic Unit	Hydrologic Area	Hydrologic Subarea Number	Hydrologic Subarea Name	Hydrologic Subarea Acres
Santa Ana River	Lower Santa Ana River	801.11	East Coast Plain	194,575
San Gabriel River	Anaheim	845.61	Undefined	40,937
San Gabriel River	Lower San Gabriel River	405.15	Central (Split)	80,235

Source: *Water Quality Assessment Report* (April 2023)
I = Interstate

Receiving waters for stormwater within the Project Area include Coyote Creek, Fullerton Creek, Carbon Creek, Lower Santiago Creek (or Santiago Creek Reach 1), Santa Ana River Reaches 1 and 2, Bolsa Chica Channel, San Diego Creek Reach 1, and Peters Canyon Wash. Coyote Creek, Fullerton Creek, Carbon Creek, Bolsa Chica

Channel, and Peters Canyon Wash are concrete-lined channels. Santiago Creek is an earthen-lined drainage, and the Santa Ana River and San Diego Creek are natural waterways. Coyote Creek drains to San Gabriel River Reach 1, the San Gabriel River Estuary, and ultimately the San Pedro Bay. Lower Santiago Creek ultimately drains into the Santa Ana River, and the Santa Ana River drains to the Pacific Ocean at Huntington Beach State Park. The Bolsa Chica Channel drains to Anaheim Bay, Bolsa Bay Marsh, before terminating at Bolsa Chica State Beach. San Diego Creek Reach 1 and Peters Canyon Wash both flow into Newport Bay, Upper (Ecological Reserve) and Newport Bay, Lower (the entire lower bay, including Rhine Channel, Turning Basin, and South Lido Channel to the east end of H-J Moorings). Figure 2.9-1 displays the watersheds and surface waters within the Project corridor.

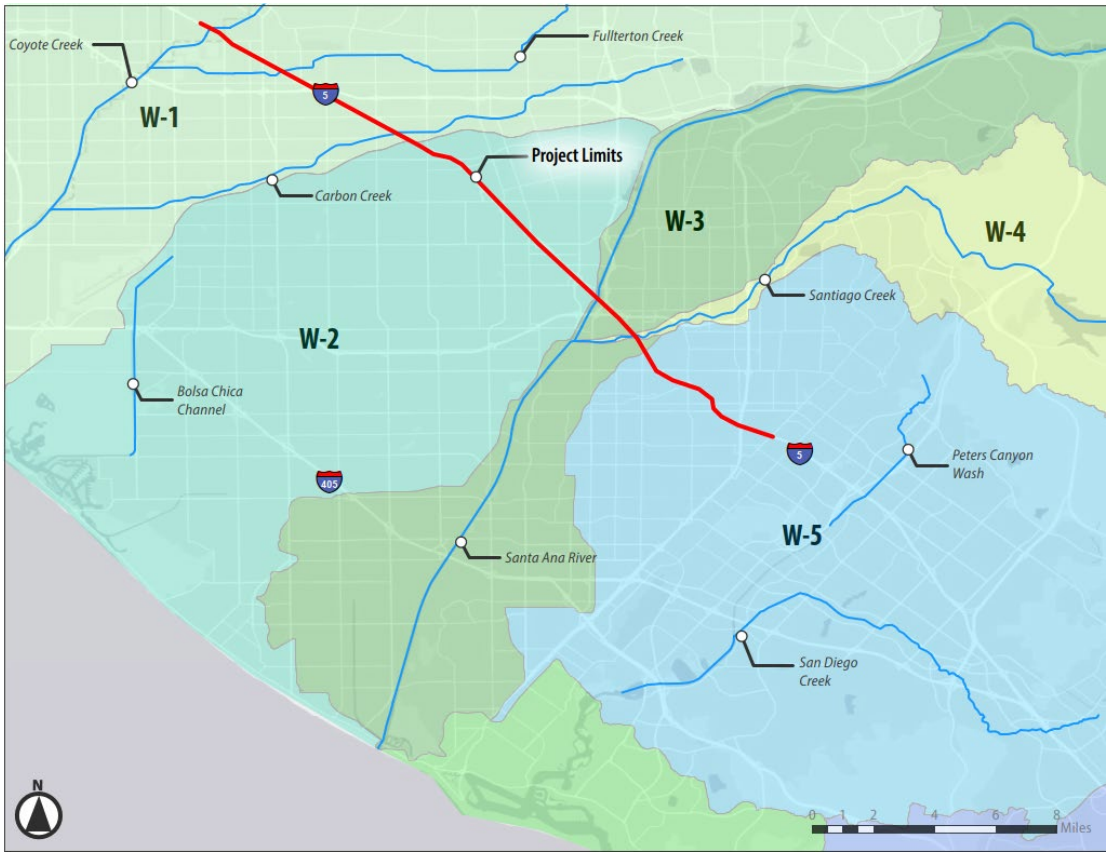

Figure 2.9-1: I-5 Managed Lanes Project Watersheds and Surface Waters

Legend:
W-1: Lower San Gabriel River Watershed
W-2: Bolsa Chica Channel-Frontal Huntington Harbour Watershed
W-3: Lower Santa Ana River Watershed
W-4: Santiago Creek Watershed
W-5: San Diego Creek Watershed

As shown in Figure 2.9-1, surface waters within the project limits include Coyote Creek, Fullerton Creek, Carbon Creek, Santa Ana River, and Santiago Creek.

Surface Water Quality Objectives

To protect beneficial uses, the Los Angeles RWQCB and the Santa Ana RWQCB have set forth WQOs that are described in their Basin Plans. WQOs are intended to (1) protect public health and welfare; and (2) maintain or enhance water quality in relation to the designated existing and potential beneficial uses of the water. The Santa Ana RWQCB (Santa Ana RWQCB 1995) and Los Angeles RWQCB (Los Angeles RWQCB 2014 [amended in 2019]) surface WQOs for inland receiving waters are shown in Table 3-9 and Table 3-10, respectively of the *Water Quality Assessment Report* (April 2023).

