Shoemaker Bridge Replacement Project

Water Quality Assessment Report

07-LA-710 PM6.0/6.4

EA: 27300

SCH No. 2016041007

April 2018

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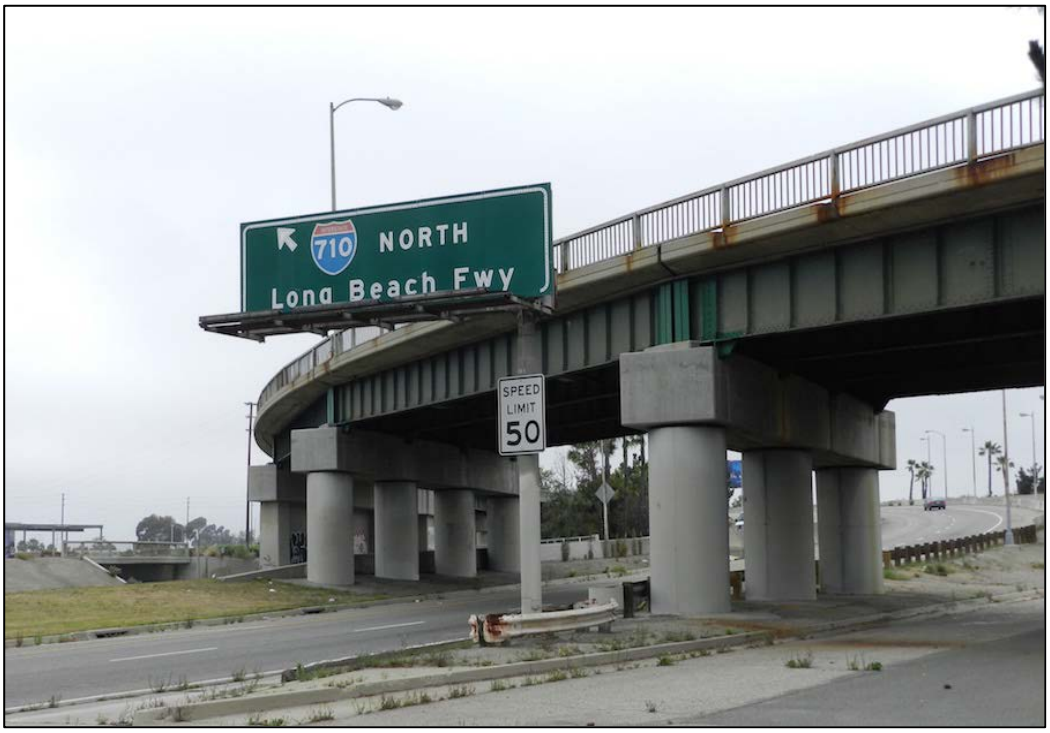
Water Quality Assessment Report
Shoemaker Bridge Replacement Project



Shoemaker Bridge Replacement Project, Los Angeles County
City of Long Beach, California
7-LA-710-6.0-6.4
EA 273000/EFIS 0700021122

April 2018

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April 2018

STATE OF CALIFORNIA
Department of Transportation

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Executive Summary

The primary purpose of the Water Quality Assessment Report (WQAR) is to fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and provide information, to the extent possible, for the National Pollution Discharge Elimination System (NPDES) permitting.

This WQAR includes a discussion of the Project, the physical setting of the Project area, and the regulatory framework with respect to water quality. It also provides data on surface water and groundwater resources within the Project area and existing water quality, describes water quality impairments and beneficial uses, identifies potential water quality impacts/benefits associated with the Project, and recommends avoidance and/or minimization measures.

The City of Long Beach (City) is the lead agency under the California Environmental Quality Act (CEQA), and the California Department of Transportation (Caltrans) is the lead agency under the National Environmental Policy Act (NEPA), as assigned by the Federal Highway Administration (FHWA), in accordance with NEPA (42 United States Code [USC] 4321 et seq.) and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500–1508).

The City, in cooperation with Caltrans, is proposing to replace the Shoemaker Bridge (West Shoreline Drive) in the City of Long Beach, California. The Shoemaker Bridge Replacement Project (Project) is an Early Action Project (EAP) of the Interstate 710 (I-710) Corridor Project and is located at the southern end of State Route 710 (SR-710) in the City of Long Beach, bisected by the Los Angeles River (LA River).

Three alternatives, a No Build Alternative (Alternative 1), and two build alternatives (Alternatives 2 and 3) are being evaluated as part of the proposed Project. Alternatives 2 and 3 would replace the existing Shoemaker Bridge over the LA River with a new bridge constructed just south of the existing bridge. In both Alternatives 2 and 3, the Shoemaker Bridge would accommodate bicycle and pedestrian use and include the evaluation of design options for a roundabout (Design Option A) or a “Y” intersection (Design Option B) at the easterly end of the new bridge. The primary difference between Alternatives 2 and 3 is Alternative 2 includes repurposing a portion of the existing Shoemaker Bridge for nonmotorized transportation and recreational use, and Alternative 3 includes the removal of the existing Shoemaker Bridge in its entirety.

Alternatives 2 and 3 would also provide improvements to associated roadway connectors to downtown Long Beach and along West Shoreline Drive from SR-710, as well as improvements along portions of 3rd, 6th, and 7th Streets, and West Broadway from Cesar E. Chavez Park to Magnolia Avenue. The proposed improvements may include additional street lighting; restriping; turn lanes; and bicycle, pedestrian, and streetscape improvements. The Project also includes the removal of the Golden Shore grade separation over West Shoreline Drive and modifications along Golden Shore to create a new controlled intersection at Golden Shore and West Shoreline Drive. Additionally, the Project would evaluate street improvements on 6th and 7th Streets from

Magnolia Avenue to Atlantic Avenue and on Anaheim Street between 9th and Atlantic Avenue. As an EAP of the I-710 Corridor Project, Alternatives 2 and 3 would evaluate the impacts from the closure of the 9th and 10th Street ramp connections into downtown Long Beach.

The Project is located in the LA River and Dominguez Channel Watersheds, and is under the authority of the Los Angeles Regional Water Quality Control Board (RWQCB) – Region 4. The proposed Project would require replacing the existing bridge over the LA River, which drains into the Pacific Ocean. According to the State Water Resources Control Board (SWRCB), other waterbodies adjacent to or near the Project area include Dominguez Channel Estuary (unlined portion below Vermont Avenue), Los Angeles River Reach 1 (Estuary to Carson Street), Los Angeles River Estuary (Queensway Bay), Los Angeles/Long Beach Inner Harbor, Long Beach City Beach, San Pedro Bay Near/Off Shore Zones, and Los Angeles Harbor – Consolidated Slip. All of these waterbodies are listed as impaired waterbodies in the 2014/2016 Integrated Report (Clean Water Act 303(d) List/305(b) Report) (State Water Resources Control Board, 2017).

Construction is expected to take place from July 2020 to January 2023. The proposed Project would require the temporary disturbance of 39.52 acres of soil area under the Roundabout Design Option and 39.49 acres of soil area under the "Y" Intersection Design Option. During construction, the proposed Project would have the potential to result in increased construction-related pollutants and turbidity within the streams, creeks, and drainages in the Project area, and eventually into receiving bodies. Best Management Practices (BMP) would be in place during construction to reduce pollutants of concern in runoff from the Project limits.

Table ES-1 summarizes the acres of existing impervious surface area that will be removed and added under each alternative, as well as the net new impervious surface area for each alternative. The alternative with the biggest footprint is Design Option A (roundabout) under Alternative 2.

Table ES-1: Changes in Impervious Surfaces in the Project Area

	New Impervious Area (acres)	Existing Impervious Area to be Removed (acres)	Net New Impervious Area (NNI) (acres)
Alternative 2			
Design Option A (Roundabout)	6.81	15.46	-8.65
Design Option B ("Y" Intersection)	6.23	16.04	-9.81
Alternative 3			
Design Option A (Roundabout)	6.81	15.96	-9.15
Design Option B ("Y" Intersection)	6.23	16.54	-10.31

Source: HDR, Inc., 2018e

In addition, stormwater flows within the Project area would be directed to the proposed Long Beach Municipal Urban Stormwater Treatment (LB MUST) Facility where it would be treated. Furthermore, the forthcoming Stormwater Data Report (SWDR) and Low Impact Development (LID) Plan (to be prepared during Plans, Specifications, and Estimate (PS&E) phase of the Project) would include permanent BMPs to treat Project-related stormwater. Any runoff that cannot be accommodated by the LB MUST Facility would be treated by the Project to the maximum extent practicable through construction of a detention basin in the southern portion of the Project area. Other BMPs that may be implemented include gross solid removal devices (GSRD), wet basins, bioswales and stripes, media filters, and catch basin inserts.

With the implementation of BMPs and standard measures, direct and indirect impacts on water quality would be minimized. In addition, no substantial or adverse changes in the physical, chemical, or biological characteristics of the aquatic environment are anticipated to result from the Project.

Proposed activities within the LA River would require coordination with, and permits from several regulatory agencies, which would require additional time to coordinate. The anticipated reviews/permits associated with the improvements are as follows:

- NPDES Construction General Permit (United States (U.S.) Environmental Protection Agency);
- Clean Water Act (CWA) Section 401 Water Quality Certification (Los Angeles Regional Water Quality Control Board [LARWQCB]);
- Dewatering Permit (LARWQCB);
- Dewatering Permit (City of Long Beach);
- CWA Section 404 Permit (U.S. Army Corps of Engineers [USACE]);
- CWA Section 408 Permit (USACE) (This is not an environmental permit, but rather a design permit.);
- Nationwide Permit 14 (USACE);
- Nationwide Permit 33 (USACE); and
- California Fish and Game Code Section 1602 Streambed Alteration Agreement (California Department of Fish and Wildlife).

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1. INTRODUCTION

1.1 Approach to Water Quality Assessment

The purpose of the Water Quality Assessment Report (WQAR) is to fulfill the requirements of NEPA and CEQA, and to provide information for National Pollutant Discharge Elimination System (NPDES) permitting. The document includes a discussion of the Project, the physical general environmental setting of the Project area, and the regulatory framework with respect to water quality. The document also provides data on surface water and groundwater resources within the Project area and the water quality of these waters, describes water quality impairments and beneficial uses, identifies potential water quality impacts/benefits associated with the Project, and recommends avoidance and/or minimization measures for potentially adverse impacts.

1.2 Project Description

The City of Long Beach (City) is the Lead Agency under the California Environmental Quality Act (CEQA), and the California Department of Transportation (Caltrans) is the Lead Agency under the National Environmental Policy Act (NEPA), as assigned by the Federal Highway Administration (FHWA), in accordance with NEPA (42 United States Code [USC] 4321 et seq.); and the Council on Environmental Quality (CEQ) Regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500–1508).

The City, in cooperation with Caltrans, is proposing to replace the Shoemaker Bridge (West Shoreline Drive) in the City of Long Beach, California. A regional location map is included as **Figure 1-1**. The Shoemaker Bridge Replacement Project (Project) is an Early Action Project (EAP) of the Interstate 710 (I-710) Corridor Project and is located at the southern end of State Route 710 (SR-710) in the City of Long Beach, bisected by the Los Angeles River (LA River).

Three alternatives, a No Build Alternative (Alternative 1), and two build alternatives (Alternatives 2 and 3) are being evaluated as part of the proposed Project. Alternatives 2 and 3 would replace the existing Shoemaker Bridge over the LA River with a new bridge located just south of the existing bridge. In both Alternatives 2 and 3, the Shoemaker Bridge would accommodate bicycle and pedestrian use and include the evaluation of design options for a roundabout (Design Option A) or a “Y” intersection (Design Option B) at the easterly end of the new bridge. The primary difference between Alternatives 2 and 3 is that Alternative 2 includes re-purposing a portion of the existing Shoemaker Bridge for non-motorized transportation and recreational use, and Alternative 3 includes the removal of the existing Shoemaker Bridge in its entirety.

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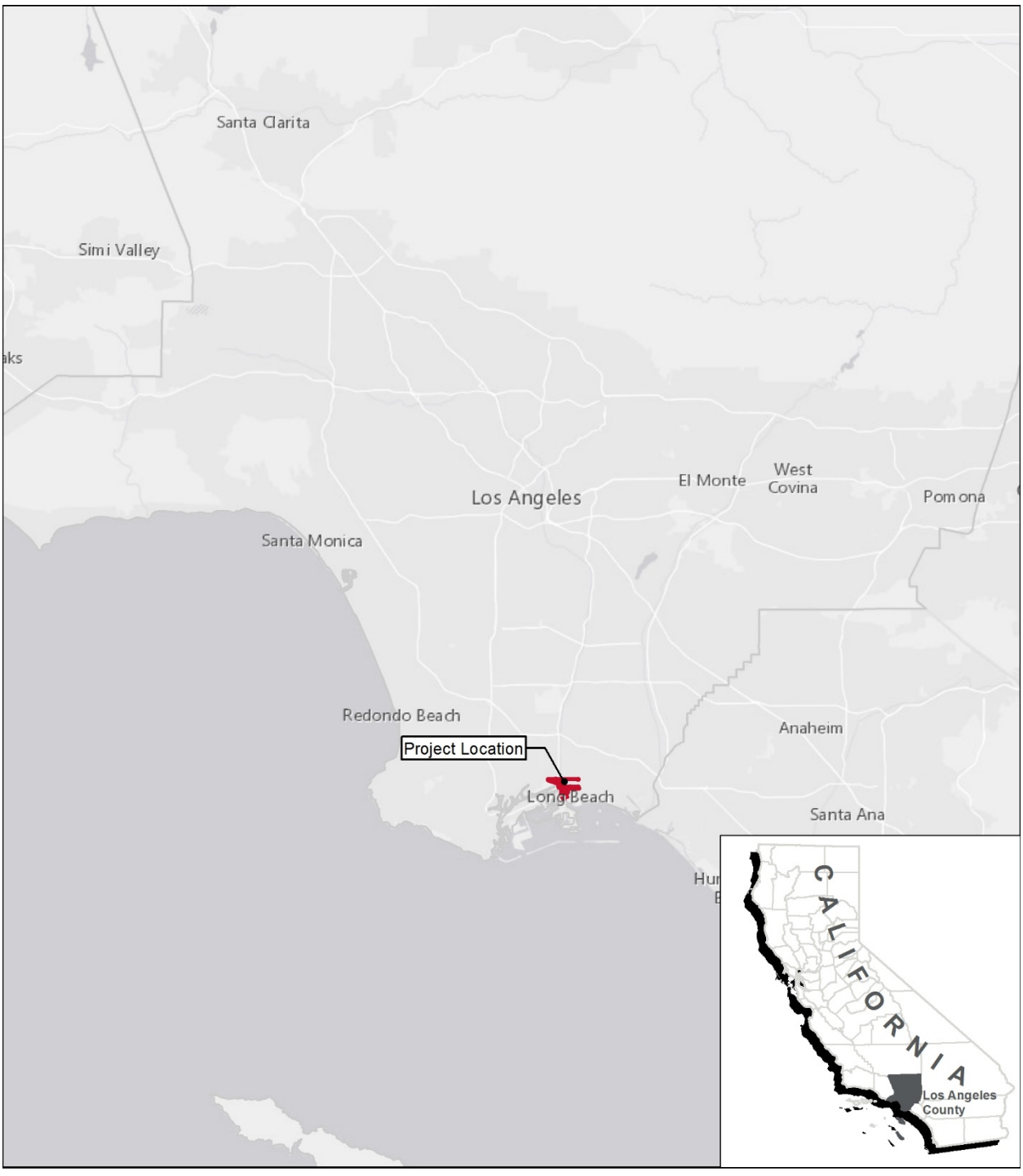
Figure 1-1: Regional Location



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Shoemaker Bridge Replacement Project

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Alternatives 2 and 3 would also provide improvements to associated roadway connectors to downtown Long Beach and along West Shoreline Drive from SR-710, as well as improvements along portions of 3rd, 6th, and 7th Streets, and West Broadway from Cesar E. Chavez Park to Magnolia Avenue. The proposed improvements may include additional street lighting; restriping; turn lanes; and bicycle, pedestrian, and streetscape improvements. The Project also includes the removal of the Golden Shore grade separation over West Shoreline Drive and modifications along Golden Shore to create a new controlled intersection at Golden Shore and West Shoreline Drive. Additionally, the Project may also include street improvements on 6th and 7th Streets from Magnolia Avenue to Atlantic Avenue, and on Anaheim Street between 9th Street and Atlantic Avenue. As an EAP of the I-710 Corridor Project, Alternatives 2 and 3 would evaluate the impacts from the closure of the 9th and 10th Street ramp connections into downtown Long Beach. The Project location and Project limits are illustrated in **Figure 1-2**.

Although most of the modifications and construction would occur within the existing Caltrans or City right-of-way (ROW), a partial property acquisition, aerial easement, and temporary construction easements (TCE) from the Los Angeles Flood Control District (LACFCD) would be required as part of the proposed Project. In addition, a small partial acquisition and a TCE may be required from an existing parking lot to complete the downtown street modifications along West Broadway. To accommodate the removal of the grade separation at Golden Shore and West Shoreline Drive, TCEs may be required along the west and east side of Golden Shore north of West Shoreline Drive, and along the south side of West Shoreline Drive east of Golden Shore.

TCEs would be required along multiple portions of the LA River and Rio Hondo (LARIO) Trail to accommodate for trail connections associated with the proposed Project, and along portions of 6th Street, 7th Street, Golden Avenue, and San Francisco Avenue. The TCEs required along 6th Street and 7th Street (between Golden Avenue and Daisy Avenue) would accommodate restriping, and curb and sidewalk improvements.

The proposed Project is included in the Final 2017 A*dopted Federal Transportation Improvement Program* (FTIP) and the Southern California Association of Government's (SCAG) *2016 Regional Transportation Plan* (RTP) for Los Angeles County as Project ID: LA0G830.

The purpose of the proposed Project is to:

- Provide a structure and highway facility that meets current structural and geometric design standards.
- Provide a facility that is compatible with planned freeway improvements and downtown development Projects.
- Improve connectivity from the downtown area to surrounding communities and adjacent recreational use areas.
- Improve safety and operations for all modes of transportation.

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Figure 1-2: Project Limits

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The Project limits are generally bounded by 9th and 10th Street ramp connections and West Shoreline Drive to the west, Magnolia Avenue to the east, Ocean Boulevard and West Shoreline Drive to the south, and Anaheim Street to the north. The Project limits on the east side extend beyond Magnolia Avenue along Anaheim Street, 6th and 7th Streets to Atlantic Boulevard. These limits provide the logical termini to facilitate the replacement of the existing bridge and to also accommodate planned City improvements, as well as proposed improvements in the I-710 Corridor Project. The existing Shoemaker Bridge has structural deficiencies and a high accident rate due to non-standard geometric features that cannot be upgraded to current State highway standards. The Project is needed to improve safety, operations, and connectivity between downtown Long Beach and regional transportation facilities. The Project is also needed to accommodate planned improvements in the area, such as the City's planned expansion of Cesar E. Chavez Park and Drake Park.

If the existing Shoemaker Bridge were to continue to be used for vehicular traffic, the existing nonstandard features would remain, and the existing bridge alignment would preclude planned improvements by other locally and regionally significant Projects, specifically, the I-710 Corridor Project. Implementation of the proposed Project would provide consistency with the improvements proposed as part of the I-710 Corridor Project and the Mobility Element of the *City of Long Beach General Plan* (City of Long Beach, 2013), in addition to meeting the needs for traffic safety and accommodating the Projected increase in demand for nonmotorized transportation facilities.

1.2.1 Alternative 1 (No Build)

Under the Alternative 1 (No Build), the proposed Project improvements would not be implemented; therefore, no construction activities would occur. The existing structure and highway facility would not meet current structural and geometric design standards and, thus, safety and connectivity would not be improved within the Project area.

1.2.2 Alternative 2

Alternative 2 includes the replacement of the ramp structures that connect to the downtown Long Beach roadway system. This alternative would evaluate the roundabout design option (Design Option A) and the "Y" interchange design option (Design Option B) at the east end of the proposed bridge. The new bridge would consist of multiple structures, with numerous spans that cross the LA River, the northbound (NB) lanes of SR-710, and the LA River and Rio Hondo (LARIO) trail. The new ramps would be located approximately 500 feet (measured from centerline) south of the existing Shoemaker Bridge. A portion of the existing bridge would be re-purposed into a nonmotorized recreational public space maintained by the City. The bottom of the new river-spanning structures would exceed the existing 43-foot Mean High Water Level (MHWL).

The deck of the new bridge would accommodate two through ramp lanes in each direction, shoulders, barriers, and a pedestrian/bikeway on the south side of the bridge. Under Design Option B, the bridge would also include two turn lanes in the southbound (SB) direction. On the west side of the river, the ramps would connect on the left side of the freeway, at approximately the same

merge and diverge existing ramp locations. On the east side of the river, a roundabout or controlled intersection would be provided at the ramp termini. The ramp termini would be located at or near the eastern abutment of the river-spanning section of the new Shoemaker Bridge.

Local Streets

As shown previously in **Figure 1-2**, the build alternatives include modifications to nine local streets, including West Shoreline Drive, Ocean Boulevard, Golden Shore /North Golden Avenue, West Broadway, 3rd Street, 6th Street, 7th Street, 9th Street, 10th Street, and Anaheim Street.

West Shoreline Drive

At the eastern end of the new bridge, a new roundabout or controlled intersection would be constructed to allow West Shoreline Drive and 7th Street ingress and egress. The existing NB and SB West Shoreline Drive are currently separated by Cesar E. Chavez Park and the Southern California Edison (SCE) Seabright Substation. The NB roadbed would be removed and integrated into Cesar E. Chavez Park. The existing SB roadbed, located adjacent to the LA River, would be reconfigured and widened to allow two-way traffic and access from the newly configured West Shoreline Drive to the substation. A new controlled intersection would be introduced on Shoreline Drive at the termini of West Broadway. The loop ramp connector between NB West Shoreline Drive and Ocean Boulevard would be removed and converted into park space. The existing Golden Shore Bridge that crosses over West Shoreline Drive would be removed, and a new controlled intersection would be created at West Shoreline Drive and Golden Shore.

3rd Street

The existing 3rd Street alignment curves to the north through Cesar E. Chavez Park and merges onto NB West Shoreline Drive. The proposed realignment of 3rd Street would be revised to end at Golden Avenue, and the section of 3rd Street that curves into the park would be removed and converted into park space. The street, which currently carries one-way traffic in the westbound (WB) direction, would be reconfigured to allow for two-way traffic between Golden and Magnolia Avenues.

Ocean Boulevard

The loop ramp connecting NB West Shoreline Drive and Ocean Boulevard would be removed and converted into park space. The Ocean Boulevard and Golden Shore intersection would be modified to accommodate two-way traffic on Golden Shore between Ocean Boulevard and West Broadway.

Golden Shore / Golden Avenue

Golden Shore is currently a two-way street from Queensway Drive to Ocean Boulevard. North of Ocean Boulevard, Golden Shore becomes Golden Avenue and the roadway splits, providing connections to and from NB West Shoreline Drive and West Broadway. The proposed Project would eliminate the existing Golden Shore Bridge over West Shoreline Drive and reconstruct the street at a lower elevation to create a new controlled intersection at West Shoreline Drive. The

connector ramps from SB West Shoreline Drive to Golden Shore Street and from NB Golden Shore to eastbound (EB) West Shoreline Drive would be removed. The intersection of Golden Shore and West Seaside Way would be eliminated. The proposed Project would also eliminate the ramp connection from NB West Shoreline Drive and realign Golden Avenue to provide connections to and from West Broadway. Access from West Broadway to Golden Avenue would be limited to right-in and right-out only.

West Seaside Way

West Seaside Way between Golden Shore Street and Queens Way would be reconfigured, and the controlled intersection at Golden Shore would be eliminated. The street would continue to provide access to parking structures and local office buildings. A new intersection allowing access between West Shoreline Drive and West Seaside Way would be constructed approximately 675 feet east of Golden Shore.

West Broadway

The existing terminus of West Broadway is uncontrolled and diverges from the left side of SB West Shoreline Drive. The portion of West Broadway from West Shoreline Drive to Maine Avenue, including its grade separation structure, would be removed. The connection would be replaced by a controlled intersection at West Shoreline Drive and West Broadway. West Broadway would be configured for two-way traffic from West Shoreline Drive to Magnolia Avenue. Traveling EB, a right turn pocket would be provided on West Broadway at the approach to Magnolia Avenue.

6th Street

The existing terminus of 6th Street is uncontrolled and diverges from the right-hand side of SB West Shoreline Drive on the Shoemaker Bridge. The existing grade separated structure would be removed. The portion of 6th Street from SB West Shoreline Drive to Golden Avenue would be reconfigured to provide access to the warehouse properties located at Topaz Court and Golden Avenue and would not provide connectivity to West Shoreline Drive. 6th Street would be converted from one-way westbound to two-way traffic flow between Golden Avenue and Atlantic Avenue. Additionally, a new bicycle path would extend from the new 6th Street terminus, providing connections to the LARIO Trail and the proposed Shoemaker Bridge. A new roadway would also extend from the existing 6th Street terminus to provide access to Drake Park.

7th Street

The existing terminus of 7th Street is uncontrolled and merges on the right side of NB West Shoreline Drive, on the Shoemaker Bridge. The portion of 7th Street from Golden Avenue to West Shoreline Drive, including its grade separation structure, would be removed and reconstructed. The connection would be replaced by a roundabout or "Y" intersection at West Shoreline Drive. 7th Street would be reconfigured from one-way EB to two-way traffic between West Shoreline Drive and Atlantic Avenue, and would feature two lanes in each direction.

9th Street

The existing terminus of 9th Street is uncontrolled and merges on the right side of SB West Shoreline Drive, on the Shoemaker Bridge. The portion of 9th Street from Fashion Avenue to West Shoreline Drive, including its grade separation structure, would be removed. The connection would not be replaced. The Project would also evaluate traffic calming and signal improvements on 9th Street between Caspian Avenue and Anaheim Street.

10th Street

The existing terminus of 10th Street is uncontrolled and diverges from the right side of NB West Shoreline Drive, on the Shoemaker Bridge. The portion of 10th Street from West Shoreline Drive to Fashion Avenue, including its grade separation structure, would be removed. The connection would not be replaced.

Anaheim Street

The Project would evaluate traffic calming and signal improvements on Anaheim Street between West 9th Street and Atlantic Avenue.

Ramps/Connectors

The new ramps would be operated and maintained by Caltrans. The area owned and maintained by Caltrans after completion of the proposed Project would include the new Shoemaker Bridge terminus on the east of the LA River, the main span over the LA River to SR-710, the structure spanning the NB lanes of SR-710, and the roadbed connecting to SR-710.

1.2.3 Alternative 3

Similar to Alternative 2, Alternative 3 includes the replacement of the ramp structures that connect to the downtown Long Beach roadway system. This alternative would also evaluate both Design Options A and B at the east end of the proposed bridge. In addition, similar to Alternative 2, the bridge under Alternative 3 with Design Option B would also include two turn lanes in the SB direction. On the west side of the river, the ramps would connect on the left side of the freeway at the same merge and diverge locations of the existing ramps. On the east side of the river, a roundabout (Design Option A) or a controlled intersection (Design Option B) would be provided at the ramp termini. The ramp termini are located at or near the eastern abutment of the river-spanning section of the new Shoemaker Bridge. Local street improvements described under Alternative 2 would also apply under Alternative 3. The difference between Alternative 2 and Alternative 3 is the removal of the existing Shoemaker Bridge. The same ramp/connectors proposed under Alternative 2 would apply under Alternative 3.

2. REGULATORY SETTING

2.1 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 United States (U.S.) from any point source unlawful unless the discharge is in compliance with a NPDES permit. Known today as the Clean Water Act (CWA), Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit program. Important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity, which 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. (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. The Federal Environmental Protection Agency delegated to the California State Water Resources Control Board (SWRCB) the implementation and administration of the NPDES program in California. The SWRCB established nine Regional Water Quality Control Boards (RWQCBs). The SWRCB enacts and enforces the Federal NPDES program and all water quality programs and regulations that cross Regional boundaries. The nine RWQCBs enact, administer and enforce all programs, including NPDES permitting, within their jurisdictional boundaries. 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., including wetlands. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The objective 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 permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor Project activities with no more than minimal effects.

There are also two types of Individual permits: Standard Individual permit and Letter of Permission. Ordinarily, Projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Individual permits. For Standard Individual permit, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's (EPA) Section 404 (b)(1) Guidelines (U.S. EPA CFR 40 Part 230), and whether permit approval is in the public interest. The 404(b)(1) Guidelines were developed by the U.S. EPA in conjunction with 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 which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA), to the proposed discharge that would have less effects on waters of the U.S., and not have any other significant adverse environmental consequences. Per Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures have been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent 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 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4.

2.2 State Laws and Requirements

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. 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 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 SWRCB and RWQCBs are responsible for establishing the water quality standards as required by the CWA, and regulating discharges to protect beneficial uses of water bodies. Details regarding water quality standards in a Project area are contained in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions, and then set standards necessary to protect these uses. Consequently, the water quality standards developed for particular water body segments are based on the designated use and vary depending on such use. Water body segments that fail to meet standards for specific pollutants are included in a Statewide List in accordance with CWA Section 303(d). If a Regional Board determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-source point controls (NPDES permits or Waste Discharge

Requirements), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed. The SWRCB implemented the requirements of CWA Section 303(d) through Attachment IV of the Caltrans Statewide MS4, as it includes specific TMDLs for which Caltrans is the named stakeholder.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB adjudicates water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and 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 (NPDES) Program**

  Municipal Separate Storm Sewer Systems (MS4)

  Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of stormwater dischargers, including MS4s. The U.S. EPA defines an MS4 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 are designed or used for collecting or conveying stormwater." The SWRCB has identified the Department as an owner/operator of an MS4 pursuant to federal regulations. The Department's MS4 permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

  The Department's MS4 Permit, NPDES No. CAS000003, SWRCB Order No. 2012-0011-DWQ (adopted on September 19, 2012 and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2014) and Order No. 2015-0036-EXEC (conformed and effective April 7, 2015) contains three basic requirements:

  1. The Department must comply with the requirements of the CGP (see below);

  2. The Department must implement a year-round program in all parts of the State to effectively control stormwater and non-stormwater discharges; and

  3. The Department stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs) to the Maximum Extent Practicable, and other measures deemed necessary by the SWRCB and/or other agency having authority reviewing the stormwater component of the

Project. In addition, the Department must comply with TMDL requirements in Attachment IV.

To comply with the permit, the Department 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 the Department 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 the Department uses to reduce pollutants in stormwater and non-stormwater 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.

Construction General Permit

Construction General Permit (NPDES No. CAS000002, SWRCB Order No. 2009-0009-DWQ, adopted on November 16, 2010) became effective on February 14, 2011 and was amended by Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ. The permit regulates stormwater discharges from construction sites which result in a Disturbed Soil Area (DSA) of one 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 Storm Water Pollution Prevention Plan (SWPPP) Developer (QSD) to develop and implement an effective SWPPP. All Project Registration Documents, including the SWPPP, are required to be uploaded into the SWRCB's on-line Stormwater Multiple Application and Report Tracking System (SMARTS), at least 30 days prior to construction.