In addition, the Basin Plan has identified a numeric WQO for Santa Ana River Reach 2. The numeric WQO for total dissolved solids (TDS), based on a 5-year moving average, is 650 milligrams per liter.

Beneficial Uses

The Basin Plans identify implementation programs to achieve WQOs and requires monitoring to evaluate the effectiveness of these programs. WQOs must comply with the State antidegradation policy (State Board Resolution No. 68-16), which is designed to maintain high-quality waters while allowing some flexibility if beneficial uses are reasonably affected. Beneficial uses of water are defined in the Basin Plan as those necessary for the survival or well-being of humans, plants, and wildlife. Examples of those beneficial uses include drinking water supplies, swimming, industrial and agricultural water supply, and the support of freshwater and marine habitats and their organisms. The designated beneficial uses for direct receiving water resources within the Study Area are shown in Table 3-11 of the *Water Quality Assessment Report* (April 2023) and are summarized below.

The following existing or potential beneficial uses are identified for Coyote Creek (Above La Canada Verde Creek):

- **MUN:** Municipal and Domestic Supply
- **IND:** Industrial Service Supply
- **PROC:** Industrial Process Supply
- **WARM:** Warm Freshwater Habitat

- **RARE:** Rare, Threatened, or Endangered Species
- **WILD:** Wildlife Habitat

The following existing or potential beneficial uses are identified for Carbon Creek:

- **MUN:** Municipal and Domestic Supply
- **GWR:** Groundwater Recharge
- **REC1:** Water Contact Recreation
- **REC2:** Non-Contact Water Recreation
- **WARM:** Warm Freshwater Habitat
- **RARE:** Rare, Threatened, or Endangered Species
- **WILD:** Wildlife Habitat

The following existing or potential beneficial uses are identified for Santa Ana River Reach 1:

- **MUN:** Excepted from Municipal and Domestic Supply
- **REC-1:** Water Contact Recreation
- **REC-2:** Non-Contact Water Recreation (Access prohibited in all or part per agency with jurisdiction)
- **WARM:** Warm Freshwater Habitat (Intermittent beneficial use)
- **WILD:** Wildlife Habitat (Intermittent beneficial use)

The following existing or potential beneficial uses are identified for Santa Ana River Reach 2:

- **MUN:** Excepted from Municipal and Domestic Supply
- **GWR:** Groundwater Recharge
- **AGR:** Agricultural Supply
- **REC-1:** Water Contact Recreation
- **REC-2:** Non-Contact Water Recreation
- **WARM:** Warm Freshwater Habitat
- **RARE:** Rare, Threatened, or Endangered Species
- **WILD:** Wildlife Habitat

The following existing or potential beneficial uses are identified for Santiago Creek Reach 1:

- **MUN:** Excepted from Municipal and Domestic Supply
- **GWR:** Groundwater Recharge
- **REC-1:** Water Contact Recreation
- **REC-2:** Non-Contact Water Recreation
- **WILD:** Wildlife Habitat

There are no designated beneficial uses for Fullerton Creek per the Santa Ana Region Basin Plan (updated February 2016).

Water Quality Impairments

The proposed project crosses over five water bodies that convey flow to downstream tributaries before draining to the Pacific Ocean. The 2020–2022 Integrated Report (SWRCB 2022b) includes a combined list of CWA Section 303(d) water bodies that are listed as not meeting water quality standards and Section 305(b) water bodies that identifies water bodies still requiring the development of a TMDL, those that have a completed TMDL approved by the USEPA, and those that are being addressed by actions other than a TMDL. Table 2.9-2 presents the impaired water bodies and the TMDL pollutants.

As shown in Table 2.9-2, Peters Canyon Channel is listed on the 303(d) List of Water Quality Limited Segments as impaired for toxaphene, pH, indicator bacteria toxicity, benthic community effects, malathion, selenium, and dichlorodiphenyltrichloroethane (DDT). San Diego Creek Reach 1 is listed as impaired for nutrients, sedimentation/ siltation, selenium, toxaphene, toxicity, indicator bacteria, benthic community effects, DDT, and malathion. Coyote Creek is listed as impaired for indicator bacteria, dissolved copper, iron, malathion, pH, and toxicity. Lower Newport Bay is listed as impaired for chlordane, copper, DDT, indictor bacteria, nutrients, polychlorinated biphenyls (PCBs), and toxicity. Upper Newport Bay is listed as impaired for chlordane, copper, DDT, indicator bacteria, malathion, nutrients, PCBs, sedimentation/siltation, and toxicity. Receiving waters in the Study Area are not used for drinking water or water recharge.

The Receiving Water Risk Factor was determined as High because the proposed Project is within the San Diego Creek Watershed. The San Diego Creek Watershed is designated as a high-risk receiving watershed because it is impaired for sediment/ siltation. Given a Sediment Risk Factor of Medium and a Receiving Water Risk Factor of High, per the CGP, the combined RL was determined as Level 2.