Waivers from CGP coverage.

Projects that disturb over 1.0 acre but less than 5 acres of soil, may qualify for waiver of CGP coverage. This occurs whenever the R factor of the **Watershed Erosion Estimate (=RxKxLS) in tons/acre** is less than 5. Within this CGP formula, there is a factor related to when and where the construction will take place. This factor, the 'R' factor, may be low, medium or high. 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.

In accordance with 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 one 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.

The CGP contains a risk-based permitting approach by establishing three levels of risk possible for a construction site. Risk levels 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 Risk Level determined. For example, a Risk Level 3 (highest risk) Project would require compulsory stormwater runoff pH and turbidity monitoring, and pre- and post-construction aquatic biological assessments during specified seasonal windows.

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 United States must obtain a 401 Certification, which certifies that the Project will be in compliance with State water quality standards. The most common federal permit triggering 401 Certification is a CWA Section 404 permit, issued by USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the Project location, and are required before 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 prescribe a set of requirements known as Waste Discharge Requirements (WDRs) under the State Water Code (Porter-Cologne Act). WDRs may specify the inclusion of additional Project 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.

2.3 Regional and Local Requirements

Los Angeles RWQCB Water Quality Control Plan (Basin Plan)

Section 13240 of the Porter-Cologne Act requires each RWQCB to formulate and adopt water quality control plans, or basin plans, for all areas within the region. The Project area is under the jurisdiction of the Los Angeles RWQCB – Region 4. The Los Angeles RWQCB developed the *Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) to preserve and enhance water quality in the region (Los Angeles Regional Water Quality Control Board, 1994).

The Basin Plan lists the beneficial uses of surface waters and ground waters in the basin. Beneficial uses are uses that may be protected against quality degradation. These uses generally include, but are not limited to, domestic, municipal, agricultural and industrial supply, power generation, recreation, aesthetic enjoyment, navigation, and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

The Basin Plan also includes water quality objectives, which are the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

Los Angeles County Code

The Los Angeles County Code applies to the LA River, which is under the jurisdiction of the LACFCD. Chapter 21 (Stormwater and Runoff Pollution Control) sets forth standards to regulate the stormwater and non-stormwater discharges to the facilities of the LACFCD in order to protect those facilities, the water quality of the waters in and downstream of those facilities, and the quality of the water that is being stored in underground water-bearing zones (County of Los Angeles, 2013).

Los Angeles County General Plan

The Los Angeles County General Plan (County's General Plan) contains the County's goals related to land use, and is designed to serve as the basis for development decisions. The following objective and policy from the County's General Plan, Conservation and Open Space Element are applicable to the Project (County of Los Angeles, 1980):

- Objective: To conserve water and protect water quality.
- Policy 5: Encourage the maintenance, management, and improvement of the quality of imported domestic water, ground water supplies, natural runoff, and ocean water.

Greater Los Angeles County Integrated Regional Water Management Plan

The Greater Los Angeles County Region Integrated Regional Water Management (GLACR IRWM) group finalized the GLACR IRWM Plan in 2014 (Leadership Committe of the Greater Los Angeles County IRWM Region, 2014). IRWM Plans are regional plans designed to improve collaboration in water resources management. The first IRWM Plan for GLACR IRWM was published in 2006 following a multi-year effort among water retailers, wastewater agencies, stormwater and flood managers, watershed groups, the business community, tribes, agriculture, and non-profit stakeholders to improve water resources planning in the Los Angeles Basin. The plan provides a mechanism for: 1) coordinating, refining, and integrating existing planning efforts within a comprehensive, regional context; 2) identifying specific regional and watershed-based priorities for implementation Projects; and 3) providing funding support for the plans, programs, Projects, and priorities of existing agencies and stakeholders.

City of Long Beach Pollution Abatement Program

The City maintains a pollution abatement program that follows NPDES guidelines and ensures that public agencies are abiding by SWPPP requirements. The program seeks to optimize beneficial uses of receiving waters by reducing pollutant loads through BMPs, including catch basins, oil and grease separators, and sediment separators.

City of Long Beach Stormwater Management Program

The Port of Long Beach (POLB) works with the Los Angeles RWQCB to implement the Long Beach Stormwater Management Program (LBSWMP), which consists of several elements, including the following (City of Long Beach, 2017):

- Program management
- Geographic characterization
- Development/Construction program
- Illicit connection and discharges elimination program
- Education/Public information program
- Annual reporting program

City of Long Beach MS4 Permit

The City's MS4 Permit was issued under Order No. R4-2014-0024, NPDES Permit No. CAS004003 by the Los Angeles RWQCB on March 11, 2014 (amended November 23, 2016) (Los Angeles Regional Water Quality Control Board, 2014). As required by the permit, all priority Projects must follow the City's Low Impact Development (LID) Manual.

Los Angeles River Master Plan

In July 1991, the Los Angeles County Board of Supervisors directed the County's Departments of Public Works, Parks and Recreation, and Regional Planning to coordinate all interested public and private parties in the planning, financing, and implementation efforts of the *Los Angeles River Master Plan* (Los Angeles County Public Works, 1996). The master plan identifies ways to enhance and revitalize the publicly-owned rights-of-way along the LA River and Tujunga Wash.

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3. AFFECTED ENVIRONMENT

3.1 General Environmental Setting

The Project area is in the City of Long Beach in the County of Los Angeles, approximately 100 miles north of the City of San Diego and 20 miles south of the City of Los Angeles. The City of Long Beach encompasses approximately 50 square miles and is bounded by the Pacific Ocean to the south. The major cities surrounding the City of Long Beach are Lakewood and Carson, which are both located to the north.

The Shoemaker Bridge is adjacent to and west of I-710, and crosses over the LA River. The LA River drains into the Pacific Ocean, approximately two miles south of the Project area. The Project surroundings are densely developed with commercial areas to the north, and residential areas to the north and east. In addition, several channels associated with the POLB are approximately 0.2 mile to the west of the existing bridge.

3.1.1 Population and Land Use

According to the 2012-2016 American Community Survey (ACS) 5-Year Estimates, the City's Population was 470,130 individuals, which represents an approximately 2-percent increase from the 2010 census, when the population was 462,257 individuals (United States Census Bureau, 2017). The long-term population growth in the city from 2012 to 2040 is expected to increase from 466,300 to 484,500, representing an approximately 4-percent increase (Southern California Association of Governments, 2015).

The land in the city is primarily developed, and much of the area is covered with semi-permeable or non-permeable material (i.e., paved) (Los Angeles Department of Public Works, n.d.). According to the City's General Plan Land Use Map, land use designations within the Project area are primarily Commercial, Parks and Recreation, Transportation and Utilities, and Residential (City of Long Beach, 2012). Other designated land uses in the Project area include Public Facilities, Mixed Urban, Industrial, Water, and Vacant.

3.1.2 Topography

California is divided into 11 geomorphic provinces, which are naturally defined geologic regions that display a distinct landscape or landform. The Project area is located in the northern portion of the Peninsular Ranges geomorphic province. The Peninsular Ranges are bound to the east by the Colorado Desert and extend north to the Santa Monica Mountains, west into the submarine continental shelf, and south to the California state line. The Peninsular Ranges are distinguished by northwest trending mountain ranges and valleys (California Geological Survey, 2002).

The Project area is located in the Los Angeles Basin, which is characterized as an alluviated lowland (i.e., a flat landform that is less than 200 meters below sea level and was created from the deposition of sediment from rivers over a long period of time) (United States Geological Survey, 1965). The Los Angeles Basin is largely flat and gently slopes toward the Pacific Ocean to the

south. Long Beach is slightly elevated due to plate movement (i.e., uplift and local folding and faulting) in the region; however the majority of the city has an elevation of less than 60 feet (City of Long Beach, 1998).

The Project area is relatively flat and slopes gently to the south toward the Pacific Ocean. The Project area includes slopes and embankments adjacent to existing roadways, but none that are unusually steep.

3.1.3 Hydrology

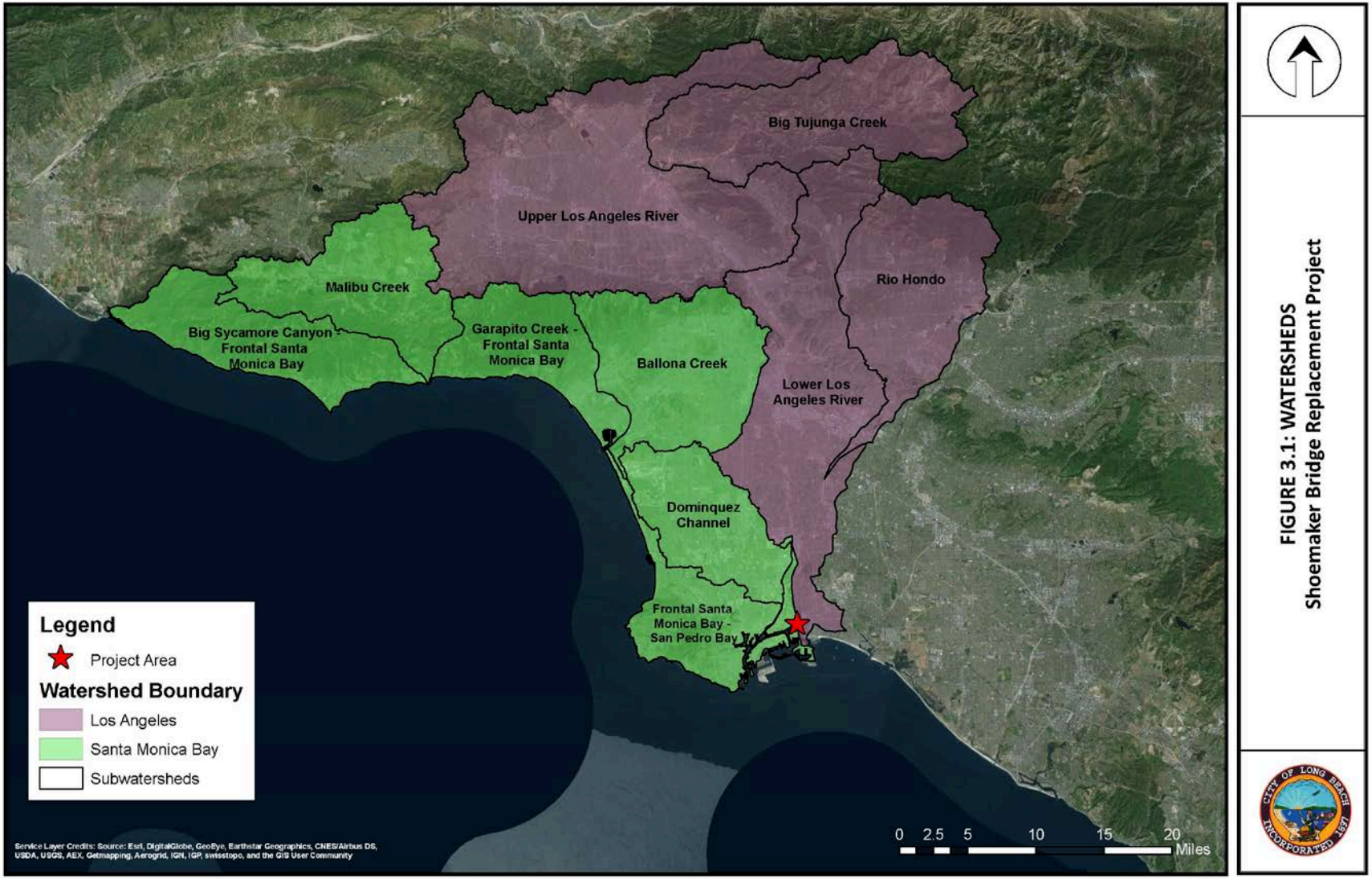
3.1.3.1 Regional Hydrology

The Project area is in the Los Angeles Region, which is under the jurisdiction of the Los Angeles RWQCB – Region 4 (Los Angeles Regional Water Quality Control Board, 2014). The Los Angeles Region includes the coastal watersheds and drainages that flow into the Pacific Ocean from Ventura and Los Angeles Counties, and portions of Santa Barbara and Kern Counties. Specifically, the Los Angeles Region includes the drainages between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County line. The Los Angeles Region also contains the drainage flows of the five coastal islands of Anacapa, San Nicolas, Santa Barbara, Santa Catalina, and San Clemente, as well as coastal waters within three miles of the continental and island coastlines (Los Angeles Regional Water Quality Control Board, 2014).

The classification system for surface waters employed by the Los Angeles RWQCB was developed by the United States Geological Survey (USGS) (Los Angeles Regional Water Quality Control Board, 2014). The classification system, known as the Watershed Boundary Dataset (WBD), divides surface waters into hydrologic units, which are classified into regions, sub-regions, accounting units, and cataloging units (United States Geological Survey, 2017). The Project area is located in Region 18 (California Region), Subregion 1807 (Southern California Coastal), Accounting Unit 180701 (Ventura-San Gabriel Coastal), and Cataloging Unit 18070105 (Los Angeles). The Los Angeles Cataloging Unit covers an area of 819 square miles.

The classification system for ground water was developed by the California Department of Water Resources (CDWR), and divides groundwaters into hydrologic regions, basins, and subbasins (California Department of Water Resources, 2003). The Project is located in the South Coast Hydrologic Region (HR), the Coastal Plain of Los Angeles Basin, and West Coast Subbasin.

The Los Angeles RWQCB also defines Watersheds and Watershed Management Areas for planning purposes (Los Angeles Regional Water Quality Control Board, 2014). Two Watershed Management Areas are in the Project area: the LA River Watershed and the Dominguez Channel Watershed (State Water Resources Control Board, n.d.) (depicted as Dominguez Channel and Lower Los Angeles River subwatersheds in **Figure 3-1**, Watersheds).


Big Tujunga Creek
Upper Los Angeles River
Rio Hondo
Malibu Creek
Big Sycamore Canyon - Frontal Santa Monica Bay
Garapito Creek - Frontal Santa Monica Bay
Ballona Creek
Lower Los Angeles River
Dominquez Channel
Frontal Santa Monica Bay - San Pedro Bay
Legend
Project Area
Watershed Boundary
Los Angeles
Santa Monica Bay
Subwatersheds
0 2.5 5 10 15 20
Miles
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
FIGURE 3.1: WATERSHEDS
Shoemaker Bridge Replacement Project

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Los Angeles River Watershed

The eastern portion of the Project area extends into the LA River watershed. The watershed comprises approximately 834 square miles of land that is bordered by the Santa Monica Mountains to the west and south, Simi Hills and Santa Susana Mountains to the north and west, and San Gabriel Mountains to the north and east (Los Angeles Department of Public Works, n.d.). The land use in the watershed is roughly 44 percent open space, which includes the area near the headwaters in the mountains. The remaining 56 percent of the watershed is highly developed with residential, commercial and industrial land uses. Urban runoff and illegal dumping are major contributors to impaired water quality in the watershed (Los Angeles Regional Water Quality Control Board, 1994).

Dominguez Channel Watershed

The Dominguez Channel Watershed comprises approximately 133 square miles of land and water in the southern portion of Los Angeles County (City of Los Angeles, n.d.). Over 90 percent of the watershed's land area is developed with residential, industrial, commercial, and transportation uses, and over 60 percent of the watershed is covered with impervious surfaces. The Dominguez Channel Watershed includes the cities of Carson, Compton, El Segundo, Gardena, Hawthorne, Inglewood, Lawndale, Lomita, Long Beach, Los Angeles, Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Torrance, Port of Long Beach, Port of Los Angeles, and parts of Los Angeles County (Los Angeles Department of Public Works, n.d.). The majority of the watershed drains into the Dominguez Channel, which stretches approximately 15.7 miles, and empties into the Los Angeles Harbor. Due to the high level of urbanization, water quality is impaired by a variety of pollutants (City of Los Angeles, n.d.).

3.1.3.2 Local Hydrology

The LA River, which stretches approximately 51 miles in a general north-south direction, originates in the San Fernando Valley, flows through the Project area, and drains into San Pedro Bay in the City of Long Beach (City of Los Angeles, 2017). In the 1930s to 1960s, USACE channelized the river for flood protection (Los Angeles Regional Water Quality Control Board, 1994). The portion of the LA River in the Project area has a natural bottom with concrete-lined sides, and is managed by the USACE. Flows in the LA River vary throughout the year. During the dry season, the water flow in the river comes primarily from effluent discharges and groundwater inflow. During the wet season, the river also contains runoff from storm events and snow melt (Los Angeles Department of Public Works, n.d.).

In addition to the LA River, the Project area includes roadways on each side of the river, SR-710 to the west of the river, and the Southern California Edison (SCE) Seabright Substation and Cesar E. Chavez Park to the east of the river. The Project area includes mostly paved surfaces, with the exception of Cesar E. Chavez Park, which is landscaped with trees and grass. Roadway drainage in the Project area flows into grated inlets, which lead to underground storm drain systems. The

existing storm drain systems outlet to one of three pump stations, which empty into the Los Angeles River Estuary or Long Beach Inner Harbor.

3.1.3.2.1 Precipitation and Climate

The climate of the Project area is characterized by winters that are mild with occasional rain, and summers that are warm and dry (City of Long Beach, 1996). Average climate conditions are observed from the Long Beach Daugherty Field weather station, the nearest National Oceanic and Atmospheric Administration (NOAA) station with long term temperature and precipitation data available. The average annual temperature of the Project area is 64.7 degrees Fahrenheit, 55.3 degrees as the average annual low and 74.1 degrees as the average annual high (National Ocean and Atmospheric Administration, 2010). The warmest month of the year is typically August when the average high is 83.8 degrees and the average low is 64.9 degrees. The coolest month is typically December when the average high is 66.8 degrees and the average low is 45.8 degrees.

Annual precipitation is 12.26 inches per year of rainfall for the Project area. The majority of precipitation occurs during winter and spring months, between November and March. February has historically been the wettest month of the year, with a monthly average rainfall of 3.09 inches. The Project area does not receive snowfall.

3.1.3.2.2 Surface Waters

Surface streams in and adjacent to the Project area include the LA River, and two channels in the POLB (Channel Two and Channel Three). The LA River is located beneath the bridge, and Channel Two and Channel Three are approximately 0.2 mile west of the bridge and flow into the Inner Harbor of the Port of Long Beach. The LA River and two channels drain into the Pacific Ocean approximately two miles south of the Project area. In the Project area, the LA River is a natural-bottom channel with concrete-lined sides. Channel Two and Channel Three are concrete-lined channels.

As shown in **Table 3-1**, the Los Angeles RWQCB has established water quality objectives for its major regional waterbodies. These objectives designate allowable limits of water quality constituents or characteristics that allow for the reasonable protection of the resource's beneficial uses. Numerical objectives have not been established for the waterbodies in and adjacent to the Project area.

Table 3-1: Regional Water Quality Objectives for Inland Surface Waters, Enclosed Bays, and Estuaries

Parameter	Water Quality Objective
Ammonia	Ammonia concentrations in receiving waters shall not exceed values listed in the Basin Plan.
Bacteria	In waters designated for noncontact water recreation (REC-2), the fecal coliform concentration shall not exceed 200/100 milliliters (mL), based on a minimum of not fewer than four samples for any 30-day period, nor shall

	more than 10 percent of total samples during any 30-day period exceed 4000/10 mL.
Bioaccumulation	Toxic pollutants shall not be present at levels that would bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health.
Biostimulatory Substances	Waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses.
Biochemical Oxygen Demand (BOD)	Waters shall be free of substances that result in increases in BOD that adversely affect beneficial uses.
Chemical Constituents	Surface waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use.
Chlorine, total residual	Chlorine residual shall not be present in surface water discharges at concentrations that exceed 0.1 milligram per liter (mg/L) and shall not persist in receiving waters at a concentration that causes impairment of beneficial uses.
Color	Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses.
Exotic Vegetation	Exotic vegetation shall not be introduced around stream courses to the extent that such growth causes nuisance or adversely affects beneficial uses.
Floating Material	Waters shall be free of floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.
Dissolved Oxygen	At a minimum, the mean annual dissolved oxygen concentration of all waters shall be greater than 7 mg/L, and no single determination shall be less than 5.0 mg/L, except when natural conditions cause lesser concentrations. Dissolved oxygen content of surface waters designated as Warm Freshwater Habitat (WARM) shall not be depressed below 5 mg/L as a result of waste discharge. Los Angeles-Long Beach Harbors - The mean annual dissolved oxygen concentrations shall be 6.0 mg/L or greater, provided that no single determination shall be less than 5.0 mg/L.
MBAs	Waters shall not have methylene blue activated substances (MBAs) in concentrations greater than 0.5 mg/L in waters designated for municipal water use (MUN). Note: Municipal and domestic use is identified as a 'potential' use for the identified receiving surface waters.
Mineral Quality	There are no waterbody specific mineral quality objectives identified for any of the identified receiving surface waters in the Basin Plan.
Nitrogen	Nitrogen levels shall not exceed 10 mg/L (nitrate-nitrogen plus nitrite-nitrogen), 45 mg/L (as nitrate), 10 mg/L (as nitrate-nitrogen), or 1 mg/L (as nitrite-nitrogen).
Oil and Grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the

	water or on objects in the water, cause nuisance, or otherwise adversely affect beneficial uses.
PCBs	Pass-through or uncontrollable discharges to waters of the region or at locations where the waste can subsequently reach water of the region, are limited to 71 picograms per liter (pg/L) (30-day average) for the protection of human health and 14 nanograms per liter (ng/L) and 30 ng/L (daily average) to protect aquatic life in inland fresh waters and estuarine waters respectively.
Pesticides	Waters designated as domestic or municipal supply shall not contain concentrations of pesticides in excess of the limiting concentrations contained in Title 22 of the California Code of Regulations, listed in Table 3-7 of the Basin Plan. Note: Municipal and domestic use is identified as a 'potential' use for this watershed.
pH	The pH of inland surface wasters shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges. Ambient pH levels shall not be changed more than 0.5 units from natural conditions as a result of waste discharge. The pH of bays or estuaries shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges. Ambient pH levels shall not be changed more than 0.2 units from natural conditions as a result of waste discharge.
Radioactivity	Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
Suspended Material	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
Settleable Material	Waters shall not contain settleable material that causes nuisance or adversely affects beneficial uses.
Tastes and Odors	Waters shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible aquatic resources, cause nuisance, or adversely affect beneficial uses.
Temperature	The natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperatures does not adversely affect beneficial uses.
Toxicity	All waters shall be maintained free of toxic substances in concentrations that are toxic to or produce detrimental physiological responses to human, plant, or aquatic life.
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Where natural turbidity is between 0 and 50 mephelometric turbidity units (NTU), increases shall not exceed 20 percent. Where natural turbidity is greater than 50 NTU, increases shall not exceed 10 percent. Note: The Los Angeles Water Board may issue a specific Waste

	Discharge Requirements (WDRs) permit allowing higher concentrations within zones of dilution.

Source: Los Angeles RWQCB, 1994

According to the SWRCB, other waterbodies adjacent to or near the Project area include Dominguez Channel Estuary (unlined portion below Vermont Avenue), Los Angeles River Reach 1 (Estuary to Carson Street), Los Angeles River Estuary (Queensway Bay), Los Angeles/Long Beach Inner Harbor, Long Beach City Beach, San Pedro Bay Near/Off Shore Zones, and Los Angeles Harbor – Consolidated Slip. **Table 3-2** shows the beneficial uses for waterbodies in and adjacent to the Project area.

Table 3-2: Beneficial Uses for Waterbodies

Surface Water Feature	Existing Beneficial Uses	Potential Beneficial Uses
Dominguez Channel Estuary (unlined portion below Vermont Ave)	• Commercial and Sport Fishing • Estuarine Habitat • Marine Habitat • Wildlife Habitat • Preservation of Rare and Endangered Species • Fish Migration • Fish Spawning	• Navigation
Los Angeles River Reach 1 (Estuary to Carson Street)	• Groundwater Recharge • Warm Freshwater Habitat • Marine Habitat • Wildlife Habitat • Preservation of Rare and Endangered Species • Fish Migration • Fish Spawning • Shellfish Harvesting	• Municipal & Domestic Supply • Industrial Service Supply • Industrial Process Supply
Los Angeles River Estuary (Queensway Bay)	• Industrial Service Supply • Navigation • Commercial and Sport Fishing • Estuarine Habitat • Marine Habitat • Wildlife Habitat	• Shellfish Harvesting

	• Preservation of Rare and Endangered Species • Fish Migration • Fish Spawning	
Los Angeles/Long Beach Inner Harbor	• Industrial Service Supply • Navigation • Commercial and Sport Fishing • Marine Habitat • Rare, Threatened, or Endangered Species • Wetlands	• Shellfish Harvesting
Long Beach City Beach	• Navigation • Commercial and Sport Fishing • Marine Habitat • Preservation of Rare and Endangered Species	• Fish Spawning
San Pedro Bay Near/Off Shore Zones	No information provided in the RWQCB Basin Plan	
Los Angeles Harbor – Consolidated Slip	No information provided in the RWQCB Basin Plan	

Source: Los Angeles RWQCB, 1994

All of these waterbodies are listed as impaired waterbodies in the 2014/2016 Integrated Report (Clean Water Act 303(d) List/305(b) Report) (State Water Resources Control Board, 2017). In the Project area, the flows of the LA River Watershed are dominated by tertiary-treated effluent from several municipal wastewater treatment plants (Los Angeles Regional Water Quality Control Board, 1994). Urban runoff and illegal dumping are the major contributors to impaired water quality in the Los Angeles River and tributaries.

Table 3-3 lists the impaired water bodies in the Project area for which Caltrans is a TMDL stakeholder, as well the pollutants for each of these water bodies (Caltrans, 2017).

Table 3-3: Impaired Water Bodies and Pollutants

Impaired Water Body	Pollutant(s)
Dominguez Channel & Greater Los Angeles & Long Beach Harbor Waters	Toxic Pollutants: metals (copper (Cu), lead (Pb), zinc (Zn)), dichlorodiphenyltrichloroethane (DDT), polycyclic aromatic hydrocarbons, (PAH), and polychlorinated biphenyls (PCB)

Long Beach City Beaches and Los Angeles River Estuary	Indicator Bacteria
Los Angeles River and Tributaries	Metals
Los Angeles River Watershed	Bacteria
Los Angeles River	Trash

Source: Caltrans, 2017

3.1.3.2.3 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Los Angeles County (Map Numbers 06037C1964F, 06037C1962F, and 06037C1965F) indicates that the Project area is in the following flood zones (see **Figure 3-2**) (Federal Emergency Management Agency, 2008):

- Zone A: This zone is defined as a special flood hazard area subject to inundation by the 1% annual chance flood and no base flood elevations were determined. The portion of the Project area that includes the bridge, the LA River, and the area to the west of the LA River is in Zone A.
- Zone AH: This zone is defined as a special flood hazard area subject to inundation by the 1% annual chance flood and includes flood depths of 1 to 3 feet. Base flood elevations are determined. The northeastern portion of the Project area along Anaheim Street to the east of the LA River is in Zone AH.
- Shaded Zone X: This zoned is defined as an area of 0.2% annual chance flood, an area of 1% annual chance flood with average depths of less than 1 foot or with a drainage area less than 1 square mile; and an area protected by levees from 1% annual chance flood. The central portion of the Project area directly east and west of the LA River is in Shaded Zone X.
- Zone X: This zone is defined as an area determined to be outside the 0.2% annual chance floodplain. The eastern portion of the Project area is in Zone X.

According to the FEMA FIRM, the portion of the Project area that includes the bridge and the LA River, the area to the west of the LA River, and the area along Anaheim Street to the east of the LA River are in Zone A or Zone AH, which are defined as areas within the 100-year floodplain. A separate flood prevention project being proposed by the City is the Long Beach Municipal Urban Stormwater Treatment (LB MUST) Facility, which would be located within the Project area and would accommodate stormwater flows from the northern portion of the Project area above West Broadway. The LB MUST facility includes facilities intended to improve water quality associated with urban runoff that ultimately flows into the LA River.

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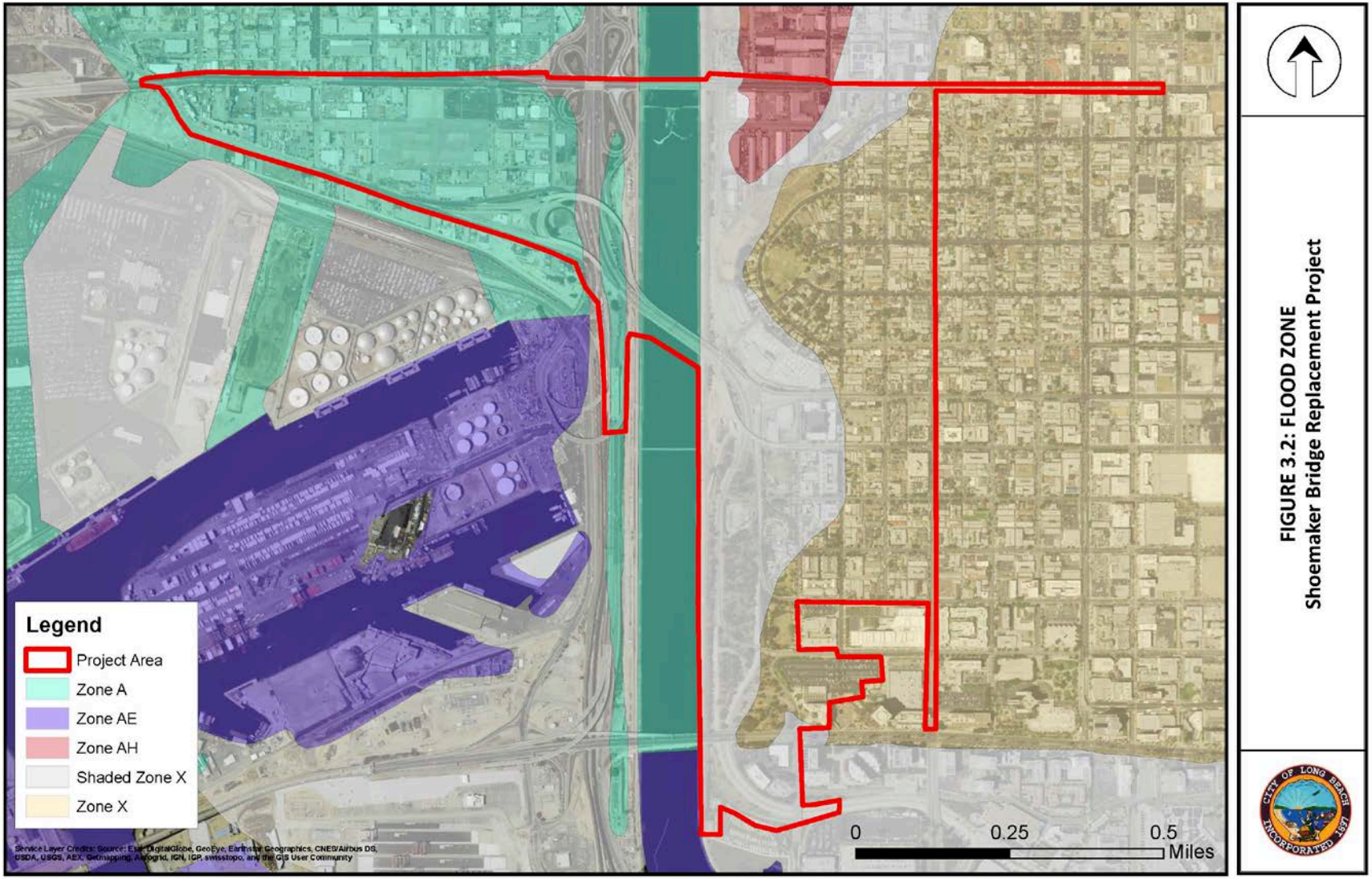
Legend
Project Area
Zone A
Zone AE
Zone AH
Shaded Zone X
Zone X
0
0.25
0.5
Miles
FIGURE 3.2: FLOOD ZONE
Shoemaker Bridge Replacement Project

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3.1.3.2.4 Municipal Supply

The City's municipal water supply comes from local groundwater wells and water purchased from the Metropolitan Water District of Southern California. The Metropolitan Water District of Southern California provides imported water from the Colorado River through the Colorado River Aqueduct and from Northern California through the State of California Water Project. The City of Long Beach Groundwater Treatment Plant is one of the largest treatment plants in the United States where groundwater is treated to drinking water standards. In addition, the Long Beach Water Reclamation Plant provides non-potable water for other water demands in the city, such as for irrigation (Long Beach Water Department, 2017). Currently, the City of Long Beach has no water recharge facilities in city limits. The nearest water recharge facility to the Project area is the San Gabriel River Recharge Facility (U.S. Geological Survey, 2012).