Table 2.9-2: Direct and Indirect Receiving Waterbody Listing Status

Waterbody Name	303(d) Impairment	TMDL Status	
		TMDL Still Required	Being Addressed by USEPA-Approved TMDL
Peters Canyon Channel	Toxaphene, pH, Indicator Bacteria, Toxicity, Benthic Community Effects, Malathion, Selenium, DDT	pH, Indicator Bacteria, Toxicity, Benthic Community Effects, Malathion, Selenium	Toxaphene, DDT
San Diego Creek Reach 1	Nutrients, Sedimentation/Siltation, Selenium, Toxaphene, Toxicity, Indicator Bacteria, Benthic Community Effects, DDT, Malathion	Selenium, Toxicity, Indicator Bacteria, Benthic Community Effects, Malathion	Nutrients, Sedimentation/ Siltation, Toxaphene, DDT
Coyote Creek	Indicator Bacteria, Dissolved Copper, Iron, Malathion, pH, Toxicity	Iron, Malathion, pH, Toxicity	Dissolved Copper, Indicator Bacteria
Newport Bay, Lower	Chlordane, Copper, DDT, Indicator Bacteria, Nutrients, PCBs, Toxicity	Copper, Toxicity	Chlordane, DDT, Indicator Bacteria, Nutrients, PCBs, Toxicity
Newport Bay, Upper	Chlordane, Copper, DDT, Indicator Bacteria, Malathion, Nutrients, PCBs, Sedimentation/Siltation, Toxicity	Copper, Malathion, Toxicity	Chlordane, DDT, Indicator Bacteria, Nutrients, PCBs, Sedimentation/Siltation

Source: State Water Resources Control Board (2022).
DDT = dichlorodiphenyltrichloroethane
PCB = polychlorinated biphenyls
TMDL = total maximum daily load
USEPA = United States Environmental Protection Agency

Per Attachment D of the Caltrans MS4 Permit, Table 2.9-3 presents the TMDL impaired water bodies and associated TMDL pollutants within the Project Area. The TMDLs listed in Table 2.9-3 require additional TMDL-specific implementation requirements above and beyond complying with the baseline requirements of the Permit.

Per Attachment D of the Caltrans MS4 Permit, Table 2.9-4 presents the TMDL impaired water bodies and associated TMDL pollutants subject to Time Schedule Order 2022-0033-DWQ terms and conditions, as well as specified implementation requirements.

Table 2.9-3: TMDLs with Baseline and Additional TMDL-Specific Implementation Requirements

RWQCB	TMDL Impaired Waterbody	TMDL Pollutant
Los Angeles	San Gabriel River, Estuary and Tributaries (shared TMDL)	Indicator bacteria
Santa Ana	Rhine Channel Area of the Lower Newport Bay	Chromium and mercury
Santa Ana	Rhine Channel	Metals (copper, lead, and zinc)
Santa Ana	San Diego Creek and Newport Bay	Dissolved copper, lead, and zinc

Source: *Water Quality Assessment Report* (April 2023)
RWQCB = Regional Water Quality Control Board
TMDL = total maximum daily load

Table 2.9-4: TMDLs Subject to Time Schedule Order 2022-0033-DWQ and Specified Implementation Requirements

RWQCB	TMDL Impaired Waterbody	TMDL Pollutant
Los Angeles	San Gabriel River Estuary and Impaired Tributaries	Metals (copper, lead, and zinc) and selenium
Santa Ana	San Diego Creek Watershed	Organochlorine compounds: DDT, chlordane, PCBs, and toxaphene
Santa Ana	Upper and Lower Newport Bay	Organochlorine compounds: DDT, chlordane, PCBs, and toxaphene

Source: *Water Quality Assessment Report* (April 2023)
DDT = dichlorodiphenyltrichloroethane
PCB = polychlorinated biphenyls
RWQCB = Regional Water Quality Control Board
TMDL = total maximum daily load

Table 2.9-5 presents a list of existing TMDLs that would be applicable to CGP requirements for NAL sampling when there is a discharge of a nonvisible TMDL, listed on Tables H1 to H3 of Attachment H of the CGP. Sampling would be required when there is a lack of BMP installation, a BMP failure, or a spill.

Table 2.9-5: TMDL Requirements Associated with Construction Stormwater Discharges

TMDL	Pollutant
San Gabriel River Metals and Selenium TMDL	Metals and selenium
San Diego Creek and Newport Bay Nutrients TMDL Nutrients	Nutrients
San Diego Creek and Newport Bay Organochlorine Compounds TMDL	Organochlorine compounds
San Diego Creek and Newport Bay Sediment TMDL	Sediment
San Diego Creek and Newport Bay Toxics TMDL	Toxics

Source: *Water Quality Assessment Report* (April 2023)
TMDL = total maximum daily load

As part of its runoff and characterization monitoring studies, Caltrans identified pollutants that were discharged from Caltrans facilities with a load or concentration that commonly exceeded allowable standards and were still considered treatable by currently available Caltrans-approved Treatment BMPs. These pollutants, designated as targeted design constituents (TDCs), include sediment; metals (i.e., total and dissolved fractions of zinc, lead, and copper); nitrogen (e.g., ammonia); phosphorus; and general metals. Some of the TDCs (e.g., nutrients) identified by Caltrans are the same pollutants of concern identified in Table 2.9-5.

The Project limits are within the Significant Trash Generating Areas (STGA) identified in the Statewide Trash Implementation Plan (Caltrans 2019). STGAs within the Project limits are displayed on Figure 2.9-2. Therefore, the STGA within the Project limits will be evaluated for the implementation of full trash capture (FTC) devices to meet the Statewide Trash Provisions. Specifically, the Project will implement the Statewide Trash Provisions by carefully selecting, installing, operating, and maintaining any combination of FTC systems within the Project where there will be physical improvement to the freeway (e.g., widening).

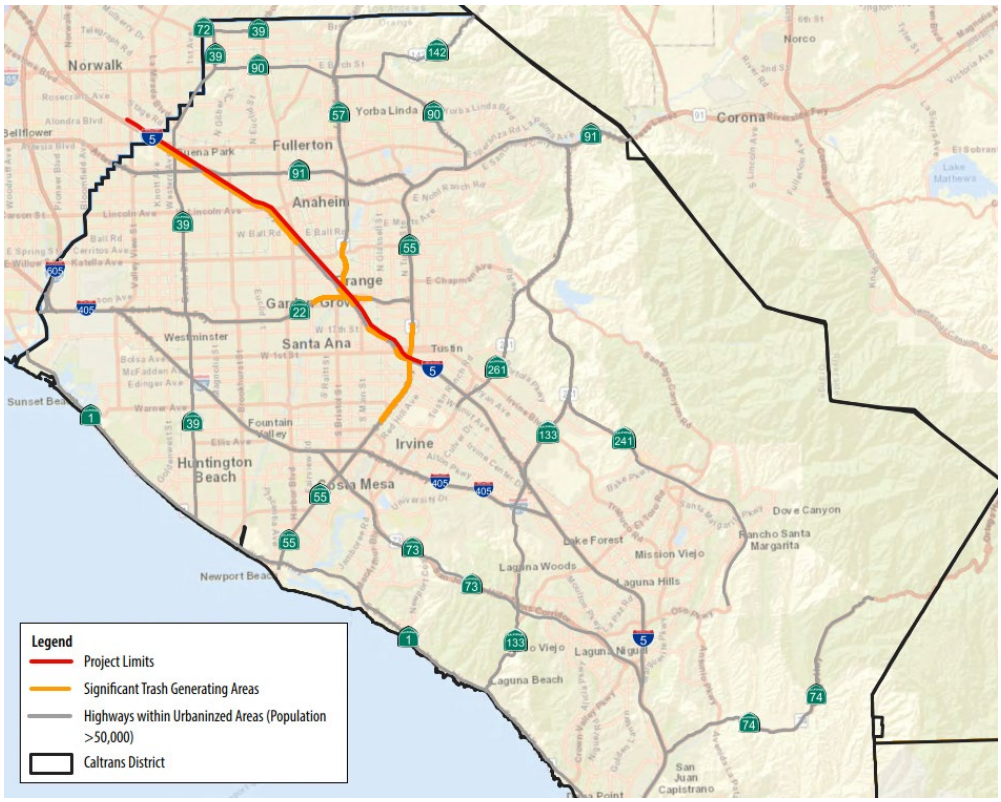

Figure 2.9-2: I-5 Managed Lanes Project Significant Trash Generating Areas

2.9.2.2 Groundwater

Groundwater Hydrology

Coastal Plain of the Orange County Groundwater Basin

The Study Area is located within the Coastal Plain of the Orange County Groundwater Basin (Orange County Basin). The Orange County Basin underlies the northern half of Orange County. It covers approximately 224,000 acres, bordered by the Coyote and Chino Hills to the north, the Santa Ana Mountains to the northeast, and the Pacific Ocean to the southwest, and terminates near the Orange County line to the northwest, where it connects to the Coastal Plain of Los Angeles – Central Basin (California Department of Water Resources 2005).

The California Department of Water Resources divides the Orange County Basin into two primary hydrologic divisions, the Forebay and Pressure areas. The boundary of these two areas generally delineates the areas where surface water or shallow groundwater can or cannot move downward in substantial quantities to the first producible aquifer. This boundary represents a transition zone where low-

permeability clay and silt deposits increasingly occur in near-surface sediments southwest of the boundary of these two areas.

The Santa Ana River serves as Orange County Water District's (OCWD) main source for groundwater recharge. OCWD manages the underground reserves that supply 500 wells within OCWD's boundary. Approximately 270,000 acre-feet of water is pumped for use each year. Groundwater reserves are maintained by a recharge system, which replaces water pumped from wells. OCWD's facilities have a recharge capacity of about 300,000 acre-feet per year, with a total capacity of 38,000,000 acre-feet. Approximately 2 million people depend on this source for more than 75 percent of their water (Caltrans 2022). Along a 6-mile section of the Santa Ana River that belongs to OCWD, a system of diversion structures and recharge basins captures most of the water that would otherwise flow into the Pacific Ocean. The Interstate (I) 5 Managed Lanes Project crosses the Santa Ana River approximately 3 miles downstream from the OCWD Burris Basin recharge facility (OCWD 2018).

Groundwater Water Quality Objectives

The groundwater WQOs for the Santa Ana Region, as designated in the Basin Plan, are provided in Table 3-13 of the *Water Quality Assessment Report* (April 2023). A site-specific groundwater WQO for the Orange County Basin is:

- **TDS:** 580 milligrams per liter (mg/L)
- **Nitrate as Nitrogen:** 3.4 mg/L

Existing Groundwater Levels

Groundwater levels are generally lower than the levels in 1969, when the Orange County Basin was considered to have been full. The level in the forebay has generally stabilized, whereas the southern coastal area has declined steadily through time. Since 1990, the magnitude of yearly groundwater level fluctuation has approximately doubled near the coast because of seasonal water demand and short-term storage programs, but it has stayed the same in the forebay. Average groundwater levels for the Orange County Basin have risen about 15 feet since 1990, with average levels in the forebay area rising about 30 feet and average levels in the coastal area dropping a few feet (Department of Water Resources 2004).

Beneficial Uses

The present or potential beneficial uses for the Orange County Basin as designated in the Basin Plan are listed below:

- **MUN:** Waters are used for community, military, municipal, or individual water supply systems
- **AGR:** Waters are used for farming, horticulture, or ranching
- **IND:** Waters are used for industrial activities that do not depend primarily on water quality (e.g., mining, cooling, or gravel washing)
- **PROC:** Waters are used for industrial activities that depend primarily on water quality (e.g., food preparation)

Groundwater Quality

Groundwater in this area is primarily calcium sulfate and calcium bicarbonate in character. The TDS in the Central Basin ranges from 200 to 2,500 mg/L based on data from 293 public supply wells. The average TDS concentration for these 293 wells is 453 mg/L (California Department of Water Resources 2004).