3.1.3.3 Groundwater Hydrology

The Project area is located in the South Coast Hydrologic Region (HR), which is bordered near the Ventura-Santa Barbara County line to the west, the Transverse Ranges to the north, the San Jacinto Mountains and Peninsular Ranges to the east, and the Mexico border to the south (California Department of Water Resources, 2003). The South Coast HR is primarily composed of Orange, San Diego, and Los Angeles Counties, but also extends into portions of Riverside, San Bernardino, Ventura, Kern, and Santa Barbara Counties. The South Coast HR includes 56 groundwater basins, and the Project area is located in the Coastal Plain of Los Angeles groundwater basin. The Coastal Plain of Los Angeles is further divided into subbasins, including the Central Subbasin and West Coast Subbasin, which supply groundwater to the City. Though the Project area is underlain by the West Coast Subbasin, the Central Subbasin supplements the groundwater supply in the West Coast Subbasin.

The West Coast Subbasin, bordered on the east by the Central Subbasin, encompasses approximately 140 square miles (California Department of Water Resources, 2004b). The subbasin is bounded on the north by the Baldwin Hills and the Ballona Escarpment (a bluff just south of the Ballona Creek), on the east by the Newport-Inglewood fault zone, on the south by San Pedro Bay and the Palos Verdes Hills, and on the west by Santa Monica Bay. Water recharge of the aquifers in the West Coast Subbasin comes from adjacent groundwater subbasins, including the Central Subbasin, as well as saltwater intrusion from the Pacific Ocean (California Department of Water Resources, 2004b).

Encompassing approximately 270 square miles, the Central Basin is bounded on the north by the La Brea high, on the northeast by the Elysian, Repetto, Merced, and Puente Hills, on the east by the Los Angeles County/Orange County line, and on the southwest by the Newport-Inglewood fault system (California Department of Water Resources, 2004a). The Central Subbasin is divided into four divisions, which include the Los Angeles Forebay, the Montebello Forebay, the Whittier Area, and the Pressure Area. The Angeles and Montebello Forebays are water table aquifers that allow surface water to seep into the deeper aquifers to replenish the subbasins. The Whittier Area

and Pressure Area are confined aquifer systems that are primarily recharged from the up-gradient forebay areas and adjacent groundwater subbasins (California Department of Water Resources, 2004a). The LA and San Gabriel Rivers flow over the Central Subbasin before emptying into the Pacific Ocean.

The Project area is located in the West Coast Groundwater Subbasin, underlying the Port of Los Angeles (POLA) and POLB. Beneficial Uses for this groundwater subbasin are Industrial Service Supply, Industrial Process Supply, and Agricultural Supply (Los Angeles Regional Water Quality Control Board, 2014). The Los Angeles RWQCB has established water quality objectives for groundwater in the Los Angeles Region, which are summarized in **Table 3-4.** Groundwater within the Project area is present at relatively shallow depths, between 5 and 10 feet below ground surface (HDR, Inc., 2018d).

Table 3-4: Regional Objectives for Ground Waters

Constituent	Regional Objectives for Ground Waters
Bacteria	In ground waters used for domestic or municipal supply (MUN) the concentration of coliform organisms over any seven-day period shall be less than 1.1/100 ml.
Chemical Constituents and Radioactivity	Ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents and radionuclides in excess of the limits specified in the following provisions of Title 22 of the California Code of Regulations which are incorporated by reference into this plan: Table 64431-A of Section BASIN PLAN – MAY 2, 2013 3-40 WATER QUALITY OBJECTIVES 64431 (Inorganic chemicals), Table 64444-A of Section 64444 (Organic Chemicals), Table 64442 of Section 64442 (Gross Alpha Particle Activity, Radium-226, Radium-228, and Uranium), and Table 64443 of Section 64443 (Beta Particle and Photon Radioactivity). This incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect. (See Tables 3-8, 3-9, 3-12a, and 3-12b.) Ground waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use.
Mineral Quality	Numerical mineral quality objectives for individual groundwater basins are contained in Table 3-13.
Nitrogen (Nitrate, Nitrite)	Ground waters shall not exceed 10 mg/L nitrogen as nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N), 45 mg/L as nitrate (NO_3), 10 mg/L as nitrate-nitrogen (NO3-N), or 1 mg/L as nitrite-nitrogen (NO_2-N).
Taste and Odor	Ground waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

Source: Los Angeles RWQCB, 1994

3.1.4 Geology/Soils

The Project area is in the Los Angeles Basin, an actively subsiding basin bound by the Santa Monica and San Gabriel Mountains to the north, the Santa Ana Mountains to the east, and the Palos Verdes Hills to the south (United States Geological Survey, 1965). Stratified sedimentary rocks that originated in a marine environment extend over 15,000 feet below the Los Angeles Basin (City of Long Beach, 1998). The Los Angeles Basin is characterized as an alluvial plain, and was formed by the accumulation of sand, silt, and gravel from rivers in the region. Coastal areas within the Los Angeles Basin have been highly modified by dredging and landfill operations from the construction of recreational and harbor facilities (City of Long Beach, 1998).

The City designated four soil profiles for seismic zoning purposes, and two of these soil profiles that underlie the Project area (City of Long Beach, 1998):

- Soil Profile A: This soil profile is in the western portion of the Project area and consists primarily of man-made fill that is generally composed of fine sand and silt.
- Soil Profile D: This soil profile is in the eastern portion of the Project area, which consists of embedded units of sandstone, siltstone, and shale ranging in age from the Miocene (approximately 23 million to 5 million years ago) to late Pleistocene (approximately 126,000 to 11,700 years ago). The upper layers of soil are primarily sand, silty sand, and sandy silt that are generally medium to very dense. Clayey silt and silty clay, which have a stiff to hard consistency, are also present in surface layers to a lesser extent. In addition, several aquifers are located under the surface soil layers.

Soil erosion is the process by which soil particles are removed from the land surface, by wind, water and/or gravity. Soils are assigned to Hydrologic Soil Groups (HSGs), which are categorized according to their soil runoff potential. HSGs range from Group A (low runoff potential and rapid to very rapid subsoil permeability) to Group D (high runoff potential and very slow subsoil permeability) (Natural Resources Conservation Service, 2007). The existing soil type within the Project area is classified as sandy and is included in HSG B. HSG B soils are typically made up of 10 to 20 percent clay and 50 to 90 percent sand, which give the soils a loamy sand or sandy loam texture. When wet, HSG B soils have a moderately low potential for runoff (Natural Resources Conservation Service, 2007).

The soil erodibility factor, or K factor, is a measure of the susceptibility of soil or surface material to erosion. The K factor for soils in the Project area is 0.32, as provided by the Caltrans Water Quality Planning tool (Caltrans, n.d.). A K value ranging from 0.25 to 0.45 is indicative of medium-textured soils that are moderately susceptible to particle detachment. Therefore, these soils produce runoff at moderate rates.

The erosivity factor, or R factor, is the potential for soil to wash off disturbed, devegetated earth during rain events (Environmental Protection Agency, 2012). The R factor in the Project area is 85.04. An R factor greater than five indicates that the Project does not qualify for a waiver from

NPDES permitting requirements. The length-slope factor, or LS Factor, is the effect of topography (i.e., slope length and steepness) on erosion. The LS Factor in the Project area is 0.46.

A Risk Level Assessment was completed in compliance with the Construction General Permit. The risk determination is calculated based on the K, R, and LS Factors. According to the Risk Level Assessment, the sediment risk and receiving water risk are both low at the intersection of 6th Street and Golden Avenue, resulting in a combined risk of Level 1. Therefore, the Project is subject to minimum BMP and visual monitoring requirements (State Water Resources Control Board, 2013).

3.1.5 Biological Communities

3.1.5.1 Aquatic Habitat

Historically, the mouth of the LA River, the POLB, and surrounding areas formed an estuary with mudflats and marsh areas that provided habitat for birds, fish, and invertebrates (Southern California Coastal Water Research Project, 2014). However, modifications to the port over the past 100 years, including dredging, filling, channelization, and construction, have altered the physical properties of the estuary and contributed to substantial degradation of aquatic habitat in and around the Project area.

Currently, the Project area is located in an urban setting, with most of the natural drainage features diverted underground as part of the City storm drain system (HDR, Inc., 2018a). The only jurisdictional feature in the Project area is the LA River. The majority of the LA River is concrete-lined; however, the channel is soft bottomed with riprap sides in the Project area. Starting at Willow Street (approximately 1.5 miles north of the Project area), the LA River contains brackish water from tidal influence from the Pacific Ocean. Because of the depth and alkalinity of the water, the Project area does not include no suitable habitat for emergent vegetation.

Despite substantial degradation, the LA River still provides some aquatic habitat and serves as a movement and/or foraging corridor for marine and bird species between the Pacific Ocean and upstream habitat areas. The Project area contains 10.29 acres of Estuarine Subtidal waters (Deepwater Aquatic), which are areas that are usually partially enclosed by land but are connected to the ocean and may be diluted by freshwater runoff (HDR, Inc., 2018b). Estuarine subtidal waters are permanently inundated and can support submergent (below water) plant species. A variety of species rely on the Estuarine Subtidal (Deepwater Aquatic) habitat in the Project area for protective cover, water, food, and habitat for reproduction and nesting. In the outer harbor, marine mammals, such as harbor seals and California sea lions, rest on buoys and breakwaters.

3.1.5.1.1 Special Status Species

To determine the potential for special-status species to occur in the Project area, database records were searched from the following sources:

- California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB);

- California Native Plant Society (CNPS) Online Electronic Inventory of Rare and Endangered Vascular Plants of California;
- CalFlora website; and
- United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) Official Species List (HDR, Inc., 2018b).

Based on the records search, a total of 33 special-status plant species have the potential to occur in or around the Project area. Southern tarplant (*Centromadia parryi* ssp. *australis*), the only special-status species for which suitable habitat was identified, is not an aquatic species. There is also potential for a total of 31 special-status wildlife species to occur in the Project area, based on the records search. The Project area is highly developed and contains no suitable habitat for most of these species. Only five special-status wildlife species have the potential to utilize the Project area, they are the California least tern, California sea lion, western mastiff bat, pocketed free-tailed bat, and big free-tailed bat. Of these species, only the California least tern and California sea lion utilize aquatic habitat.

The California least tern is a federally endangered species that nests colonially along the Pacific Coast from the San Francisco Bay to Baja California. Along the LA River, these birds can be found in estuarine areas from early April to early September. California least terns have been observed nesting at Terminal Island in the POLA approximately three miles southwest of the Project limits; however, suitable nesting habitat is absent within the Project limits. California least terns were observed foraging around the mouth of the LA River below Queensway Bridge, approximately 0.5 mile southeast of the Project limits.

The California sea lion is protected under the Marine Mammal Protection Act. California sea lions have been observed in the lower reaches of the LA River just south of Ocean Boulevard, adjacent to the Project limits. Though California sea lions sometimes wander upstream, they typically rely on “haul-out” sites (e.g., docks, piers, platforms, and beaches) for activities that include mating, giving birth, avoiding predators, regulating body temperature, socializing, and resting. Since “haul-out” sites are not common in the Project limits, the occurrence of California sea lions is limited.

3.1.5.1.2 Stream and Riparian Habitats

In the Project area, the LA River channel has riprap sides. The hard substrate provides rocky intertidal habitat for macroinvertebrates and sessile marine animals and plants, which provide food sources for fishes and birds. The portion of the LA River channel in the Project area also has a natural bottom that shifts perennially because of tidal influences. The channel bottom likely consists of mud and silt and supports benthic invertebrate species (HDR, Inc., 2018b). The deep water in the LA River channel in the Project area contains deep water that does not support emergent vegetation (plants that grow in wetlands). The area in the Project limits contains a small

Freshwater Emergent Marsh, on the south side of the LA River, which supports habitat for fish and wildlife species.

3.1.5.1.3 Wetlands

As defined in 33 CFR 328.3(b), wetlands are "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support… a prevalence of vegetation typically adapted for life in saturate soil conditions." The Project area contains less than 0.01 acre of Freshwater Emergent Marsh, which is a wetland habitat. The Freshwater Emergent Marsh is located along the south side of the LA River in the Project area. This community consists of accumulated sediment along the top of the riprap banks, which is dominated by California Bulrush (*Schoenoplectus Californicus*). Freshwater Emergent Marsh provides productive habitat for a variety of aquatic and terrestrial life.

3.1.5.1.4 Fish Passage

The LA River contains deep water and drains into the Pacific Ocean, approximately two miles south of the Project area. Therefore, there is potential for fish passage in the LA River channel. The lower reaches of the LA River and the portion of the Project area in Queensway Bay are designated Essential Fish Habitat (EFH) for Coastal Pelagic Species (northern anchovy, pacific sardine, pacific (chub) mackerel, jack mackerel, and krill), and Pacific Coast Groundfish species by the National Marine Fisheries Service Habitat Division (NMFS) (National Oceanic and Atmospheric Administration, 2015). EFH is defined as habitat that includes waters and substrate necessary for fish to spawn, breed, feed, or grow to maturity (National Oceanic Atmospheric Administration, n.d.). Only the northern anchovy and pacific sardine are expected to occur within the Project area, and their populations are most likely to occur in Queensway and San Pedro Bays downstream of the Project area.

4. ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This section describes the anticipated changes to the aquatic environment and potential short-term, long-term, and cumulative impacts on water quality during construction and operation of the Project. The changes to impervious surfaces in the Project area for each alternative are shown in **Table 4-1** (HDR, Inc., 2018e). The impacts associated with each alternative and design option are described in the following sections.