Coastal Plain of Los Angeles Central Basin

The northern section of the Project, within Caltrans District 7, at I-5 from Post Mile 0.0 to 0.5, is in the Coastal Plain of the Los Angeles Groundwater Basin (commonly referred to as the Central Basin). The Central Basin spans an area of 177,000 acres and occupies a large portion of the southeastern part of the Coastal Plain. Groundwater enters the Central Basin through surface and subsurface flows and by direct percolation of precipitation and streamflow. With a groundwater storage capacity of 13,800,000 acre-feet, the Central Basin replenishes the aquifers in the forebay areas where permeable sediments are exposed at ground surface (California Department of Water Resources 2004). Natural replenishment of the Central Basin's groundwater supply is primarily from surface inflow through the Whittier Narrows and some underflow from the San Gabriel Valley.

Groundwater Water Quality Objectives

The groundwater WQOs for the Los Angeles Region, as designated in the Basin Plan, are provided in Table 3-15 of the *Water Quality Assessment Report* (April 2023).

Existing Groundwater Levels

According to the Groundwater Bulletin (California Department of Water Resources 2004), groundwater levels varied over a range of approximately 25 feet between 1961 and 1977. Since 1996, groundwater levels have varied by a range of 5 to 10 feet. Well water levels documented in 1999 indicated that most water levels are in the upper portion of their recent historical range.

Beneficial Uses

The present or potential beneficial uses for the Coastal Plain of the Los Angeles Central Basin, as designated in the Basin Plan, are listed below:

- **MUN:** Waters are used for community, military, municipal, or individual water supply systems
- **AGR:** Waters are used for farming, horticulture, or ranching
- **IND:** Waters are used for industrial activities that do not depend primarily on water quality (e.g., mining, cooling, or gravel washing)
- **PROC:** Waters are used for industrial activities that depend primarily on water quality (e.g., food preparation)

Existing Groundwater Quality

Groundwater in this area is primarily calcium sulfate and calcium bicarbonate in character. The TDS in the Central Basin ranges from 200 to 2,500 mg/L based on data from 293 public supply wells. The average TDS concentration for these 293 wells is 453 mg/L (California Department of Water Resources 2003).

2.9.3 Environmental Consequences

2.9.3.1 Temporary Impacts

Build Alternative (Alternative 2)

Under this alternative, sign replacement and pavement delineation would be implemented to meet the latest California Manual on Uniform Traffic Control Devices (CA MUTCD) standards. No additional roadway improvements would occur. Two proposed park-and-ride facilities are being evaluated as part of Alternative 2 and would be constructed within the existing freeway ROW.

During construction, Alternative 2 would disturb a total of 2.60 acres of surface area. Construction activities for the sign replacement and development of the park-and-ride facilities would include clearing and grubbing, grading, and excavation. Soil would be exposed, and there would be a potential for soil erosion compared to existing conditions. Additionally, during a storm event, soil erosion could occur at an accelerated rate. Construction of Alternative 2 would disturb a smaller area than Alternative 3 and Alternative 4. Therefore, Alternative 2 would involve the least amount of exposed soil and would result in the lowest potential for soil erosion and downstream sedimentation to occur when compared to Alternative 3 and Alternative 4.

During pavement delineation, there is a potential for construction-related pollutants to be spilled or leaked or to be transported via storm runoff into drainages adjacent to

the Project Area and into downstream receiving waters. Petroleum products (e.g., paints and/or thermoplastic materials) may be spilled or leaked and have the potential to be transported via storm runoff into receiving waters. Other pollutants of concern during construction under Alternative 2 include sediments, trash, concrete waste (dry and wet), sanitary waste, and chemicals.

Temporary or portable sanitary facilities provided for construction workers would be a source of sanitary waste that could be transported to downstream receiving waters. Construction workers would also generate trash and debris (e.g., food wrappers) that could also be transported to receiving waters. If water is detained at the construction site, it has the potential to reach ambient air temperatures and, if discharged to receiving waters, could contribute to the increase in water temperatures.

As described in Project Features PF-WQ-2 and PF-WQ-3 (all Project Features provided in Section 2.9.4), construction activities associated with Alternative 2 would comply with the requirements of the CGP. In compliance with the CGP, preparation of a SWPPP and implementation of Construction BMPs would be required to identify sources of stormwater pollution, minimize erosion, control stormwater, and prevent spills. Construction BMPs would include, but not be limited to, Erosion Control and Sediment Control BMPs (which are designed to minimize erosion and retain sediment on site) and Good Housekeeping BMPs to prevent spills, leaks, and discharge of construction debris and waste into receiving waters. The SWPPP would be developed and Construction BMPs selected and implemented to target pollutants of concern during construction. Potential Construction BMPs include, but are not limited to: stabilized construction entrance/exit, preservation of existing vegetation, slope protection, construction scheduling, storm drain inlet protection, perimeter and runoff controls, sediment barriers, tire/wheel wash, street sweeping and vacuuming, wind erosion control, concrete waste management, temporary stockpiles, streambank stabilization, gravel bag berms, sandbag barriers, clean water diversion, concrete curing, and solid waste management. The Construction BMPs would retain sediment and other pollutants on the Project site, which would prevent these pollutants from reaching receiving waters.

PF-WQ-2 The Project will comply with the provisions of the NPDES Construction General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (CGP) 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 CGP by preparing and implementing a Stormwater Pollution Prevention Plan (SWPPP) to address all construction-related activities, equipment, and materials that have the potential to impact water quality for the appropriate risk level (RL). The SWPPP will identify the sources of pollutants that may affect the quality of stormwater and include Best Management Practices (BMPs) to control the pollutants, such as sediment control, catch basin inlet protection, construction materials management, and nonstormwater BMPs. All work would conform to the Construction Site BMP requirements 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. These include, but are not limited to, temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other nonstormwater BMPs.

Alternative 2 is anticipated to be Risk Level 2 under the CGP; therefore, effluent monitoring for pH and turbidity levels would be required during storm events. This would ensure that pH and turbidity levels remain below NALs, as established in the CGP. Discharges of stormwater and authorized nonstormwater discharges are not anticipated to cause or contribute to any violations of applicable water quality standards or objectives, or adversely affect human health. In addition, runoff during construction would not contain pollutants in quantities that would create a condition of nuisance or adversely affect beneficial uses of waters of the State. Properly implemented Construction BMPs, with appropriate installation, inspection, and maintenance, as incorporated by Project Features PF-WQ-2 and PF-WQ-3, would retain pollutants on site and prevent them from entering receiving waters. Therefore, no adverse water quality impacts are anticipated during construction of Alternative 2.

Build Alternative (Alternative 3)

In addition to the construction activities described under Alternative 2, Alternative 3 would also convert the existing HOV lane to an Express Lane (EL) in each direction between Red Hill Avenue and State Route (SR) 55; convert two existing HOV lanes to ELs in each direction between SR-55 and SR-57; and convert an existing HOV lane to an EL in each direction from SR 57 to the Orange/Los Angeles County line. Implementation of Alternative 3 would also include 10 on-ramp and 11 off-ramp improvements and extension of an existing soundwall. During construction, Alternative 3 would disturb a total area of 9.03 acres. Alternative 3 would result in similar impacts to water quality as those discussed above for Alternative 2 because both Build Alternatives include similar construction activities, such as clearing and grubbing, grading, excavation, paving, and sealing. The extension of the soundwall under Alternative 3 may include driving sheet piles for foundation support and shoring operations. During construction of the soundwall extension, without proper control and use of equipment, materials, and waste products from pile driving operations, there is a potential for the discharge of pollutants to the storm drain system and receiving waters. Erosion and sedimentation are also a concern given the movement of soils during excavation and grading activities for the soundwall.

Although the intensity of a temporary impact may vary between Alternative 2 and Alternative 3, the temporary impacts due to erosion, sedimentation, and the lack of day-to-day operations of the construction site which involve keeping a clean, orderly construction site are similar. Alternative 3 would implement the same Project Features as Alternative 2 as well as PF-WQ-6. Implementation of these Project Features would minimize the transport of pollutants such as sediment and waste materials. Implementation of these Project Features would also control paving, surfacing, sealing, and concrete waste management operations that may pollute stormwater runoff or discharge to the storm drain system or receiving water body. These Project Features are summarized below.

As included in Project Feature PF-WQ-2 and PF-WQ-3, construction activities associated with Alternative 3 would comply with the requirements of the CGP. In compliance with the CGP, preparation of a SWPPP and implementation of Construction BMPs would be required to minimize erosion and prevent spills. Construction BMPs would include, but not be limited to, Erosion Control and Sediment Control and Good Housekeeping BMPs to prevent spills, leaks, and discharge of construction debris and waste into receiving waters. The SWPPP would be developed and Construction BMPs selected and implemented to target pollutants

of concern during construction. Potential Construction BMPs would be the same as those included in Alternative 2. The Construction BMPs would retain sediment and other pollutants on the Project site, which would prevent these pollutants from reaching receiving waters.

The extension of the soundwall under Alternative 3 may include driving sheet piles for foundation support and shoring operations. During the soundwall extension, if groundwater is encountered, care is required for the removal of nuisance water because of high turbidity and other pollutants resulting from dewatering. If the removal of groundwater from sheet pile driving and shoring operations is required, under Alternative 3, it is possible that dewatering activities could result in the release of unsuitable and untreated water if discharged directly to the environment. Dewatering activities would also have the potential to impact water quality, especially during flushing of potable water from temporary or new potable water pipelines.

Groundwater may contain elevated levels of TDS, nitrates, color, or other constituents that could affect surface water quality when discharged to surface waters. Construction activities could also result in accidental releases of construction-related hazardous materials that might affect groundwater. Excavations could provide a direct path for construction-related contaminants to reach groundwater. Excavations could also disturb known and undocumented soil or groundwater contaminants, resulting in the migration of contaminated groundwater further into the groundwater table. As required by Project Feature PF-WQ-6, if groundwater dewatering becomes necessary during construction, construction activities associated with Alternative 3 would comply with the requirements of Order No. R8-2020-0006 or Order No. R4-2018-0125. Under both orders, permittees are required to monitor their discharges from construction groundwater extraction waste to ensure that effluent limitations for constituents are not exceeded. Therefore, no substantial changes to groundwater quality are anticipated.

PF-WQ-6 If dewatering is expected for the preferred alternative, the Project shall fully conform to the requirements specified in Order No. R8-2020-0006, General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimus) Threat to Water Quality or Order No. R4-2018-0125 General Waste Discharge Requirements for Discharges of Groundwater from Construction and Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and

Ventura Counties. These NPDES permits are applicable to construction dewatering wastes and dewatering wastes from subterranean seepage.

Build Alternative (Alternative 4)

In addition to the construction activities described under Alternative 3, roadway improvements under Alternative 4 would also construct an additional EL in each direction between SR-57 and SR-91. Implementation of Alternative 4 would also include 11 on-ramp and 13 off-ramp improvements and extension of three retaining walls. The same impacts to soundwalls described under Alternative 3 would occur as part of Alternative 4. During construction, Alternative 4 would disturb a total of 24.61 acres of surface area. Alternative 4 would result in similar impacts to water quality as those discussed above for Alternative 3.