Table 4-1: Changes in Impervious Surfaces in the Project Area

	New Impervious Area (acres)	Existing Impervious Area to be Removed (acres)	Net New Impervious Area (NNI) (acres)	Replaced Impervious Surface (RIS) (acres)	New Impervious Surface (NIS) (acres)
Alternative 2					
Design Option A (Roundabout)	6.81	15.46	-8.65	12.85	6.85
Design Option B ("Y" Intersection)	6.23	16.04	-9.81	15.55	5.74
Alternative 3					
Design Option A (Roundabout)	6.81	15.96	-9.15	15.50	6.35
Design Option B ("Y" Intersection)	6.23	16.54	-10.31	15.55	5.25

Source: HDR, Inc., 2018e

4.2 Potential Water Quality Impacts

4.2.1 Anticipated Changes to the Physical/Chemical Characteristics of the Aquatic Environment

4.2.1.1 Substrate

Both build alternatives would require construction of a new bridge over the LA River, and Alternative 3 would require demolition of the existing bridge structure. The first phase of construction would include activities that could disturb river sediment, such as excavation of the channel bottom for placing foundation columns and construction equipment. The next phase of construction would include demolition work. During construction, the disturbance of existing channel bottom sediments would be localized around the proposed bridge columns and also around any temporary supports required to erect the new bridge. The nine columns proposed in the channel limits comprise approximately 1,000 square feet of disturbed area. Because disturbance in the

channel would be localized to a small area, no substantial changes to the substrate are anticipated. During operation, no changes to the substrate would result from the Project.

4.2.1.2 Currents, Circulation, or Drainage Patterns

Both build alternatives would require construction of a new Shoemaker Bridge over the LA River. During construction, temporary supports would be required to erect the new bridge, but these supports would be removed following construction. Therefore, any changes to circulation or drainage patterns from these structures would be temporary. Construction of the Project would not affect seasonal changes or perennial shifts from tidal influences in the LA River

As shown in **Table 4-1**, the Project would result in a net decrease in impervious surface area of 8.65 acres under Alternative 2, Design Option A; 9.81 acres under Alternative 2, Design Option B; 9.15 acres under Alternative 3, Design Option A; and 10.31 acres under Alternative 3, Design Option B. The new bridge would be designed to accommodate stormwater flows. Flow rates and volumes would be managed by BMPs, which may include including gross solid removal devices (GSRD), wet basins, bioswales and stripes, media filters, and catch basin inserts. In addition, the Project is being designed to ensure that stormwater flows are accommodated within the following two permanent BMPs, which will be utilized for stormwater management during Project operation (see **Figure 4-1**):

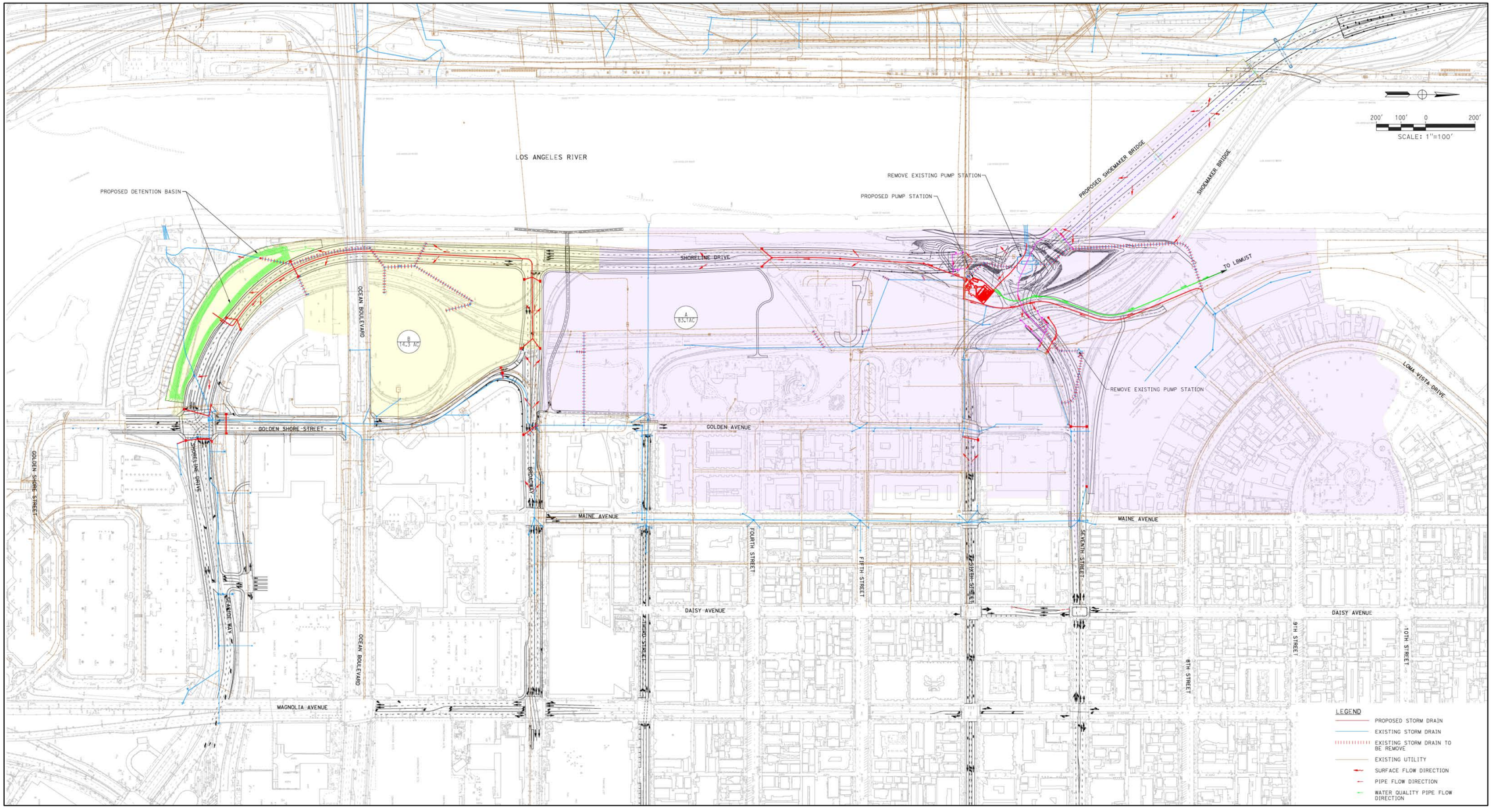
- The LB MUST Facility, which is a separate project, will accommodate drainage from the portion of the Project area to the north of Broadway; and
- A detention basin will be constructed as part of the Project to accommodate drainage from the portion of the Project area to the south of Broadway.

With implementation of BMPs, Project operation would not result in a substantially faster flow rate or an increased volume of flow from the bridge. In addition, the depth of the water body would not change as a result of the Project, and the Project would not affect seasonal changes or perennial shifts from tidal influences in the LA River. Therefore, no substantial changes to currents, circulation, or drainage patterns from Project operation are anticipated.

4.2.1.3 Suspended Particulates (Turbidity)

Both build alternatives would require construction of a new Shoemaker Bridge over the LA River, and Alternative 3 would require demolition of the existing bridge structure. The Project would require heavy construction (e.g., excavation of the channel bottom for foundation columns and the positioning of equipment outriggers) and demolition work that could result in the re-suspension and dispersal of fine-grained bottom sediments within the water column. In addition, construction sites adjacent to the LA River could disturb soil and promote erosion of the channel banks. The erosion of soils could result in the transport of solid materials in surface runoff into the channel. Therefore, soil disturbance in and adjacent to the LA River, and erosion of the channel banks and nearby areas, could result in increased turbidity and total suspended solids (TSS) during construction.

Figure 4-1: Preliminary Drainage Exhibit



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Disturbance in the channel would be localized around the existing and/or proposed bridges. In addition, prior to the start of the construction phase, a SWPPP would be prepared to outline appropriate construction BMPs that would be implemented to minimize erosion into the LA River. Therefore, no substantial changes to turbidity are anticipated.

During operation of the Project, turbidity in the LA River could result from intermittent and seasonal re-suspensions of sediment through stormwater flows. However, turbidity levels would be minimal and similar to existing levels. In addition, the new bridge would be designed to accommodate anticipated stormwater flows. Therefore, no substantial changes to turbidity are anticipated.

The following BMPs and standard measures to address temporary impacts associated with Project construction would also be implemented:

- Turbidity and pH testing will be conducted at discharge points during qualifying rain events.
- During construction, the City's Resident Engineer or designated contractor shall ensure that carriers be constructed at entry points to the receiving waters to prevent large debris from entering the receiving water.
- During construction, the City's Resident Engineer or designated contractor shall ensure that cofferdams be used during bank or sediment disturbing construction activities.
- During construction, the City's Resident Engineer or designated contractor shall ensure that turbidity curtains be used in lieu of silt curtains, which are less effective at trapping sediment in tidal channels.

The following standard measure to address long-term impacts associated with Project operation would also be implemented:

- Following construction, Caltrans' Resident Engineer or designated contractor shall ensure that new bridge structures be continuously maintained to prevent excessive buildup of debris that could be discharged in a precipitation event.

4.2.1.4 Oil, Grease, and Chemical Pollutants

During construction, accidental discharge of waste products, trash left at the construction site, and petroleum hydrocarbons that have spilled in the construction area could be sources of oil, grease, and chemical pollutants. However, prior to construction, a SWPPP would be prepared to outline appropriate construction BMPs that would be implemented to prevent any pollutants from entering the LA River. Therefore, no substantial changes to the levels of oil, grease, and chemical pollutants are anticipated.

During operation, oil, grease, and chemical pollutants could be discharged into the LA River in stormwater runoff as a result of incidental drippings from vehicles, and accidental spills during maintenance activities, such as bridge painting and surface treatments. As shown in **Table 4-1**, the project would result in a net decrease in impervious surface area under each alternative and design

option, which could result in a decrease in surface runoff. In addition, the Project would be designed to allow surface runoff to flow directly into the nearest stormwater channel, where it would be conveyed to a detention basin or the LB MUST Facility. The Project also includes modifications that would not increase the capacity of the bridge or roadways (e.g., additional street lighting, re-striping, turn lanes, bicycle, pedestrian, and streetscape improvements). In addition, ongoing maintenance to remove excess grease and other chemical pollutants would be implemented to prevent these pollutants from entering the LA River. Therefore, no substantial changes to the levels of oil, grease, and chemical pollutants are anticipated during Project operation.

The following BMPs and standard measures to address temporary impacts associated with Project construction would also be implemented:

- Storm Drain Inlet Protection (SC-10) will be used to protect the new and existing storm drain inlets.
- Solid Waste Management (WM-5) will be used to control runoff from waste piles generated from demolishing the existing bridge structures.
- Temporary Concrete Washout and Concrete Management (WM-8) will be used to control runoff from waste concrete.
- Paving and Grinding Operations (NS-3) will be used to manage waste from paving operations.
- Pile Driving Operations (NS-11) will involve mitigation measures to control waste from pile driving operations.
- Concrete Curing (NS-12) will be used to control waste related to concrete curing.
- Material & Equipment Use Over Water (NS-13) will be required for work done over the LA River.
- Structure Demolition / Removal Over or Adjacent to Water (NS-15) will be required for removal of the existing bridge over the LA River.
- Stabilized construction entrance/exits (TC-1) will be provided at locations where construction traffic will enter paved roads.
- In order to minimize the volume of decontamination wash water and to prevent the transport of contaminates from work site areas during construction, the City's Resident Engineer or designated contractor shall ensure the implementation of BMPs including the following:
    - Waste Management (WM)-6, addressing Hazardous Waste Management
    - WM-7, addressing Contaminated Soil Management
    - Tracking Control (TC)-3, which pertains to Entrance Outlet Tire Wash

- During construction, the City's Resident Engineer or designated contractor shall ensure that proposed locations for servicing, washing, and refueling of equipment are designated in areas that are located away from temporary channels or swales that have the potential to quickly convey runoff to the drainage system and into the LA River. The Resident Engineer or designated contractor shall comply with the guidance outlined in BMP Non-Stormwater (NS)-8, pertaining to Vehicle and Equipment Cleaning, NS-9, pertaining to Vehicle and Equipment Fueling, and NS-10, pertaining to Vehicle and Equipment Maintenance.
- During construction, the City's Resident Engineer or designated contractor shall ensure that construction materials be securely locked up to avoid vandalism and accidental spills into the watercourse. The City's Resident Engineer or designated contractor shall follow measures outlined in BMPs Materials Management (WM)-1, regarding Material Delivery and Storage and WM-4, regarding Spill Prevention and Control.
- During construction, the City's Resident Engineer or designated contractor shall ensure that all construction site BMPs follow the latest edition of the Stormwater Quality Handbooks: Construction Site BMPs Manual (Caltrans, 2011) to control and minimize the impacts of construction related activities, material 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 non-stormwater BMPs identified in the following Non-Stormwater (NS) BMPs listed below:
    - NS-2, related to Dewatering Operations
    - NS-3, related to Paving and Grinding Operations
    - NS-4, related to Temporary Stream Crossing
    - NS-5, related to Clear Water Diversion
    - NS-6, related to Illicit Connection/Discharge
    - NS-7, related to Potable Water/Irrigation
    - NS-11, related to Pile Driving Operation
    - NS-12, related to Concrete Curing
    - NS-13, related to Concrete Finishing
    - NS-16, related to Temporary Batch Plants

    In addition, during construction, the City's Resident Engineer or designated contractor shall ensure compliance with the following Materials Management (WM) BMPs:

    - WM-3, related to Stockpile Management
    - WM-5, related to Solid Waste Management
    - WM-9, related to Sanitary-Septic Waste Management
    - WM-10, related to Liquid Waste Management
- During construction, the City's Resident Engineer or designated contractor shall ensure that contaminated material (e.g., oil, lubricants) will be kept at a safe distance (a minimum of 30.5

m [100 feet]) from an entry point into a receiving water body. Temporary barriers and containers will be necessary to confine any contaminated materials. Upon completion of construction, all contaminated material on the construction site must be removed and disposed of in accordance with Federal, regional, and local regulations.

- During construction, the City's Resident Engineer or designated contractor shall ensure that a temporary spill containment system will be installed and maintained on either side of the receiving water crossing. The City's Resident Engineer or designated contractor will be responsible for the containment plan and the execution of spill containment during the course of construction. The containment plan shall be reviewed and approved by the City's Resident Engineer.
- During construction, the City's Resident Engineer or designated contractor shall ensure excess grease will be manually removed from moving parts of bridges and collected for disposal.
- During construction, the City's Resident Engineer or designated contractor shall ensure that structures will be degreased prior to painting and hydro-blasting to remove old paint with additive-free water, where possible.
- During construction, the City's Resident Engineer or designated contractor shall ensure that shrouds be erected around working areas. Nets and tarps shall be suspended below bridges to catch debris from abrasive removal of old paint and over-spray, where wind conditions permit.
- During construction, the City's Resident Engineer or designated contractor shall ensure that debris be confined by anchoring tarps to enclose the bridge where the bridge deck is close to the water level.
- During construction, the City's Resident Engineer or designated contractor shall ensure that booms be used to capture fugitive floating paint chips. Custom-built enclosures shall be used to confine and capture abrasives, old paint chips, and paint.
- During construction, the City's Resident Engineer or designated contractor shall ensure that vacuum or suction shrouds on blast heads shall be used to capture grit and old paint.
- During construction, the City's Resident Engineer or designated contractor shall ensure that storing, mixing, and cleaning operations will be carried out on land.

4.2.1.5 Temperature, Oxygen Depletion, and Other Parameters

During Project construction and operation, the Project would not require the use of fertilizers that could result in phytoplankton blooms, causing impacts on water temperature, oxygen depletion, or changes in other parameters in the channel. In addition, the Project would not result in the discharge of heated water into the channel, because all water used during construction for the bridge work would be contained and properly disposed of outside the Project area. Therefore, Project construction and operation would not result in substantial changes in temperature, oxygen depletion, or other parameters in the Project area.

4.2.1.6 Flood Control Functions

According to the FEMA FIRM, the portion of the Project area that includes the bridge and the LA River, the area to the west of the LA River, and the area along Anaheim Street to the east of the LA River are in the 100-year floodplain (see **Figure 3-2** in Section 3.1.3.2.3). During construction, the Project would require demolition of the existing bridge structure over the LA River under Alternative 3, and both build alternatives would require construction of a new bridge over the LA River.

During Project construction, temporary supports would be required within the LA River to erect the new bridge. However, the temporary supports would be minor structures that would be completely removed following construction. During Project operation, the new bridge, under Alternatives 2 and 3 (Design Options A and B), would result in an increase of water surface elevation of 0.14 feet or less that would extend approximately two miles upstream of the bridge, as discussed in the Location Hydraulic Study (HDR, Inc., 2018c) that was prepared for the Project. The change in water surface elevation is relatively minor and would not result in flooding because the existing levee walls are high enough to contain flows within the flood control channel. In addition, the bottom of the new bridge would exceed the existing 43-foot Mean High Water Level (MHWL), which would ensure that the new bridge would not interfere with flows within the channel. Therefore, Build Alternatives 2 and 3 (Design Options A and B) would not result in any adverse impacts on the 100-year floodplain or floodway.

4.2.1.7 Storm, Wave, and Erosion Buffers

Storm, wave, and erosion buffers in the Project area include riprap along the LA River banks. During construction, the Project could result in soil erosion of the channels and banks. However, the Project would include construction site BMPs to protect the banks and control erosion (e.g., riprap, concrete walls, and sheet piling). In addition, the channel banks would be restored following construction, and storm, wave, and erosion buffers would function similar to existing conditions. Therefore, no substantial changes to storm, wave, and erosion buffers are anticipated during construction or operation.

4.2.1.8 Erosion and Accretion Patterns

Both build alternatives would require construction of a new bridge over the LA River, and Alternative 3 would require demolition of the existing bridge structure. During construction, the Project would require excavation of the channel bottom for foundation columns or the positioning of equipment outriggers. Therefore, soil disturbance in and adjacent to the LA River, and erosion of the channel banks and nearby areas is anticipated. Disturbance in the channel would be localized around the existing and/or proposed bridges. In addition, prior to the start of the construction phase, a SWPPP would be prepared to outline appropriate construction BMPs that would be implemented to minimize erosion into the LA River. Therefore, no substantial erosion and accretion (sediment build-up) patterns are anticipated during construction. Project operation would not result in

exposed soils or unstable slopes. Therefore, the Project would not result in changes in erosion or accretion patterns during operation.

The following BMPs and standard measures to address temporary impacts associated with Project construction would also be implemented:

- Scheduling and Move-In/Move-Out temporary erosion control (SS-1) to designate multiple move-ins to establish temporary erosion control on graded areas that are substantially complete.
- Preservation of existing vegetation (SS-2) for any Environmentally Sensitive Areas (ESAs) identified in the environmental document and existing park landscaping that will be protected during construction activities as designated on the construction documents.
- Hydraulic Mulch (SS-3) will be utilized to stabilize the graded slopes prior to plant establishment.
- Hydroseeding (SS-4) and soil binders (SS-5) will be used for exposed slopes and stockpiles.
- Outlet protection (SS-10) will be used to protect downstream areas from erosion.
- Streambank stabilization (SS-12) will be required mitigate work involving the existing LA River banks.
- Silt Fence (SC-1) will be installed to protect the perimeter of the Project work sites.
- Temporary Sediment Basin (SC-2) will be utilized on the east side of the bridge to mitigate sediment transport into the existing pump station and LA River.
- Street Sweeping (SC-7) will be utilized to clean up adjacent City streets.
- During construction, the City's Resident Engineer or designated contractor shall ensure compliance with the provisions of the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (Order No. 2009-0009-DWQ, NPDES No. CAS000002), and any subsequent amendments (Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ), as they relate to construction activities for the Project. This will include submission of the Permit Registration Documents, including a Notice of Intent (NOI), risk assessment, site map, Stormwater Pollution Prevention Plan (SWPPP), annual fee, and signed certification statement to the SWRCB via the Stormwater Multi-Application and Report Tracking System (SMARTS) at least 7 days prior to the start of construction. Construction activities will not commence until a Waste Discharger Identification (WDID) number is received from the SMARTS. The SWPPP will be prepared by a Qualified SWPPP Developer (QSD) will meet the requirements of the Construction General Permit and will identify potential pollutant sources associated with construction activities; identify non-stormwater discharges; develop a water quality monitoring and sampling plan; and identify, implement, and maintain BMPs to reduce or eliminate pollutants

associated with the construction site. BMPs will include, but not be limited to, Good Housekeeping, Erosion Control, and Sediment Control BMPs. The BMPs identified in the SWPPP will be implemented during Project construction. Caltrans and City will comply with the Risk Level 1 sampling and reporting requirements of the Construction General Permit. A Rain Event Action Plan (REAP) will be prepared and implemented by a Qualified SWPPP Developer (QSP) within 48 hours prior to a rain event of 50 percent or greater probability of precipitation according to the National Oceanic and Atmospheric Administration (NOAA). A Notice of Termination (NOT) will be submitted to the SWRCB within 90 days of completion of construction and stabilization of the site.

- During construction, the City's Resident Engineer or designated contractor shall ensure that channel bank work include bank protection (riprap, concrete walls, and sheet piling) to eliminate the possibility of enhanced bank erosion. If channel bank work occurs during post construction, Caltrans' Resident Engineer or designated contractor will ensure that the same requirements are adhered to.

4.2.1.9 Aquifer Recharge/Groundwater

Support structures would be constructed with either the cast-in-drilled-hole (CIDH) method or cast-in-steel-shell (CISS) method. In the CIDH method, a hole is drilled, then filled with slurry (semiliquid mixture of fine particles) to prevent cave-ins. The hole is then pumped with concrete, which displaces the slurry and is reused. During this process, any groundwater that fills the hole prior to filling with slurry and concrete would be removed and disposed of properly. Construction is not expected to affect groundwater movement because the slurry would prevent groundwater movement, and no active dewatering, other than emptying the hole prior to filling it with slurry, would be conducted. Therefore, no substantial changes to groundwater recharge are anticipated.

During construction, there is also potential for encountering impacted groundwater (i.e., groundwater that contains concentrations of pollutants of concern that exceed NPDES permit limits) during a dewatering operation. Three alternatives for disposing impacted groundwater from the proposed dewatering operation could be implemented:

- Treatment onsite
- Treatment and disposal offsite
- Disposal into local sewer system

The most appropriate treatment method would be determined based on a groundwater assessment and recommendations from the Los Angeles RWQCB. With implementation of one of these treatment methods, permanent impacts on groundwater quality in the vicinity of the Project area would be minimal upon completion of the construction.

Project operation would not result in an increase in the transport of pollutants into the groundwater through infiltration. Because the project would result in a net decrease in impervious surface area

under each alternative and design option (see **Table 4-1**), no substantial net gain or loss in infiltration is anticipated. The BMPs selected may provide infiltration opportunities along the alignment, which would be a positive influence to the local hydrogeology.

The following BMPs and standard measures to address temporary impacts associated with Project construction would also be implemented:

- Dewatering may be necessary during construction of deep foundation pending the results of further geotechnical explorations.
- During construction, the City's Resident Engineer or designated contractor shall ensure compliance with the provisions of 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 (Order no. R4-2013-0095, NPDES Permit no. CAG994004), effective July 6, 2013 (known as the Dewatering permit), as they relate to discharge of non-stormwater dewatering wastes for the Project. The two options to discharge would be to the local storm drain system and sanitary sewer system, and would require a permit from the Regional Water Quality Control Board (RWQCB) and the City of Long Beach, respectively.
- During construction, the City's Resident Engineer or designated contractor shall ensure compliance with the provisions of the General Waste Discharge Requirements for Discharges of Treated Groundwater from Investigation and/or Cleanup of Volatile Organic Compounds-Contaminated Sites to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties (Order no. R4-2013-0043, NPDES Permit no. CAG914001), effective April 7, 2013 (known as the Dewatering permit for contaminated sites), as they relate to discharge of non-stormwater dewatering wastes from contaminated sites for the Project. The two options to discharge would be to the local storm drain system and sanitary sewer system, and would require a permit from the RWQCB and the City of Long Beach, respectively.
- During construction, the City's Resident Engineer or designated contractor shall ensure that an appropriate groundwater treatment method be determined based on a groundwater assessment and recommendations from the Los Angeles Regional Water Quality Control Board (RWQCB). These three treatment methods include:
    - **Onsite Treatment**: A temporary water treatment plant would be constructed to treat water generated from dewatering operations to reduce the concentrations of pollutants of concern below National Pollution Discharge Elimination System (NPDES) limits.
    - **Treatment and Disposal Offsite**: Water would be temporarily stored in the Project area, the waste would be profiled (i.e., categorized as hazardous or non-hazardous), and the water would be transported to a regulated facility for treatment and disposal.

- **Disposal into the Local Sewer System**: Groundwater would be disposed into the County of Los Angeles sewage treatment system via a local sewer or truck line, depending on the rate and flow. An Industrial Wastewater Discharge Permit, issued by the County of Los Angeles Sanitation Department, would be required. Treatment of the discharge water may be required to satisfy the permit.

4.2.1.10 Baseflow

Baseflow is the portion of water in a channel that results from the seepage of groundwater rather than from runoff. Construction and operation of the Project would not change the nature of the LA River channel bottom. Therefore, no substantial changes to baseflows are anticipated to result from the Project.

4.2.2 Anticipated Changes to the Biological Characteristics of the Aquatic Environment

4.2.2.1 Special Aquatic Sites

According to 40 Code of Federal Regulations (CFR) Part 230, special aquatic sites are geographic areas that have special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas, which include wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes, are generally recognized as areas that substantially influence or positively contribute to the general overall environmental health or vitality of the entire ecosystem of a region. The Project area does not contain Special Aquatic Sites.

4.2.2.2 Habitat for Fish and Other Aquatic Organisms

Both build alternatives would require construction of a new bridge over the LA River, and Alternative 3 would require demolition of the existing bridge structure. During construction, temporary supports would be required in the LA River channel to erect the new bridge. In addition, both alternatives would require excavation of the channel bottom for foundation columns and the positioning of outriggers, and Alternative 3 would require anchoring barges under the existing structure to facilitate demolition and receive debris. These construction activities have the potential to temporarily degrade aquatic habitat by reducing food sources, and increasing suspended solids, noise, vibration, runoff, and litter.

To minimize disturbance of aquatic habitat, the work area would be minimized to the extent feasible. In addition, BMPs would be implemented, and include but are not limited to, construction monitoring by a Project biologist, delineating sensitive habitat, and limiting the operation of construction equipment to non-sensitive areas.

During operation, the Project is expected to result in a net loss of deepwater aquatic habitat. Under Alterative 3, new aquatic habitat could become available where the existing bridge support structures would be removed. Construction of the new bridge could result in additional shade over aquatic habitat; however, impacts from shading would not adversely affect the species utilizing

the habitat because they are adapted to a wide range of habitats. Therefore, Project operation would not result in substantial changes to habitat for fish and other aquatic organisms.

Standard measures, as identified in the Natural Environment Study (NES) prepared for the Project, would be implemented to minimize impacts on biological resources:

- Caltrans and the City would designate a U.S. Fish and Wildlife Service/National Marine Fisheries Services (USFWS/NMFS) approved biologist (Project biologist) who shall be responsible for overseeing compliance with protective measures for the biological resources during clearing and work activities within and adjacent to Environmentally Sensitive Areas (ESAs). The Project biologist would be familiar with the protected habitats, plants, and wildlife. The Project biologist would also maintain communications with the contractor to ensure that issues relating to biological resources are appropriately and lawfully managed. The Project biologist would review final plans, designate areas that need temporary fencing (e.g., ESA fencing), and monitor construction. The Project Biologist would monitor construction within the vicinity of estuarine habitat for the duration of the Project to ensure that permit conditions, BMPs, ESAs, and all avoidance and minimization measures are properly constructed and followed.
- Reporting requirements, frequency, and duration would be established during abbreviated consultation with USFWS/NMFS, if required. The Project biologist would provide a final report to Caltrans prior to submittal to USFWS/NMFS documenting compliance with avoidance and minimization measures within 60 days of the completion of work.
- Prior to clearing or construction, highly visible barriers (such as orange construction fencing) would be installed around sensitive habitats adjacent to the Project footprint to designate ESAs to be preserved. No grading or fill activity of any type would be permitted within these ESAs.
- Heavy equipment, including motor vehicles, would not be allowed to operate within the ESAs. All construction equipment would be operated in a manner so as to prevent accidental damage to nearby preserved areas. All equipment maintenance, staging, and dispensing of fuel, oil, or any other such activities would occur in developed or designated non-sensitive upland habitat areas. The designated upland areas would be located in such a manner as to prevent the runoff from any spills from entering waters of the United States.
- An employee education program for all construction personnel would be developed and implemented by the biological monitor prior to construction. At a minimum, the program would include the following topics: (1) responsibilities of the biological monitor; (2) delineation and flagging of adjacent sensitive habitat; (3) limitations on all movement of those employed on site, including ingress and egress of equipment and personnel, to designated construction zones (personnel shall not be allowed access to adjacent sensitive habitats); (4) on-site pet prohibitions; (5) use of trash containers for disposal and removal of trash; and (6)

Project features designed to reduce the impacts to listed species and habitat and promote continued successful occupation of adjacent habitat areas.

- Project construction shall be carried out under standard BMPs (e.g., no staging or vehicle repair in sensitive areas, implementation of erosion control measures, fuel spill cleanup). During Project construction, the proper use and disposal of oil, gasoline, diesel fuel, antifreeze, lead paint, and other toxic substances shall be enforced. No construction materials, equipment, debris, or waste shall be placed or stored where it may accidentally deposit fill material or be subject to tidal erosion and dispersion. Construction materials shall not be stored in contact with the soil.
- All soils and material, including contaminated topsoil and lead-based paint from demolished bridges, shall be removed from the Biological Study Area (BSA) and disposed of properly. Floating booms shall be used to contain debris discharged and any debris discharged shall be removed no later than the end of each day.
- Best Management Practices would be utilized to limit the spread of re-suspended contaminated sediment. These may include cofferdams, silt curtains, or turbidity curtains that would contain re-suspended sediment on site until it settles.
- Caltrans standard SWPPP would be followed to minimize erosion and identify specific pollution prevention measures that would eliminate or control potential point and nonpoint pollution sources on site during and following the Project's construction phase. Specific BMPs will be implemented during Project construction so as not to cause or contribute to an exceedance of any water quality standard. In addition, changes to the BMPs such as alternative mechanisms, if necessary, during Project design and/or construction would be implemented in order to achieve the stated goals and performance standards.
- Permanent impacts to the LA River would be replaced on or off site at a minimum 2:1 ratio. Temporary direct impacts to the LA River would be replaced at a minimum 1:1 ratio with in-kind habitat restored in place within the Biological Study Area (BSA). If off-site restoration is conducted, it would be done within the Los Angeles River Watershed, if feasible.
- Further criteria specified in the Habitat Mitigation and Monitoring Plan (HMMP) would include an establishment period for the replacement habitat, if applicable, regular trash removal, and regular maintenance and monitoring activities to ensure the success of the mitigation plan. After construction, annual summary reports of biological monitoring would be provided to the USACE, RWQCB, and CDFW that document the monitoring effort. The duration of the monitoring and reporting would need to be established by resource agency permit conditions.