As included in Project Features PF-WQ-2 and PF-WQ-3, construction activities associated with Alternative 4 would comply with the requirements of the CGP. Prior to construction, a SWPPP would be prepared and implemented and would address stormwater management, spill prevention and response, and nonstormwater discharges. Construction site BMPs would be deployed to the maximum extent practicable. Given that construction is occurring in an existing highway transportation corridor, similar to the other Build Alternatives, construction impacts caused by Alternative 4 include only a minimal increase in sediment loads due to removal of paved areas and disturbance of soil below the pavement. The temporary residual increase in sediment loads from the construction area is unlikely to alter the hydrologic response (i.e., erosion and deposition) downstream in the hydrologic subarea watersheds presented in Table 2.9.1 and, subsequently, the sediment processes in these watersheds because of the negligible potential for sediment. Use of Construction BMPs is expected to minimize any sedimentation, erosion, and chemical water quality impacts during construction.

The construction of the new retaining wall under Alternative 4 may include driving sheet piles for foundation support and shoring operations. During these operations, if groundwater is encountered, dewatering would be required. Care is required if groundwater is encountered because of high turbidity and other pollutants resulting from dewatering. If construction of the new retaining wall requires dewatering, groundwater would be disposed of according to NPDES dewatering permit requirements, as described in PF-WQ-6. Therefore, no substantial changes to regional groundwater levels are anticipated under Alternative 4.

Potential impacts to groundwater quality under Alternative 4 would be the same impacts that were discussed under Alternative 3. Per NPDES requirements, as required under PF-WQ-6, a dewatering plan would be prepared to guide the disposal of groundwater encountered during construction activities, as well as undocumented soil and groundwater contaminants. Therefore, no substantial changes to groundwater quality are anticipated.

No Build Alternative (Alternative 1)

No temporary impacts to hydrology or water resources are anticipated under the No Build Alternative because there will be no work constructed within the Caltrans transportation corridor. Any planned residential, commercial, or industrial development adjacent to the transportation corridor are responsible for their own temporary drainage conveyance facilities and are excluded from conveying off-site runoff into the Caltrans drainage facility. Therefore, no changes to hydrology or water resources are anticipated with construction activities associated with off-site planned development under the No Build Alternative.

2.9.3.2 Permanent Impacts

Build Alternative (Alternative 2)

Under this alternative, sign replacement and pavement delineation would be implemented to meet the latest California Manual on Uniform Traffic Control Devices (CA MUTCD) standards. No additional roadway improvements would occur. Two proposed park-and-ride facilities are being evaluated as part of Alternative 2 and would be constructed within the existing freeway ROW.

Alternative 2 would result in a permanent net increase in impervious surface area of 2.10 acres. An increase in impervious surface area would increase the volume of runoff during a storm, thereby increasing the potential for more effectively transporting pollutants to receiving waters. Also, an increase in impervious surface area would increase the total amount of pollutants in the stormwater runoff and nonstormwater runoff, which would increase the amount of pollutants traveling to on-site drainages and downstream receiving waters.

Potential pollutants associated with the implementation of Alternative 2 during the post-construction phase include: sediment from natural erosion; nutrients, such as phosphorus and nitrogen, associated with replace-in-kind landscaping and establishment of vegetative cover as a permanent erosion control measure to protect new slopes of 2:1 or flatter; mineralized organic matter in soils; nitrite discharges

from automobile exhausts and atmospheric fallout; litter; and metals from the combustion of fossil fuels, the wearing of brake pads, and corrosion of galvanized structures (Caltrans 2017a).

Treatment BMPs would be implemented under Alternative 2 to target these pollutants of concern. As a result, Alternative 2 would not be a substantial source of pollutants that would contribute to any existing impairments; therefore, there is a low potential for the alternative to adversely affect water quality. Although Alternative 2 would result in an increase of 2.10 acres of new impervious surfaces, BMPs for Alternative 2 would treat 100 percent of the new impervious surface area, providing water quality benefits to on-site drainages and downstream receiving waters.

As specified in Project Features PF-WQ-1, PF-WQ-4, PF-WQ-5, and PF-WQ-7, Alternative 2 would comply with the Caltrans NPDES Permit and the Caltrans Statewide Trash Implementation Plan (Caltrans 2019). These project features require the implementation of Caltrans-approved Treatment BMPs, Design Pollution Prevention BMPs, and FTC measures to reduce the discharge of pollutants of concern to the maximum extent practicable. Design Pollution Prevention BMPs are features that focus on reducing or eliminating runoff and controlling sources of pollutants during operation of the Project. Treatment BMPs utilize treatment mechanisms to remove pollutants that have entered stormwater runoff. FTC devices reduce or prevent trash discharges from the Caltrans ROW to storm drain systems and receiving waters.

PF-WQ-1 The Project will comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for the State of California, Department of Transportation, Order No. 2022-0033-DWQ, NPDES No. CAS000003 (Permit) and any subsequent permits in effect at the time of construction.

PF-WQ-4 Design Pollution Prevention Best Management Practices (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, over side drains, flared end sections, and outlet protection/velocity dissipation devices.

PF-WQ-5 Caltrans-approved treatment BMPs will be implemented consistent with the requirements of NPDES Permit and Waste Discharge Requirements for the State of California, Department of Transportation, Order No. 2022-0033-DWQ, NPDES No. CAS00003 and any subsequent permits in effect at the time of construction. Treatment BMPs may include biofiltration strips, biofiltration swales, infiltration basins, detention devices, Design Pollution Prevention Infiltration Areas (DPPIA), dry-weather flow diversion, gross solids removal devices (GSRDs), media filters, bioretention, open graded friction courses, wet basins, and other BMPs.

PF-WQ-7 Caltrans FTC Devices, other treatment controls, and/or institutional controls will be implemented within STGAs consistent with requirements of Attachment E of National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for the State of California, Department of Transportation, Order No. 2022-0033-DWQ, NPDES No. CAS000003.

The applicability of all 12 Caltrans-approved Treatment BMPs would be analyzed for the entirety of the Project from a water quality perspective in relation to the receiving water bodies and the STGAs within the Project limits. The proposed Treatment BMPs for Alternative 2 include design pollution prevention infiltration areas (DPPIAs) and biofiltration swales (BSWs). DPPIAs and BSWs were selected as water quality Project Features because they provide a dual purpose for both water quality and trash capture. These BMPs are also more sustainable due to lower lifecycle costs and can be situated at locations along the Project corridor where ROW requirements would not conflict with other environmental mitigation.

As stated above, the Treatment BMPs would target constituents of concern from Caltrans ROW. Furthermore, the Design Pollution Prevention BMPs would control sources of pollutants in the Project Area, thereby reducing the amount of pollutants that would drain to downstream receiving waters. Therefore, Alternative 2 would not result in any adverse impacts to water quality during operation with inclusion of Project Features PF-WQ-1, PF-WQ-4, PF-WQ-5, and PF-WQ-7.

Build Alternative (Alternative 3)

In addition to the construction activities described under Alternative 2, Alternative 3 would also convert the existing HOV lane to an Express Lane (EL) in each direction between Red Hill Avenue and State Route (SR) 55; convert two existing HOV lanes to ELs in each direction between SR-55 and SR-57; and convert an existing HOV lane to an EL in each direction from SR-57 to the Orange/Los Angeles County line. Implementation of Alternative 3 would also include 10 on-ramp and 11 off-ramp improvements and extension of an existing soundwall.

Operation of Alternative 3 would produce the same pollutants of concern during operation as Alternative 2. Alternative 3 would result in a permanent increase in impervious surface area of 10.69 acres. An increase in impervious surface area would increase the volume of runoff during a storm, thereby increasing the potential for more effectively transporting pollutants to receiving waters. Also, an increase in impervious surface area would increase the total amount of pollutants in both stormwater runoff and nonstormwater runoff, which would increase the amount of pollutants traveling to on-site drainages and downstream receiving waters.

Operation of Alternative 3 has the potential to contribute to the downstream nutrient load, sedimentation/siltation, metals, copper, and trash impairments. Treatment BMPs, like BMPs included in Alternative 2, would be implemented under Alternative 3 to target these pollutants of concern. As a result, Alternative 3 would not be a substantial source of pollutants that would contribute to any existing impairments; therefore, there is a low potential for the alternative to adversely affect water quality. Although Alternative 3 would result in an increase of 10.69 acres of new and replaced impervious surfaces, BMPs for Alternative 3 would treat 100 percent of the new and replaced impervious surface area, providing water quality benefits to on-site drainages and downstream receiving waters.

As stated in Project Features PF-WQ-1, PF-WQ-4, PF-5, and PF-WQ-7, Alternative 3 would include the Design Pollution Prevention and Treatment BMPs to target constituents of concern in stormwater runoff to the maximum extent practicable like those described under Alternative 2. The Treatment BMPs would target constituents of concern from transportation facilities. Additionally, the Design Pollution Prevention BMPs would control sources of pollutants in the Project Area, thereby reducing the amount of pollutants that would drain to downstream receiving waters. Therefore, Alternative 3 would not result in any adverse impacts to water quality

during operation with incorporation of Project Features PF-WQ-1, PF-WQ-4, PF-WQ-5, and PF-WQ-7.

Build Alternative (Alternative 4)

In addition to the construction activities described under Alternative 3, roadway improvements under Alternative 4 would also construct an additional EL in each direction between SR-57 and SR-91. Implementation of Alternative 4 would also include 11 on-ramp and 13 off-ramp improvements and extension of three retaining walls. The same impacts to soundwalls described under Alternative 3 would occur as part of Alternative 4.

Operation of Alternative 4 would produce the same pollutants of concern during operation as Alternative 2 and Alternative 3. An increase of 19.86 acres in impervious surface area would increase the volume of runoff during a storm, thereby increasing the potential for more effectively transporting pollutants to receiving waters. Also, an increase in impervious surface area would increase the total amount of pollutants in both stormwater runoff and nonstormwater runoff, which would increase the amount of pollutants traveling to on-site drainages and downstream receiving waters.

Operation of Alternative 4 has the potential to contribute to the downstream nutrient load, sedimentation/siltation, metals, copper, and trash impairments. Treatment BMPs, like BMPs included in Alternative 3, would be implemented under Alternative 4 to target these pollutants of concern. As a result, Alternative 4 would not be a substantial source of pollutants that would contribute to any existing impairments; therefore, there is a low potential for the alternative to adversely affect water quality. Although Alternative 4 would result in an increase of 19.86 acres of new and replaced impervious surfaces, BMPs for Alternative 4 would treat 100 percent of the new and replaced impervious surface area, providing water quality benefits to on-site drainages and downstream receiving waters.

As stated in Project Features PF-WQ-1, PF-WQ-4, PF-WQ-5, and PF-WQ-7, Alternative 4 would include the Design Pollution Prevention and Treatment BMPs to target constituents of concern in storm water runoff to the maximum extent practical like those described under Alternative 3. The Treatment BMPs would target constituents of concern from transportation facilities. Additionally, the Design Pollution Prevention BMPs would control sources of pollutants in the Project Area, thereby reducing the amount of pollutants that would drain to downstream receiving waters. Therefore, Alternative 4 would not result in any adverse impacts to water

quality during operation with incorporation of Project Features PF-WQ-1, PF-WQ-4, PF-WQ-5, and PF-WQ-7.

No Build Alternative (Alternative 1)

Under the No Build Alternative, the I-5 Managed Lanes Project would not be constructed. Therefore, under the No Build Alternative, there would not be an increase in impervious area or change in land use in the Project Area. The No Build Alternative would not result in an increase in stormwater runoff or pollutant loading.

2.9.4 Avoidance, Minimization, and/or Mitigation Measures

The Build Alternatives will incorporate the Project Features outlined above in Section 2.9.3 to help address potential impacts. No avoidance, minimization, and/or mitigation measures are required.

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