4.2.2.2.1 Fish Passage (Beneficial Uses)

The LA River contains deepwater aquatic habitat that is designated as EFH for Coastal Pelagic Species and Pacific Coast Groundfish species. Therefore, the LA River channel has the potential

to support fish passage. During construction, the Project would require work over and within the LA River channel, which could restrict fish passage. However, the Project area is only expected to support northern anchovy and Pacific sardine, and the majority of these populations are located south of the Project area in Queensway and San Pedro Bays. To minimize disturbance to fish passage, the work area would be minimized to the extent feasible, and construction BMPs would be implemented. During operation, the Project is not anticipated to result in changes to fish passage because the new bridge columns would not substantially restrict water flow or fish movement.

4.2.2.3 Wildlife Habitat

In the Project area, the LA River has been substantially degraded and contains a high toxic load, which has reduced the suitability of wildlife habitat. However, the LA River may still provide some habitat and serve as a movement and/or foraging corridor for marine and/or bird species between the Pacific Ocean and upstream habitat areas. During construction, the Project would require work over and within the LA River channel, which could temporarily reduce or restrict access to wildlife and foraging habitat. To minimize disturbance to wildlife habitat, the work area would be minimized to the extent feasible, and construction BMPs would be implemented. During operation, the new bridge footings would result in a small decrease in area within the deepwater aquatic habitat. However, the reduction in area would not result in a substantial loss of wildlife habitat. Therefore, operation of the Project is not anticipated to result in changes to wildlife habitat.

4.2.2.3.1 Wildlife Passage (Beneficial Uses)

In the Project area, the LA River may provide habitat and serve as a movement and/or foraging corridor for marine and/or bird species between the Pacific Ocean and upstream habitat areas. Marine mammals, such as harbor seals and California sea lions, are known to use upstream areas of the LA River for basking and foraging. During construction, the Project would require work over and within the LA River channel, which could affect wildlife passage. To minimize disturbance, the work area would be minimized to the extent feasible, and construction BMPs would be implemented. During operation, the new bridge footings would result in a small decrease in area within the deepwater aquatic habitat; however, the reduction in area would not substantially change or restrict wildlife passage. Therefore, the Project is not anticipated to result in changes to wildlife passage.

4.2.2.4 Endangered or Threatened Species

According to the CNDDB, a minimum of 33 special-status plant and 31 special-status animal species have potential to inhabit the Project area. The only special-status plant species that can be found in the Project area is not an aquatic species. Of the five special-status wildlife species that have the potential to utilize the Project area, only the California least tern and California sea lion utilize aquatic environments.

The proposed Project is not expected to substantially change nesting habitat for California least terns due to the lack of suitable nesting habitat in the Project area. Foraging habitat for California

least terns may be temporarily limited during construction; however, any changes to foraging habitat would cease once construction has been completed. To minimize disturbance to foraging habitat, the work area would be minimized to the extent feasible and construction BMPs would be implemented. During operation, the new bridge is not anticipated to substantially change or restrict wildlife habitat essential to California least terns.

During construction, work within the LA River channel could also result in the temporary loss of foraging habitat and indirect harassment of California sea lions. However, the Project is not expected to substantially change California sea lion habitat because of the lack of "haul-out" sites in the Project area. In addition, the Project area has a low probability of California sea lion occurrences. To minimize harassment and disturbance to foraging habitat, the work area would be minimized to the extent feasible, and construction BMPs would be implemented. During operation, the new bridge is not anticipated to substantially change or restrict wildlife habitat essential to California sea lions.

Standard measures, as identified in the NES prepared for the Project, would also be implemented to minimize impacts on biological resources:

- To protect bird species that fly up and down the LA River, the new Shoemaker Bridge would be designed to ensure bird safety. At minimum, suitable fencing, at least 14 feet high, would be installed to direct flying birds up and out of the way of traffic to prevent birds from being struck by passing vehicles.
- The use of rodenticides, herbicides, insecticides, or other chemicals that could potentially harm listed/protected species shall be prohibited in and around the LA River.
- Deliberate feeding of wildlife shall be prohibited.

4.2.2.5 Invasive Species

The invasive algae *Caulerpa taxifolia* (Caulerpa) has been introduced into southern California in 2000, and has the potential to outcompete other aquatic species and cause ecosystem-level impacts. Because Caulerpa grows very dense, the algae can kill all native aquatic vegetation and displace or kill marine organisms that depend on native aquatic vegetation.

Within the Project limits, the natural habitat in the LA River and surrounding area has been highly degraded and developed, and contains minimal natural vegetation. Though Caulerpa has not been previously reported in San Pedro Bay of the Los Angeles/Long Beach Harbor complex, the invasive algae has been reported in Huntington Harbor, approximately seven miles southeast of the Project area. During construction, dredging and bottom-disturbing activities have the potential to spread Caulerpa in the Project area. To minimize the potential for spreading Caulerpa, pre-construction surveys would be conducted prior to bottom-disturbing activities, and a management plan would be developed if Caulerpa is discovered in the Project area. Operation of the Project would not require dredging or bottom-disturbing activities that could result in the introduction of invasive species.

Standard measures, as identified in the NES prepared for the Project, would be implemented to minimize impacts related to invasive species:

- Pre-construction surveys for the invasive seaweed (*Caulerpa taxifolia)* will be conducted to ensure that native aquatic vegetation occurring within the lower Los Angeles River is not displaced by the introduction or spread of this invasive aquatic species. If invasive seaweed (*Caulerpa taxifolia)* is found within the BSA, a management plan will be prepared according to guidelines in the NMFS *Caulerpa* Control Protocol, or other approved protocol, and submitted to USFWS for approval prior to the start of construction. Construction activities will not begin prior to approval of this plan, if needed.

4.2.3 Anticipated Changes to the Human Use Characteristics of the Aquatic Environment

4.2.3.1 Existing and Potential Water Supplies, and Water Conservation

Within the Project limits, existing beneficial surface water uses include groundwater recharge, and potential beneficial surface water uses of the LA River include municipal, domestic supply, and industrial process supply. During Project operation and construction, minimal water would be required for bridge maintenance and/or construction operations.

4.2.3.2 Recreational or Commercial Fisheries

No recreational or commercial fisheries are located in the portion of the LA River within the Project limits.

4.2.3.3 Other Water Related Recreation

Within the Project limits, existing beneficial surface water uses include non-contact water recreation and contact water recreation. The non-contact recreation in the Project area includes a Class I Bikeway (bike path) along the LA River. During construction, the Project could result in temporary closures of the bike path; however, a temporary detour would be provided. Contact water recreation in the Project area includes activities such as seasonal boating and kayaking. The Project would require work over and within the LA River channel that could result in temporary changes to contact water recreation. To minimize disturbance to water related recreation, the work area would be minimized to the extent feasible, and construction BMPs would be implemented. In addition, all recreational activities would return to normal use following construction. During operation, no changes to water related recreation area anticipated.

4.2.3.4 Aesthetics of the Aquatic Ecosystem

During construction, construction equipment and activities would be visible in and around the aquatic ecosystems of the Project area. However, the aesthetic quality of the aquatic ecosystems would return to similar conditions following construction. During operation, the new bridge would complement the aesthetics of the existing bridge. Therefore, no substantial changes to the aesthetics of the aquatic ecosystem are anticipated.

4.2.3.5 Parks, National and Historic Monuments, National Seashores, Wild and Scenic Rivers, Wilderness Areas, and Other Designated Areas

Parks located in the Project area include Cesar E. Chavez Park and Drake Park. The parks do not include aquatic habitat.

4.2.3.6 Traffic/Transportation Patterns

During construction, temporary detours and signage would be placed in order to maintain the flow of traffic. During operation, the traffic and transportation would improve because the Project would address non-standard features and design deficiencies. Therefore, no substantial traffic or transportation changes are anticipated that would affect water resources in the Project area.

4.2.3.7 Energy Consumption or Generation

Project construction would require a temporary need for energy to operate vehicles and machinery. During operation of this Project, no changes are anticipated because roadway capacity would remain the same. Therefore, no substantial changes to energy consumption are anticipated.

4.2.3.8 Navigation

Navigation is not permitted in the LA River, therefore, no changes to navigation are anticipated.

4.2.3.9 Safety

Temporary detours and signage would be provided during construction of the Project to maintain vehicle and pedestrian safety. During operation, existing traffic safety and operations are expected to improve, and an increase in multi-modal connectivity within the Project limits and surrounding area is anticipated. In addition, the Project would enhance Complete Streets elements (i.e., streets designed to enable safe access for all users) by providing bicycle, pedestrian, and streetscape improvements on major thoroughfares. Therefore, no substantial changes to safety are anticipated.

4.2.4 Temporary Impacts to Water Quality

4.2.4.1 Alternative 1 (No Build)

Under the No Build Alternative, no change would result in existing water quality conditions. Therefore, this alternative would not result in temporary impacts on water quality.

4.2.4.2 Build Alternatives 2 and 3 (Design Options A and B)

Proposed activities within the LA River would require coordination with, and permits from several regulatory agencies, which would require additional time to coordinate. The anticipated reviews/permits associated with the improvements are as follows:

- NPDES Construction General Permit (U.S. Environmental Protection Agency);
- CWA Section 401 Water Quality Certification (Los Angeles RWQCB);
- Dewatering Permit (Los Angeles RWQCB);

- Dewatering Permit (City of Long Beach);
- CWA Section 404 Permit (USACE);
- CWA Section 408 Permit (USACE) (This is not an environmental permit, but rather a design permit.);
- Nationwide Permit 14 (USACE);
- Nationwide Permit 33 (USACE); and
- California Fish and Game Code Section 1602 Streambed Alteration Agreement (California Department of Fish and Wildlife).

Physical/Chemical Characteristics of the Aquatic Environment

The Project would require the disturbance of approximately 39.5 acres under Alternatives 2 and 3. During construction, temporary modifications to the LA River channel and the use of construction equipment on the LA River banks have the potential to degrade water quality by increasing the amount of disturbed substrate, and TSSs. In addition, any excavated soil would be exposed, increasing potential for soil erosion compared to existing conditions.

A range of pollutants, such as trash left at the construction sites and petroleum hydrocarbons spilled from the construction sites have the potential to affect the chemical characteristics of the aquatic environment. Runoff associated with construction activities has the potential to degrade water quality. However, any impacts on the physical/chemical characteristics of the aquatic environment would be short-term and temporary. With implementation of BMPs outlined in this report, impacts from sediments and potential pollutants would be minimized. Because physical/chemical conditions would return to existing conditions following construction, impacts would not be adverse.

Implementation of Alternatives 2 and 3 would comply with the CGP, which requires that a risk assessment be conducted to determine the Project risk level. According to the Risk Level Assessment that was completed for the Project, the sediment risk and receiving water risk are both low, resulting in a combined risk of Level 1. Therefore, the Project is subject to minimum BMP and visual monitoring requirements (State Water Resources Control Board, 2013).

In accordance with the CGP, a SWPPP would also be required prior to construction because the DSA would be more than one acre for both build alternatives. The SWPPP would include the development of a Construction Site Monitoring Program that would include procedures and methods related to the visual monitoring and sampling and analysis plans for non-visible pollutants, sediment, turbidity, pH, and receiving waters.

Biological Characteristics of the Aquatic Environment

Work within the LA River channel and the use of temporary structures during construction of the Project have the potential to temporarily affect habitat for fish and other aquatic organisms. In

addition, construction activities could temporarily reduce foraging habitat for special-status species (California least terns and California sea lions). To minimize disturbance to aquatic habitat during construction, the work area would be minimized to the extent feasible. Construction equipment would not be allowed in sensitive habitats, and all equipment maintenance, staging, and disposal of waste materials would be restricted to developed or designated non-sensitive upland habitat areas. Other BMPs, including erosion control measures and fuel spill cleanup, would also be implemented. Construction of the Project is not expected to have an adverse effect on EFH in the Project area, and is not expected to permanently affect any listed species.

Human Use Characteristics of the Aquatic Environment

During construction, access to non-contact and contact water recreation may be limited in some areas; however, recreation opportunities would return to their existing levels following construction. Therefore, adverse impacts on the human use characteristics of the aquatic environment are not anticipated.

4.2.5 Long-term Impacts During Operation and Maintenance

4.2.5.1 Alternative 1 (No Build)

Under the No Build Alternative, no change would result in existing water quality conditions. Therefore, this alternative would not result in long-term impacts on water quality.

4.2.5.2 Build Alternatives 2 and 3 (Design Options A and B)

Physical/Chemical Characteristics of the Aquatic Environment

The Project would result in a net decrease in impervious surface area under each alternative and design option (see **Table 4-1**). A decrease in impervious surfaces would decrease the volume and velocity of stormwater discharge, as well as the amount of pollutants into receiving waterways. Therefore, Project operation has the potential to improve water quality in the Project area compared to existing conditions.

In addition, the new bridge would be designed to accommodate stormwater flows through a detention basin and the LB MUST Facility. BMPs (e.g., GSRDs, wet basins, bioswales and stripes, media filters, and catch basin inserts) would also be in place to manage flow rates and volumes, as well as groundwater infiltration. Therefore, no adverse impacts on the physical/chemical characteristics of the aquatic environment are anticipated to result from operation of the Project.

Biological Characteristics of the Aquatic Environment

Long-term operation of the new bridge would not affect fish or wildlife passage, wildlife habitat, habitat essential to special-status species, or invasive species. Therefore, no adverse impacts on the biological characteristics of the aquatic environment are anticipated to result from operation of the Project.

Human Use Characteristics of the Aquatic Environment

During operation, traffic safety and operations are expected to improve as a result of bicycle, pedestrian, and streetscape improvements on major thoroughfares. The Project would include improvements to address non-standard features and design deficiencies. Therefore, no adverse impacts on the human use characteristics of the aquatic environment are anticipated to result from operation of the Project.

4.3 Impact Assessment Methodology

Impacts that would result from the Project have been assessed for each of the build alternatives. With the implementation of BMPs and standard measures, direct and indirect impacts on water quality would be minimized under both build alternatives. No substantial differences in impacts would result from the build alternatives.

4.4 Cumulative Impacts

The cumulative setting is considered the LA River and Dominguez Channel Watersheds. Existing and continuing development, as well as flood control measures and structures, contribute to cumulative water quality impacts. Approximately 19 development projects are being planned, are under construction, or have been completed in the cumulative impact study area. Development projects in design and construction phases in the POLB area include the Middle Harbor Project, On-Dock Rail Support Facility Project, Gerald Desmond Bridge replacement Project, Cesar E. Chavez Park Project, and the Drake Park Project. Because these development projects are in close proximity to receiving water bodies, these projects have the potential to increase pollutant loads in receiving waters.

The Project would require the temporary disturbance of 39.52 acres of soil area under the Roundabout Design Option and 39.49 acres of soil area under the "Y" Intersection Design Option. During construction, the Project would have the potential to result in increased construction-related pollutants and turbidity within the LA River in the Project area, and into receiving water bodies. Therefore, the Project would have the potential to contribute to cumulative water quality impacts in the LA River and Dominguez Channel Watersheds. The Project would result in a net decrease in impervious surface area of 8.65 acres under Alternative 2, Design Option A; 9.81 acres under Alternative 2, Design Option B; 9.15 acres under Alternative 3, Design Option A; and 10.31 acres under Alternative 3, Design Option B. The decrease in impervious surface area would contribute to improved long term water quality.

With the implementation of standard BMPs, compliance with regulatory permits, and implementation of avoidance and minimization measures listed in this report, Project impacts would be reduced to the extent feasible. Future projects in the cumulative impact area would be expected to implement similar measures. The Project includes BMPs to reduce pollutants of concern in runoff form the study area, and stormwater would be directed to a detention basin or the proposed LB MUST Facility where stormwater would be treated.

5. AVOIDANCE AND MINIMIZATION MEASURES

As discussed in Section 4. Environmental Consequences, Project design features, BMPs, and standard measures would be implemented to avoid and minimize potential impacts. No other avoidance or minimization measures are required.

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